

Sociodemographic Correlates of Practice towards Oral Hygiene among University Students: A Cross-sectional Insight

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ABSTRACT

Objectives: This study aimed to determine sociodemographic correlates of practice towards oral hygiene (OH) among university students in a private university. **Methods:** A cross-sectional study was performed among university students in Malaysia using a prevalidated questionnaire. The convenient stratified sampling method was adopted to recruit participants from four main faculties of a private university. The Statistical Package for Social Science (SPSS) Version 24.0 was used to analyze the data. Univariate and multivariate analyses were performed to determine the correlates of practice of OH among the study participants. **Results:** Out of a total of 324 participants, female students had far-good practice towards OH than males. The final year students showed better OH practice than the pre-final years. Among the studied races, the Chinese students had the highest percentage of adequate practice than the rest. Overall, this study found that most of the students had fair to good practice towards OH.

Conclusion: Multiple logistic regression analyses showed that statistically significant differences ($p < 0.05$) were present among the six demographic variables. The current study found that age groups, race, faculty, year of education, parents' education, and healthcare professionals in the family were the sociodemographic correlates of practice towards OH among the university students in Malaysia.

Key words: Oral hygiene, OH, Practice, Private, University students.

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INTRODUCTION

Oral health is a vital aspect for everyone's life either children, adults, or elders. Furthermore, it is of significant importance when it comes to teenagers and students.^{1,2} Students despite having a busy student life cannot neglect the importance of oral health as after completing their studies, they would be role models to the community especially in their families. Additionally, having appropriate oral hygiene (OH) practice is imperative to encourage others to take care of their oral health.^{3,4}

Furthermore, precise education and awareness about routine OH are the most important factors to be considered among the students.^{5,6} Increasing the awareness about good practice towards OH can make individuals grasp more information about a healthy lifestyle which could greatly help in preventing oral diseases and maintaining OH.¹⁻⁶ Diet always plays a significant role in an apt OH and overall good dental care. Over-consumption of soft drinks often leads to various oral diseases and prolonged complications.^{7,8} In maintaining OH, prevention and management of various dental diseases like dental caries are also important to consider. The dental caries is always tagged with a high cost of treatment and if left untreated could lead to oral pain and teeth loss which eventually affects the oral quality of life.⁷⁻¹⁰ Other risk factors in maintaining OH include the frequent use of tobacco and the consumption of alcohol.^{11,12}

There are many ways to obtain good OH and one of the main practices that should be routinely done is regular brushing of the teeth. Students may have bad oral health practices due to their busy teaching and learning schedule.¹³⁻¹⁵ Insufficient time may cause them not to regularly brush their teeth and neglecting other important OH practices. Although antimicrobial mouthwashes can help reduce numerous oral infections, caries and plaque which can lead to gingivitis and gum diseases.¹⁴⁻¹⁶ But

yet continuity in adopting good practices to attain OH is recommended by the American Dental Association (ADA).¹³ Regular and gentle brushing of the tongue can also help in removing various germs and maintain freshness of the breath.¹⁴ According to the World Health Organization (WHO), oral diseases could be significantly decreased by practicing good OH and addressing the common risk factors.¹⁶ The common risk factor for bad OH could be due to excessive use of soft drinks, sugary and dairy products, alcohol consumption and inappropriate teeth brushing techniques.^{10-12,17} The current study aimed to assess OH practices and its predictors among university students in a private university in Malaysia.

MATERIALS AND METHODS

This cross-sectional study was conducted among pre-final and final year students from the four faculties i.e. medicine, pharmacy, business and biotechnology at a private medical university. The current study was carried out over nine months (September 2017 to May 2018) in which data collection and the analysis of the data were done. Stratified convenient sampling technique was adopted to achieve the sample size of this research. The sample size of 350 students was collected based on the student population in the pre-final and final year from each faculty.

The data were collected from the four faculties regarding various variables like gender, age groups, race, faculty, year of education, residence, parents' education and healthcare professionals in family. For avoiding any bias, the sample was obtained by random recruitment of pre-final and final year students from each faculty. Only those students were included in the study who were willing to participate voluntarily and gave consent.

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This study was conducted through a self-administered and validated research questionnaire. The preliminary questionnaire was prepared after an in-depth literature review and a modified version was developed and later validated by experienced professionals in a related field. The questionnaire consisted of diverse statements in the dichotomous form "Yes" or "No" based on their practice about OH in daily life. A score of 1 was credited to the correct answer and 0 to an incorrect answer. The criteria for evaluation were defined according to previous studies¹⁸⁻²⁰ where <5 correct answers show poor practice, 6-7 correct answers show fair practice and >7 correct answers show good practice among the university students regarding OH. All aspects of the study protocol were authorized by the concerned university ethical committee and all of the requirements were met before the start of the study.

Statistical Analyses

Categorical variables were presented as frequencies and percentages and means and standard deviations were calculated for the continuous variables. Logistic regression analysis was used to analyze the

sociodemographic correlates of practices towards OH among the university students. Factors found significant in univariate analysis, were included in multivariate logistic regression to estimate the odds ratios (ORs) with 95% confidence intervals (CIs). *P*-value < 0.05 was considered statistically significant.

