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A survey on misunderstanding of dental scaling in Hong Kong

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Abstract: There is no information on the misunderstanding of dental scaling; on whether the misunderstanding affects the general public to go for scaling or not; on complaints about dental scaling and suggestion of who should educate the public in the existing literature. This study gives the information from the general public in Hong Kong. *Methods:* A cross-sectional survey by telephone interview on a random sample of 1412 subjects aged 13 years and above in Hong Kong was conducted from 3rd January to 15th February 2006. *Results:* More females had received scaling (adjusted OR = 1.73, 95%CI 1.31–2.29 $P < 0.001$), 51–60 years age group had the highest scaling experience (adjusted OR = 2.69, 95% CI 1.55–4.68, $P < 0.001$). Higher education was related to scaling experience ($P < 0.001$). Of the subjects with complete data, 22.5% (307/1364) had never received dental scaling, 17.9% (55/307) did not understand the purpose, 12.1% (37/307) replied that it would make the teeth thinner, 11.4% (35/307) replied that the gum space would become wider, and 11.4% (35/307) stated that scaling would damage the gum. In all, 45.9% (298/649) of the subject reported bleeding, 33.7% (139/413) sensitivity, 40.5% (62/153) smaller teeth and 23.9% (84/351) widened gum space because of mistakes made during the procedure; 8.6% (56/649) of those who experienced bleeding, 17.8% (27/152) of those who reported the teeth became smaller and 12% (42/350) of those who stated that the gum space became wider intended to reduce the frequency, delay or not go for scaling. A total of 79.6% (841/1057) experienced one of the perceived problems; 27.8% (234/841) had complained about scaling. *Conclusion:* This study shows a common lack of knowledge of dental scaling in the Hong Kong population. Patients should be better informed about the aim before the procedure.

Key words: bleeding; dental scaling; gum space; sensitivity

Introduction

Background

Scaling is the treatment for periodontal disease (1). However, many people in Hong Kong go for scaling for simple cleaning and cosmetic purposes. This procedure is often called 'washing teeth' in Chinese. Hence, many people do not know they have received a treatment for the disease even after the procedure. Misunderstanding of scaling procedure leads to delay or avoidance of the treatment or complaints against dentists. Bleeding during scaling and sensitivity after scaling are misunderstood as mistakes or damages that have been made during the procedure. This study presents the data about a survey on misunderstanding of dental scaling in Hong Kong.

Objectives

1. To investigate the percentage of subjects who had misunderstanding of dental scaling among those who had no scaling experience.
2. To investigate the knowledge of bad experience during and after dental scaling.
3. To investigate the intention to go for dental scaling after having a bad experience.
4. To investigate complaints about dental scaling.
5. To investigate public opinion of who should take the responsibility to educate the public about dental scaling.

Literature review

Periodontal disease and scaling

Dental plaque/biofilm is a cause of periodontal disease (1–5). Calculus is the calcified form of plaque. The surface of calculus is very rough, which further enhances the accumulation of plaque. The mechanical removal of dental plaque and calculus is the treatment of periodontal disease from mild to severe form (1, 4–6).

Dental plaque causes the recession of periodontal tissue and leads to the exposure of the root (7). The recession progresses slowly and the site is covered by the calculus (7). Removal of the calculus immediately exposes the root surface and sensitivity may be experienced by the patients (8).

Misunderstanding and misconception of dental scaling

The inflammation of the gingivae caused by the plaque is ignored by the patients or the patients avoid brushing or touching the gingivae in routine oral care. Bleeding of the inflamed gingivae during the scaling procedure is because of the disease but many patients do not understand.

The revealing of the original size of the teeth and the gaps between the teeth leads to misunderstanding, and some patients thought that procedural mistakes were made by the operators.

Searching in Pubmed and Ovid was performed. Searching of 'dental scaling' and 'misunderstanding' resulted in no items. When 'dental scaling' and 'misconception' were used to search, one paper was found but this was not related to misconception of dental scaling.

When 'dental scaling' and 'adherence' were used, two papers were found. One study was about the root surface response following different treatments. In a paper entitled 'Adherence to periodontal maintenance in Tehran, Iran. A 7-year retrospective study' adherence of treatment in different age, gender, diagnosis, prognosis, procedures performed and maintenance intervals were studied (9). The results and conclusion were that the compliance of periodontal treatment, i.e. scaling, root planning and surgery, was low. The authors speculated different reasons for the low compliance, and one of the eight speculations was that there existed a misconception in periodontal treatment, particularly about scaling and root planning, in that people believed that the treatment did more harm (i.e. removal of tooth structure from the root of the tooth) than good to the tooth. However, this was just a speculation, which was not the objective of the study. The speculation was not supported by the evidence. Dentists might think patients had this misconception but there were no studies of misconception of dental scaling. It was the only sentence that could be found in all papers searched related to the misconception of dental scaling.

