

From Clinician to Researcher — A First-Hand Account

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ABSTRACT

While teaching and clinical care may be somewhat intuitive, research is much less so, and a lack of research experience or opportunity to do research can be frustrating to the faculty member who is trying to become well-rounded. In an effort to ease the transition from clinical teacher to clinical researcher, the faculty of dentistry at Dalhousie University has developed a research mentorship program. The purpose of this paper is to report on the opportunities and challenges that 2 dental clinicians experienced when they participated in the pilot phase of an epidemiologic survey of the oral health status of seniors. In their academic role, these 2 clinical examiners, who were full-time faculty members, concentrated on classroom and clinical teaching. Although neither had previous clinical research experience, both were interested in broadening their horizons by engaging in research in the hope of attaining a variety of positive outcomes.

For citation purposes, the electronic version is the definitive version of this article: www.cda-adc.ca/jcda/vol-73/issue-3/247.html

Attracting and retaining academic faculty are 2 major challenges for dental schools today. The expectation is that a full-time faculty member, whether tenure stream or not, should be a Jack (or Jill) of all trades. This is especially true for smaller institutions in which faculty members are expected to teach a full course load, assist in patient care and participate in research activities, in addition to their administrative duties. The problem lies in the fact that most nontenure-track faculty members complete clinical practice-related residencies rather than research-related programs. Although teaching and clinical care are somewhat intuitive, research is much less so, and a lack of research experience or opportunity to do research can be frustrating to the faculty member who is trying to become well-rounded.

In an effort to ease the transition from clinical teacher to clinical researcher, the fac-

ulty of dentistry at Dalhousie University has developed a research mentorship program. The group leading this program, the Collaboration of Oral Health Researchers, comprises 60% of the full-time faculty. Researchers with experience or training in clinical research, epidemiologic research and basic sciences have formed this group to facilitate collaborative oral health research within the faculty and beyond it. Within the faculty, the goal is to increase research capacity by providing opportunities for faculty members with limited or no research experience and training to participate in research at some level.

The purpose of this paper is to report the opportunities and challenges that 2 of these dental clinicians experienced during their participation in the pilot phase of an epidemiologic survey of the oral health status of seniors.

The Research Project

The Seniors Oral Health Assessment Project (SOHAP) was developed to test the practicality of using survey methods to measure the oral health of seniors who were living in a variety of settings in Nova Scotia: those living independently in the community, and those living in assisted-living facilities and long-term care institutions. Clinical oral health status, the impact of oral health on seniors' quality of life and potential barriers to their oral health care were measured. This paper deals only with measuring their oral health status. The experience of interviewing seniors about the other issues is outlined elsewhere.¹

Clinical oral health status for population surveys is usually measured with indices such as that for decayed, missing, filled teeth (DMFT) and the Community Index of Periodontal Treatment Needs (CIPTN). These indices express the status of the oral health of a particular population numerically. The multidimensional index called Clinical Oral Disorders in Elders (CODE),² developed and tested at the University of British Columbia, was chosen for the project. This index focuses on older adults and assesses denture quality, jaw function, mucosal health, dental caries, tooth structure and periodontal status. The CODE index was selected for SOHAP because it focused on treatment needs rather than detailed clinical data, although it is difficult to calibrate for treatment needs, particularly with older adults who may not be able to tolerate certain treatment procedures. However, the index provides a basis for facilitating the development of public programs for the management of oral health of seniors.

From Clinician to Researcher: Opportunities and Challenges

The 2 clinical examiners in this study were full-time faculty members whose academic roles concentrated on classroom and clinical teaching. Neither had previous clinical research experience; both were interested in broadening their horizons by engaging in research in the hope of attaining a variety of positive outcomes (Table 1).

Transformation from clinical teacher to clinical researcher was not without challenges, as outlined below. One of the keys to making these changes was that the primary researchers provided an environment that was inclusive and supportive.

Calibration Challenges

An essential component of epidemiologic research is the validity and reliability of the measurements, whether they are clinical indices or data from personal interviews. In other words, to ensure that good-quality data are captured, the measurement must truly measure what

Table 1 Positive attributes of becoming a clinical researcher

• Intellectually stimulating and different activities from usual teaching duties
• Increased understanding of the dynamics of clinical research projects
• Provision of a community service
• Meaningful interactions and contributions as a research team member
• Improvement of clinical researcher's academic portfolio

Table 2 Challenges occurring during the oral examination of older adults

• Physical limitations (sight, hearing, speech, mobility) or mental impairment (cognition level)
• Social attitudes
• Seating or positioning in the dental chair, wheelchair or bed
• Restricted jaw opening
• Tendency to tire easily

it is supposed to measure (validity) and the results of a measure should be identical or closely similar each time they are measured (reliability). It is important for a clinical examiner to be able to reproduce similar results for the same group of subjects from one time to the next (intra-examiner reliability) and for all examiners to produce similar results for the same group of subjects at one given time (inter-examiner reliability).³ This requires training and calibration.

