# Barriers to the Provision of Oral Health Education among Mongolian Dentists

Battsetseg Tseveenjav[a]/Miira M. Vehkalahti[a]/Heikki Murtomaa[a]

**Purpose:** To study barriers to providing oral health education (OHE) to their patients among Mongolian dentists.

**Subjects and Methods:** A questionnaire survey was carried out in 2000 among practising dentists (n = 250) in the capital city of Mongolia. The response rate was 98%. Barriers to OHE were measured by six statements describing problems that might interfere with dentists' OHE activities and attitudes towards it by a statement about its importance; all answers were rated on a 5-point Likert scale (strongly agree-strongly disagree). Self-perceived competency in providing OHE was measured by means of a 4-point scale of competency (very to not at all competent) and preventive knowledge by 14 statements related to preventive dentistry. Dentists' work-related backgrounds were work experience in years, type of practice (state or private) and field of practice (general practice or speciality field). Statistical evaluation was carried out by chi-square test and logistic regression analysis.

**Results:** Poor appreciation of OHE by patients (85%) followed by insufficient teaching materials (73%) and time constraint due to the huge demand for curative care (59%) were the most commonly agreed-upon barriers. Concerning their attitudes towards and competency in providing OHE, 88% of the dentists agreed that OHE should be statutory, and 85% perceived themselves at least quite competent. Dentists' years of work experience were positively, but preventive knowledge score negatively associated with their agreeing about barriers to OHE activities.

**Conclusion:** Despite appreciation of OHE, Mongolian dentists seem to face practical barriers to providing OHE activities.

**Key words:** oral health education, health promotion, dentists, Mongolia

*Oral Health Prev Dent 2005; 3: 183–188. Submitted for publication: 05.01.05; accepted for publication: 02.08.05.*

Because oral health is greatly influenced by patients' individual behaviours, oral health education is considered an integral part of oral health promotion (Blinkhorn, 1981), helping in the making of informed decisions. One of the objectives of oral health education (OHE) is to transmit up-to-date health information from experts to the public (Towner, 1993).

[a] *DDS, PhD, Department of Oral Public Health, Institute of Dentistry, University of Helsinki, Helsinki, Finland.*

***Reprint requests:*** *Dr Battsetseg Tseveenjav, P.O.B 41, 00014 University of Helsinki, Finland. Tel: 358-503269119; Fax: 358-9-19127346; E-mail: battsetseg.tseveenjav@helsinki.fi*

Effective OHE may produce changes in patients' knowledge (Hawkins et al, 2000; Kay and Locker, 1996), bring about some shift in belief or attitude (Hoogstraten and Moltzer, 1983), facilitate the acquisition of skills (Miyazaki et al, 1990) and even may effect changes in behaviour or lifestyle (Tones and Tilford, 1994), resulting in positive outcomes for oral health (Isaksson et al, 2000; Kowash et al, 2000; Thomas et al, 2000). Short-term gains in knowledge and behaviour and difficulty of changing attitudes have also been reported (Brown, 1994). The cost-effectiveness of OHE activities is inconclusive in reviews of the literature, due to the quality of the available evidence pertaining to the effectiveness of OHE (Brown, 1994; Kay and Locker, 1996).

OHE may be carried out by dental professionals (Nettleton, 1989) or by health or dental auxiliaries – hygienists or assistants (Murtomaa et al, 1983; Basson, 1999), teachers (Thomas et al, 2000), and caregivers (Isaksson et al, 2000) – and provided to the general public, groups of people or individuals depending on the type of strategy in use – population or high-risk. Depending on target group, OHE activities could be implemented through the mass media (Schou, 1987) or in different settings such as homes (Kowash et al, 2000), kindergartens (Rayner, 1992), schools (Hawkins et al, 2000; Park et al, 2004), work places (Petersen, 1989), and health care centres (Murtomaa and Ainamo, 1977). Information technology is also becoming popular for health educational purposes, although its effectiveness for health outcomes has been questioned because of lack of evidence (Wong, 2000; Chestnutt, 2001; Bessell et al, 2002).