Thirty-one papers were found when 'dental scaling' and 'compliance' were used for the search; when 'dental scaling' and 'follow up' were used, there were 369 papers; 440 papers were found when 'dental scaling' and 'bleeding' were used; 96 papers were found when 'dental scaling' and 'sensitivity' were used; however, they were not related to the misconception of dental scaling.

Data in Hong Kong related to periodontal disease and dental scaling

Periodontal disease is a common disease affecting most of the population from the mild to severe form. In Oral Health Survey 2001 in Hong Kong, caries and periodontal disease, two common dental diseases were studied, the five groups of

subjects were 5, 12, 35–44, 65 to 74-year old non-institutionalized old persons and 65-year old or above institutionalized old persons. The needs for dental scaling were assessed for last four groups through oral examination. The last four groups were also requested to complete a questionnaire. There were three sets of questionnaires: one for the 12-year-old group, one for the 35- to 44-year-old group and the 65- to 74-year-old non-institutionalized group and the last one for the 65- to 74-year-old institutionalized old persons. All questionnaires were sought through written request to the Department of Health.

The assessed need was the need for scaling diagnosed by the examiners in the survey and the perceived need was the need answered by the patient in the related question in the questionnaire. The assessed need for the 12-year-old group was 59.5%, the data for perceived needs were not shown (10, 11). It was confirmed that perceived need of dental scaling was not asked in the questionnaire in this age group. From the question 23 'Which of the following methods could prevent periodontal disease?' The options were regular dental check up, brushing and flossing and other unrelated methods (12). Even when the subject chose dental check up, they might not have known the treatment of periodontal disease was scaling. The subject might interpret other treatment e.g. medication prescribed by the dentist. It meant that the knowledge that scaling was a treatment for periodontal disease was not assessed.

The perceived need and the assessed need for dental scaling were 18.4% and 95.9% respectively in the 35 to 44-year-old group (13). The perceived need and the assessed need were 3.9% and 98.3% respectively in the 65 to 74-year-old non-institutionalized older persons group; the perceived need and assessed need were 0.6% and 49.9% respectively in the age 65 or above institutionalized old persons group (14, 15). From question 30 of the original questionnaire for adults and non-institutionalized older persons and from question 22 of the questionnaire for the institutionalized older persons, the question asked was 'Do you think you need dental treatment now?' (16, 17). Then 'What kind of treatment do you need?' was asked. Dental scaling and gum (periodontal) treatment were two options; options of treatment for other problem like dentures and filling, etc. were given. It meant that even when the patient chose dental scaling, it did not indicate that the patient thought dental scaling was a treatment for the periodontal disease. The might have thought that they needed to clean the teeth for cosmetic purpose or that scaling was a preventive measure of caries.

No matter what the patient thought about dental scaling, these figures show that the perceived needs of different groups for dental scaling were very low compared to the assessed needs.

Knowledge attitude and behavior of periodontal disease

Searching of 'knowledge attitude and behavior' and 'periodontal disease' resulted in 96 papers.

In 'Oral health knowledge, attitudes, and practices of Chinese adults' (18) wherein the author studied the perceived causes and preventive method of dental caries and gum disease in Southern China, the options for prevention of gum disease was visit to a dentist and the subjects might not know scaling was the treatment of gum disease.

In 'Oral health attitudes, knowledge and behavior among school children in North Jordan' (19), 'bushing and flossing', 'soft food', 'vitamin C' and 'don't know' were the options for awareness of periodontal and gingival health among the study population. The options of 'The management sought in your last visit' were 'scaling', 'check the teeth', 'gum treatment', 'put fluoride', 'fillings', 'extractions' and so on. The patient might not have known scaling was the treatment of gum disease; they chose the option as they had that treatment, it might be simply for cosmetic and cleaning purpose or they thought the dentists suggested them to have regular cleaning, as it was a routine procedure of check up.

In 'Knowledge on periodontal disease before and after a mass media campaign' (20) the question asked for treatment for periodontitis was set in a clear way; there was a list of treatments and examinations for caries and periodontitis, scaling, gingival surgery, filling, X-ray examination, filled teeth and so on; they asked the subject to choose them under caries or periodontitis; therefore, the answers should be correctly interpreted by the subjects if they chose scaling under the periodontitis.

In the 'Present state of dental health knowledge, attitudes/behavior and perceived oral health of Japanese employees' (21), one option in the knowledge items was 'regular dental visits only to remove tartar would keep one from periodontitis', this gave a clear choice for the subjects, but in the behavior items, they used ' I go to see the dentist regularly' as a description.

