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Development of an International Collaborative Dental Hygiene Programme between Japan and Canada

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Abstract: This paper reports the development of an international dental hygiene educational programme between Japan and Canada, and the evaluation of its outcomes. In 2004, a unique collaborative programme with Canadian dental hygiene schools was introduced as part of a 3-year dental hygiene curriculum. This international programme mainly consists of three parts: a spring (full Japanese faculty and student exchange to Canada), fall (select Japanese faculty and student exchange to Canada for focused professional development) and summer (select Canadian student exchange to Japan) component. The spring component provides an opportunity for all Japanese students to visit the Canadian dental hygiene schools at the end of their second year. Students and faculty members share information about their programmes and culture through instructional presentations, chair-side hands-on clinical simulations, and table clinic presentations. For the fall component, selected Japanese students and faculty re-visit the Canadian school for more extensive learning and exchange with Canadian students. Workshops are held for faculty on educational and research topics. For the summer component, selected second year Canadian students visit Japan. The Japanese students' basic knowledge of Canada and Canadian dental hygiene showed statistically significant improvement ($P < 0.001$) as assessed by pre- and post-tests. Other programme evaluations including faculty and students' surveys have so far identified positive outcomes in learning and research. The programme has offered opportunities for faculty professional development and joint research projects. In conclusion, the findings reported here demonstrate that

incorporation of the international collaborative programme can be a significant addition to dental hygiene education.

Key words: cross-cultural dental hygiene; dental hygiene process of care; internationalization

Introduction

As the technologies of travel, communications and information bring the entire world within our reach, our need to understand international and global phenomena has expanded, and globalization has given people the opportunities for international education. However, these trends have not yet impacted the field of dental hygiene.

In 2006, the number of foreign nationals entering Japan was estimated to be 8 110 000. Those who formally registered to stay in Japan were 2 085 000, comprising 1.63% of total population of Japan (1). Although, Japan is still considered to be homogeneous in terms of ethnic background and language, foreign nationals living in Japan increased more than 47% in 10 years. Statistics concerning foreign clients visiting dental offices in Japan are not available, yet it is likely that clinical dental hygienists in Japan are seeing more clients from other countries now than in the past. At the same time, the number of Japanese persons living overseas is on the increase reaching 1 063 195 in 2006 (2).

Dental hygienists are one of many Japanese healthcare professions working overseas. Darby and Walsh (3) defined 'cross-cultural dental hygiene' as 'the effective incorporation of the client's sociocultural background into the dental hygiene process of care'. It has become an important concept in providing optimal dental hygiene care. However, virtually all dental hygiene programmes in Japan are non-culturally diverse with the majority of their enrolling students from only one ethnic category. Traditionally, almost no emphasis has been given to cross-cultural competence in dental hygiene curricula in Japan. Thus, students' state of readiness towards the provision of cross-cultural care is questionable. Reaching the goal of cultural competence requires that dental hygiene programmes and the faculty are committed to graduating students who respect the beliefs, health-related behaviours, interpersonal styles and the attitudes of a culturally diverse clientele (4).

Dental hygiene in Japan is evolving into a highly skilled profession with an increasingly academic orientation. At the same time, Japanese dental hygiene education is experiencing a drastic change. Every dental hygiene programme is required to offer at least a 3-year curriculum by 2010 (5, 6). Although

this change in national policy poses a significant challenge for dental hygiene educators in Japan, it provides an opportunity to introduce new and innovative learning into programmes. It is important that dental hygiene curricula incorporate cross-cultural educational strategies (7) and prepare students to function effectively in a multi-cultural society. Adding an international programme can provide opportunities to enhance learning for both dental hygiene students and faculty. In 2001, the Miyagi Advanced Dental Hygienist College (MADH) established first 3-year dental hygiene education programme in Japan (6). Subsequently in 2003, MADH initiated international educational collaborations with two dental hygiene programmes in Vancouver, British Columbia, Canada. One collaboration was established with the Vancouver Community College (VCC) and the other with the University of British Columbia (UBC). This study describes the development, implementation and evaluation of the international collaborative programme between Canada and Japan. Programme evaluations were carried out by statistical analysis of pre- and post-test scores using a non-parametric method and various surveys for students and faculty. Several implications for introducing an international education to dental hygiene curricula are discussed.