RESULTS

Table 1 shows different demographic details of the study participants like gender, age groups, race, faculty, year of education, residence, parents' education and healthcare professionals in family. A total of 324 students were involved in the study. A total of 324 (72.2%) were females and 90 (27.8%) were the males. The participation from each faculty was pharmacy 118 (36.4%), medicine 81 (25.0%), biotechnology 67 (20.6%) and business 58 (18.0%).

Table 2 represents the practice score of the study participants with the percentage. The practice scores are categorized as poor, fair and good. There were a total of 10 diverse questions regarding OH practice were asked from the study participants.

Table 1: Demographic characteristics of study participants (n = 324).

Variable	N (%)
Gender	
Male	90 (27.8)
Female	234 (72.2)
Age groups	
18-20 years	52 (16.1)
21-25 years	252 (77.7)
> 25 years	20 (6.2)
Race	
Malay	12 (3.7)
Chinese	211 (65.2)
Indian	95 (29.3)
Others	6 (1.8)
Faculty	
Pharmacy	118 (36.4)
Medicine	81 (25.0)
Biotechnology	67 (20.6)
Business	58 (18.0)
Year of education	
Pre-final	169 (52.2)
Final	155 (47.8)
Residence	
Hosteller	216 (66.7)
Non- Hosteller	108 (33.3)
Parents' education	
< Primary	115 (35.5)
Pre-university	120 (37.0)
University	89 (27.5)
Healthcare professionals in family	
Yes	107 (33.1)
No	217 (66.9)

Table 2: Practice response to oral hygiene among students.

Variables	Practice towards OH (N %)		
	Poor	Fair	Good
Gender			
Male	11 (12.2)	64 (71.1)	15 (16.7)
Female	18 (7.7)	173 (73.9)	43 (18.4)
Age groups			
18-20 years	16 (30.8)	25 (48.1)	11 (21.1)
21-25 years	27 (10.7)	163 (64.7)	62 (24.6)
> 25 years	3 (15.0)	7 (35.0)	10 (50.0)
Race			
Malay	3 (25.0)	5 (41.7)	4 (33.3)
Chinese	19 (9.0)	148 (70.2)	44 (20.8)
Indian	12 (12.6)	65 (68.5)	18 (18.9)
Others	1 (16.7)	3 (50.0)	2 (33.3)
Faculty			
Pharmacy	9 (7.6)	98 (83.1)	11 (9.3)
Medicine	9 (11.1)	60 (74.1)	12 (14.8)
Biotechnology	5 (7.5)	52 (77.6)	10 (14.9)
Business	5 (8.6)	28 (48.3)	25 (43.1)
Year of education			
Pre-final	18 (10.7)	126 (74.6)	25 (14.7)
Final	10 (6.4)	112 (72.3)	33 (21.3)
Residence			
Hosteller	17 (7.9)	170 (78.7)	29 (13.4)
Non- Hosteller	12 (11.1)	68 (63.0)	28 (25.9)
Parents' education			
< Primary	97 (84.3)	7 (6.1)	11 (9.6)
Pre-university	99 (82.5)	9 (7.5)	12 (10.0)
University	59 (66.3)	13 (14.6)	17 (19.1)
Healthcare professionals in family			
Yes	7 (6.5)	25 (23.4)	75 (70.1)
No	36 (16.6)	41 (18.9)	140 (64.5)

Table 3 denotes the correlates (predictors) of practice to OH with univariate analysis and multivariate regression models. In the univariate analysis results, a total of seven variables were found statistically significant. In multivariate logistic regression analysis, six variables were found to be statistically significant.

DISCUSSION

This study showed that the majority of the students from each faculty had fair practice about OH. According to the results obtained, students from pharmacy 98 (83.1%), medicine 60 (74.1%), biotechnology 52 (77.6%) and business 28 (48.3%) showed a fair practice of OH. In comparison among faculties, almost all of the participants had fair to good practices about OH. The medicine faculty students had better practice for OH with (COR 3.543; $p = 0.031$) than the biotechnology students (COR 2.673; $p = 0.021$). The highest percentage that showed good practice regarding OH was from the business faculty students. In opposition, the least good

practices were observed from the students of faculty of biotechnology. From the year of education variable, the highest percentage of students that are having good practice towards their oral health was the final year students.

In univariate analysis, our study results reported significant differences ($p < 0.05$) in gender, age groups, race, faculty, year of education, parents' education and healthcare professionals in family. In gender (COR 1.261; $p = 0.049$) where only 15 (16.7%) males and 43 (18.4%) female students had good practices towards OH. This study reported that there was a statistically significant association seen among males and females regarding the practice of OH. From the results obtained, it was evident that females had a good practice of OH at a larger percentage than male students. Appropriate education and awareness about OH can improve students' OH practices. Another study performed among students in Turkey also confirmed that oral and dental good health practice among students can easily be enhanced with increasing their awareness about

Table 3: Practice correlates of oral hygiene.

