

Research Report

Oral Health Knowledge, Attitude and Behaviour of Indonesian Dental Students in East Java Province, Indonesia

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ABSTRACT

Background: Oral health knowledge, attitudes and behaviors possessed by dental students become provisions in the education and promotion of oral health in the community. **Purpose:** This study aims to analyze the oral health knowledge, attitudes and behavior of Indonesian dental students in East Java province based on gender and educational stage. **Methods:** This research is a cross-sectional study using an online questionnaire distributed to dental students at five dental faculties in East Java. 169 respondents in this study completed an online HU-DBI questionnaire with a choice of answers to agree or disagree about the description of oral health knowledge, attitudes, and behavior. **Results:** Female students have a higher level of knowledge and oral health behavior than the opposite sex with a significance value of <0.001 and 0.05 , respectively. There was a significant correlation between knowledge and attitude with a significance level of 0.030 and a correlation between knowledge and behavior with a significant number of 0.037 . **Conclusion:** Female dental students had better oral health knowledge and behavior than male dental students. There is no relationship between the education stage and oral health knowledge, attitudes and behaviour. Further, we found positif association between oral health knowledge and attitudes towards behaviour.

Keywords: oral health; knowledge; attitude; behavior; education research

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INTRODUCTION

Oral health is a part of general health. Those cannot be separated from each other because oral health will affect the overall health of the body, and vice versa. The attitude of the dental community towards their own teeth and the attitude of the dentists who provide dental care play an important role in determining the health condition of teeth and mouth in the community.¹

Dental students as prospective dentists play an important role in educating and promoting oral and dental public health. The behaviour of dental students in maintaining oral health reflects their understanding of the importance of maintaining oral health and preventing oral diseases as well as their commitment to improving the oral health of their future patients.²

Hiroshima University-Dental Behavioural Inventory (HU-DBI) was developed by Kawamura et al.³ to determine knowledge, attitudes, and behaviour related to dental health among dental students. The maximum score is 12, where

higher scores indicate better oral health knowledge, attitudes and behaviours.⁴ The oral health knowledge, attitudes and behaviours of dental students have been evaluated on this scale in several countries. Providing the same measurement of students' oral health knowledge, attitude and behaviour using HU-DBI could facilitate comparisons across countries and cultures.

According to Alam Moheet and Farooq⁵ the mean HU-DBI score of clinical students was significantly greater than that of pre-clinic students. This contradicts the research conducted by Vangipuram et al.⁶ which showed that the year of education did not have a significant difference in HU-DBI scores. Further, other characteristics such as sex could also contribute to the difference.⁷

Even though HU-DBI has been translated in many languages and used in many countries, the application of HU-DBI in measuring oral health knowledge, attitude and behaviour among Indonesian dental students in East Java province has never been reported. Thus, this study was conducted to analyze oral health knowledge, attitude

and behaviour of Indonesian dental students in East Java province, Indonesia.

MATERIALS AND METHODS

This research is a cross-sectional study. It was conducted in 2021 using an online questionnaire distributed to pre-clinical and clinical students at five dental faculties in East Java. The number of samples was calculated using the Slovin formula (Figure 1). So that the minimum number of samples in this study worth 149. The study protocol was approved by the Ethics Committee of Faculty of Dental Medicine, Airlangga University. Research was conducted in accordance with the Declaration of Helsinki. All respondents provided consent to become participants in the first part of the online questionnaire. There is no enforcement to become respondents in this study.

Inclusion criterias in this study were students of pre-clinical and clinical stage at five dental faculties in East Java who are willing to participate in the research and able to complete the online questionnaire (clicking the submit button at the end of the questionnaire), while the exclusion criteria were those who were unwilling to be respondents or those who failed to complete the online questionnaire (did not answer ≥ 1 question). The Hiroshima University-Dental Behavioural Inventory questionnaire contains 20 items (presented in Table 1) with a choice of answers to agree or disagree about the description of oral health behaviour, attitudes, and knowledge of pre-clinical and clinical dental student.