Study population and methods

Programme development

In September 2003, three faculty members of MADH (Sendai, Japan) visited VCC Dental Hygiene, and UBC Faculty of Dentistry, Dental Hygiene programmes to initiate development of an international educational collaboration. The objectives and the needs of the programme were shared by all parties, and the programme outline and tentative contents were discussed.

Programme description

The formal programme was offered to MADH students for the first time in 2004, and continued thereafter. The programme was integrated into the MADH curriculum, and the general

instructional objective is to 'acquire basic knowledge, skills and attitudes concerning international dental hygiene practice in order to take dental hygiene actions with cross-cultural perspectives'.

This programme consists mainly of three parts; a spring, fall and summer component (Fig. 1). The spring component was initiated with VCC and UBC in 2004, and the fall component was introduced with VCC in 2005. After a formal sister school relationship was established between MADH and VCC in 2006, the summer element was added to the programme.

The spring component consists of a Japanese faculty and the student travel exchange to Canada providing an opportunity for all MADH students to visit VCC and UBC at the end of their second year in spring. In this full-day programme with VCC, the students and faculty members share information about their programmes and the culture through presentations, chair-side hands-on clinical simulations, and table clinic presentations focused on the VCC students analysis of studies. At UBC, the students are introduced to opportunities for advanced dental hygiene education (baccalaureate and master degree courses) (8). UBC graduate students and MADH faculty members present and share their educational research activities.

The fall component was designed with two major aspects in mind. These include the provision of advanced learning opportunities for selected MADH students and the faculty professional development focused on important transcultural dental hygiene educational issues. Each year, two third year Japanese students participated with faculty members. Student applicants were selected on the basis of their English skills and academic performance. They attended a 3-day programme at VCC, basically shadowing VCC students in their existing studies. A member of the MADH faculty who has studied and published original research in the United States provides a lecture to

both VCC and MADH students as a part of VCC Oral Health Sciences course. Workshops are held for faculty on educational topics including teaching long-term residential care, critical thinking, problem-based learning, clinical and community topics and programme evaluation.

In the summer component first introduced in 2006, selected Canadian students visit Japan for 1 week. The Canadian students have completed their second year of dental hygiene education in a 3-year entry to practice diploma programme. They also shadow the Japanese students in their classroom and laboratory studies, their practicum in dental offices and on community rotations to geriatric, long-term residential care facilities. They live with host families in order to absorb as much of the Japanese culture as possible.

Evaluation

For the spring programme, pre- and post-tests with 20 items that assess the basic knowledge of Canada and dental hygiene profession and education in Canada are given to MADH students. Students are asked to fill out pre- and post-programme surveys (Table 1). For the fall programme, students set their own specific behavioural objectives (SBOs) and evaluate the actual outcome of each objective at the end of the programme. Also, they prepare a presentation and share their learning with the rest of Japanese students and faculty. In 2006, an effort was made to evaluate motivation and performance of the MADH dental hygiene faculty participants during the fall programme. An evaluation sheet (Table 2) was distributed to VCC faculty members. In the summer component, Canadian students evaluate their learning experiences at MADH by filling out a survey. Upon their return to Canada, the VCC students prepare a presentation to share their learning experiences with VCC faculty, governance board members, the

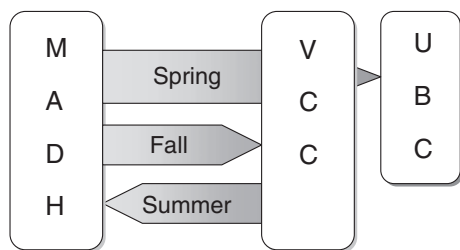


Fig. 1. Schematic description of the international collaborative dental hygiene programme. The programme consists of spring, fall and summer components (MADH, Miyagi Advanced Dental Hygienist College; VCC, Vancouver Community College; UBC, University of British Columbia).