Mongolian dentists seem to be active in giving recommendations and advice on oral self-care to their own children (Tseveenjav et al, 2004). But dentists, in general, seem to encounter a multitude of different attitudinal, practical and ethical dilemmas providing OHE to patients (Murtomaa and Telivuo, 1988). The aim of the present study was therefore to investigate barriers to the provision of OHE among Mongolian dentists for their patients. We hypothesised that those dentists with higher preventive knowledge, more competence in providing OHE and more positive attitudes towards OHE perceive fewer barriers to putting into practice OHE.

## MATERIALS AND METHODS

### *Data collection*

A questionnaire designed to gather information on dentists' perceived barriers to, attitude towards and self-perceived competency in providing oral health education (OHE) and data on their work-related background was written in English and later translated into Mongolian. The survey instrument was pre-tested among ten Mongolian dentists of different ages and length of working experience in December 1999 and then discussed with them. After revision, the final version, together with a letter explaining the voluntary and confidential nature of dentists' participation in the survey, was delivered by one of the authors (BT) to all dentists practising (n = 250) in Ulaanbaatar, in May 2000. The response rate within five weeks was 98%.

### *Questions and variables*

*Barriers to practise OHE* were assessed by six statements (B1-B6), given on a five-point Likert scale, concerning appraisal of OHE as a service by patients, availability and quality of teaching materials, time constraint to practise OHE, perceived skills to practise OHE, availability of evidence of benefits of OHE, and possibility of dentists in inducing behavioural change in patients (for original statements see Table 1).

*Attitude* towards OHE was assessed by dentists' reaction to the statement "Oral health education should be statutory by legislation as a dentist's daily duty" measured by means of a five-point Likert scale. Further, the answers were given scores of zero to four, higher scores corresponding to more positive attitude (for original statement see Table 1).

*Self-perceived competency in practising OHE to patients* was assessed by the statement 'How competent do you feel in giving oral health education to patients?' measured by means of a four-point scale: very competent, quite competent, not very competent, or not at all competent. For further analysis a higher score was given to the more competency in providing oral health education.

*Preventive knowledge* was assessed by 14 statements related to preventive matters. The statements were related to the role of fluorides, frequency of sugar consumption, sugar-free chewing gum and xylitol, and use of sealant in preventing dental caries, and to the aetiology of gingivitis (For original statements see Tseveenjav, 2004). Each statement was measured by means of a five-point Likert scale. For further analysis, each answer was given scores, higher scores corresponding to greater knowledge. A sum of the scores of 14 statements represented each dentist's preventive knowledge score with a theoretical maximum of 56.

*Background data* comprised information on dentists' years of working experience and type (state institution or private practice) and field (general practice or speciality field) of practice.

### *Statistical evaluation*

Statistical significance of differences was evaluated by chi-square test. Each of the barriers to provid-

**Table 1 Percentages of 'strongly agree' or 'agree' answers of Mongolian dentists (n = 245) to statements describing attitudes (A) towards and barriers (B1-B6) to providing oral health education (OHE)**

| Original statements: | | Dentists' work experience | | | Dentists' type of practice | | |
|---|---|---|---|---|---|---|---|
| | | ≤ 5 yrs % | > 5 yrs % | p | State % | Private % | p |
| A | OHE should be statutory by legislation as a dentist's daily duty | 90 | 88 | 0.69 | 85 | 93 | **0.05** |
| B1 | Most patients do not appreciate OHE as a service provided by dentists. | 79 | 89 | **0.03** | 85 | 86 | 0.92 |
| B2 | Teaching material for OHE of patients is insufficient. | 68 | 77 | 0.10 | 69 | 80 | **0.05** |
| B3 | Time is insufficient for OHE due to huge demand for curative care. | 41 | 70 | **0.00** | 62 | 55 | 0.28 |
| B4 | Not enough skills can be acquired to provide OHE to patients. | 49 | 51 | 0.68 | 50 | 52 | 0.72 |
| B5 | Scientific evidence is insufficient as to benefits of OHE. | 31 | 46 | **0.03** | 39 | 41 | 0.71 |
| B6 | Inducing behavioural change in patients is difficult. | 10 | 27 | **0.002** | 18 | 24 | 0.23 |

[1] chi-square test for differences in number of 'strongly agree' and 'agree' answers vs. others by dentists' work-related background factors; statistically significant p-values in bold ($p < 0.05$)

ing OHE was separately explained by the dentist's work experience (in years), type and field of practice, preventive knowledge, self-perceived competency in and attitude towards OHE by means of logistic regression analysis. 'Outcome' category was dentists saying 'strongly agree' or 'agree' with different barriers to OHE. From the factors included in the models, work experience, preventive knowledge, and self-perceived competency in and attitude towards OHE were served as continuous variables. Reference groups for the categorical variables were a dentist's being a private practitioner for type of practice, and working in a speciality for field of practice.

