



University Students' Awareness about Oral Health and Hygiene

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Authors' contributions

This work was carried out in collaboration among all authors. Authors MSI and MZI designed the study, performed the initial statistical analyses and wrote the protocol. Authors SUDK and MSI wrote the first draft of the manuscript. Authors MSI and MZI managed refined analyses. Authors SUDK and MSI revised the manuscript. All authors read and approved the final manuscript.

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ABSTRACT

Objective: The objective of the study was to evaluate the awareness of university students about oral health and hygiene in a university in Malaysia.

Methods: A cross-sectional study was conducted among the students of four different faculties (pharmacy, medical, biotechnology and business) in a university in Malaysia with the help of pre-validated research questionnaire. The Statistical Package for Social Science (SPSS) Version 24.0 was used to analyze and present the data.

Results: The final response gathered was 324 from four faculties. The pharmacy faculty students had better knowledge as compared to the other faculties. The female students had better knowledge of oral health hygiene as compared to males. Final year students reported more appropriate knowledge as compared to pre-final year students.

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Conclusion: Overall appropriate knowledge was observed among the four studied faculties of the university. The present study concluded that pharmacy students had more appropriate knowledge of oral health and hygiene than the other faculty students.

Keywords: Oral health and hygiene; knowledge; university students; university.

1. INTRODUCTION

Maintaining oral hygiene and health is actually keeping the mouth clean, free of disease and other problems such as bad breath by routine brushing and cleaning the teeth [1,2]. Oral hygiene must be carried out regularly to prevent bad breath and dental diseases like tooth decay, cavities, dental caries, and gum diseases such as gingivitis and periodontitis [3,4]. Generally, many guidelines recommend cleaning the teeth twice a day, which can be after breakfast and before sleeping at night. Still, the mouth should be cleaned precisely after every meal [5, 6].

Usually, white or straight teeth are correlated with oral health and hygiene. Still, a hygienic mouth can still have damaged or twisted teeth [7,8]. Attaining healthy teeth requires dental care throughout life [3,9]. There are billions of microorganisms surviving within our mouths at any specific time. Several of these microorganisms develop plaque, producing tooth decay and cavities, leading to gum diseases [3,10]. For maintaining a healthy smile, one must perform good oral hygiene every day [10]. After meals, brushing teeth, using antimicrobial mouthwash, and flossing at least once a day can prevent several infectious diseases which could cause bacterial reproduction in the mouth that often results in tooth decay [11,12].

The university students are generally considered the most educated people in the community. Therefore, all university students must have proper knowledge on oral health and hygiene. Thus, the present study was conducted to evaluate the knowledge of the University students from different faculties on oral health and hygiene.

2. METHODOLOGY

A cross-sectional study was performed in a university to assess the knowledge of university students on oral health and hygiene. A self-

developed and pre-validated research tool was used for the data collection of the current study.

A stratified convenience sampling technique was adopted for enrolling the required sample size from four studied faculties of a university in Malaysia. This university had numerous faculties but in line with the study perspectives, only 4 faculties were chosen to recruit sample size. The final targeted sample size was 350 students.

For assessment of the knowledge, open-ended statements were asked from all the study participants. All the knowledge questions consisted of one right answer, along with two or more wrong answers. All the respondents were asked to understand the questions and sensibly select the answer based on their knowledge of each asked statement on oral health and hygiene. The obtained scores were taken and presented as a percentage of right and wrong answers.

Data evaluations and statistical presentation were done by Statistical Package for Social Science (SPSS) version 24.0. The data were categorical, and thus, the data were analyzed by Chi-square and Fisher exact test to find the p-value. A value of $P < 0.05$ was considered statistically significant for the current study. The effect size was measured using Partial Eta Squared (η^2), which is according to Cohen's classification of effect size, if $0.01 \leq \eta^2 \leq 0.06$ = small, if $0.06 \leq \eta^2 \leq 0.14$ = medium, $\eta^2 \geq 0.14$ = large.