Table 1. Excerpts from the programme survey

| |
|--|
| Have you ever visited a foreign country? |
| Do you like learning English? |
| Do you feel hesitant about English conversation? |
| How often do you study English? |
| How do you rate your English proficiency? |
| Is English proficiency important for you? |
| Do you feel that making yourself understood in English is difficult? |
| Would you like to perform a presentation in English? |
| How do you rate your willingness to offer dental hygiene care to clients from foreign countries? |

Students were asked to answer survey questions before and after participation.

Table 2. Faculty evaluation sheet for the fall programme

| |
|---|
| Faculty panel presentation |
| How do you rate your understanding of the presentation? |
| Was the content informative and of value to dental hygiene education? |
| How do you rate the overall quality of the presentation? |
| General performance during the programme |
| Was the MADH faculty eager to participate in conversations and discussions? |
| How do you rate MADH faculty's communication skill (including English proficiency)? |

Vancouver Community College faculty was asked to evaluate each Miyagi Advanced Dental Hygienist College (MADH) faculty during the programme utilizing a five-point scale (5, excellent to 1, poor).

programme advisory committee members and other VCC students.

Ethical considerations and data analysis

Informed consent regarding the use of data for educational and research purposes was obtained from faculty and students. For statistical analyses, a software package (InStat version 3.05 for Windows, GraphPad Software, San Diego, CA, USA) was used.

Results

Spring programme

According to the preprogramme survey, the programme provided approximately 70% of MADH students with their first opportunity to visit a foreign country. The topics discussed for the spring programme at VCC over the years are listed in Table 3. In 2003, it started with self-introductory contents but every year, an attempt was made to discuss more complex topics.

The scores of the post-test were statistically significantly greater than those of the pretest ($P < 0.001$) (Fig. 2). This indicates that students' basic knowledge of Canada and dental

Table 3. Discussion themes in the spring programme

| | Student | Faculty |
|------|---|---|
| 2003 | Introduction of MADH | Dental hygiene education in Japan |
| 2004 | Oral hygiene instructions at elementary schools | Continuing dental hygiene education at MADH |
| 2005 | Simulated patient practice | Education of dysphagia management |
| 2006 | Clinical practice | Simulated patient practice: incorporating the dental hygiene models |

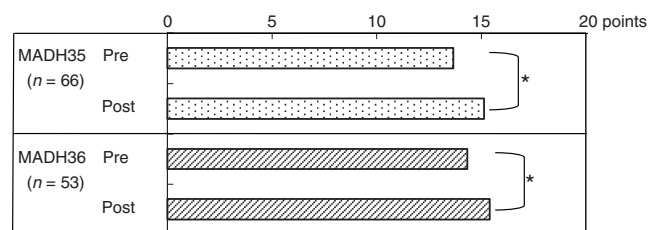


Fig. 2. Mean scores of pre- and post-tests assessing the basic knowledge of Canada and Canadian dental hygiene (MADH35: class of 2005, MADH36: class of 2006). * $P < 0.001$ Wilcoxon matched-pairs signed ranks test.

hygiene education and practice in Canada has improved after programme participation.

After participation, the percentage of students who indicated that they like English 'very much' increased from 5% to 16% for the class of 2005 (data not shown). Similar results were obtained for the class of 2006. Also, the students whose recognition of the importance of learning English increased from 38% to 60%.

The results of the post-programme survey are shown in Fig. 3. The MADH students gave relatively high ratings for their experiences with presentations and clinical simulations at VCC.

Fall programme

The fall international collaborative programme component provided advanced learning opportunities for MADH students (Fig. 4). Limiting the number of participating students allowed for more individualized attention from VCC faculty and students. In addition, homestay opportunities provided by VCC students and their families made it possible for the MADH students to experience Canadian life and culture. Each

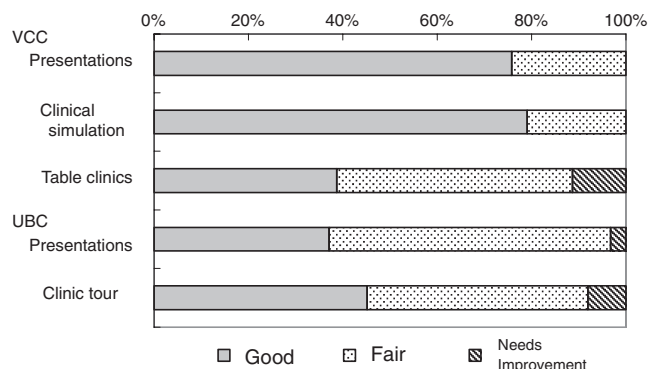


Fig. 3. Representative results from the post-programme survey. Students were asked to evaluate their experiences with each content of the programme by using a rating scale (2, good; 1, fair and 0, poor).