## RESULTS

Of the surveyed dentists, 83% were female. Median and mean ages were 34 and 35 years with a range of 23 to 60. Median and mean lengths of work experience were seven and 10 years with a range of some months to 38 years. Overall, 58% were employed in a state institution and 42% in private practice; 60% worked as general practitioners and 40% in a speciality field.

Among the six barriers asked about, patients' poor appraisal of OHE as a service was the most frequently perceived barrier for the dentists (85%), followed by insufficient teaching material (73%) and time constraint due to the huge demand for curative care (59%) (Fig 1).

Concerning their attitude towards OHE, 42% strongly agreed that OHE should be part of a dentist's daily duty; 46% agreed, 6% disagreed, 2% strongly disagreed, and 4% could not say.

Eight per cent of the dentists reported feeling very competent in giving oral health education to patients, 75% quite competent, 14% not very competent, and 3% not competent at all.

Mean and median score of preventive knowledge was 42 (SD = 6) with a range of 26 to 56; 51% belonged to the highest quartile of preventive knowledge score.

Dentists with more years of work experience, compared to those with fewer years, tended to perceive poor appraisal of OHE by patients (B1), time constraint (B3), insufficiency of evidence (B5), and difficulty of inducing behavioural change (B6) as barriers (Table 1). Dentists in private practice were more likely to have a positive attitude towards OHE (A) and to perceive insufficient teaching materials

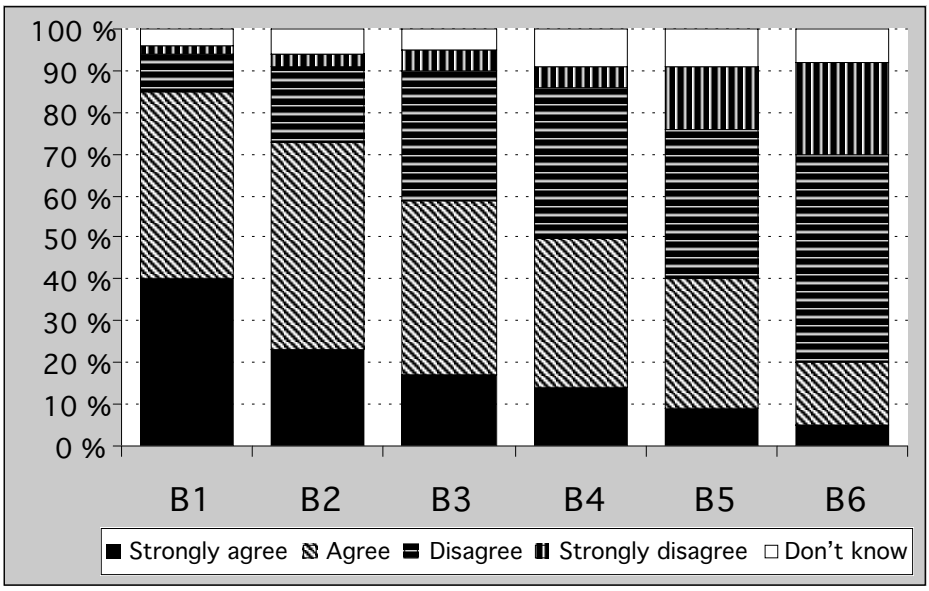


**Fig 1** Dentists' reaction to statements describing different barriers (B1-B6) to providing oral health education (OHE)
B1 – Poor appraisal of OHE by patient
B2 – Insufficient teaching materials for OHE
B3 – Time constraint for OHE due to huge demand for curative care
B4 – Insufficient skills acquired for providing OHE
B5 – Insufficient evidence of benefits of OHE
B6 – Difficulty of inducing behavioral change in patients

(B2) as a barrier to OHE, than were those engaged in state institution (Table 1).

