

Kertas Asli/Original Article

**Dental Knowledge and Self-reported Oral Care
Practices Among Medical, Pharmacy and
Nursing Students**
(Pengetahuan Mengenai Pergigian dan Amalan Penjagaan Mulut
di Kalangan Pelajar Perubatan, Farmasi dan Kejururawatan)

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ABSTRACT

A self-administered questionnaire survey was conducted to investigate the level of dental knowledge among senior medical, pharmacy and nursing students of Universiti Kebangsaan Malaysia, and to determine self-reported practices of oral care. Students were invited to complete a set of questionnaires on knowledge related to causes, prevention, signs and treatment of dental caries and periodontal disease; and practices related to oral hygiene and dental visits. A total of 206 questionnaire forms were distributed. 204 forms were returned complete (response rate = 99%). Dental knowledge scores ranged from 0 (no correct answer given) to 16 (gave all correct answers). The mean knowledge scores between the groups were statistically different ($p < 0.05$): pharmacy students scored highest (mean = 12.29, 95% CI 11.44, 13.14) followed by the medical students (mean = 12.02, 95% CI 11.33, 12.71) and nursing students (mean = 10.83, 95% CI 10.40, 11.26). Areas that had lowest knowledge scores were signs and treatment of gum disease. With regard to oral care practices, majority cited that they brushed teeth at least twice a day (94.6%) and used toothbrush and toothpaste (97.5%). Not many (21.8%) used dental floss and about half (54.2%) reported visiting the dentist more than twelve months ago. Reasons for dental visits included getting check-ups (64.6%), restorations (45.6%) and emergency care such as extractions (24.0%). In general students had at least a moderate level of dental knowledge but demonstrated poor knowledge in some areas. While most reported good oral hygiene habits, behaviour related to dental visits need to be improved. Findings suggest a need for inclusion of oral health education in the medical, pharmacy and nursing curriculum.

Key words: Dental knowledge, Oral care, Medical students, Pharmacy students, Nursing students

ABSTRAK

Satu survei soal selidik telah dijalankan untuk mengenal pasti tahap pengetahuan pergigian dan amalan penjagaan mulut di kalangan pelajar perubatan, farmasi dan kejururawatan di Universiti Kebangsaan Malaysia. Pelajar diundang untuk mengisi borang soal selidik mengenai pengetahuan mereka mengenai punca, pencegahan, tanda dan rawatan penyakit karies gigi dan penyakit periodontium; dan juga amalan berkaitan higin mulut dan lawatan ke klinik pergigian. Sebanyak 206 borang soal selidik telah diedarkan dan 204 borang yang lengkap telah dikembalikan kepada penyelidik (kadar respons = 99%). Jumlah skor pengetahuan pergigian diberikan berada di dalam julat 0 (jika tidak memberikan sebarang jawapan yang betul) dan 16 (jika memberikan jawapan yang betul bagi semua soalan). Skor min keseluruhan pengetahuan pergigian adalah 11.65 (sela keyakinan 95% 11.27, 12.04) dan menunjukkan perbezaan yang bererti ($p < 0.05$) apabila dibandingkan di antara tiga kumpulan pelajar; skor adalah tertinggi bagi pelajar perubatan (min = 12.02, sela keyakinan 95% 11.33, 12.71), diikuti oleh pelajar farmasi (min = 12.29, sela keyakinan 95% 11.44, 13.14) dan pelajar kejururawatan (min = 10.83, sela keyakinan 95% 10.40, 11.26). Ramai yang membuat kesilapan apabila menjawab mengenai tanda dan rawatan untuk penyakit periodontium. Mengenai amalan penjagaan mulut, majoriti melaporkan memberus gigi sekurang-kurangnya dua kali sehari (94.6%) dan menggunakan berus gigi dan ubat gigi (97.5%). Tidak ramai (21.8%) menggunakan flos dan separuh (54.2%) telah membuat lawatan terakhir ke klinik pergigian lebih dari 12 bulan yang lalu. Sebab-sebab yang diberikan untuk mendapatkan rawatan pergigian ialah untuk mendapatkan pemeriksaan gigi (64.6%), tampalan gigi (45.6%) dan rawatan kecemasan seperti cabutan gigi (24.0%). Secara am, kebanyakan pelajar mempunyai tahap pergigian yang sederhana. Walaupun amalan higin mulut adalah baik namun amalan berkaitan lawatan ke klinik pergigian perlu diperbaiki. Ini mencadangkan perlunya pendidikan kesihatan mulut disertakan ke dalam kurikulum program ijazah doktor perubatan, farmasi dan kejururawatan.