3. RESULTS AND DISCUSSION

The final total of the survey response gathered was 324. From the Faculty of Pharmacy 110 students willingly answered the study questions. As for the Faculty of Medicine 81 students answered. The number of students' respondents from the Faculty of Biotechnology was 67.

Demographics of the current study is presented in the Fig. 1 as follows:

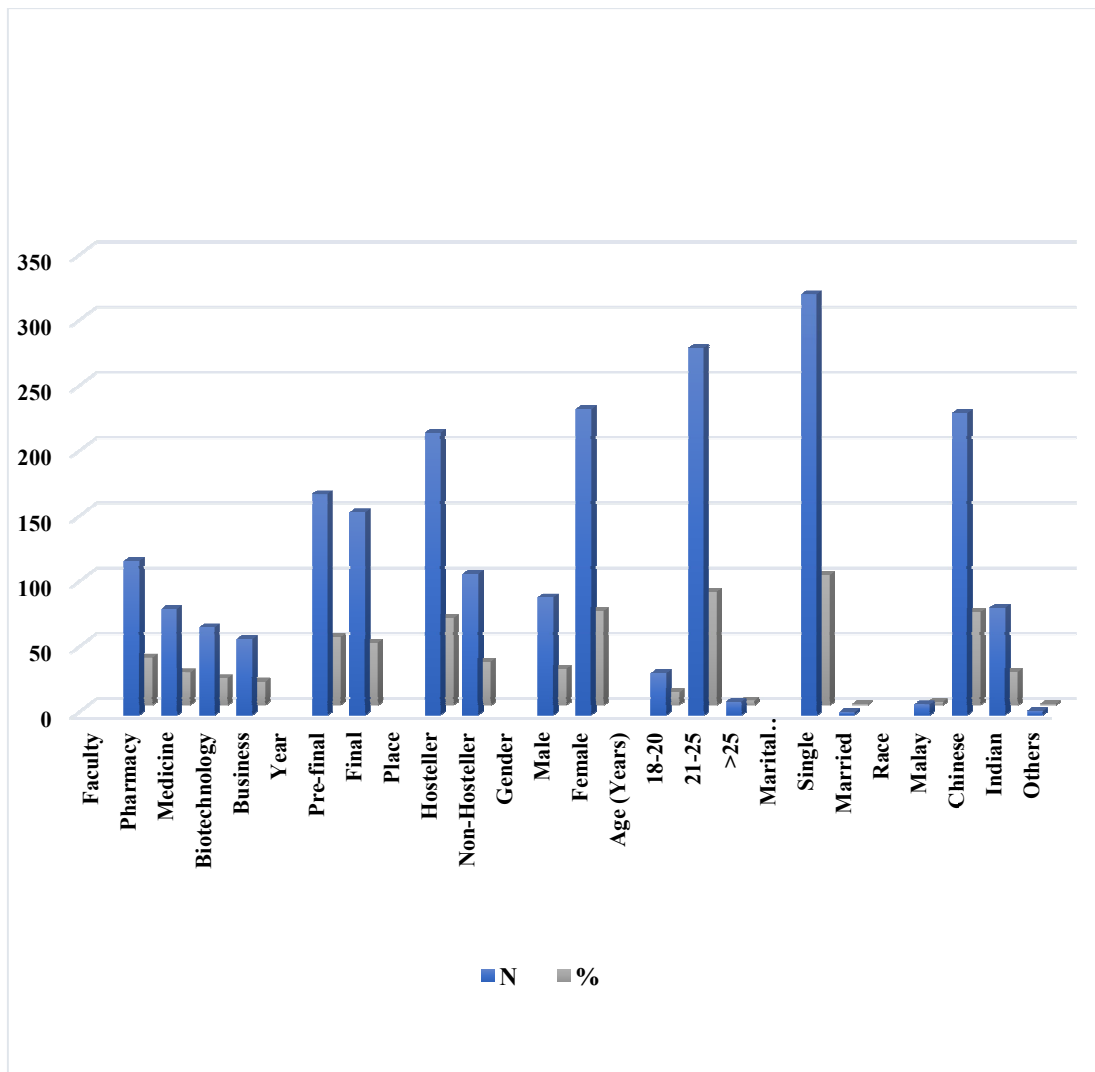


Fig. 1. Demographic information of the students

The individual responses for each asked question are presented as followings tables.