Dentists' years of work experience were positively associated with their agreeing about time constraints (B3), insufficient evidence (B5), and difficulty of inducing behavioural change (B6) as barriers to OHE activities in logistic regression models. Dentists' scores on preventive knowledge were negatively associated with their agreeing about difficulty of inducing behavioural change (B6). The self-perceived competency score was positively associated with concern about insufficient teaching materials (B2), but negatively with insufficient skills (B4) (Table 2).

## DISCUSSION

The socio-economic transition taking place in Mongolia since the 1990s brought huge differences in people's income, employment and lifestyle. Such changes consequently expected to affect people's individual, social and behavioural determinants of health, increasing health differences in a society (Wilkinson, 1997).

Changing circumstances require from the professional dental community in Mongolia a change in its curative-orientated approach based on the earlier specialist-based dental care system towards a public health- and prevention-orientated one. There is a great need to make use of the benefits of oral health promotion to meet the changing needs and demands of the population (Tseveenjav, 2004).

The high response rate of the respondents to this study guarantees that the subjects represent the target population well – urban dentists in Mongolia. A questionnaire survey was a suitable, economical and practical way for this type of data collection, although the tendency of giving socially more acceptable answers still remains. Questions were close-ended, and statements measured by means of a 4- or 5-point scale in order to improve accuracy of the analysis.

As hypothesised, those dentists with better knowledge of preventive matters were less likely to perceive a difficulty in inducing behavioural change in patients. Similarly, those perceiving themselves as more competent in providing OHE tended to disagree that insufficient skills would be a barrier to OHE. As expected, the younger dentists (fewer years of work experience) tended to disagree with their older counterparts about the different barriers interfering with their OHE provision.

Poor appraisal of OHE by the patient was the most important barrier for Mongolian dentists (85%), despite their working sector – private or public – in agreement with UK community dentists (79%) (Nettleton, 1989) and Finnish dental hygienists (90%) (Murtomaa et al, 1983). In contrast, poor appreciation of OHE by the patient has been reported by only 18% of Finnish dentists in private practice (Murtomaa and Telivuo, 1988).

**Table 2 Association of dentists' perceived barriers (strongly agree or agree answers) to providing oral health education (OHE) with selected variables by logistic models**

| Explanatory variables | B1 OR (95% CI) | B2 OR (95% CI) | B3 OR (95% CI) | B4 OR (95% CI) | B5 OR (95% CI) | B6 OR (95% CI) |
|---|---|---|---|---|---|---|
| Work experience | 1.1 (0.9 – 1.1) | 1.0 (1.0 – 1.1) | **1.1 (1.0 – 1.1)** | 1.0 (1.0 – 1.1) | **1.0 (1.0 – 1.1)** | **1.1 (1.0 – 1.1)** |
| Current job: State institution | 1.1 (0.5 – 2.5) | 1.7 (0.9 – 3.2) | 0.8 (0.5 – 1.4) | 1.1 (0.6 – 1.9) | 1.1 (0.7 – 2.0) | 1.8 (0.9 – 3.7) |
| Field of practice: General | 1.0 (0.5 – 2.2) | 0.9 (0.5 – 1.6) | 0.8 (0.5 – 1.4) | 1.0 (0.6 – 1.7) | 0.9 (0.5 – 1.5) | 0.8 (0.4 – 1.7) |
| Preventive knowledge | 1.0 (1.0 – 1.1) | 1.0 (0.9 – 1.0) | 1.0 (0.9 – 1.0) | 1.0 (0.9 – 1.0) | 1.0 (0.9 – 1.0) | **0.9 (0.9 – 1.0)** |
| Attitude towards OHE | 1.0 (0.7 – 1.6) | 1.2 (0.8 – 1.6) | 0.9 (0.6 – 1.2) | 1.2 (0.9 – 1.6) | 0.9 (0.7 – 1.2) | 0.8 (0.6 – 1.2) |
| Competency in giving OHE | 1.3 (0.7 – 2.4) | **2.1 (1.3 – 3.6)** | 0.9 (0.6 – 1.4) | **0.5 (0.3 – 0.8)** | 0.6 (0.9 – 2.7) | 0.9 (0.5 – 1.7) |