Variables	Univariate analysis		Multivariate analysis	
	OR (95% CI)	P-Value	OR (95% CI)	P-Value
Gender				
Male	Referent		Referent	
Female	1.261 (0.39–4.57)	0.049	1.016 (0.37–3.25)	0.436
Age groups				
18-20 years	Referent		Referent	
21-25 years	5.365 (3.22–6.84)	0.001	3.543 (2.23–4.71)	0.021
> 25 years	8.542 (5.54–9.97)	0.001	6.762 (3.13–6.82)	0.041
Race				
Malay	Referent		Referent	
Chinese	4.452 (2.25–7.54)	0.001	3.132 (1.43–5.14)	0.034
Indian	1.421 (0.65–2.11)	0.423	-	-
Others	-	-	-	-
Faculty				
Pharmacy	Referent		Referent	
Medicine	3.543 (2.92–5.31)	0.031	2.011 (1.41–4.65)	0.367
Biotechnology	2.673 (1.96–4.29)	0.045	1.257 (1.78–3.54)	0.051
Business	3.433 (2.87–6.67)	0.021	2.213 (1.37–4.35)	0.048
Year of education				
Pre-final	Referent		Referent	
Final	3.456 (2.12–8.76)	0.005	2.211 (1.82–4.72)	0.045
Residence				
Hosteller	Referent			
Non-hosteller	0.741 (0.52–2.19)	0.215		
Parents' education				
< Primary	Referent		Referent	
Pre-university	1.439 (0.43–2.61)	0.639	-	-
University	3.458 (2.86–8.14)	0.007	2.489 (1.25–6.82)	0.032
Healthcare professionals in family				
Yes	Referent		Referent	
No	3.273 (2.11–7.29)	0.001	2.531 (1.49–5.52)	0.011

OD = Odds Ratio, 95% CI = 95% Confidence Interval

OH.²¹ According to another study finding, it was seen that the students' oral health awareness was significantly improved in their final years.²²

There was a non-significant effect of the place of living observed among the study participants' regarding OH. From the study results, it was shown that hostellers had a higher percentage of fair and good practices of OH than non-hostellers. A study done by Astrom *et al.* about oral health behaviors at the age of 15-35 years reported that a better oral health practice was noted among the female participants. The reason behind could be that females often present more attentiveness in maintaining a well-mannered and well-dressed appearance.²³ Similar to our and their findings, another study also had similar results that the oral and dental healthcare of female students were better than the male students.²¹ Another study findings also corroborate to our results that oral behavior of female students towards better dental care practice was higher than the male students.²⁴

Statistically, no significant difference was seen among age groups regarding the OH practice of the study respondents. From the results obtained, it was noted that the percentage of good OH practice among the students increased with age. In univariate analysis findings, parents' education was also found as statistically significant between primary or low-level education and university levels. For university-level education (COR 3.458; $p = 0.007$) were observed which clearly showed that statistically significant differences were present among both groups regarding OH practices.

In this study, regarding the different races of the study students, mix findings were observed about fair and good OH practice. The reason behind could be that there was a large difference present regarding the total number of respondents from each race, which made it unable to reflect on the actual practice of the respondents from all of the races. According to another study, there was also a substantial cultural difference existed in oral health practice among students from different race and cultural backgrounds.¹

In our study, correlates of good practice of OH were obtained by controlling or adjusting confounders using the multivariate logistic regression model. In logistic regression analysis, it was inferred that age groups, race, faculty, year of education, parents' education and healthcare professionals in the family were the pure correlates (determinants) of practice towards OH among university students. The highest odds for the variables i.e. the age groups ">25 years" (AOR 6.762; $p=0.041$), race "Chinese" (AOR 3.132; $p=0.034$), faculty "business" (AOR 2.213; $p=0.048$), year of education (AOR 2.211; $p=0.045$), parents' education "university" (AOR 2.489; $p=0.032$) and the healthcare professionals in the family (AOR 2.531; $p=0.011$) were reported when adjusted for the other studied demographic variables.

The results of the current study may be skewed due to a significantly higher number of female respondents than the males, a higher number from age group (21-25 years old), a higher number of single students and also higher number of pharmacy students. In terms of ethnicity, there was a difference in participants' size from each faculty, which may lead to some bias in the obtained results. Like many other similar studies, this was a cross-sectional study whereby its generalizability was limited by the size of the studied population. Hence, the results cannot be projected to the entire country.

CONCLUSION

The study reported that age groups, race, faculty, year of education, parents' education and healthcare professionals in the family were the correlates (determinants) of practice towards OH among university students. This study was novel among its type as there was no earlier study reported regarding correlates of practice of OH among university students in Malaysia.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

ABBREVIATIONS

OH: Oral Hygiene; **WHO:** World Health Organization; **SPSS:** Statistical Package for Social Sciences; **CI:** Confidence Interval; **OR:** Odds Ratio; **COR:** Crude Odds Ratio; **AOR:** Adjusted Odds Ratio.

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