For all the other related papers, the terms 'regular dental check', 'dental visits' or 'see a dentist' were used in the behavior. Limited clear treatment options of scaling, professional removal of calculus (tartar) or plaque were used in the related studies in knowledge attitude and behavior as regards periodontal disease.

Public opinion of education of dental scaling

Searching of 'public opinion' and 'dental scaling', 'public views' and 'dental scaling' resulted in no item. Searching of 'education' and 'dental scaling' resulted in 134 papers. They were not related to the public opinion of education of dental scaling or education of dental scaling to general public. When 'health promotion' and 'dental scaling' were used, three papers were found but they were not related to the public opinion of education of dental scaling or education of dental scaling to general public.

The theory of reasoned action

Ajzen and Fishbein developed the Theory of Reasoned Action in 1980 (22). In this theory, a person's attitude towards a behavior consists of: 1) a belief that that particular behavior leads to a certain outcome; and 2) an evaluation of the outcome of that behavior. If the outcome seems beneficial to the individual, he or she may then intend to or actually participate in a particular behavior. Also included in one's attitude towards a behavior is his/her concept of the subjective norm. Ultimately, one's attitude toward a behavior can lead to an intention to act (or not to act as the case may be). This intention may or may not lead to a particular behavior.

From all the papers found, it indicates that patient might not know dental scaling is the treatment of periodontal disease, that there is a knowledge gap about dental scaling and the misunderstanding, that there is no information about whether the misunderstanding affects the general public to go for scaling or not and there is also no suggestion of who should educate the public.

In the present survey on misunderstanding of dental scaling in Hong Kong, the lack of knowledge of scaling, i.e. the misunderstanding of the scaling procedure was studied. The intention not to go for dental scaling because of the misunderstanding was also studied. It was concentrated on the subjects who had the dental scaling experience. It was not a study of the knowledge, attitude and behavior. The data of attitude of those subjects who had received scaling were not collected.

Methods

Subjects

The study population consisted of the Cantonese and English speaking people aged 13 years and above in Hong Kong. Subjects aged 13 years and above were included, as the data in Oral Health Survey 2001 presented the assessed need for dental scaling for subjects aged 12 years as mentioned in the literature review. Institutional Review Board of the University of Hong Kong approved the study on 21 October 2005.

Sample size calculation

A cross sectional survey by telephone interview on a random sample aged 13 years and above in Hong Kong was conducted. Level of confidence used was 95%, alpha at 0.05, the precision was ±3%, as there was no previous information, 0.5 was used as the estimated proportion, so a sample size of 1068 had to be used.

Questionnaire design

Chinese and English questionnaires were constructed; they consisted of 20 questions and included five sections: reasons why the subject had not received dental scaling, experience during or after dental scaling, complaints about dental scaling and the responsibility of education of dental scaling to public and demographic background.

The questionnaire was pilot tested in a private dental clinic with 87 patients. Face validity, length and comprehensibility were pre-tested before adoption. Test–retest reliability test was also conducted on 42 patients on days 1 and 8 the results were identical.

Interviewers first asked the subjects 'Have you ever received dental scaling?' With those who had not received dental scaling in their lifetime, question 2 'Why haven't you gone for scaling?' was asked. Then question 17 'Who should take the responsibility to educate the public about dental scaling?' was asked. Demographic data were collected at the end.

The main question asked with all subjects who had received dental scaling was: 'Was there any bleeding during the scaling'? Interviewer asked the subject why there was bleeding or the interviewer jumped to another question if there was no bleeding. After these questions about perceived bad experience or condition about the scaling experience were asked, data on the reasons for the condition faced and the complaints that the subject made were collected. Then question 17 'Who should take the responsibility to educate the public about dental scaling' was asked and finally the demographic data were collected. In all questions, subjects who chose the option ''other reasons'' were asked to specify the reason.

Interviewers and training

Eight experienced telephone interviewers for public opinion were recruited. They all had post secondary education

background and spoke Chinese and English. A 3-h training was provided to them. They were calibrated. One interviewer asked the subject over a hands-free telephone, and then eight interviewers entered the answers from the subjects in the questionnaires. Five subjects were asked totally and the statistics programme SAS was used to calculate the kappa statistics to assess the agreement among the interviewers. There were 20 questions, 18 of them were identical for all interviewers, kappa statistics = 0.87, $P < 0.0001$ and 0.9374, $P < 0.0001$ for question 4 and 17 respectively, showing very good agreement.