Dependent variables: B1 – Poor appraisal of OHE by patient; B2 – Insufficient teaching materials for OHE, B3 – Time constraint for OHE due to huge demand for curative care, B4 – Insufficient skills acquired for providing OHE, B5 – Insufficient evidence for benefits of OHE, B6 – Difficulty of inducing behavioural change in patients; one at a time

Insufficient teaching material was the second most important barrier to OHE for Mongolian dentists (73%), contrary to that found for the Finnish private dentists (37%) (Murtomaa and Telivuo, 1988). The issue of both quality and quantity of teaching materials for OHE seems to be a common problem and has been mentioned in many studies (Alexander, 2000; Kwan, 2000).

Time constraint as a barrier to OHE was reported by 59% of the Mongolian dentists; the same barrier has been reported by 54% of the Finnish (Murtomaa and Telivuo, 1988), and 21% of the UK dentists (Nettleton, 1989). Time constraint for Mongolian dentists reveals once more that curative care is their priority daily duty (Tseveenjav, 2004). Prioritising either health education or clinical work as the main duty was also a problem for hygienists in public health centres and private practice, respectively, in Finland (Murtomaa et al, 1983).

Difficulty in inducing behavioural change was the least often perceived barrier by Mongolian dentists (20%), similar to that reported by Finnish (24%) (Murtomaa and Telivuo, 1988) and UK dentists (25%) (Nettleton, 1989). However, the need for introducing behavioural sciences applied to dentistry into the current curriculum in Mongolia would facilitate management of behavioural change of patients in the changing socio-economic circumstances (Tseveenjav et al, 2004).

The majority of the dentists perceived themselves at least quite competent in giving OHE. However, based on their opinions about different barriers to providing OHE, future planning of OHE activities among Mongolian dentists calls for understanding of psychological aspects of dentist-patient communication and relationships (Sondell and Soderfelds, 1997; Freeman, 1999), active involvement of patients in assessment and evaluation (Strong and Norris, 1982), and giving realistic advice to patients (Barker, 1994).

The majority of full-time Finnish oral health educators offering group or individual OHE are hygienists and dental assistants (Laiho et al, 1995). But in Mongolia, since there are no professionally trained dental auxiliaries, dentists need to put greater efforts into involving and cooperating with their auxiliary staff in OHE activities. For this purpose, the basic and continuing professional dental education should increase the number of courses in preventive dentistry (Tseveenjav et al, 2003) and

design special programmes to provide dentists knowledge and skills to practice a team-work approach to OHE activities in the special local circumstances.

In conclusion, despite appreciation of OHE, Mongolian dentists seem to face practical barriers to providing oral health activities for their patients.

## ACKNOWLEDGEMENTS

Grants to BT by The Centre for International Mobility (CIMO) in Finland, the University of Helsinki, and The Finnish Dental Society Apollonia are warmly acknowledged. We thank all the dentists for taking part in this survey.

