COMMUNITY DENTISTRY

A COMPARATIVE EVALUATION OF ORAL HEALTH KNOWLEDGE, ATTITUDES AND PRACTICES OF DENTAL AND PHARMACY STUDENTS OF RIPHAH INTERNATIONAL UNIVERSITY

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ABSTRACT

Oral health promotion by healthcare professionals is a vital aspect of preventive dentistry. However, their personal oral hygiene behaviors play an integral role in such promotions. The aim of this study was to compare the oral health knowledge, attitudes and practices of dental and pharmacy students of Ripah International University (RIU).

Using a self-administered structured questionnaire for a cross-sectional survey, a study population of 157 dental students (DS) and 303 pharmacy students (PS) were recruited by convenience sampling from the Islamabad campus of the university. DMFT index for each subject also was recorded. Comparisons between the two study groups were made using independent sample t-test.

Results were grouped into four categories of caries prevalence, oral hygiene behaviors, oral health attitudes and knowledge. The mean DMFT index of dental students was 1.67 ± 2.39 and PS 1.47 ± 1.71 (p=0.36). Most DS (72.6%) and half of PS (55.4%) brushed their teeth twice or more times a day (p=0.43), while only 19.3% of the study population flossed their teeth daily. Attitudes towards oral health were shown by 45.2% DS and 45.9% PS visiting the dentist only when driven by pain while 26.1% DS and 30% PS had never been to a dentist. Oral health knowledge was judged by only 33% DS and 34% PS (p=0.40) ever having noticed a sticky white layer on their tooth surfaces while only 17.5% DS and 2.9% PS (p=0.03) used a soft-bristled toothbrush.

The DS did not exhibit any particularly exemplary oral hygiene preventive behaviors which generally fell below the recommended standards. Greater emphasis during their dental training could improve their oral self-care behaviors.

Key words: Dental students, pharmacy students, oral health knowledge, attitudes and practices.

INTRODUCTION

Good oral hygiene is the foundation for a healthy mouth and prevents 80% of all dental problems.1 The most common self-care behaviors for oral hygiene are tooth brushing and dental flossing.1 Oral hygiene levels resulting from these behaviors show an inverse relationship with dental caries, especially when using fluoridated toothpastes.2,3 Since tooth brushing by itself is relatively ineffective for inter-proximal plaque removal, regular use of dental floss facilitates interdental gingival health.4

During the past two decades, there has generally been a decline in the prevalence of caries amongst children in the industrialized world which has been attributed to fluoridation of drinking water and toothpastes as well as community and school oral health promotion programs that have led to greater awareness of oral health knowledge and improved practices.
and attitudes toward oral hygiene. Dentists and affiliate healthcare professionals play a significant role in health promotion. However, their personal oral hygiene and their attitudes towards oral health are not only an integral part of, but provide a crucial driving force for, their role as health promoters. The first objective of this study was to evaluate the oral health knowledge, attitudes and practices of dental students of Riphah International University, Islamabad who will be the oral healthcare professionals of tomorrow. The second objective was to compare the same behaviours with pharmacy students of the same university, who will be a section of future healthcare professionals not directly involved with oral health.

MATERIALS AND METHODS

The study design was a descriptive cross-sectional survey using a self-administered, structured, closed-ended 18-item questionnaire that assessed oral health and hygiene knowledge, attitudes and practices. The questionnaire was based on standard oral health questions gleaned from a review of relevant publications and dental literature. The questionnaire was pilot tested on 35 dental students and revised according to their feedback. After filling out the questionnaire, each subject was examined to determine his or her DMFT index. Dental examinations were conducted in the outpatient department of Islamic International Dental Hospital under the supervision of the dental officer on duty.

Inclusion criteria for selection of subjects were current 1st, 3rd and 4th year dental students of Islamic International Dental College and 1st, 2nd, 3rd and 4th year pharmacy students of Riphah Institute of Pharmaceutical Sciences. The 2nd year dental students were excluded as they performed the task of data collection as part of their community dentistry field assignment. Convenience sampling was used since both the colleges and the dental hospital are located on the same campus in Islamabad. Data collection was carried out over a period of 3 months (March-May 2008). Standard procedures of informed consent were used inclusive of anonymity and confidentiality. Some questionnaires were completed on the spot and others were filled out at leisure and collected at a later visit. No honorarium was offered. Students not returning the filled questionnaire after two reminders were considered as unwilling to participate. The study proposal was reviewed by the Institutional Review Board of the Human Subjects Committee of Riphah International University, Islamabad, and granted approval.