Question 1: I am fully aware about oral hygiene and importance of dental health.

A statistically significant and weak positive relationship was observed between the response of question 1 with faculty ($p=0.038$, $\phi=0.015$), year of education ($p=0.022$, $\phi=0.012$) and gender variables ($p=0.041$, $\phi=0.009$). More inappropriate knowledge (80.6%) reported by Biotechnology students.

Question 2: Periodontitis is a preventable disease if treated on time.

A statistically significant and weak positive relationship was observed between the response of question 2 with faculty ($p=0.014$, $\phi=0.013$), and the year of education variable ($p=0.034$, $\phi=0.008$). Final year students reported more appropriate knowledge (93.5%).

Question 3: Dental caries or teeth decaying is the common cause of bad breath.

A statistically significant and weak positive relationship was observed between the response of question 3 with gender ($p=0.021$, $\phi=0.019$) and race variables ($p=0.037$, $\phi=0.011$). More appropriate knowledge (68.8%) reported by female students.

Table 1. Knowledge of question 1 N (%)

Variables	Correct	Incorrect	P value	Effect size
Faculty			0.038	0.015
Pharmacy	24 (20.3)	94 (79.7)		
Medicine	21 (25.9)	60 (74.1)		
Biotechnology	13 (19.4)	54 (80.6)		
Business	31 (53.4)	27 (46.6)		
Year			0.542	-
Pre-final	47 (27.8)	122(72.2)		
Final	42 (27.1)	113(72.9)		
Place			0.022	0.012
Hosteller	55 (25.5)	161(74.5)		
Non-Hosteller	34 (31.8)	73 (68.2)		
Gender			0.041	0.009
Male	29 (32.6)	60 (67.4)		
Female	60 (25.6)	174(74.4)		
Age			0.543	-
18-20	4 (12.5)	28 (87.5)		
21-25	79 (28.1)	202(71.9)		
>25	5 (50.0)	5 (50.0)		
Marital status			0.052	-
Single	89 (27.6)	233(72.4)		
Married	0 (0.0)	2 (100.0)		
Race			0.872	-
Malay	2 (25.0)	6 (75.0)		
Chinese	70 (30.3)	161(69.7)		
Indian	17 (20.7)	65 (79.3)		
Others	0 (0.0)	3 (100.0)		

Table 2. Knowledge of question 2 N (%)

Variables	Correct	Incorrect	P value	Effect size
Faculty			0.014	0.013
Pharmacy	114(96.6)	4 (3.4)		
Medicine	71 (87.7)	10 (12.3)		
Biotechnology	63 (94.0)	4 (6.0)		
Business	48 (82.8)	10 (17.2)		
Year			0.034	0.008
Pre-final	151(89.3)	18 (10.7)		
Final	145(93.5)	10 (6.5)		
Place			0.543	-
Hosteller	199(92.1)	17 (7.9)		
Non-Hosteller	96 (89.7)	11 (10.3)		
Gender			0.540	-
Male	82 (92.1)	7 (7.9)		
Female	213(91.0)	21 (9.0)		
Age			0.658	-
18-20	29 (90.6)	3 (9.4)		
21-25	256(91.1)	25 (8.9)		
>25	10(100.0)	0 (0.0)		
Marital status			0.711	-
Single	294(91.3)	28 (8.7)		
Married	2 (100.0)	0 (0.0)		
Race			0.843	-
Malay	8 (100.0)	0 (0.0)		
Chinese	212(91.8)	19 (8.2)		
Indian	73 (89.0)	9 (11.0)		
Others	3 (100.0)	0 (0.0)		

Question 4: Dental plaque often leads to gingivitis.

