Oral health status of a cohort of new university undergraduate students in Hong Kong

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ABSTRACT Objectives. To evaluate the caries status, periodontal status, prosthetic status, treatment needs, and patterns of dental attendance and utilization of a population of university undergraduates in Hong Kong, and to compare the dental health characteristics of those who attended dental services during secondary school years with those who did not. Methods. Between February and July 2002, questionnaires regarding the dental behavior and history were sent in a systematic randomized manner to Year 1 students of the Chinese University of Hong Kong when they attended a new dental consultation appointment. Clinical examinations were performed by a single examiner in a dental surgery setting. Caries status, periodontal health, prosthetic status, and treatment needs of the subjects were then recorded and analyzed. Results. Of the 360 students participated in the study, 54.7% were female and 45.3% were male. The overall mean decayed, missing, and filled teeth value was 2.10. Less than 30% of the population had active caries; however, nearly the entire population required some form of periodontal treatment. Only 2% required dental prostheses. More than 90% of subjects reported attending the School Dental Care Service during primary school years. However, less than 50% of the subjects reported visiting a dentist during their secondary school years, with more than 60% reporting “Feeling not necessary”. The mean decayed, missing, and filled teeth value among those subjects who attended dental services during their secondary school years was higher than those who did not attend (t test, P<0.001). Attendants had significantly more filled teeth. More non-attendants had a Community Periodontal Index score of 2 while more attendants scored 1 (Chi squared test, P<0.01), showing that the latter group demonstrated better periodontal health. Conclusions. Over 99% had some degree of chronic inflammatory periodontal disease. A very low percentage of the students required construction of dental prosthesis, while about one fifth were candidates for surgical extraction of impacted wisdom teeth. New university undergraduates who had attended dental services during their secondary school years demonstrated better periodontal health.

Introduction

In Hong Kong, primary school children are entitled to the School Dental Care Service (SDCS) scheme, which provides comprehensive dental treatment by qualified dental therapists under the supervision of government dental officers. However, when these students are promoted to secondary and post-secondary schools, they receive no further regular dental care unless they seek advice from private and/or university dentists. Although various parties have suggested extending the SDCS or providing some sort of student dental plan beyond primary schooling, limited data are available regarding the oral hygiene, caries patterns, and treatment needs among this population, especially in relation to their dental attendance patterns.

A number of local dental surveys were found covering the 15- to 19-year-old population in Hong Kong. However, the only survey that closely matched our target population and gave comprehensive information on dental caries and periodontal health status was by Lind et al 1 in 1986, which reported a decayed, missing, and filled teeth (DMFT) value of 1.7; three quarters of the population required scaling,
oral health status of undergraduate students in Hong Kong and the remaining quarter required more advanced periodontal treatments.

The main objectives of the present study were to describe the oral health status of a cohort of new university undergraduate students in Hong Kong, and to assess and compare the oral health status and treatment needs of those who attended dental services during their secondary school years with those who did not.

Methods

This cross-sectional oral health study comprised both a questionnaire and clinical examination given to 2800 Year 1 undergraduates of the Chinese University of Hong Kong. A systematic random sampling method was employed to select subjects during a 6-month period (February 2002 to July 2002): the first of every two Year 1 undergraduate students attending a new dental consultation appointment was invited to participate in the survey. If he or she did not agree to participate in the survey, the next Year 1 undergraduate student attending for a new dental consultation would be regarded as the first of a new selection set. Only those with written consents and complete questionnaires were included in the survey.

The questionnaire was close-ended and completed by the participants without supervision or guidance. In order to minimize the chances of misunderstanding and misinterpretation, pilot trials of the questionnaires were employed on other student patients before the final version was established.

The clinical examinations were performed by a single examiner in a dental surgery setting. The caries status, periodontal health, prosthetic status, and treatment needs of the subjects were recorded by applying simplified World Health Organization diagnostic criteria without radiographs. Thus, only those third molars (wisdom teeth) that were partially erupted and mesially or horizontally angulated were recorded as impactions.

Intra-examiner calibration exercises using Kappa statistics were conducted before and during the survey in order to monitor reproducibility. The Kappa value was kept at 0.82 to 0.87 throughout the survey.

All collected data were coded, entered into a computer, and analyzed using the Statistical Package for the Social Sciences (Windows version 11.0, SPSS Inc., Chicago [IL], United States). The probability levels of all tests were set at 0.05.

Results

Of the 360 participants, 197 (54.7%) were female and 163 (45.3%) were male. The mean age was 19.3 years (standard deviation, 0.6 years). Although 94% of subjects reported attending the SDCS during primary school, as to their secondary school years, only 48.6% (n=175) reported receiving some sort of dental treatment, 44.4% (n=160) did not visit a dentist, and the remaining 6.9% (n=25) did not remember whether they had attended a dental clinic during that time. Most (>75%) subjects who did visit a dentist during their secondary school years reported attending private sector dental services.

Among the attendants, 55% reported visiting a dentist only when necessary, without a regular check-up. Up to 20% visited a dentist at least once a year, while the rest reported attending every 1 to 2 years.

Among those who did not visit a dentist, more than 60% reported feeling no dental need at the time as their main reason, one third reported financial reasons for not attending, while 2.5% were too afraid to seek dental treatment.