The answers to each question were numerically coded and the data were entered in the Statistical Package for Social Sciences (SPSS) software version 15.0. Since the nature of this cross-sectional study was descriptive, the results were analyzed by descriptive statistics including frequencies, percentages and independent sample t-tests. All tests were set at a 0.05 significance level.

RESULTS

Of the 490 students approached to participate in the study, 30 refused; giving an overall participation rate of 93.8%, with a sample size of 460, of which 157 (34.1%) were dental students and 303 (65.9%) students of the pharmacy school. The mean age of the students was 20.46 ± 4.14 years standard deviation. The mean age of dental students was 20.97 ± 6.7 years and of pharmacy students 20.16 ± 1.52 years.

The gender distribution of the study population was 1:2.7 male to female, respectively. The dental student group was female dominated with a ratio of 1:4.4 while the PS exhibited a gender ratio of 1:2.2

Results were grouped into four categories of caries prevalence, oral hygiene behaviors, oral health attitudes and knowledge.

Caries prevalence

The overall mean DMFT index of the study population was found to be 1.54 ±1.97 with a ‘decayed’ statistic of 0.85 ±1.44, a ‘missing’ statistic of 0.25 ±0.85 and a ‘filled’ statistic of 0.53 ±1.2. Within each student sample, the mean DMFT index and its component statistics are summarized in Table 1. There were no statistical significant differences for the mean DMFT and its three components between the two student samples.

Oral hygiene behaviors

Preventive oral health behaviors are judged by the use and frequency of oral hygiene methods such as tooth brushing, flossing and use of mouthwash and
A Comparative Evaluation of Oral Health Knowledge

A tooth-brush with toothpaste is the most common oral hygiene tool used for cleaning teeth, which was adopted by 423 (92%) students while only 7 (1.6%) used traditional methods of miswak, dandasa, rock salt, etc only. Of these, one subject was a dental student and six were pharmacy students. Students using both toothbrushes and traditional oral hygiene tools comprised of 26 (5.6%), of which 9 were from the dental school and the remainder from the pharmacy school. Four students chose not to answer these questions. The frequency of these oral hygiene practices was 282 (61.3%) students brushing their teeth twice or more times a day, 163 (35.4%) brushing at least once a day while only 11 (2.4%) claimed to not brushing their teeth on a daily basis. There was no significant statistical difference in tooth-brushing habits between the two student groups (p=0.43). The comparison of tooth brushing frequency between the two student groups is shown in Figure 1.

Most 307 (66.7%) of the students did not floss their teeth with only 89 (19.3%) having adopted this habit. The use of floss was unequally distributed in the dental (43) and pharmacy (46) student groups which was statistically significant (p=0.001). Interestingly, 49 (10.7%) of the students did not know what flossing meant. These were predominantly pharmacy students (40 pharmacy and 9 dental).

The use of mouthwashes was somewhat equally distributed amongst the study population with 213 (46.3%) using this oral hygiene tool and 242 (52.5%) not using it. There was a somewhat equitable distribution use in the two student groups, which was not statistically significant (p=0.11). The frequency of flossing and use of mouthwash in the study population are represented graphically in Figure 2.

![Figure 1: Toothbrushing frequency of dental and pharmacy students](image1)

![Figure 2: Flossing and Mouthwash use of study population](image2)

| TABLE 1: COMPARISON OF MEAN DMFT AND ITS COMPONENT BETWEEN DENTAL AND PHARMACY STUDENTS |
|---------------------------------------------|---------------------------------------------|-------------------------------|------------------|
| DMFT index                                  | Mean ± standard deviation                   | Independent sample t-test     |                 |
| Dental students                             | Pharmacy students                           | t                             | P-value         |
| Decayed                                     | 1.67 ± 2.39                                 | 1.47 ± 1.71                   | 0.916           | 0.36          |
| Missing                                     | 0.90 ± 1.71                                 | 0.82 ± 1.28                   | 0.515           | 0.61          |
| Filled                                      | 0.27 ± 1.00                                 | 0.25 ± 0.81                   | 0.217           | 0.83          |
|                                            | 0.62 ± 1.50                                 | 0.48 ± 1.02                   | 1.023           | 0.31          |

More than half of the study population 251 (54.7%) never used toothpicks, while 201 (43.7%) students used toothpicks. There was no particular variation regarding this oral hygiene behavior in either the dental or pharmacy student groups.