Questionnaires were put in to the computer assisted telephone interview systems CATI. The interviewers discussed with one another, if they were not certain with the options which the subjects chose. They typed the exact words to the questionnaire if they were not certain. Half of the telephones were installed with recording system and the interviewers were randomly assigned to the seats with recording equipment, therefore, around half of all the interviews were recorded. Compact disc records were reviewed by me and discussions with interviewers were performed during the data collection process. I also monitored the whole data collection process through direct supervision or through the internet to enter the CATI system.

Telephone interview

Household telephone number samples were randomly found in the telephone directory. A computer generated random four digit number was added to the sample number, the sum of the two numbers became a new eight digit telephone number. Then a new random telephone list was generated. Non- household numbers and numbers not in use were excluded. When the person told the interviewer the telephone number belonged to a company, an office or an organization, the telephone number was defined as a non-household number. After the interviewer dialed the number, a long sound indicated that the number was not in use. The special sound for fax number was distinguishable and then was excluded. As a result, 5068 telephone numbers were excluded, including 633 fax numbers, 3453 invalid numbers, 87 call forwarding numbers, 847 non-household numbers and 48 numbers with technological problems.

The second stage was to select randomly one subject aged 13 years and above. Subjects were those who would be the first one with the nearest birthday among those aged 13 years and above. After self introduction, the interviewer explained the purposes of the study and then oral consent was sought. The interviewee could reject any question that he/she did not want to answer. The interviewer asked the question 'Can I talk to the member who will be the first one to have the nearest birthday?' From 3 January to 15 February 2006, a total of 2547 households were contacted, 1097 (43.1%) household rejected the interview before the introduction of the study or rejected the interview before the screening of subject i.e. during the introduction or before answering the question 'Is there any person aged 13 years or above in the household?'. Thirty-eight (1.5%) did not complete the interview, 1412 (55.4%) completed the interview. The response rate was 55.4% (1412/2547).

The telephone interview was stopped when the number of subjects who had received dental scaling was 1084. i.e. slightly more than the calculated sample size of 1068, as some of those who had received scaling might refuse to answer some questions.

Analysis

The SPSS 14.0 for windows was used for analysis (SPSS Inc., Chicago, IL, USA). Multiple logistic regression was used to calculate the odds ratios in the lifetime experience of dental scaling. The level of statistical significance was set at 0.05.

In Crosstabs procedure, Pearson chi-square test was used to generate test of independence. Level of statistical significance was set at 0.05.

Results

Demographics

Data on gender, age and education level of the sample were compared with the Hong Kong general population and subjects who did not answer any of these three demographic data were not used in the analysis. Of 1412 subjects, 48 were excluded. As 1364 subjects were aged 13 years and above in this survey and the published data from the Census and Statistics Department were in the age groups of 10–14, 15–19, etc. data on age 13–20 were not available for comparison with the age groups in this survey. Hence, data on year-end population by single age and sex of end-2005 population were sought by written request to the Demographic Statistics Section of the Department (23). The population data, provided by the Census and Statistics Department, of people aged 13 years and above were used and are presented in Table 1.

The age and gender of the 1364 subjects were compared with the calculated figures of the population in Hong Kong. Small, medium and large effect size are indicated, respectively, by 0.2, 0.5 and 0.8 (24).

The published data from the department for the education attainment were for those aged 15 and above; therefore, a compiled table of education attainment of those aged 13 and above was sought through written request to the Demographic

Table 1. **Respondents' characteristics**

	No. of respondents (n = 1364)	Proportion of respondent (%)	No. of population (n = 6 157 300)	Proportion of population (%)	Effect size	Overall mean difference	SD
Sex							
Female	814	59.7	3 244 500	52.69	0.20	6.98	0.490
Male	550	40.3	2 912 800	47.31		−6.98	0.489
Age							
13–20	230	16.9	712 800	11.6	0.31	5.29	0.242
21–30	227	16.6	952 400	15.5		1.17	0.269
31–40	256	18.8	1 208 500	19.6		−0.86	0.310
41–50	286	21.0	1 361 500	22.1		−1.14	0.337
51–60	169	12.4	885 100	14.4		−1.98	0.231
61–70	107	7.8	478 100	7.8		0.08	0.143
71–80	69	5.1	389 700	6.3		−1.27	0.107
80+	20	1.5	169 200	2.8		−1.28	0.040
Education level							
Primary or below	246	18.0	1 492 000	24.6	0.22	−6.52	0.332
Secondary	748	54.8	3 206 300	52.8		2.06	0.497
Tertiary or above	370	27.1	1 377 000	22.7		4.46	0.372

The values 0.2, 0.5 and 0.8 indicate small, medium and large effect size, respectively (24)

Statistics Section responsible for the General Household Survey of the department (25). Table 1 shows the comparison of education attainment of the respondents and the population aged 13 and above in Hong Kong. The samples had more females; more subjects aged 13–20, fewer subjects who had primary education and more subjects who had tertiary education.

