

A Saito
C Tomita
Y Sato
G Cathcart

Perceptions of Japanese and Canadian dental hygiene students towards their profession

Authors' affiliations:

Atsushi Saito, Department of Clinical Oral Health Science, Tokyo Dental College, Tokyo, Japan; Miyagi Advanced Dental Hygienist College, Sendai, Japan
Chiaki Tomita, Private dental practice, Sendai, Japan
Yoko Sato, Miyagi Advanced Dental Hygienist College, Sendai, Japan
Ginny Cathcart, Centre for Instructional Development Vancouver Community College, Vancouver, BC, Canada

Correspondence to:

Atsushi Saito, DDS, PhD
Department of Clinical Oral Health Science
Tokyo Dental College
2-9-18 Misaki-cho, Chiyoda-ku
101-0061 Tokyo, Japan
Tel.: +81 3 5275 1721
Fax: +81 3 3262 3420
E-mail: atsaito@tdc.ac.jp

*A part of the study was presented at the 2nd annual meeting of the Japan Society for Dental Hygiene on 23 November, 2007.

Dates:

Accepted 25 August 2008

To cite this article:

Int J Dent Hygiene 7, 2009; 188–195
DOI: 10.1111/j.1601-5037.2009.00388.x
Saito A, Tomita C, Sato Y, Cathcart G. Perceptions of Japanese and Canadian dental hygiene students towards their profession.

© 2009 The Authors.

Journal compilation © 2009 Blackwell Munksgaard

Abstract: *Objectives:* The purpose of this study was to investigate perceptions towards the profession and level of self-esteem of Japanese and Canadian dental hygiene students. *Methods:* Third year dental hygiene students enrolled in a Japanese and a Canadian dental hygiene programme were asked to participate in a survey study. An instrument was developed to obtain students' opinions about the profession. The present study also explored dental hygiene students' levels of self-esteem, and the relationship with perceptions towards profession. *Results:* Scores for dimensions including 'Motivation', 'Expectation' and 'Environment' were significantly higher among the Canadian students over Japanese students. The level of explicit self-esteem of the Canadian students was significantly higher than that of the Japanese students, and it was positively correlated with their expectations of the profession. *Conclusions:* There were significant differences in perceptions between Japanese and Canadian dental hygiene students. It is suggested that educational strategies should be planned to positively influence the students' perceptions toward the profession and improve the level of self-esteem.

Key words: dental hygiene education; perception; profession; self-esteem

Introduction

Through the experiences of an international educational collaboration between Japan and Canada that was initiated in 2003 (1), there has been a general view among the Japanese dental hygiene students and faculty that the Canadian dental hygiene

students seem to be more active in learning and motivated to become dental hygienists. Since there was no empirical evidence to demonstrate that differences truly exist, it was decided that an exploratory study focusing on students' perceptions toward the profession should be undertaken. Human behaviours and perceptions are thought to be influenced by many psychological factors including self-esteem, so the present study explored students' self-esteem.

Studies regarding perceptions towards a profession have been conducted in nursing and other health care professions (2–5). The information obtained through these studies is considered important in evaluating the current status of education. In dental hygiene, however, information regarding student perceptions of the profession and its influencing factors is scarce.

Self-esteem is a positive or negative orientation toward oneself, an overall evaluation of one's worth or value. Self-esteem has been shown to be linked to social anxiety and is therefore related to fear of negative evaluation (6). Nursing students' levels of self-esteem have been well investigated (6–8). Andersson (7) reported that student nurses perceive nursing in a very traditional way and that their perceptions tend to be stable during the training period. The study also suggested that about one-third of the students develop a new perspective and a self-concept as a nurse during the course, but the traditional image of the nurse persists. In a study with Irish nursing students, Begley and White (6) reported that nursing students' self-esteem might be increased by expansion of intrinsic job characteristics, improving their job satisfaction and providing frequent positive feedback. The consequences of nursing student empowerment has been shown to be high self-esteem, motivation for learning and positive regard for placement (9).

In dental hygiene, however, little research has been conducted in this area. An attempt was made by Eda (10) to investigate the relationship between self-esteem and professional identity of Japanese dental hygiene students. More information is needed to understand dental hygiene students' feelings about themselves and the significance of this self assessment in dental hygiene education.