Fig. 4. Miyagi Advanced Dental Hygienist College student in a clinical practicum at Vancouver Community College.

participating MADH student evaluated their own SBOs at the completion of the programme. Upon returning to Japan, they prepared a presentation and shared their knowledge and experiences with the rest of MADH students.

The themes of faculty development panels (Fig. 5) over the years have included various topics such as residential care, surgical magnification and critical thinking. VCC faculty evaluated MADH faculty participants' performance during the fall programme. There were slight differences in faculty performance, especially in English proficiency (data not shown). Over the years, the VCC third year students' evaluations of the special Oral Health Sciences lecture given by the MADH faculty member (periodontist) have been favourable.

Summer programme

For the summer programme, VCC students apply and two students are selected by the VCC International to visit MADH



Fig. 5. Faculty professional development panel.

at the end of their second year of studies. The Canadian students shadow MADH students in their classroom, laboratory, dental office practicum and community outreach studies into geriatric long-term residential care facilities (Fig. 6). The VCC students experience Japanese culture through a homestay living arrangement with MADH students' family. This further enhances students' motivation for cross-cultural communication.

For the most part, the VCC students' evaluation of the summer programme at MADH has been favourable, as exemplified by a survey comment from one VCC participant: 'In the lectures, notes in English would have made the experience better. I really enjoyed participating in the lab making the temporary bridge. The dentist at the clinical rotation was friendly and accepting. This experience was exciting and informative. The faculty members were very helpful. Host family was warm and made my stay very comfortable. This is a very wonderful programme'. The VCC students' learning outcomes in the international collaborative dental hygiene programme are integrated into their portfolio assignments in third year. These portfolio assignments test the dental hygiene students knowledge of theory, practice and their evidence of attainment of dental hygiene learning outcomes.

Further academic and research outcomes

As for the third party evaluation, the programme received an award in 2005 from the British Columbia Centre for International Education (9). This award recognizes internationalization initiatives in post-secondary education in the province. The international faculty development collaboration made it



Fig. 6. Vancouver Community College students participated in a clinical practicum at a residential care facility in Japan. This practicum is a part of 'Dysphagia management' course in the Miyagi Advanced Dental Hygienist College curriculum.



Fig. 7. The World Dental Hygienists Award presentation at the 17th International Symposium on Dental Hygiene in Toronto, Canada (July 2007).

possible for MADH to introduce dental hygiene theories and conceptual models for the purpose of giving students a biopsychosocial perspective on dental hygiene care (10). In 2005, the VCC Dental Hygiene department head visited Japan to participate in a dental hygiene symposium on periodontal education with the MADH senior instructor (11). Participants co-authored a textbook entitled 'Dental Hygiene Process of Care' in Japanese (12). Shared research projects were also initiated. Preliminary results from a joint research project revealed that there are significant differences between our learning climates (13). Currently, efforts are being made to implement interventions which might improve the learning climates.

For the first time in their lives, many of the students from both countries were faced with a language barrier. However, exposing themselves to a foreign country was truly a rewarding experience, as evidenced by free comments in the post-programme survey. Students realized that there are different ways of looking at things. They even discovered new research topics through the exchange of their ideas. The international programme had inspired them in different ways. One robust example includes the three students who authored a paper and submitted it to an international journal. For that, they received the World Dental Hygienists Award (14) (Fig. 7). Another recent MADH graduate conducted a survey study assessing the career perception and self-esteem of dental hygiene students in Japan and Canada (15). The results of these studies will be shared by all parties in future programme presentations.