Kata kunci: Pengetahuan pergigian, Amalan penjagaan mulut, Pelajar perubatan, Pelajar farmasi, Pelajar kejururawatan

INTRODUCTION

In the Ninth Malaysian Plan, health has been accorded as an important asset in the development of the human capital. Oral health – an integral part of general health – can affect individual well-being, appearance, social skills, diet, nutrition, speech and self-esteem. For the past twenty years, Malaysians especially schoolchildren have shown a notably improved oral health status (Oral Health

Division, Ministry of Health 1998). However, dental treatment needs such as restorations and dental extractions among the adult population remains high (Oral Health Division, Ministry of Health 2001). Furthermore, there is evidence to say that the burden of oral disease still lies within groups at the lowest social gradient (Oral Health Division, Ministry of Health 2005).

If oral health professionals continue to regard that such oral health inequalities may be addressed within the oral health community alone – then, this issue will never be resolved. From the last National Oral Health Survey for Adults (Oral Health Division, Ministry of Health 2001), only 5% of the adult population was reported to have made a visit to a government dental clinic within the past year. This was in spite of the high prevalence of oral disease and treatment needs identified within this population in the same survey. Subsequently, this under-utilisation of oral health care services implies that: 1) the public oral health care system does not reach out to the majority of the adult population – which may be due to either factors hindering access to government clinics or the public's preference to seek dental care at private clinics; 2) the public tends to seek dental treatment only when they can no longer tolerate a dental problem; and public may also went to private practitioner.

On the other hand, members of the public are more likely to make frequent contact with the primary care sector (Planning and Development Division, Ministry of Health 2006) for various reasons such as well clinics and vaccinations, or to get treatment for common ailments such as coughs and cold. As such, primary health care teams are ideally placed to promote oral health within the context of general health, thus reinforcing the possibility that the dental health teams can benefit from having allies beyond the oral health community. All members of the health profession have the potential to promote oral health by supporting accurate oral health messages, showing exemplary oral health-related behaviour, encouraging appropriate dental visits and participating in explicit oral health promoting activities within their scope of duties.

In the year 2000, a ten-year National Oral Health Plan was introduced to provide direction for oral health initiatives and the expected outcomes by the year 2010 (Oral Health Division, Ministry of Health 2002). Realising the potential role of non-dental health care providers in oral health promotion, one of the strategies outlined in the National Oral Health Plan was to incorporate dental health education in the curriculum of medical undergraduates and other allied health personnel (e.g. nurses, pharmacists).

This trend of incorporating oral care elements into the formal undergraduate training curriculum can be seen among some medical, pharmacy and nursing programmes. In many countries, for example, attempts to implement oral health modules within the medical curriculum have been received well and some have been shown to be successful in improving the level of dental knowledge among medical students (Lewis et al. 2000, Skelton et al. 2002). While there has not been much literature regarding oral health in the pharmacy curriculum, there is evidence

of some exposure to “effects of sugar in medication on oral health” in the undergraduate curriculum with higher input given in the postgraduate training (McVeigh & Kinirons 1999). Nevertheless, practicing pharmacists wanted to know more about oral health care (Maunder & Landes 2005) and acknowledge that oral care should be included in the pharmacy curriculum (Priya et al. 2008). In the nursing curriculum, a cross-sectional study in the United Kingdom suggested very scarce input of oral health education (Longhurst 1998). Meanwhile an oral health promotion module introduced in a South African course for primary health care nursing appeared to be well-received and achieved at least short-term improvements in knowledge and skill (Ogunbodede et al. 1999).