Self-esteem is often analysed as a variable in relation to cultural aspects. East Asians perceptions of life and work have been shown to be different from Westerners (11). The existence of cross-cultural differences in self-appraisal fit the stereotype of the modest East Asian. This contributes to the perceived view that East Asians have less positive self-concepts than Americans (12). The need for positive self-regard, as it is currently conceptualized, is not a universal concept, rather it is rooted in significant aspects of North American culture (13).

With these factors in mind, the following hypotheses were developed:

Hypothesis 1. Between Japanese and Canadian students, there are differences in their perceptions toward the profession of dental hygiene.

Hypothesis 2. Canadian dental hygiene students are more motivated to become dental hygienists when compared to Japanese students.

Hypothesis 3. There are certain relationships between students' perceptions towards the profession and self-esteem.

The term 'perception' was chosen to describe how the students view themselves, their environment, ways of thinking and feeling about dental hygiene and the opportunity to act in dental hygiene and educational situations.

Methods

Participants

The target sample included 3rd year dental hygiene students in the class of 2006 at Vancouver Community College (VCC), British Columbia, Canada and at Miyagi Advanced Dental Hygienist College (MADH) in Sendai, Japan. The VCC and MADH faculty members and students have been involved in an international exchange programme since 2003. The 3rd year students were selected to gain the views of students toward the end of their programme.

Approach

A survey with 10 items was developed in Japanese to obtain Japanese students' opinions about the profession. The following process was utilized to develop items 1 through 9 of the instrument. Two MADH educators developed a base instrument which was piloted with five MADH students and further refined based on their data.

The instrument was then translated into English for use with the Canadian students. The translation process involved the forward translation (14, 15) of the modified instrument. MADH faculty members, one dentist and one dental hygienist, fluent in both Japanese and English performed forward translation into English. For equivalence, both Japanese and Canadian faculty members were consulted to identify discrepancies, and adjustments were made for inconsistencies. The refined Japanese and English versions were used in the present study (Table 1).

Participants were asked to respond to a variety of questions involving rating scales and as well as other types of categorical

Table 1. The English version of the survey instrument (item 1–9)

1. Your age
2. How do you rate your present motivation to become a dental hygienist?
3. How do you rate your expectations for the profession?
4. How do you rate the professional environment for dental hygienists?
5. What was your initial reason for choosing dental hygiene as a career?
6. What aspect of dental hygiene appeals to you most?
7. How long do you plan to work as a dental hygienist?
8. As a dental hygienist, what area would you like to go into?
9. Would you like to start independent practice if allowed?

Table 2. Item 10 in the survey instrument. The Rosenberg self-esteem scale (16)

(1) On the whole, I am satisfied with myself.
(2) At times I think I am no good at all. R
(3) I feel that I have a number of good qualities.
(4) I am able to do things as well as most other people.
(5) I feel I do not have much to be proud of. R
(6) I certainly feel useless at times. R
(7) I feel that I'm a person of worth, at least on an equal plane with others.
(8) I wish I could have more respect for myself. R
(9) All in all, I am inclined to feel that I am a failure. R
(10) I take a positive attitude toward myself.

R, items with scores reversed for quantitative analysis.

options. For item 10, a self-esteem scale (16, 17) was used to assess levels of explicit self-esteem (18) (Table 2). A four-point rating scale was used for each of the subscale question. For the Japanese instrument, a Japanese version of the Rosenberg scale (19) was utilized, while original version was used for the English instrument.

The study was conducted under the aegis of the ethics committees of MADH and VCC.

Analysis

For statistical analysis of the quantitative data, a software package (InStat version 3.05 for Windows, GraphPad Software, La Jolla, CA, USA) was used. Thematic analysis was used to assess the interview data.

Results

A total of 75 surveys were returned. The response rates were 82% for MADH and 100% for VCC. The mean age of respondents was 20.9 (range 20–33) years for MADH and 27.3 (range 20–41) for VCC. Student records from MADH and VCC indicated that the percentage of students who enrolled in the

programme immediately after graduation from high school or university were 98% and 10%, respectively.