## REFERENCES

1. Alexander RE. Readability of published dental education materials. JADA 2000;131:937-942.
2. Barker T. Realistic dietary advice for patients. Dent Update 1994;21:28-34.
3. Basson WJ. Oral health education provided by oral hygienists in private practice. SADJ 1999;54:53-57.
4. Bessell TL, McDonald S, Silagy CA, Anderson JN, Hiller JE, Sansom LN. Do Internet interventions for consumers cause more harm than good? A systematic review. Health Expect 2002;5:28-37.
5. Blinkhorn AS. Dental health education. In Dental public health: An introduction to community dentistry. 1981. Ed. Slack. Bristol: Wright.
6. Brown LF. Research in dental health education and health promotion: A review of the literature. Health Educ Q 1994;21: 83-102.
7. Chestnutt IG. Patient information on the Internet-what are the issues? Community Dent Health 2001;18:205-206.
8. Freeman R. The psychology of dental patient care. 10. Strategies for motivating the non-compliant patient. Br Dent J 1999;187:307-312.
9. Hawkins RJ, Zanetti DL, Main PA, Jokovic A, Dwyer JJM, Otchere DF, Locker D. Oral hygiene knowledge of high-risk Grade One children: an evaluation of two methods of dental health education. Community Dent Oral Epidemiol 2000;28: 336-343.
10. Hoogstraten J, Moltzer G. Effects of dental health care instruction on knowledge, attitude, behaviour and fear. Community Dent Oral Epidemiol 1983;11:278-282.
11. Isaksson R, Paulsson G, Fridlund B, Nederfors T. Evaluation of an oral health education program for nursing personnel in special housing facilities for the elderly. Part II: Clinical aspects. Spec Care Dentist 2000;20:109-113.
12. Kay EJ, Locker D. Is dental health education effective? A systematic review of current evidence. Community Dent Oral Epidemiol 1996;24:231-235.
13. Kowash MB, Pinfield A, Smith J, Curzon MEJ. Effectiveness on oral health of a long-term health education programme for mothers with young children. Br Dent J 2000;188: 201-205.
14. Kwan SY. Transcultural oral health care: 2. Developing transcultural oral health promotion materials. Dent Update 2000;27:346-348.
15. Laiho M, Honkala E, Kannas L. How is oral health education conducted in Finnish health centers? Community Dent Oral Epidemiol 1995;23:119-124.
16. Miyazaki H, Kambe M, Yamazaki M, Yamaguchi Y, Ansai T, Ohtani I, Shirahama R, Yamashita Y, Itoh-Andoh M, Takehara T. Learning efficiency of a toothbrush for mastering scrubbing method. Clin Prev Dent 1990;12:19-21.
17. Murtomaa H, Ainamo J. Role of health education among services rendered by dental personnel in Finland. Community Dent Oral Epidemiol 1977;5:164-168.
18. Murtomaa H, Telivuo M. The attitudes of Finnish dentists in private practice towards dental health education. Community Dent Health 1988;5:369-380.
19. Murtomaa H, Haanpää UM, Roos M. The role of dental hygienists in dental education. Proc Finn Dent Soc 1983;79: 187-190.
20. Nettleton S. Dentists and dental health education: A study of the perceptions of 28 community dentists. Community Dent Health 1989;6:47-60.
21. Park DY, Ma DS, Horowitz AM. Oral health education courses for university students: why not? J Public Health Dent 2004; 64:3-4.
22. Petersen PE. Evaluation of a dental preventive program for Danish chocolate workers. Community Dent Oral Epidemiol 1989;17:53-59.
23. Rayner JA. A dental health education programme, including home visits, for nursery school children. Br Dent J 1992;172: 57-62.
24. Schou L. Use of mass-media and active involvement in a national dental health campaign in Scotland. Community Dent Oral Epidemiol 1987;15:14-18.
25. Sondell K, Söderfeldt B. Dentist-patient communication: a review of relevant models. Acta Odontol Scand 1997;55: 116-126.
26. Strong J, Norris C. Patient motivation: seeing is believing. Dent Assist 1982;2:40-42.
27. Thomas S, Tandon S, Nair S. Effect of dental health education on the oral health status of a rural child population by involving target groups. J Indian Soc Pedod Prev Dent 2000;18: 115-125.
28. Tones K, Tilford S. Health Education: Effectiveness, efficiency and equity. London: Chapman and Hall, 1994;1-48.
29. Towner EML. The history of dental health education: a case study of Britain. In: Schou L, Blinkhorn AS. Oral Health Promotion. Oxford: Oxford University Press, 1993;1-23.
30. Tseveenjav B, Vehkalahti M, Murtomaa H. Attendance at and self-perceived need for continuing education among Mongolian dentists. Eur J Dent Educ 2003;7:130-135.
31. Tseveenjav B. Preventive Dentistry in Mongolia. PhD Thesis, University of Helsinki, Finland; 2004 (electronic version: http://ethesis.helsinki.fi/julkaisut/laa/hamma/vk/tseveenjav).
32. Tseveenjav B, Vehkalahti M, Murtomaa H. Caries-preventive measures applied by Mongolian dentists to their children. Oral Health Prev Dent 2004;2:203-209.
33. Wilkinson RG. Unhealthy Societies. The afflictions of inequality. London: Routledge, 1997;53-71.
34. Wong D. Web site provides education, information on dental decay, cavities. Dent Today 2000;19:32-36.