Discussion

In planning an international programme, there are basic, yet important questions that need to be addressed. One of them is

'why should dental hygiene students bother going overseas for such an exchange?'. In 2004, a first of its kind, international educational exchange between Japanese and Canadian dental hygiene schools was initiated, and the experiences of the programme provided one answer to that question. Introducing diversity into a group can increase the quality and strength of that group as evidenced by a high level of international scholarly activity and the publications since the programme began.

Collectively, the evaluation of the present programme has revealed various positive results. The exchange of knowledge and skills has provided an excellent opportunity for both Canadian and Japanese students to experience their chosen profession from another perspective. The programme has offered opportunities for faculty development and joint research projects. MADH students considered student-to-student exchanges at VCC an indispensable part of the programme. A need for improvement in some areas was identified. For instance, student evaluation for VCC table clinic presentations during the first few years was less favourable than those of the clinical simulations. Because of the students' insufficient proficiency in English, the research topics presented by VCC students might have been too difficult for MADH students to fully understand. To address this issue, a change has already been implemented since the 2006 programme. Information regarding the topics from the table clinics is now made available to MADH students prior to participation. This allows more time to prepare in order to comprehend the table clinic inquiry and information.

MADH students seemed to experience some difficulties in understanding the presentation contents at UBC as shown in the survey results (Fig. 3). Research competencies are required for MADH students in their curriculum. The MADH programme offers opportunities for students to initiate and implement such research activities. It was speculated that the MADH student exposure to such activities was not sufficient at the end of second year when they participated in the spring programme in Canada at UBC. However, MADH faculty feels that presenting the possibilities for higher and international dental hygiene education and research is very important for this programme. For example, participation in the spring and fall programmes of 2005 inspired a MADH graduate to enroll in a new dental hygiene baccalaureate degree completion course offered by a university in Japan.

McKellin (16) stated that the internationalization process is effective and sustained to the degree it is integrated with the institution's primary functions of teaching, research and service. She described the mechanism of internationalization as

Table 4. The mechanisms of internationalization (16)

| Mechanism | Facilitates internationalization by |
|---|--|
| Curriculum development | Infusing an international/multi-cultural dimension across the curriculum; internationalizing general education in order to expose more students to the international dimensions of their studies; addressing international aspects of academic disciplines, professional, technical and vocational training |
| Professional development of faculty, staff and administrators | Increasing international experience/expertise of faculty, staff and administrators; enhancing their ability to function and communicate in an international setting; providing support and incentives for faculty to internationalize courses, programmes, participate in international exchange, teach overseas, engage in international development projects or international research |

shown in Table 4. In order to build an effective international dental hygiene programme, we propose the use of the dental hygiene process as a framework model. In the assessment stage, it is first important to examine values and guiding principles of each institution. Then it must be decided how the programme might fit into a curriculum. At this stage, faculty members should openly exchange opinions. Then information regarding an international programme must be collected and analysed. At the diagnostic/decision-making stage, a school's needs and interests are identified. The identification of possible barriers is very important at this stage. In planning, it is vital to have a general idea of goals and outcomes of the programme. Following that organizers must initiate contact with some target organizations and begin discussions and negotiations. It should be kept in mind that the impact of study abroad depends on students' preparation in advance, the degree of immersion in the host culture, and the opportunities to build on and share the experience upon return to the home campus (17). When implementing the actual programme, close communication become necessary between institutions. Safety considerations are of the utmost priority in this stage. Evaluation should be done by all parties involved. This is the model that was followed in the development of the international collaborative dental hygiene programme between Canada and Japan.

Different sectors of society have gone through internationalization for decades, including both international cooperation and competition especially in the economic realm. As a result, each sector has experienced a rigorous, critical cycle of self-evaluation on the domestic level, as the sector has sought to improve its effectiveness. This has forced a redefinition of the status quo learning from different perspectives, the successes and failures of other countries and communities (18). We need

to realize that in the 21st century, even as the world has become more tightly interconnected, there are still a few sectors in society that have not really absorbed this wave of internationalization. One of them may well be dental hygiene, and this carries consequences for dental clients in Japan. It may mean that they are not necessarily getting the best dental hygiene care that might otherwise be available to them had the field faced internationalization and benefited from rigorous critical review, reform and improvements based on perspectives from other countries. Healthcare providers in the 21st century are at the cutting edge of great demographic, social and cultural changes (19). Many of these changes are playing an important role in the delivery of healthcare to clients, their families and the community. Providing oral health care based on the clients' individual needs is the cornerstone of dental hygiene practice (4). Therefore, it is important that we learn how to be sensitive to cultural differences as the world becomes more borderless.