A summary of the responses to items 2, 3, 4 is shown in Table 3. As for the motivation to become a dental hygienist, the percentage of respondents whose answers were either ‘very high’ or ‘high’ was approximately 44% for MADH respondents and 95% for VCC respondents. The Japanese respondents who felt their motivations were ‘low’ and ‘very low’ accounted for 22% and 4%, respectively. The mean score for VCC respondents was statistically significantly higher ($P < 0.0001$) than that of MADH respondents (Fig. 1).

When asked to rate their expectations toward the profession, 29% of MADH respondents and 100% of VCC respondents gave a rating of ‘very high’ or ‘high’ (Table 4). The MADH respondents who felt their motivations were ‘low’ and ‘very low’ accounted for 15% and 5%, respectively. The mean score for VCC respondents was statistically significantly higher ($P < 0.0001$) than that of MADH respondents (Fig. 1).

When asked to rate the professional environment for dental hygienists, 11% of MADH and 95% of VCC respondents rated the environment as ‘very good’ or ‘good’. MADH respondents who felt the professional environment was ‘bad’ and ‘very bad’ accounted for 22% and 36%, respectively. The mean score for VCC was statistically significantly higher ($P < 0.0001$) (Fig. 1).

The students were asked to indicate their reasons for choosing dental hygiene as a career at the time of enrollment. The following values indicate the percentage of MADH respondents’ main reasons:

- 32% for obtaining professional license.
- 13% as a life time career.
- 11% having interest in health care.

The prevalence of VCC respondents’ reasons was somewhat different:

- 43% having interest in health care.
- 23% indicating monetary advantages.
- 9% influenced by family or relatives.
- 9% as a life time career.

The students were then asked to indicate the factors in dental hygiene that appeal to them. The following values indicate the percentage of MADH responses:

- 47% as professional license.
- 13% indicating acquisition of professional knowledge and skills.
- 13% indicating provision of professional care.

VCC responses were as follows:

- 25% as opportunity to provide healthcare or independent practice.
- 20% indicating monetary advantages.

Table 3. Summary of responses to items 2, 3, and 4

Items	Questions	Rating	n (%)		Binarization*
			MADH	VCC	
2. Motivation	How do you rate your present motivation to become a dental hygienist?	5. Very high	4 (7.2)	14 (70.0)	High
		4. High	20 (36.3)	5 (25.0)	
		3. Moderate	17 (30.9)	1 (5.0)	Low
		2. Low	12 (21.8)	0 (0)	
		1. Very low	2 (3.6)	0 (0)	
3. Expectation	How do you rate your expectations for the profession?	5. Very high	2 (3.6)	15 (75.0)	High
		4. High	14 (25.5)	5 (25.0)	
		3. Moderate	29 (52.7)	0 (0)	Low
		2. Low	8 (14.5)	0 (0)	
		1. Very low	3 (5.5)	0 (0)	
4. Environment	How do you rate the professional environment for dental hygienists?	5. Very good	0 (0)	8 (40.0)	Good
		4. Good	6 (10.9)	11 (55.0)	
		3. Moderate	35 (63.6)	1 (5.0)	Bad
		2. Bad	12 (21.8)	0 (0)	
		1. Very bad	2 (3.6)	0 (0)	

MADH, Miyagi Advanced Dental Hygienist College; VCC, Vancouver Community College.

*Ratings were grouped and expressed as either high or low as shown.

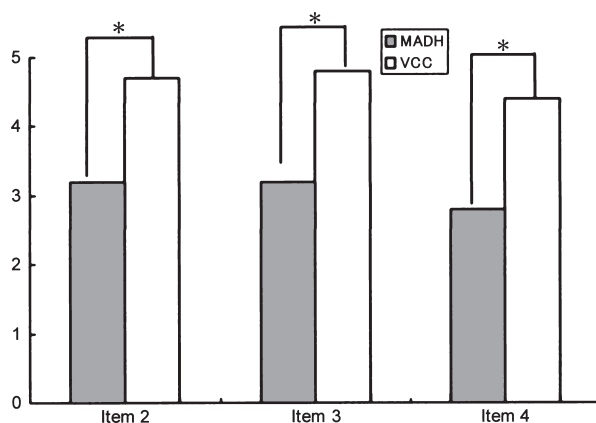


Fig. 1. Mean scores for items 2, 3, and 4 (* $P < 0.0001$, Mann-Whitney U test).