The total number of residential telephone lines in 2005 was 2.116 million, while the number of domestic households in Hong Kong from January 2006 was 2.292 million; it was estimated the penetration rate of residential telephone lines was more than 90% (26, 27). Lifetime experience of dental scaling is presented in Table 2. Tables 3–10 represent answers to the questions. Tables 11–14 present the different aspects of respondents' complaints and Table 15 shows that there was no relationship between knowledge score and complaint history.

Discussion

Summary of findings

This study showed that the lack of knowledge of dental scaling was related to the intention to go for scaling. In all 8.6%

Table 2. **Lifetime experience of dental scaling**

	Had received scaling (n = 1057)	Had never received scaling (n = 307)	Total (n = 1364)	Adjusted OR	95.0% CI	P-value
Sex						
Male	403 (73.3)	147 (26.7)	550	1		
Female	654 (80.3)	160 (19.7)	814	1.73***	1.31–2.29	<0.001
Age						
13–20	171 (74.3)	59 (25.7)	230	1		
21–30	177 (78.0)	50 (22.0)	227	0.85	0.54–1.35	0.495
31–40	223 (87.1)	33 (12.9)	256	2.03**	1.25–3.29	**0.004**
41–50	238 (83.2)	48 (16.8)	286	2.03**	1.29–3.21	**0.002**
51–60	142 (84.0)	27 (16.0)	169	2.69***	1.55–4.68	<0.001
61–70	68 (63.6)	39 (36.4)	107	0.92	0.53–1.60	0.773
71–80	31 (44.9)	38 (55.1)	69	0.61	0.32–1.17	0.137
80+	7 (35.0)	13 (65.0)	20	0.35*	0.12–0.99	**0.047**
Education level						
Primary	137 (55.7)	109 (44.3)	246	1		
Secondary	591 (79.0)	157 (21.0)	748	3.03***	2.06–4.46	**<0.001**
Tertiary	329 (88.9)	41 (11.1)	370	7.41***	4.52–12.15	**<0.001**

*P < 0.05, **P < 0.01, ***P < 0.001
Each odds ratio has been adjusted for the other two variables
The values given in parentheses are percentages.

(56/649) of subjects who had the experience of bleeding, 17.8% (27/152) of those who reported the teeth became smaller after the procedure and 12% (42/350) of those who stated that the gum space became wider after the procedure intended to reduce the frequency of scaling, delay the scaling or not go for scaling (Tables 8–10).

In total, 79.6% (841/1057) of the subjects had the experienced at least one of the perceived problems; 87% (732/841) did not have the correct knowledge of the perceived problems, 27.8% (234/841) of the subjects who had bad experience had complaints about it, they had complained about the mentioned problems, the technique of the dentist or a few of them lodged complaint against the dentists with the authority.

Most subjects thought that they should ask the dentist when there was a problem or the dentist should regard it his/her responsibility to educate the patient about dental scaling.

Among those who had never received dental scaling, 40.4% thought their teeth were white and did not need scaling, 17.9% did not understand the purpose of scaling, 12.1% thought scaling would make the teeth smaller, 11.4% thought gum space would become wider and 11.4% thought scaling would damage the gum. It showed a common lack of knowledge about scaling (Table 3).

Strengths and limitation

This survey is the first one to present data on misunderstanding of dental scaling among those who had never received it and the patients who had the perceived bad experience during and after the procedure. It is also the first study to present the public opinion about who should educate the general population about dental scaling.

The telephone penetration rate in Hong Kong is high. The response rate of the survey was 55.4%. It was a reasonable response rate when compared to the response rates ranged from 44% to 65.8% in other telephone surveys in Hong Kong (28–37) (Table 1).

The representativeness of the sample was fair as the effect sizes for different demographic characteristics ranged from 0.20–0.31. The sample had more females, more subjects aged 13–20 years, fewer subjects who had primary education and more subjects who had tertiary education. For Tables 3–10 and 16, the relationship between the chosen options with gender, age and education was investigated by using chi-square, most of the chosen options were not related to these three demographic data. There will be too many tables, if they were presented in this paper. All the proportions for the total sample were crude as they were not weighted or adjusted. This is

Table 3. **Reasons for not having gone for scaling**

Q2, Why haven't you gone for scaling?	
Reasons	Total (n = 307)
My teeth are white, there's no need	124 (40.4)
Too expensive	94 (30.6)
Do not understand the purpose of scaling	55 (17.9)
Uncomfortable during the procedure	47 (15.3)
Painful	47 (15.3)
Scaling will make my teeth become thinner	37 (12.1)
Gum space will get wider after scaling	35 (11.4)
Scaling will damage the gum	35 (11.4)
No teeth	26 (8.5)
No time	19 (6.2)
Other reasons	51 (16.6)

Subjects can choose multiple answers
The values given in parentheses are percentages.