In Malaysia, however, the trend of incorporating oral health in the curriculum of non-dental health programmes has yet to be established. Most undergraduate medical, pharmacy and nursing formal programmes as in Universiti Kebangsaan Malaysia, for instance, do not include organised teaching of oral health care. Furthermore, it is not known whether exposure gained from the school dental service had been translated into good dental knowledge and oral care practices. If students from these programmes were to be potential allies in oral health, it is useful to investigate their level of dental knowledge and oral care practices.

Therefore, this study aimed to investigate the level of dental knowledge among senior medical, pharmacy and nursing students of Universiti Kebangsaan Malaysia, and to determine their self-reported practices of oral care.

MATERIALS AND METHODS

STUDY SAMPLE

This cross-sectional survey was conducted using self-administered questionnaires. Students who had undergone at least one year of clinical exposure in their respective degree programmes during 2005-2006 (pharmacy and nursing) and 2006-2007 (medical) academic sessions were invited to participate in this study. Those who agreed to take part in this study were asked to complete a set of questionnaires on age, gender, course of study, knowledge related to causes, prevention, signs and treatment of dental caries and periodontal disease; and oral care practices related to oral hygiene and dental visits. The questionnaire forms were distributed to the students at the end of scheduled class sessions with permission and cooperation of the respective heads of departments’ offices. The questionnaire generally took an average of ten minutes to complete and forms were retrieved immediately after the sessions. Approval to conduct the study including ethics clearance was obtained from the UKM Dental Faculty Research Committee in 2004.

QUESTIONNAIRE

The questionnaire was constructed with reference to relevant literature and modified from the instrument developed by Zamirah et al. (2005) and used in a study investigating oral health awareness among first year dental students. It was designed to include questions on the students' dental knowledge as well as self-reported oral care practices. Prior to the survey, the questionnaire was pre-tested to assess the clarity, sequencing and time needed to complete the questionnaire.

DENTAL KNOWLEDGE

This was measured by asking eight close-ended questions knowledge related to causes, prevention, signs and treatment of dental caries and knowledge related to causes, prevention, signs and treatment of periodontal disease. For each question, the respondent may choose more than one answer from all possible responses provided in the questionnaire. An answer was scored as *incorrect* (0 mark) when *none* of the correct responses was chosen. An answer was scored as *partially correct* (1 mark) when *some* of the correct responses were chosen and scored as *correct* (2 marks) when *all* the correct responses were chosen. Total dental knowledge scores ranged from 0 (no correct answer given) to 16 (gave all correct answers).

ORAL CARE PRACTICES

The question asked were frequency of toothbrushing, method of cleaning teeth and use of cleaning aids other than toothbrush and behaviour related to visits to the dental clinics (last dental visit and reason for last dental visit).

STATISTICAL ANALYSIS

Data management and statistical analysis were carried out using Statistical Package for Social Science version 13.0 (SPSS Inc). Frequency distributions of correct answers scored for dental knowledge are presented. Mean scores and 95% confidence intervals for dental knowledge, by gender and for each course were calculated and compared using t-tests for statistical analysis and ANOVA respectively. Oral care practices are presented using frequency distributions for each item of behaviour for each student group.

RESULTS

Two hundred and six questionnaires were distributed whereby 204 were returned and fully completed with the response rate of 99.0% (Table 1). The highest

proportion of participants in this study was nursing students (38.2%) (Table 1). Almost 80% of the respondents were females (Table 1). The mean age of the respondent was 22.1 years old (S.D 1.1 years). The ethnic groups represented were Malay (N = 148, 72.5%), Chinese (N = 42, 20.6%) and Indian (N = 14, 6.9%).

TABLE 1. Characteristics of study participants (*n* = 204)

Course of study	Number of students (%)	Response rate (%)	Gender		
			Male	Female	Total
			<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)
Medicine	60 (29.4)	100.0	21 (35.0)	39 (65.0)	60 (100.0)
Pharmacy	66 (32.3)	100.0	20 (30.3)	46 (69.7)	66 (100.0)
Nursing	78 (38.2)	97.5	2 (2.6)	76 (97.4)	78 (100.0)
Total	204 (100.0)	99.0	43 (21.1)	161 (78.9)	204 (100.0)

With regards to dental knowledge (Table 2), majority of the respondents answered correctly to questions on prevention of gum disease (95.6%), causes of gum disease (88.7%), causes of dental decay (84.3%) and prevention of dental decay (77.0%). Areas that had lowest scores were signs (24.0%) and treatment (32.8%) of gum disease. Medical students had a higher proportion of correct answers with regard to treatment for dental decay, nursing students had the least proportion of correct answers for signs of gum disease, while pharmacy students had the least proportion of correct answers for prevention of gum disease.