- 15% indicating acquisition of professional knowledge and skills.

When asked 'how long do you plan to work as a dental hygienist?', MADH responses were as follows:

- 27% as lifetime.
- 25% having no specific plan.
- 18% indicating until becoming a parent.

The corresponding responses from VCC respondents were 55, 35 and 5%, respectively.

When asked to indicate the professional area they wish to go into, prevention of periodontal diseases was the most prevalent answer, accounting for 33% of MADH and 30% of VCC respondents. The rest of MADH responses were:

- 20% as prevention of caries.
 - 14% indicating not sure.
 - 8% as paediatric dentistry, followed by orthodontics and aesthetic dentistry.
- The rest of VCC responses were:
- 17% indicating public health service.
 - 15% as caries prevention.
 - 13% as education, followed by oral health care for the elderly and orthodontics.

When asked how they felt about independent practice if allowed, only 2% of MADH respondents answered they would like to go into independent practice. In contrast, 40% of VCC respondents indicated that they would. The following reasons against the independent practice were provided from both MADH and VCC respondents:

- Practice management seems overwhelming.
- Better care can be provided by practice with dentists.
- Too much responsibility.

In item 10, levels of students' self-esteem were sought. There was a statistically significant difference in total scores of MADH and VCC respondents (Fig. 2). The mean VCC score was significantly higher than that of MADH in every subscale. The differences were highlighted by the result from the subscale 9 'All in all, I am inclined to feel that I am a failure'. 95% of VCC respondents chose 'Disagree' 'Strongly disagree', but the percentage was only 14.5% for MADH respondents.

When correlations between scores of items 2, 3, 4 and self-esteem level were examined, a statistically significant

Table 4. Relationship between scores for items 2, 3, 4 and self-esteem scores

			Self-esteem [<i>n</i> (%)]			
Items	Rating		Very low 0–10 pts	Low 11–20 pts	High 21–30 pts	Very high 31–40 pts
2. Motivation	MADH	High	0 (0)	4 (7.3)	18 (32.7)	1 (1.8)
		Low	1 (1.8)	8 (14.5)	21 (38.2)	2 (3.6)
	* <i>P</i> = 0.3655					
	VCC	High	0 (0)	0 (0)	4 (20)	16 (80)
Low		0 (0)	0 (0)	0 (0)	0 (0)	
N.D.						
3. Expectation	MADH	High	0 (0)	2 (3.6)	13 (23.6)	0 (0)
		Low	1 (1.8)	10 (18.2)	26 (47.3)	3 (5.5)
	* <i>P</i> = 0.2281					
	VCC	High	0 (0)	0 (0)	4 (20)	16 (80)
Low		0 (0)	0 (0)	0 (0)	0 (0)	
N.D.						
4. Environment	MADH	Good	0 (0)	1 (1.8)	5 (9.1)	0 (0)
		Bad	1 (1.8)	11 (20)	34 (61.8)	3 (5.5)
	* <i>P</i> = 0.3731					
	VCC	Good	0 (0)	0 (0)	4 (20)	15 (75)
Bad		0 (0)	0 (0)	0 (0)	1 (5)	
N.D.						

MADH, Miyagi Advanced Dental Hygienist College; VCC, Vancouver Community College.

**P*-value by chi-square test.

N.D., not determined.

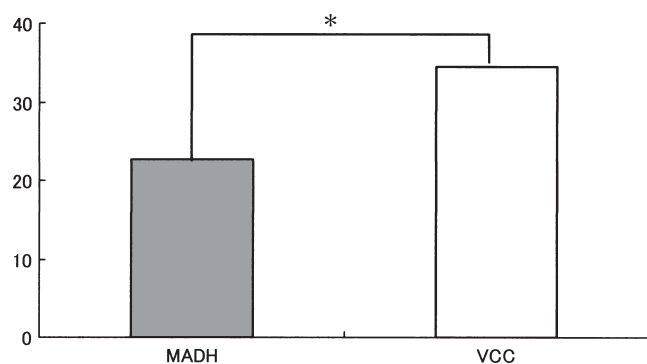


Fig. 2. Mean scores for items 10; the self-esteem scale (**P* < 0.0001, Mann–Whitney *U* test).

correlation ($r = 0.4928$, $P = 0.0273$, Spearman rank correlation) was found only between item 3 ‘expectation’ and self-esteem scores of VCC respondents. Although relationships were further sought using chi-square test, no significant relationships were found between scores of items 2, 3, 4 and self-esteem level (Table 4).