Table 4. **Reasons for the gum bleeding**

Q4.What caused the gum bleeding?	
Reasons	Total (n = 649)
Gum was damaged, procedure error because of poor technique	31 (4.8)
Gum was damaged, procedure error which was difficult to avoid	267 (41.1)
Bleeding of gum spontaneously	179 (27.6)
Other reasons	29 (4.5)
Don't know	143 (22.0)

The values given in parentheses are percentages.

Table 5. **Reasons for sensitivity**

Q6. What was the reason for sensitivity?	
Reasons	Total (n = 413)
The teeth became thinner because of procedural error (bad technique)	22 (5.3)
The teeth became thinner because of the procedural error (difficult to avoid)	117 (28.3)
The teeth were sensitive themselves	113 (27.4)
Other reasons	33 (8.0)
Don't know	128 (31.0)

The values given in parentheses are percentages.

Table 6. **Reasons for the teeth becoming smaller or thinner**

Q8. What was the reason for the teeth becoming smaller or thinner after scaling?	
Reasons	Total (n = 153)
The teeth became thinner or smaller, because of mistakes (poor technique)	13 (8.5)
The teeth became thinner or smaller, because of mistakes (difficult to avoid)	49 (32)
The original size of the teeth was revealed	57 (37.3)
Other reasons	6 (3.9)
Don't know	28 (18.3)

The values given in parentheses are percentages.

Table 7. **Reasons for space widened after scaling**

Q10.What was the reason for the space widened after dental scaling?

Reasons	Total n = 351
The teeth became thinner or damaged because of error (poor technique)	9 (2.6)
The teeth became thinner or damaged which was unavoidable	49 (14.0)
The gum was damaged because of error (poor technique)	4 (1.1)
The gum was damaged but it was unavoidable	22 (6.3)
The original shape of teeth and gum was revealed	196 (55.8)
Other reasons	15 (4.3)
Don't know	56 (16.0)

The values given in parentheses are percentages.

Table 8. **The intention to go for scaling after having bleeding experience**

Q11. Will gum bleeding during scaling prevent you from going for scaling?

Answers	Total (n = 648)
Yes, it prevents me from going (dentist is not good)	11 (1.7)
Yes, I will go less frequently or delay (dentist is not good)	22 (3.4)
No, but I go to another dentist	29 (4.5)
No, it won't affect me because this is very difficult to avoid	290 (44.8)
No, it won't affect me since the gum bled itself	68 (10.5)
No, it won't affect me but I don't know the reason of bleeding	77 (11.9)
No, it won't affect me because of other reasons	20 (3.1)
No, it won't affect me because routine cleaning is necessary	108 (16.7)
Yes, I will go less frequently or not go for scaling (other reasons)	23 (3.5)

The values given in parentheses are percentages.

Table 9. **The intention to go for scaling when the teeth became smaller after scaling**

Q12. Will the realizing of the thinner teeth after scaling prevent you from going for scaling?

Answers	Total (n = 152)
Yes, it prevents me from going for scaling (dentist is not good)	8 (5.3)
Yes, I will go less frequently or delay (dentist is not good)	8 (5.3)
No, but I go to another dentist	9 (5.9)
No, it won't affect me because this was very difficult to avoid	41 (27.0)
No, it won't affect me (original size of the teeth was revealed)	18 (11.8)
No, it won't affect me but I don't know the reason	16 (10.5)
No, it won't affect me because of other reasons	7 (4.6)
No, it won't affect me because routine cleaning is necessary	34 (22.4)
Yes, I will go less frequently or not go for scaling (other reasons)	11 (7.2)

The values given in parentheses are percentages.

Table 10. **The intention to go for scaling when the gum space was widened after scaling**

Q13. Will the realizing of bigger space between two teeth or the gum and teeth prevent you from going for scaling?