Oral health knowledge, attitudes, and behaviour of the dental student were calculated from the Hiroshima University - Dental Behavioural Inventory (HU-DBI) questionnaire score analysis. Knowledge score was an addition of question number 2, 8, 10, 15 and 19. Items 2, 8,

10 and 15 received a score of one if the answer were agrees, while item 19 received a score of one if the answer was disagree. Thus, the minimum score of oral health knowledge was 0 and the maximum score was 5. Attitude score was an addition of question number 6, 14 and 11. Item 6 and 14 received a score of one if the answers were disagree, while item 11 received a score of one if the answer was agree; so the minimum score of oral health attitude was 0 and the maximum score was 3. Furthermore, behavioural score was an addition of question number 4, 9, 12 and 16. All items received a score of one if the answers were agrees, so the score of oral health behaviour was 0 to 4. Question number 1, 3, 5, 7, 13, 17, 18, and 20 were only dummy items and not included in the final scoring system.

In determining the cut-off point of oral health knowledge, attitude and behaviour, all criteria were sorted out from the highest to the lowest, then the cut-off value were calculated based on the natural cut-off point, as presented in Figure 2. The value below the cut-off point was then categorized as having bad knowledge, bad attitude or bad behaviour. The statistical analysis was performed in IBM SPSS program version 20.

Descriptive analysis of the respondents’ characteristics was described using percentage. The difference in oral health knowledge, attitude and behaviour of the respondents based on gender and their educational stage was conducted using chi-square. The correlation analysis of oral health knowledge, attitude and behavior was conducted using spearman correlation test. The statistical significance of the associations was evaluated at P < 0.05.

RESULTS

The total respondents in this study were 169. Characteristics of the respondents were presented in Table 2. Female and

$$n = \frac{N}{1 + (Ne^2)}$$

$$n = \frac{3000}{1 + (3000 \times 0.08^2)}$$

$$n = \frac{3000}{20.2} = 148.5 \sim 149$$

Information:
 n = Minimum number of samples
 N = The total number of sample population
 e = Margin of error (assumes to be worth 8%)

Figure 1. Slovin formula to calculate the number of samples.

$$\text{Natural cut – off point} = \frac{(\text{max. score}) + (\text{min. score})}{2}$$

Figure 2. Cut-off point formula

Table 1. The modified HU-DBI survey used in this study

No.	Item description
1.	I am not afraid to visit the dentist
2.	My gums often bleed when brushing my teeth
3.	I am worried about the color of my teeth
4.	I see white plaque adhering to my teeth
5.	I use a child-sized toothbrush
6.	When I get older, I feel that I cannot use dentures
7.	I am disturbed by the color of my gums
8.	My teeth will still be in bad condition, even though I brush my teeth regularly
9.	I brush each of my teeth carefully
10.	I have never been taught how to brush my teeth by a professional (dentist)
11.	I can clean my teeth well without using toothpaste
12.	I often check my teeth in front of the mirror after brushing my teeth
13.	I am worried about having bad breath
14.	Brushing your teeth cannot prevent gum disease
15.	I did not go to the dentist until I had a toothache complaint
16.	I have used a disclosing agent to see how clean my teeth are
17.	I use a toothbrush with hard bristles
18.	I don't feel like I'm brushing my teeth properly unless I brush hard
19.	I feel it takes a long time to brush my teeth
20.	My dentist once said that I brushed my teeth properly and correctly

The response option were agree or disagree

male respondents were 80.5% and 19.5%, respectively. Moreover, about 50.9% of respondents were in pre-clinical stage while 49.1% of respondents were in clinical stage.

Table 3 showed oral health knowledge, attitude and behaviour of the respondents based on gender and their educational stage. The number of female students who showed good knowledge and behaviour was around twice of the number of male students who showed good knowledge and behaviour (73% vs. 39% and 43% vs. 24%, respectively).

Table 4 shows the correlation between knowledge and attitude towards behaviour. Significant correlations were found between knowledge and attitudes, as well as knowledge and behavior. Meanwhile, no significant correlation was found in the relationship between attitudes and behavior.