Discussion

The present study is the first to describe and compare the professional perceptions held by Japanese and Canadian dental hygiene students. The survey identified differences in stu-

dents’ perceptions toward the profession. First of all, the Canadian students’ motivation to become a dental hygienist was higher than that of the Japanese students. The age distribution of Canadian respondents was from 20 to 41 years, and the average age was approximately 6 years older than the Japanese students. The majority of the Canadian students had had working experiences before enrollment, while the majority of Japanese students enrolled the programme immediately after graduation from high school or university (personal communication with VCC faculty and from the student records). Taken together, it was speculated that alleged differences in maturity and social experiences influenced the students’ motivation. In opposition to this speculation, a study of Japanese nursing students found that students with previous work experiences were likely to have less incentive to become a nurse at school entry, although most studied enthusiastically while in school (20). Further studies with larger sample sizes could clarify the influence of social experiences on dental hygiene students’ motivation toward the profession.

The level of expectation for the profession was significantly higher for the Canadian students than the Japanese students. Dental hygiene in Canada has acquired many of the attributes of a profession (21, 22). It has been viewed that the level of public and political recognition of dentistry is lower in Japan than in Canada (23). The situation is considered the same in

dental hygiene. It is therefore possible that differences in social status of dental hygiene profession may have influenced the students' expectations in the present study.

When asked to indicate their reasons for choosing dental hygiene as a career at the time of enrollment and the appealing aspects of dental hygiene, 'professional license' was the most frequent answer among the Japanese students. In Japanese society, achieving a professional license has long been highly valued. Getting a license or certification itself can sometimes be a decisive factor in seeking education. A different trend was observed among the Canadian students. Given that they were older and presumably more mature, we speculated that the Canadian students possessed clearer images for the dental hygiene profession. In addition, the average salary of Canadian dental hygienists is estimated to be approximately twice that of Japanese dental hygienists. The financial rewards of the dental hygiene profession probably influence dental hygiene students' perceptions.

As for the students' future career plans, 'life time' was the most frequent answer among Japanese and Canadian students, although the percentage was higher for the Canadian students. The interview study with VCC faculty and students revealed that more versatile work style options are available for Canadian dental hygienists. For example, many Canadian dental hygienists choose to work part-time or freelance in temporary positions or as self employed contractors. The system of maternal leave and financial support is generally more generous in Canada. These factors may influence students' desires for future career plan.

When asked to indicate the area they would like to go into as a dental hygienist, the Japanese and Canadian students showed interest in preventive care. This trend was consistent with the unique practice of dental hygiene. A distinct pattern was observed for Canadian students. Their interest for 'public health service' may be a reflection of 'access to care' issue in North America (24).

Another trend observed in the responses of Canadian students was their interest in 'education'. This was further confirmed by the interview with VCC students in which several students indicated that they would like to become dental hygiene educators. Again, alleged difference in maturity might have influenced the students' desires. Preliminary findings from the ongoing study indicated that there are significant differences in learning climate between the Japanese and Canadian dental hygiene programmes (25). In the study, the Canadian students' evaluation of their programme was significantly higher than that of the Japanese students. More positive

feelings toward their faculty might have contributed to the Canadian students' interest in educational career.

In the present study, the Canadian students' evaluation of the professional environment was significantly higher than that of the Japanese students. McKeown *et al.* (22) indicated that self-regulation is critical to the viability and development of dental hygiene in Canada. Neither self-regulation nor independent practice is allowed for dental hygienists in Japan. As the future direction of dental hygiene in Japan is still eclectic and unclear, the idea of independent practice might have been seen as either too overwhelming or distant concept for the Japanese students.

Self-esteem is a complex, multifaceted phenomenon (6). It can undergo changes through interactions with friends and teachers (26). Positive self-esteem is related to students' interest or motivation in learning.