Use of fluoridated toothpaste was very common as 401 (87.2%) of the students claimed to use them. Only 23 (5%) students did not use fluoridated toothpastes, while 31 (6.7%) did not know whether their current toothpaste contained fluoride or not.
Each response showed a statistically significant (p=0.03) near equitable representation from both student groups.

Oral hygiene behaviors tended to cluster. Participants who brushed their teeth twice or more times a day also exhibited higher rates of adjunct oral hygiene habits of flossing every day (p=0.001) and the use of mouthwash (p<0.001).

Attitudes toward oral health

Indicators for attitudes towards oral health were the students’ interest in learning to clean their teeth better, motivation/frequency of visits to the dentist and indulgence in high risk habits commonly associated with poor oral health such, as the use of different types of tobacco and the intake of carbonated soft drinks.

Most students, 381 (81.1%) showed a keen interest in learning to clean their teeth better but with 64 (13.6%) disinclined and 14 (3%) ambivalent in their desire. Nearly equal numbers of students from dental school and pharmacy school were amongst those either disinclined or ambivalent in their interest.

However, visits to the dentist showed an interesting trend. A large number of students, 132 (28.7%) had never been to a dentist and 209 (45.5%) only went to a dentist when in pain. Only 50 (10.9%) students observed the recommended six monthly dental visits while 55 (12%) made annual visits. Again, distribution of this indicator of oral health attitude within the two schools was equal as 45.2% of dental and 45.9% of pharmacy students visited the dentist only when driven by pain. Similarly, 26.1% of dental and 30% of pharmacy students had never been to a dentist. This similarity in oral health attitude was found to be statistically significant (p = 0.005).

Most of the study population, 411 (89.3%) did not indulge in tobacco use of any kind. Of the 33 (7.2%) students who used tobacco, 24 (11 dental students) smoked cigarettes and/or shisha while 6 (1 dental student) used smokeless tobacco and 3 pharmacy students indulged in both forms. Of the 24 students who smoked, the predominant frequency 21(4.7%) of use was less than half a pack a day, while only 3 students smoked more than a pack a day. Indulgence in shisha was not very popular with the students since within the category of shisha users, the dominant frequency 15 (3.2) was once a week.

Most of the study population, 330 (71.5%) drank carbonated soft drinks. The frequency of use was 150 (45.5%) students consuming one bottle of 250ml daily, 38 (11.5) consuming 2 bottles daily with 20 (6%) consuming 3 bottles or more on a daily basis. Only 75 (22.7%) students consumed soft drinks occasionally while the remaining 47 chose not to reveal their frequency of indulgence.

Oral health knowledge:

Indicators for oral health knowledge were questions evaluating the subjects’ knowledge of importance of oral health and knowledge of the best type of toothbrush bristles. Subjects were also asked if they had ever noticed a white sticky layer on their teeth because the indicator for self-perception of one’s own oral hygiene is noticing a white film of plaque over the surfaces of teeth. Results for oral health knowledge and differences in responses for the two student groups are shown in Table 2. A significant difference between the two student groups was found only the type of toothbrush bristle (p=0.03)

DISCUSSION AND CONCLUSION

In the category of caries prevalence, there is no significant difference between the mean DMFT index and its components of decayed, missing and filled teeth between the dental and pharmacy students, although, the former displayed a higher value for each category. However, the higher ‘filled’ statistic can be viewed as a positive aspect indicative of their better access to dental care.