TABLE 2. Dental Knowledge (*n* = 204)

Items	Number answered correctly (%)			
	Medical <i>n</i> = 60	Pharmacy <i>n</i> = 66	Nursing <i>n</i> = 78	Total <i>n</i> = 204
Causes of dental decay	49 (81.7)	53 (80.3)	70 (89.7)	172(84.3)
Prevention of dental decay	46 (76.7)	47 (71.2)	64 (82.1)	157 (77.0)
Signs of dental decay	31 (51.7)	29 (43.9)	50 (64.1)	110 (53.9)
Treatment for dental decay	44 (73.3)	37 (56.1)	46 (59.0)	127 (62.3)
Causes of gum disease	54 (90.0)	59 (89.4)	68 (87.2)	181 (88.7)
Signs of gum disease	11 (18.3)	38 (57.6)	0 (0.0)	49 (24.0)
Prevention of gum disease	60 (100.0)	60 (90.9)	75 (96.2)	195 (95.6)
Treatment of gum disease	21 (35.0)	21 (31.8)	25 (32.1)	67 (32.8)

Scores for dental knowledge were calculated and ranged from 0 (no correct answer given) to 16 (gave all correct answers). The overall mean knowledge score was 11.65 (95% CI 11.27, 12.04), which found the nursing students showing statistically significant (ANOVA, $p = 0.003$) lower scores (mean = 10.83, 95% CI 10.40, 11.26) compared to pharmacy (mean = 12.29, 95% CI 11.44, 13.14) and medical (mean = 12.02, 95% CI 11.33, 12.71).

With regard to oral care practices (Table 3), majority reported to brush their teeth at least twice a day (94.6%) and used toothbrush and toothpaste (97.5%). However, not many (21.8%) used dental floss and less than half (45.8%) reported visiting the dentist within the past twelve months. Highest number using floss was medical students whereas those who used mouthwash were mostly nursing students. Reasons for dental visits included getting check-ups/ cleaning (64.6%), restorations (45.6%) and emergency care such as extractions (24.0%). Most nursing students visited the dentist for preventive care while most pharmacy students requested for restorations and other forms of emergency care.

TABLE 3. Oral Care Practices ($n = 204$)

Items of behaviour	Number of students (%)			
	Medical $n = 60$	Pharmacy $n = 66$	Nursing $n = 78$	Total $n = 204$
<i>Frequency of toothbrushing</i>				
Once a day	4(6.7)	4(6.1)	3(3.9)	11(5.4)
Twice a day	31(51.7)	36(54.5)	32(41.6)	99 (48.8)
More than twice a day	25(41.7)	26(39.4)	42(54.5)	93 (45.8)
<i>Method of cleaning teeth</i>				
Toothbrush and toothpaste	60 (100.0)	63 (95.5)	75 (97.4)	198 (97.5)
Toothbrush and water	0(0)	3(4.5)	0(0)	3 (1.5)
Others	0(0)	0(0)	2(2.6)	2 (1.0)
<i>Use of other cleaning aids</i>				
Floss	18 (30.0)	10(15.2)	16(21.1)	44 (21.8)
Mouthwash	21(35.0)	26(39.4)	39(50.6)	86 (42.4)
Toothpicks	11(18.3)	8(12.1)	13(17.1)	32 (15.8)
<i>Last dental visit</i>				
Less than six months ago	17(28.3)	18(27.3)	16(20.8)	51 (25.1)
Six to twelve months ago	12(20.0)	16(24.2)	14(18.2)	42 (20.7)
More than twelve months ago	31(51.7)	32(48.5)	47(61.0)	110 (54.2)
<i>Reason for last visit</i>				
Check up or cleaning	39(65.0)	37(56.1)	50(72.5)	126 (64.6)
Filling or other restoration	26(43.3)	34(51.5)	29(42.0)	89 (45.6)
Emergency care	9(15.0)	26(39.4)	11(16.7)	46 (24.0)