A statistically significant and weak positive relationship was observed between the response of question 4 with faculty ($p=0.025$, $\phi=0.006$), and gender variables ($p=0.025$, $\phi=0.014$). More appropriate knowledge (56.8%) reported by Pharmacy students.

Question 5: Regular use of mouthwash and flossing results in prevention of gingivitis and plaque deposition.

A statistically significant and weak positive relationship was observed between the response of question 5 with faculty ($p=0.021$, $\phi=0.008$) and place of living variables ($p=0.043$, $\phi=0.007$). A statistically significant and moderate positive association was reported with the question statement and year of education variable ($p=0.002$, $\phi=0.128$). Final year students reported more appropriate knowledge (47.7%).

The present study was one of Malaysia's pioneer studies on knowledge evaluation of university students about oral health and hygiene. According to the current study findings, a statistically significant and weak positive

relationship was observed between the response to the question regarding the awareness about oral hygiene and importance of dental health with faculty ($p=0.038$, $\phi=0.015$), year of education ($p=0.022$, $\phi=0.012$) and gender variables ($p=0.041$, $\phi=0.009$). Biotechnology students reported more inappropriate knowledge (80.6%). The reason behind this could be the positive attitude of biotechnology students towards oral health and hygiene. The current study findings are supported by another study where the biotechnology students showed a more positive attitude to oral health and hygiene [12].

The current study findings reported that a statistically significant and weak positive relationship was observed between the response to the question on periodontitis is a preventable disease if treated on time with faculty ($p=0.014$, $\phi=0.013$), and the year of education variable ($p=0.034$, $\phi=0.008$). Final year students reported more appropriate knowledge (93.5%). The reason behind this could be the better knowledge of senior students as compared to the juniors. Similar result findings were reported by a study conducted in our Malaysian University according to that the senior students had better knowledge as compared to the juniors [13].

Table 3. Knowledge of question 3 N (%)

Variables	Correct	Incorrect	P value	Effect size
Faculty			0.231	-
Pharmacy	75 (63.6)	43 (36.4)		
Medicine	52 (64.2)	29 (35.8)		
Biotechnology	45 (67.2)	22 (32.8)		
Business	37 (63.8)	21 (36.2)		
Year			0.328	-
Pre-final	108(63.9)	61 (36.1)		
Final	101(65.2)	54 (34.8)		
Place			0.654	-
Hosteller	139(64.4)	77 (35.6)		
Non-Hosteller	70 (65.4)	37 (34.6)		
Gender			0.021	0.019
Male	47 (52.8)	42 (47.2)		
Female	161(68.8)	73 (31.2)		
Age			0.511	-
18-20	20 (62.5)	12 (37.5)		
21-25	180(64.1)	101(35.9)		
>25	8 (80.0)	2 (20.0)		
Marital status			0.322	-
Single	209(64.9)	113(35.1)		
Married	0 (0.0)	2 (100.0)		
Race			0.037	0.011
Malay	6 (75.0)	2 (25.0)		
Chinese	148(64.1)	83 (35.9)		
Indian	54 (65.9)	28 (34.1)		
Others	1 (33.3)	2 (66.7)		

Table 4. Knowledge of question 4 N (%)

Variables	Correct	Incorrect	P value	Effect size
Faculty			0.025	0.006
Pharmacy	67 (56.8)	51 (43.2)		
Medicine	45 (55.6)	36 (44.4)		
Biotechnology	36 (53.7)	31 (46.3)		
Business	15 (25.9)	43 (74.1)		
Year			0.231	-
Pre-final	86 (50.9)	83 (49.1)		
Final	77 (49.7)	78 (50.3)		
Place			0.055	-
Hosteller	112(51.9)	104(48.1)		
Non-Hosteller	50 (46.7)	57 (53.3)		
Gender			0.025	0.014
Male	50 (56.2)	39 (43.8)		
Female	112(47.9)	122(52.1)		
Age			0.437	-
18-20	18 (56.2)	14 (43.8)		
21-25	138(49.1)	143(50.9)		
>25	7 (70.0)	3 (30.0)		
Marital status			0.077	-
Single	163(50.6)	159(49.4)		
Married	0 (0.0)	2 (100.0)		
Race			0.546	-
Malay	3 (37.5)	5 (62.5)		
Chinese	117(50.6)	114(49.4)		
Indian	40 (48.8)	42 (51.2)		
Others	3 (100.0)	0 (0.0)		