The recommended frequency of oral hygiene tools by the American Dental Association is brushing with a fluoridated toothpaste twice a day and daily use of floss and mouthwash. Under the category of oral hygiene behaviors, in the present study, although the dental students exhibited the recommended frequency of tooth-brushing more often than the pharmacy students, the flossing and mouthwash frequency of the study population fell well below the ADA recommendation and there was no statistical difference for these preventive oral hygiene habits between the two students’ groups. Of the 35 students who opted for the use...
of traditional oral hygiene tools such as miswak and dandasa, pharmacy students were more likely to use them either in place of or as an adjunct to the commonplace toothbrush with toothpaste. Use of toothpick is generally not recommended as an interdental hygiene tool for healthy gingiva since forceful use causes damage to the dental papillae leading to widened embrasures that become prone to greater food impaction. Flossing is an ineffective method of cleaning these widened spaces which creates the demand for aggressive interdental cleaning by tooth-picks thereby creating a vicious cycle. Tooth-pick use should be limited to older adults with periodontally compromised wide interdental spaces.\(^14\) However, this fact was lost on the dental students, half of whom used toothpicks regularly. With the exception of tooth brushing frequency, the dental students did not exhibit any particularly exemplary oral hygiene preventive behaviors which generally fell below the recommended standards.

Under the categories of attitudes and knowledge of oral health, the present study showed a prevalence of smoking of only 7.2%, of which 2.4% were dental students. This was far below the national statistic of 34\(^%\),\(^15\), and also well below the statistic for the current smoking prevalence of 20.1% amongst dentists in Pakistan\(^16\). This low dental student statistic is a positive attribute as it indicates that the average dentist-to-be has not adopted the detrimental habit of smoking.

The results of the present study are comparable to another recent study conducted in Lahore\(^17\) that evaluated the same variables amongst physicians who exhibited a twice daily tooth-brushing frequency of 55\%, a statistic similar to that of the pharmacy student group, with 82\% physicians using a medium/soft toothbrush as compared to 74.9\% of the present study population. The smoking prevalence amongst the physicians was 4.7\%, which although low against the national statistic of 34\%,\(^15\) was twice that of the dental student group.\(^17\)

The present results on oral health knowledge, attitudes and practices are also consistent with studies conducted among Iranian and Mongolian licensed dental practitioners.\(^18,19\) Both studies concluded that the oral health behaviors of the dental professionals were not at optimal levels and could be further improved by continuing dental education.

### TABLE 2: ORAL HEALTH KNOWLEDGE

<table>
<thead>
<tr>
<th>Question</th>
<th>ResponseN=460 (* Frequency)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>Do you agree oral health is an integral part of general health?</td>
<td>440(95.6%)</td>
</tr>
<tr>
<td>Frequency within group</td>
<td>DS 94.3</td>
</tr>
<tr>
<td></td>
<td>PS 1.4</td>
</tr>
<tr>
<td></td>
<td>DS 1.3</td>
</tr>
<tr>
<td>Have you ever noticed a white sticky layer on your teeth?</td>
<td>159(34.6%)</td>
</tr>
<tr>
<td>Frequency within group</td>
<td>DS 33.0</td>
</tr>
<tr>
<td></td>
<td>PS 44.6</td>
</tr>
<tr>
<td></td>
<td>DS 16.6</td>
</tr>
<tr>
<td>Which type of toothbrush bristle do you think is the best for gum and dental health?</td>
<td>125(27.1%)</td>
</tr>
<tr>
<td>Frequency within group</td>
<td>DS 27.4</td>
</tr>
<tr>
<td></td>
<td>PS 55.0</td>
</tr>
<tr>
<td></td>
<td>DS 17.5</td>
</tr>
</tbody>
</table>

**Note:** All rows do not add up to 460 as some participants chose not to answer

DS – Dental students;  PS- Pharmacy students
Comparisons of dental students’ oral health behaviors with students of other streams/professionals have been reported. However, to our best of knowledge, comparison between dental and pharmacy students has not been done in the past. Therefore although we cannot directly compare our findings; a study that evaluated self-reported oral health behaviors between dental students and dental technology/dental hygiene students in Jordan found that the dental students had a higher ranking of oral health behaviors. However, in the present study, the dentals students did not exhibit any particularly higher standard of behaviors than the pharmacy students.

In conclusion, there is room for considerable improvement in the oral health behavior of both the dental and pharmacy student groups with a particular emphasis on the former as they are role models for their patients and the public at large. Greater emphasis during their undergraduate dental training could improve the health-related knowledge of and change their oral self-care behaviors.

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