DISCUSSION

This study found that female dental students showed better oral health knowledge and behaviour. In general, female have higher aesthetic needs than male so that it affects attitude and behaviour in maintaining oral health. This is in

line with research conducted by Vangipuram et al.⁶ which states that gender influences oral health behaviors. Female have a greater interest in oral health so have better behaviors in visiting dentists and maintaining oral health than men.

Dental students' behaviour in maintaining their own oral health reflects their understanding of the importance of dental care procedures and prevention. Oral health awareness, knowledge, attitudes and behavior are needed from dental students as dentists in the future so that they can play an important role more effectively in the promotion of oral health in society and they can improve their patient's oral health in the future.⁸

According to research conducted by Peker and Alkurt⁹ the behaviour of maintaining oral health among dental students was varied across different study years. Surprisingly our study did not find any differences of oral health knowledge, attitude and behaviour among Indonesian dental students in East Java province based on their educational stages. This finding was also contradicted with that found by Alam Moheet and Farooq⁵ or Al-Wesabi et al.¹⁰ which stated that clinical students had HU-DBI scores which were significantly higher than pre-clinical students. However, our finding was similar to that found by Vangipuram et al.⁶ This could be due to the fact that material regarding oral health had been obtained since the beginning of the pre-clinical education.

Our finding also showed that oral health knowledge could influence oral health attitude and behavior. This is consistent with research conducted by Lin et al.¹¹ which states that the knowledge score has a positive relationship with the attitude score of the subjects in all age groups. Tolvanen et al.¹² stated that the majority of theories about the relationship between knowledge, attitudes and behavior showed that knowledge is the basis that influences attitudes towards behavior and behavior itself. However, this contradicts the finding from a research conducted by

Table 2. Characteristics of respondents based on gender and education stage

Respondent characteristic		Frequency	
N=169		n	%
Gender	Male	33	19.5
	Female	136	80.5
Education stage	Pre-clinical dental students	86	50.9
	Clinical dental students	83	49.1

Table 3. Oral health knowledge, attitude and behaviour of the respondents based on gender and educational stage

Independent variable		Knowledge score		Sig.	Attitude score		Sig.	Behavior score		Sig.
		Bad (n [%])	Good (n [%])		Bad (n [%])	Good (n [%])		Bad (n [%])	Good (n [%])	
Gender	Female	37 [27%]	99 [73%]	<0.001	67 [49%]	69 [51%]	0.48	78 [57%]	58 [43%]	0.05
	Male	20 [61%]	13 [39%]		14 [42%]	19 [58%]		25 [76%]	8 [24%]	
Educational stage	Pre-clinical	27 [33%]	56 [67%]	0.75	40 [48%]	43 [52%]	0.95	53 [64%]	30 [36%]	0.45
	Clinical	30 [35%]	66 [77%]		41 [48%]	45 [52%]		50 [58%]	36 [42%]	

Bold: significant; test was conducted using chi square test

Table 4. Correlation between knowledge and attitude towards behaviour.

		Knowledge score	Attitude score	Behavior score
Knowledge score	Correlation coefficient	1	.167	.161
	Significance		.030	.037
Attitude score	Correlation coefficient		1	-.082
	Significance			.291
Behavior score	Correlation coefficient			1
	Significance			

Bold: significant; test was conducted using spearman correlation test

Schwarz and Lo¹³ which states that there is no correlation between oral health knowledge and attitudes.

The strength of this study relies in the fact that it can provide an overview of the oral health knowledge, attitudes and behavior of dental students in East Java Province measured by HUD-BI, so that it can open up the possibility of comparisons with research from other regions or countries. Further, the results could inform policy makers to create programs to improve learning system in dental schools so that future dental students can have more preventive insight and build advising skills to maintain oral health of their future patients. Future attention should be given to male students in which some programs should be targeted for them to increase their own and future patients' dental health. The limitation of this study was caused by its cross-sectional study design so that it cannot confirm a causal relationship. Furthermore, because the data were not taken randomly, the results could not be generalized to all dental students in Indonesia.

CONCLUSION

This study found that female dental students had better oral health knowledge and behavior than their counterparts, while there is no relationship between the education stage and oral health knowledge, attitudes and behaviour. Further, we found positif association between oral health knowledge and attitudes towards behaviour.

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