Table 5. Knowledge of question 5 N (%)

Variables	Correct	Incorrect	P value	Effect size
Faculty			0.021	0.008
Pharmacy	41 (34.7)	77 (65.3)		
Medicine	20 (24.7)	61 (75.3)		
Biotechnology	31 (46.3)	36 (53.7)		
Business	32 (55.2)	26 (44.8)		
Year			0.002	0.128
Pre-final	50 (29.6)	119(70.4)		
Final	74 (47.7)	81 (52.3)		
Place			0.043	0.007
Hosteller	73 (33.8)	143(66.2)		
Non-Hosteller	50 (46.7)	57 (53.3)		
Gender			0.231	-
Male	35 (39.3)	54 (60.7)		
Female	89 (38.0)	145(62.0)		
Age			0.341	-
18-20	8 (25.0)	24 (75.0)		
21-25	110(39.1)	171(60.9)		
>25	6 (60.0)	4 (40.0)		
Marital status			0.089	-
Single	124(38.5)	198(61.5)		
Married	0 (0.0)	2 (100.0)		
Race			0.531	-
Malay	4 (50.0)	4 (50.0)		
Chinese	92 (39.8)	139(60.2)		
Indian	27 (32.9)	55 (67.1)		
Others	1 (33.3)	2 (66.7)		

A statistically significant and weak positive relationship was observed between question regarding dental caries or teeth decaying as the common cause of bad breath with gender ($p=0.021$, $\phi=0.019$) and race variables ($p=0.037$, $\phi=0.011$). More appropriate knowledge (68.8%) reported by female students. A better knowledge of female students also reported by previous studies on different diseases [13,14].

The current study findings also reported that a statistically significant and weak positive relationship was observed between the response of question as dental plaque often leads to gingivitis with faculty ($p=0.025$, $\phi=0.006$), and gender variables ($p=0.025$, $\phi=0.014$). More appropriate knowledge (56.8%) reported by Pharmacy students. Furthermore, a statistically significant and weak positive relationship was observed between the response of question as regular use of mouthwash and flossing results in prevention of gingivitis and plaque deposition with faculty ($p=0.021$, $\phi=0.008$) and place of living variables ($p=0.043$, $\phi=0.007$). A statistically significant and moderate positive association was reported with the question statement and year of education variable ($p=0.002$, $\phi=0.128$). Final year students reported more appropriate knowledge (47.7%). The findings on final year students had better knowledge than pre-final year students, was also reported by previous studies conducted in Malaysia [12,15,16]. The reason behind this could be that final year students usually have more exposure of major health problems and their epidemiology [17-19].

It is of greatest significance for future healthcare providers to have superior medical education which could enable them to well recognize drug-disease knowledge and disease treatment [20-22]. Advanced healthcare mock representations, improved drug-disease familiarity, and evidence-based exercises are essential for them in order to treat numerous oral diseases which could further help in improving patients' overall health-related quality of life [23-24].

4. CONCLUSION

The present study concluded varied responses regarding oral health and hygiene among students of a university in Malaysia. Pharmacy students and final year students had better knowledge than the other students about oral health and hygiene. The female students also reported a better knowledge as compared to the males.

CONSENT AND ETHICAL APPROVAL

The informed consent form was signed by all the participants who agreed to take part in the study. The approval on all ethical aspects was taken from the university research and ethics committee at the study location.

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COMPETING INTEREST

Authors have declared that no competing interests exist.

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