In the present study, the level of explicit self-esteem was found to be significantly higher in the Canadian students over Japanese students. It is speculated that age is an important reason. Given that the Japanese students were on the average 6 years younger than the Canadian students, it is likely that younger student self-esteem was still in development. Cultural differences may be another contributing factor as well. It has been shown that East Asians including Japanese have less positive self-concepts than Westerners (11). However, it has also been suggested that self-esteem level of Japanese people may increase after living in North America for certain period. This implies that environmental factors may be more influential than innate cultural factors for development of self-esteem. In the present study, also in support of the hypothesis, the level of self-esteem in Canadian students was positively correlated with their expectations toward the profession. It is conceivable that the formulation of expectations toward the profession is influenced by the actual professional environment.

In nursing, educators have been implementing interventions to improve education based on studies regarding student self-esteem (27). Since education is as an important attribute to promote professional development, educational strategies should be formulated to increase dental hygiene students' self-esteem. Eda (10) reported that the levels of self-esteem and professional identity of Japanese dental hygiene students increased after the clinical rotations. While there is no single factor that can increase or decrease a person's self-esteem, the potential impact of negative evaluation on self-esteem should be carefully assessed. Given the increased rigour of dental hygiene education, effective strategies to increase dental

hygiene students' self-esteem should be investigated in the future studies.

Limitations

There are some limitations to the study. First of all, the sample size is relatively small, so the results should be interpreted with caution.

Although the present study is a cross-sectional study, it is important to study in greater depth the feeling of dental hygiene students about self-esteem and negative evaluation, and to assess whether or not both these constructs change as students progress through their education programme.

Past studies examining self-esteem have produced contradictory results (6). Because of its widespread popularity in everyday parlance and in popular psychology, the concept of self-esteem may be subject to distortion and misuse. Thus, it is recommended that those using the scale be familiar with the scientific study of this concept and its complexities (28). A different perspective has been offered by the findings of some recent studies which used measurements of implicit self-esteem (ISE) (12). These studies suggest that East Asians may be just as positive in ISE as are Americans. Ideal methods to assess and compare levels of self-esteem in settings similar to the present study should be further explored.

The Japanese and Canadian dental hygiene programmes participated in this study have different educational philosophy, entry requirements, and selection procedures. How these differences impact on students' perceptions was not assessed by our study.

Conclusions

Within the scope of the present study, significant differences in perceptions toward the profession and the level of self-esteem were noted between Japanese and Canadian dental hygiene students. Our study suggests that educational strategies should be designed to positively influence students' perceptions about their future profession and improve their level of self-esteem.

An effort is currently being made to assess Japanese and Canadian student perception of their learning climate. The pending results from this learning climate study may help better build on the results of the present study.

Acknowledgements

The authors thank dental hygiene faculty and students of Miyagi Advanced Dental Hygienist College and Vancouver

Community College for their cooperation. We thank David Blette for editing the manuscript.