Early on, with regard to cultural differences, we encountered minor difficulties, but generally there have been very few problems interacting with Canadian partners. However, cultural differences should be kept in mind. Some of the ways East Asians think have been shown to be different from Westerners (20). A few such examples are listed in Table 5. In order to overcome differences, close communication is very important and the language barrier should never be underestimated. For most Japanese dental hygiene students and faculty, this poses a serious challenge, even though they must have at least 6 years of English education before entering dental hygiene school. Bringing a global perspective into the classroom must begin with helping faculty develop that perspective for themselves (17). But dental hygiene instructors, for the most part, are not adequately prepared. Even those willing and able to integrate global perspectives can have difficulty doing so, given the multiple external demands on instructional content and insufficient foreign language proficiency. Extraordinary commitment is necessary to integrate global perspectives

Table 5. General differences between Westerners and Easterners

| Dimensions | Westerners | Easterners |
|------------------------------|--|-----------------------------------|
| Ways of organizing the world | Prefer categories | Emphasize relationships |
| Use of formal logical rules | Use logical rules to understand events | Less likely to do so |
| Dialectical approaches | Likely to insist on the correctness of one belief versus another | More likely to use the middle way |

Adopted with modification from Nisbett (20).

under our current conditions in both countries. With the growing primacy of English as the language of international communication, increasing opportunities for English education is critical. Toward this end, the MADH faculty reinforced English education in the curriculum. MADH introduced its faculty to an English communication course, taught by a native speaker (American) whose specialties include medicine and oral presentation skills. The results of evaluation by VCC faculty during the fall programme in 2006 indicated further need for improvement of MADH faculty's linguistic skills. Dental hygiene faculty members are encouraged to participate in the international programme on multiple occasions. By immersing them in another society and culture, we are aiming to bring the world and the classroom closer together.

Currently, discussions are underway with both VCC and UBC for a possible expansion of the collaborations. During the fall programme in 2007, an attempt was made to utilize an internet video and phone technology so that faculty in Japan could join in a teleconference with the participants in Canada. The notion of a web-based distance programme has many potential benefits in dental hygiene education (21). For this reason, we are pursuing the possibility for further incorporation of computer-based technologies into the programme.

To our knowledge, this report is the first to describe an international dental hygiene collaborative programme of such extensive scale. The results of the present study should draw attention to the need for developing additional resources and strategies for international dental hygiene education programme. The exchange between Japan and Canada reported here has supported both students and faculty in reflecting on the following dimensions that are believed to contribute to culturally safe care; emotional resilience, flexibility/openness, perceptual equity and personal autonomy all indicators of sociocultural competence (7). To be competitive in any field, students need global perspectives and experiences. Inviting different cultures, systems and perspectives to an existing 'comfortable' status quo requires patience, time, and perhaps increased work, stress and friction (tension) at times. Many adult education scholars believe that learning is maximized and most transformational in adults when there is tension between the immediate, concrete experience and analytic detachment. Lewin considered this conflict critical to organizational change and improvement. "...the so-called laboratory method...gave central focus to the value of subjective personal experience in learning, an emphasis that at the time stood in sharp contrast to the 'empty-organism' behaviourist theories of learning and classical physical science that included definitions of knowledge acquisition as an imper-

sonal, totally logical process based on detached, objective observation..." (22).

Dental hygienists, however, need to understand and overcome cultural differences, and integrate the experience into dental hygiene care. The participants in this international collaborative dental hygiene programme feel that internationalization initiatives show promise for improving upon the current state of dental hygiene education. This could translate into more satisfying, higher quality dental hygiene education and practice outcomes.

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