The overall mean DMFT value was 2.10 (Table 1). The total number of carious teeth was 319, which gave a mean

<table>
<thead>
<tr>
<th>Caries and treatment needs of university undergraduates who did or did not attend a dental clinic during secondary schooling*</th>
<th>Non-attendants, n=160</th>
<th>Attendants, n=175</th>
<th>Overall mean †, n=360</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decayed, missing, and filled teeth §</td>
<td>1.36 (2.38)</td>
<td>2.86 (3.06)</td>
<td>2.10</td>
</tr>
<tr>
<td>Decayed teeth</td>
<td>0.94 (2.21)</td>
<td>0.83 (1.73)</td>
<td>0.89</td>
</tr>
<tr>
<td>Missing teeth</td>
<td>0.01 (0.10)</td>
<td>0.02 (0.21)</td>
<td>0.02</td>
</tr>
<tr>
<td>Filled teeth §</td>
<td>0.41 (0.83)</td>
<td>2.02 (2.31)</td>
<td>1.19</td>
</tr>
<tr>
<td>Filling needed</td>
<td>0.83 (1.87)</td>
<td>0.80 (1.69)</td>
<td>0.82</td>
</tr>
<tr>
<td>Extraction needed §</td>
<td>0.11 (0.57)</td>
<td>0.00 (0.00)</td>
<td>0.06</td>
</tr>
<tr>
<td>Advanced treatment needed §</td>
<td>0.00 (0.00)</td>
<td>0.02 (0.13)</td>
<td>0.01</td>
</tr>
</tbody>
</table>

* Data are shown as mean number of teeth (standard deviation)
† Overall number of subjects includes 25 participants who did not remember whether they visited a dentist during their secondary school years
§ Statistically significant (P<0.05)
value of 0.89 carious tooth per person. Most (71.4%) participants had no caries. Among the affected individuals, mean number of carious teeth per person was 3.10.

Of the 319 teeth having caries, 92.8% required dental fillings, 6.3% needed to be extracted because of unrestorable lesions, and 0.9% required advanced dental treatment such as pulp treatment, veneer and/or extra-coronal coverage; 5% of affected individuals required treatment for more than five carious teeth.

Concerning the caries status and treatment needs of the population, those who reported attending a dental clinic during secondary school years (attendants) were shown to have a higher mean DMFT value, more filled teeth, and a greater need for advanced treatment compared with those who had not (non-attendants). Non-attendants required more dental extractions (t test, P<0.001) [Table 1].

Most participants required some sort of periodontal treatment. Among them, 99.4% needed oral hygiene instruction, 77% required scaling procedures, and 0.3% had at least 1 periodontal pocket greater than 3.5 mm that required more advanced periodontal treatment.

The percentage distribution of attendants and non-attendants by Community Periodontal Index (CPI) score is shown in Table 2. More non-attendants had a CPI score of 2, while more attendants had a score of 1. Statistically, there was a significant difference in the distribution between attendants and non-attendants (Chi squared test, P<0.01).

A total of 16.9% of participants had mesially or horizontally impacted wisdom teeth requiring surgical extraction; the mean number of impacted wisdom teeth per person affected was 1.52.

Only 2.2% of subjects required dental prostheses, either in the form of fixed bridges or removable partial dentures. No complete denture was required. Since the overall prosthetic need was relatively low, no statistical test was applied. However, a trend of greater need for prosthetic treatment was seen in non-attendants.

**Discussion**

Hong Kong’s university undergraduates account for less than 1% of the total population, and very few dental surveys have examined this group. However, the earlier data show that the periodontal status of this population has improved. Although over 99% of subjects in the current study demonstrated some form of periodontal disease, 0.3% required advanced periodontal treatment, compared with 25% of a similar population in 1986. The DMFT value was shown to be higher in the present study than that in 1986; however, the two target populations were not ideally matched.

The present study demonstrates the effects of dental attendance during secondary school years on oral health status. Independent t tests and Chi squared tests were applied to identify differences in various dental characteristics between attendants and non-attendants, and statistically significant differences were shown both in caries and periodontal status. Attendants demonstrated better periodontal health.

Because attendants demonstrated better oral health than non-attendants, efforts should be made to encourage all students leaving primary school to continue regular dental visits. Moreover, oral health education and promotion campaigns should be regularly held in the community so as to improve knowledge and awareness of the prevention and management of periodontal problems.

Interestingly, attendants were shown to have significantly higher DMFT values and significantly higher filled-tooth component scores than non-attendants. This may imply that attendants received much more restoration during secondary school years. However, when looking
at the decayed teeth component, the difference between the two groups was not statistically significant. This could be explained by sampling variations in the decayed teeth component, attendants requesting dental fillings from dentists for non-existent carious lesions such as stained fissures, and/or overtreatment by dentists.

During their secondary school years, 48.6% of participants reported visiting a dentist for treatment. However, a lack of official data makes it impossible to comment on actual utilization of dental services during the secondary school years of the population.

Among attendants, private dental sector was the most popular option for seeking treatment, and the main reason for their most recent visit was a routine check-up and tooth cleaning (>60%). This is consistent with previous studies by the Community Health Project 2 and Kwan 3. For non-attendants, “feeling not necessary” was the most common (>60%) reason for not visiting a dentist, which is similar to other findings 1,3.

Summarizing the different factors affecting the utilization of dental services, Lo 4 reported that self-perceived dental needs play a very important role in determining dental attendance and utilization. Factors such as age, sex, education level, socio-economic status, personal attitudes, beliefs and values, fear and anxiety, and previous dental experience were also shown to affect attendance 4,9.

To improve the pattern of poor dental attendance and low utilization of dental services, strategies must be developed to improve public perception and the awareness of better oral health.

Conclusions

This research represents the most up-to-date information on the caries status, periodontal status, prosthetic status, treatment needs, patterns of dental attendance, and utilization of university undergraduates in Hong Kong. Based on the study findings, 70% did not require any filling. However, over 99% had some degree of chronic inflammatory periodontal disease. A very low percentage of the study population required construction of dental prosthesis, while about one fifth were candidates for surgical extraction of impacted wisdom teeth. Students who had visited a dentist during their secondary school years demonstrated better periodontal health in comparison with those who had not attended dental services.

Acknowledgments

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References

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