DISCUSSION

The need for collaboration between health care professionals is not a new phenomenon but has been re-emphasized in the Ninth Malaysian Plan (Economic Planning Unit of Malaysia 2006). Oral health care in Malaysia is restricted by manpower constraints particularly when its provider-to-population ratio is compared with that of other health care providers' such as medical doctors, pharmacists and nurses (Ministry of Health 2006). If non-dental health care providers were to play a role in oral health promotion, it is necessary that they demonstrate good knowledge in basic dentistry and practice good oral care behaviour. The literature suggests that the lack of dental knowledge and poor oral care practices among health care providers may be overcome if an oral health module is incorporated into the undergraduate training programmes (Lewis et al. 2000; Skelton et al. 2002; Graham et al. 2003).

Our results indicate that on average, students had moderate level of dental knowledge and scored well in questions regarding causes and prevention of dental caries and periodontal disease. There appears to be discrepancies in knowledge regarding signs of periodontal disease as many students did not regard "bleeding gums" (54.0%) and "loose teeth" (36.5%) as signs of the disease when they actually are. With regard to treatment of periodontal disease, majority (37.4%) mistakenly thought that using medication is the best form of treatment. In general, nursing students showed limited dental knowledge which could reflect differences in exposure and job expectations during the training period.

Findings regarding dental knowledge from this study are consistent with that conducted among groups of university students from non-dental backgrounds. However direct comparison of knowledge level was difficult to ascertain due to the different contents of knowledge questions in questionnaires used. Most studies (Al-Ansari et al. 2003; Skelton et al. 2002) found that health science students had between low to moderate level of dental knowledge. Studies looking at dental knowledge of practicing health visitors, pharmacists, medical practitioners and nurses did not vary much from that of the students (Quinn 1991; McVeigh & Kinirons 1999; Priya et al. 2008; Wu et al. 2006; Lewis 2000; Longhurst 1998; Preston et al. 2000).

With regard to oral care practices, majority cited good oral hygiene habits such as brushing twice a day and using fluoridated toothpaste, except for flossing behaviour. This is not surprising as not using dental floss is very common among Malaysians (Esa et al. 1992). Dental visit behaviour in this study was also consistent with that in the Malaysian National Oral Health Survey of Adults (Oral Health Division, Ministry of Health 2001) which found less than half of the adults in the survey cited making a dental visit within the two years prior to the survey. While it is heartening to note that majority last visited the dentist for preventive reasons, many reported still practising "symptomatic" dental

attendance, which again, is similar findings of the adult survey (Oral Health Division, Ministry of Health 2001) which reported about half visited the dental clinic because they had dental problems. In contrast, nursing students had the highest proportion seeking preventive dental care (72.5%).

National (Oral Health Division, Ministry of Health 2002) and international oral health strategies (Mouradian et al. 2003; Rozier et al. 2003) have drawn attention to the potential contribution of medical doctors, pharmacists and nurses to improving oral health for the community. Global efforts have demonstrated that collaborative efforts toward achieving this end can succeed provided all parties concerned work together to realize the common goal to enhance and continuously improve the delivery of health care. In terms of educational programme, there is evidence that inclusion of oral health education in the undergraduate (Skelton et al. 2002, Graham et al. 2003) as well as postgraduate curriculum (Lewis et al. 2000) may improve knowledge of dentistry as well as oral care practices among the non-dental health care students.

This study provides important information as it includes the key players in health promotion of the general population. The fact that students had at least one year of clinical exposure means that they would have already sufficient ideas of what their job scopes will be and the role that they will play in health care sector.

Findings from this study justify the need of collaborative work among educators in these disciplines to strengthen the curriculum with regard to oral health education for these future health care providers.

CONCLUSIONS

In general students had at least a moderate level of dental knowledge but lacked correct information in relation to signs and treatment of periodontal disease. While most reported good oral hygiene habits, behaviour related to dental visits need to be improved. Hence, there is a need for the inclusion of oral health education in the medical, pharmacy and nursing curriculum.

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