Answers	Total (n = 350)
Yes, it prevents me from going (dentist is not good at scaling)	8 (2.3)
Yes, go less frequently or delay (dentist is not good at scaling)	12 (3.4)
No, but I go to another dentist	18 (5.1)
No, it won't affect me because this is very difficult to avoid	85 (24.3)
No, it won't affect me (original size of teeth and gum was revealed)	95 (27.1)
No, it won't affect me but I don't know the reason	35 (10.0)
No, it won't affect me because of other reasons	8 (2.3)
No, it won't affect me because routine cleaning is necessary	67 (19.1)
Yes, I go less frequently or not go for scaling (other reasons)	22 (6.3)

The values given in parentheses are percentages.

a limitation, and weighting is suggested for further analysis. However, because the effect sizes were not too big, and many of the proportions did not differ significantly between gender, age and education, such weighing would not change the crude proportions substantially. Calculating the proportions adjusted for or weighted by sex, age and education simultaneously is beyond the scope of this article.

There was no re-test for the subjects in the telephone survey. It was subjected to recall bias, but the reliability test for 1 week was identical in the pilot. For history of complaint, the proportion of complaint because of one or more of the bad experiences was presented. As this was a cross-sectional study, the data of ever had complained about the mentioned perceived bad experience were collected after the answer was given of such knowledge. The patient might have had the wrong knowledge and then complained, but the dentist could have taught him or her afterwards, therefore, the patient might have the correct knowledge in this survey but with a history of complaint (Table 15).

Recommendation for clinical practice

Most subjects like direct communication between the dentist and patient rather than the information given by associations, government or university.

Table 11. **Complaint about the technique of the dentist**

Q14 Have you ever complained about the technique to the original dentist or another dentist?				Total (n = 841)	Chi-square test	P-value	Linear-by linear association	P-value
Gender		Female (n = 514)	Male (n = 327)					
Yes		29 (5.6)	16 (4.9)	45 (5.4)	0.22	0.638		
No		485 (94.4)	311 (95.1)	796 (94.6)				
Age	13–30 (n = 256)	31–60 (n = 516)	60+ (n = 69)					
Yes	12 (4.7)	26 (5.0)	7 (10.1)	45 (5.4)	3.45	0.178	1.744	0.187
No	244 (95.3)	490 (95.0)	62 (89.9)	796 (94.6)				
Education level	Primary (n = 102)	Secondary (n = 475)	Tertiary (n = 264)					
Yes	5 (4.9)	34 (7.2)	6 (2.3)	45 (5.4)	8.04	0.018	3.464	0.063
No	97 (95.1)	441 (92.8)	258 (97.7)	796 (94.6)				

The values given in parentheses are percentages.

Table 12. **Complaint about the perceived problems**

Q15 Have you ever complained about the problem to the original dentist or another dentist?				Total (n = 841)	Chi-square test	P-value	Linear-by linear association	P-value
Gender		Male (n = 514)	Female (n = 327)					
Yes		137 (26.7)	80 (24.5)	217 (25.8)	0.50	0.479		
No		377 (73.3)	247(75.5)	624 (74.2)				
Age	13–30 (n = 256)	31–60 (n = 516)	60+ (n = 69)					
Yes	69(27.0)	136 (26.4)	12 (17.4)	217 (25.8)	2.81	0.245	1.409	0.235
No	187(73.0)	380 (73.6)	57 (82.6)	624 (74.2)				
Education level	Primary (n = 102)	Secondary (n = 475)	Tertiary (n = 264)					
Yes	20(19.6)	131 (27.6)	66 (25)	217 (25.8)	2.92	0.233	0.275	0.600
No	82(80.4)	344 (72.4)	198 (75.0)	624 (74.2)				

The values given in parentheses are percentages.

Table 13. **Complaint against the dentist to the authority**

Q16 Have you ever complained against the dentist to the authority of the dentists?	
Yes	3 (0.4)
No	838 (99.6)
Total	841

The values given in parentheses are percentages.

It is recommended to educate the patient about periodontal disease and scaling, particularly the reason for bleeding and sensitivity, and the treatment for sensitivity before the procedure.

Recommendations for public health and policy

There is one health promotion advertisement about periodontal disease produced by the Department of Health, it is broadcast periodically; it mentions the key points of brushing, reminds the audience to use floss and go for scaling per year. However, 40.4% of those who had not received scaling stated that their teeth were white; there was no need to go for scaling. Of them, 17.9% did not know the purpose of dental scaling (Table 3); it seems that the advertisement does not provide the clear message that scaling is the treatment of periodontal disease or the advertisement cannot reach them.

Associations, which represent dentists, are recommended to co-operate with the Department of Health to produce a better and clearer health promotion advertisement for the general public.