References

- 1 Saito A, Sato Y, Nakamura A *et al*. Development of an international collaborative dental hygiene programme between Japan and Canada. *Int J Dent Hyg* 2008; **6**: 328–336.
- 2 Kim WJ, Lee HY. A survey on the effective independent study of nursing students. *J Korean Acad Nurs* 1978; **8**: 16–42.
- 3 Nordholm LA, Westbrook MT. Career selection, satisfaction and aspirations among female students in five health professions. *Aust Psychol* 1981; **16**: 63–76.
- 4 Meleis AI, Dagenais F. Sex-role identity and perception of professional self in graduates of three nursing programmes. *Nurs Res* 1981; **30**: 162–167.
- 5 Miers ME, Rickaby CE, Pollard KC. Career choices in health care: is nursing a special case? A content analysis of survey data *Int J Nurs Stud* 2006; **44**: 1196–1209.
- 6 Begley CM, White P. Irish nursing students' changing self-esteem and fear of negative evaluation during their preregistration programme. *J Adv Nurs* 2003; **42**: 390–401.
- 7 Andersson EP. The perspective of student nurses and their perceptions of professional nursing during the nurse training programme. *J Adv Nurs* 1993; **18**: 808–815.
- 8 Burnard P, Hebden U, Edwards D. Self-esteem and student nurses: an account of a descriptive study. *Nurs Health Sci* 2001; **3**: 9–13.
- 9 Bradbury-Jones C, Sambrook S, Irvine F. The meaning of empowerment for nursing students: a critical incident study. *J Adv Nurs* 2007; **59**: 342–351.
- 10 Eda S. Study of formation and education of occupational identity as dental hygienist – through clinical training. *J Japan Soc Dent Hyg* 2007; **1**: 41–51.
- 11 Nisbett RE. *The Geography of Thought – How Asians and Westerners Think differently...and Why*. New York, The Free Press, 2003.
- 12 Yamaguchi S, Greenwald AG, Banaji MR *et al*. Apparent universality of positive implicit self-esteem. *Psychol Sci* 2008; **18**: 498–500.
- 13 Sedikides C, Gaertner L, Vevea JL. Pancultural self-enhancement reloaded: a meta-analytic reply. *J Pers Soc Psychol* 2005; **89**: 623–642.
- 14 Chun-Heung L, French P. Education in the practicum: a study of the ward learning climate in Hong Kong. *J Adv Nurs* 1997; **26**: 455–462.
- 15 Hilton A, Skrutkowski M. Translating instruments into other languages: development and testing processes. *Cancer Nurs* 2002; **25**: 1–7.
- 16 Rosenberg M. *Society and the Adolescent Self-Image*. Revised edition. Middletown, Wesleyan University Press, 1989.
- 17 Hagborg W. The Rosenberg self-esteem scale and Harter's self-perception profile for adolescents: a concurrent validity study. *Psychol Sch* 1993; **30**: 132–136.
- 18 Greenwald AG, Farnham SD. Using the Implicit Association Test to measure self-esteem and self-concept. *J Pers Soc Psychol* 2000; **79**: 1022–1038.
- 19 Yamamoto M, Matsui M, Yamashiro Y. Recognized components of various sides of self. *Jpn J Educ Psychol* 1982; **30**: 64–68.
- 20 Ootaka E, Ito M, Muta Y, Sampei Y, Sasaki R. Trend survey of graduates in Japanese Red Cross in Akita Junior College of Nursing

- (Second report). Regarding experience for being member of society, completing academic work and satisfaction level for school life. *Bull Jpn Red Cross Junior Coll Akita* 2007; **11**: 77–84.
- 21 Clovis J. The professional status of dental hygiene in Canada today. Part I. Progress and challenges. *Probe Sci J* 1999; **33**: 186–195.
 - 22 McKeown L, Sunell S, Wickstrom P. The discourse of dental hygiene practice in Canada. *Int J Dental Hyg* 2003; **1**: 43–48.
 - 23 Yaegaki K. Dentistry in the future. *Dental Diamond* 2003; **3**: 116–120.
 - 24 U.S. Department of Health and Human Services. *National Call to Action to Promote Oral Health [Internet]*. Rockville(MD): US. Department of Health and Human Services, Public Health Service, National Institutes of Health, National Institute of Dental and Craniofacial Research. NIH Publication No. 03-5303, Spring 2003. Available at: <http://www.surgeongeneral.gov/topics/oralhealth/nationalcalltoaction.html> [accessed on 2 July 2006].
 - 25 Saito A, Miura A, Sato Y. A study of the learning climate in dental hygiene education- an initiative to support change, and comparison with a Canadian dental hygiene programme. *J Jpn Dent Educ Ass* 2006; **78**.
 - 26 Fujiyoshi M, Tsutsui A, Matsuoka N, Masuoka T. Analyses in the factors of toothbrushing behavior and knowledge, and attitude toward toothbrushing, and gingivitis and plaque accumulation status. *J Dent Health* 2005; **55**: 3–14.
 - 27 Randle J. The effect of a 3-year pre-registration training course on students' self-esteem. *J Clin Nurs* 2001; **10**: 293–300.
 - 28 Department of Sociology, University of Maryland. *The Rosenberg Self Esteem Scale*. College Park (MD): University of Maryland. Available at: http://www.bsos.umd.edu/soc/Grad/spec_socpsy.htm [accessed on 23 February 2008].

Copyright of International Journal of Dental Hygiene is the property of Blackwell Publishing Limited and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.