From Tables 8–10, 16.7% subjects who bled during the scaling procedure, 22.4% subjects who reported that their teeth became smaller after they had received scaling and 19.1% subjects who stated the gaps between the teeth became wider after the scaling procedure did not have the correct knowledge, but they would not be affected as they stated that routine cleaning was necessary. Some of them also specified that their employers and/or insurance covered dental scaling, habitual and routine cleaning takes an important role, or company insurance and benefit plans are important. The assessed need for scaling was 95.9% for the

Table 14. **Complaint about dental scaling**

Question 14 Have you ever complained about scaling?									
	One problem (n = 340)	Two problems (n = 312)	Three problems (n = 151)	Four problems (n = 38)	Total (n = 841)	Chi-square test	P-value	Linear-by-linear association	P-value
Yes	80 (23.5)	85 (27.2)	55 (36.4)	14 (36.8)	234 (27.8)	10.27	0.016	9.397	0.002
No	260 (76.5)	227 (72.8)	96 (63.6)	24 (63.2)	607 (72.1)				

The values given in parentheses are percentages.

Table 15. **Knowledge score and complaint history**

Mark	No complaint (n = 607)	Any one form of complaint (n = 205)	Any two forms of complaint (n = 27)	All three forms of complaint (n = 2)	Total (n = 841)
0	373 (73.0)	122 (23.9)	15 (2.9)	1 (0.2)	511
0.25	9 (69.2)	4 (30.8)	0 (0.0)	0 (0.0)	13
0.33	31 (64.6)	15 (31.3)	2 (4.2)	0 (0.0)	48
0.5	93 (73.2)	29 (22.8)	4 (3.1)	1 (0.8)	127
0.67	19 (67.9)	7 (25.0)	2 (7.1)	0 (0.0)	28
0.75	3 (60.0)	2 (40.0)	0 (0.0)	0 (0.0)	5
1	79 (72.5)	26 (23.9)	4 (3.7)	0 (0.0)	109

The values given in parentheses are percentages.

Table 16. **Public opinion about education of dental scaling**

Q17. Who should take the responsibility to educate the public about the dental scaling?	
Answers	Total (n = 1364)
Patient should ask when there is any problem	1194 (87.5)
Private dentist (own responsibility) to educate	1136 (83.3)
University (train the dentist to educate the patient)	1099 (80.6)
Associations representing the dentists	1030 (75.5)
Hong Kong Government	948 (69.5)
University	541 (39.7)
Schools	160 (11.7)
Parents	61 (4.5)
Mass media	59 (4.3)
Others	182 (13.3)
Subjects can choose multiple answers	

The values given in parentheses are percentages.

35 to 44-year-old adults in the Oral Health Survey 2001 (13).

It gives the evidence for the dental profession to suggest to employers to add this benefit to their employees if they are going to give the latter some fringe benefits anyway.

Recommendation for further studies

As the crude proportion of bleeding and sensitivity after dental scaling was high, but most subjects did not know the true reason of them, the original treatment aim might not be achieved. If patients still lack the knowledge of the periodontal disease even after the treatment, they do not know how to help themselves. They might avoid brushing the sensitive area or bleeding gum, but the disease could not be stopped. This is important to educate the patients.

Evaluation of the effectiveness of the education programme was not performed as it was not in the scope of this research.

Further study to evaluate the effectiveness of education of periodontal disease and scaling is suggested.

Attitude towards scaling by those who had scaling experience was not studied in the present survey because it was not in the scope of this research. Patient might or might not know that the main purpose of scaling is to treat periodontal disease. They might or might not aim at treating periodontal disease even if they know it.

- Further study of knowledge, attitude and behavior as regards brushing, flossing and scaling for the general population or plus more advance treatments like root planning and periodontal surgery in advanced cases is suggested.
- It is also suggested to study the purpose of going for scaling.
- The terms such as scaling, root planning, gum surgery or oral hygiene instruction should be used for extra questions in addition to dental visits or regular check up in studies related to treatment of periodontal disease.
- It is suggested to repeat modified surveys of this kind every 3–5 years for the surveillance of the disease. Repeated cross sectional surveys can monitor the trends for KAB in the general population.

- Prospective study is suggested to study the prevalence of complaint of different problems after receiving scaling. It could be used as the baseline for intervention studies for the effectiveness of education of periodontal disease and scaling.

Conclusion

This study shows a common lack of knowledge of dental scaling in the Hong Kong population. Patients should be better informed about the aim of and the result after scaling before the procedure. That dental scaling is a treatment for periodontal disease should be addressed in health promotion programs. This knowledge should be assessed in knowledge, attitude and behavior and effectiveness of education of periodontal disease studies in the future. As this is the first study to collect the data, the questionnaire design was mainly based on those with experience and then jumped to the follow-up question, it is suggested to ask all the same questions for the whole sample population for statistical purpose in the future.

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Conflicts of interest

No conflicts of interest declared.

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