Calibration exercises allow a formal measure of how well an examiner can interpret diagnostic criteria. It is essential that, as far as practicable, the full range of diagnostic situations is presented and discussed. Commenting on the use of caries indices, Bader and Shugars⁴ reported that "experience with these criteria indicates that calibration is difficult, that examiners must be recalibrated regularly, and that achieving acceptable levels of intra- and inter-examiner reliability takes careful practice and attention to detail."

Before the study began, an experienced clinical epidemiologist conducted a training and calibration exercise in the use of the CODE program. Each clinician independently examined 2 older patients. These examinations were videotaped for review with the trainer, allowing the clinicians to standardize their measurements. Misconceptions about the use of particular terms or difficulties with the interpretation of specific conditions were discussed and consensus was reached.

The major challenge to calibration in this study was the absence of a definitive training manual specific to the requirements of the study. Examiner manuals from major American surveys⁵ were used as guidelines, but they did not deal with all the components of the clinical examination. The clinical examiners and principal investigators had an ongoing dialogue about a variety of actual clinical scenarios during the study. For example, the examiners found that sequencing procedures to examine jaw function required the participant to remove and replace their removable dental prostheses several times. This was time-consuming and cumbersome for many of the participants. As a consequence, denture stability and retention were first recorded with the dental prostheses in place, then recorded again with the prostheses removed for those procedures that did not require prostheses.

Calibration was especially difficult for certain portions of the mucosal disorder segment of the clinical examination, mainly because of discrepancies in diagnoses. The terms “stomatitis,” “glossitis” and “angular cheilitis” presented different levels of challenges for calibration. In general, older adults who wear dentures are more likely to have mucosal changes than those who do not wear dentures.⁶ The presence of a denture will itself modify the mucosa in the mouth and predispose the person to infections, such as denture-induced stomatitis and angular cheilitis, lesions frequently found in frail older adults.⁷⁻⁹ Denture-induced stomatitis can be classified clinically as pinpointed hyperemia, diffuse erythema, or granular or papillomatous hyperplasia.¹⁰ Some of the discrepancy in the distribution of the disorder can be attributed to an exclusion of one form or another. Benign migratory glossitis, or geographic tongue, is typically characterized by multiple annular areas of desquamation of the filiform papilla that appear as reddish lesions outlined in yellow and shift from area to area every few days, sometimes within hours.¹¹ This condition was not always readily identifiable and accounted for some controversy about diagnoses during the study.

Angular cheilitis presented fewer identification problems. This condition is usually associated with denture-induced stomatitis and exacerbated by denture plaque. Angular cheilitis is also associated with a loss of the occlusal vertical dimension and inadequate maxillary lip support.^{12,13} However, declaring that a mucosal condition is present or absent requires extensive diagnostic information, not simply superficial clinical observation. As a result, the examiners found it difficult to classify a specific clinical presentation as a specific mucosal condition with confidence.

Field-related Challenges

Although calibration of clinical conditions was often difficult, the population examined presented its own set of challenges (Table 2). As a rule, seniors are more likely



Figure 1: From the left, Dr. Cynthia Andrews; Ms. Angela Pitman, dental assistant; and Drs. Debora Matthews, Christian Marquez and Joanne Clovis, with the mobile equipment and supplies on their way to 1 of 9 sites visited as part of the assessment project.

to have physical or mental impairments that complicate the assessment.¹⁴ Several of the participants were confined to a wheelchair; some were bedridden. In these cases, accessibility to and lighting of the oral cavity were a significant challenge. A portable light source was used, but was it cumbersome and required an extra set of hands to operate. A head-mounted light source might have been helpful. One of the participants had recently had a stroke and had difficulty with oral communication. He was accompanied by his wife who acted as his interpreter. Also, some of the seniors exhibited seemingly ingrained attitudes and behaviours. For example, when one man was asked to remove his denture to allow examination of the soft tissues, he refused, saying, “My denture goes in, in the morning, and it doesn’t come out until bedtime!” No amount of coaxing would persuade him otherwise. A nonparticipant stopped by to tell us that she decided not to volunteer as she “didn’t have any teeth” and felt she “would not have been of any interest to us.”

Seating the research subjects in the dental chair was not always possible, so some participants were examined in wheelchairs and at their bedside. Although the mobile dental unit was tested before site visits, the intraoral lighting was poor, reducing visibility in many situations. Restricted jaw opening and the inability of many participants to recline in the chair presented further challenges to the oral examination. As well, many of our older participants tired quickly. With a mentally competent and cooperative participant, the intraoral examination took only 10 to 15 minutes, but some found even that amount of time difficult to tolerate.

The oral health of the seniors examined ranged from one extreme to another. One woman in a long-term care facility had abundant plaque on every tooth surface. Once the plaque was removed with cotton gauze, we discovered coronal or root caries on all of her 20 teeth. In contrast, one of the participants from a small rural

Table 3 Clinician versus researcher — a different thought process

Clinician	Researcher
Examination	Collection of findings
Diagnosis	Data analysis
Treatment plan and provision of care	Conclusions drawn from group data
Individual patient outcomes demonstrating improved oral health	Reports or publications contributing to policy change that leads to improved oral health in populations

community had no signs of periodontal disease and had several beautiful gold restorations. She told us that she recently admonished the members of her bridge group for not flossing regularly.

Other Challenges

A number of other barriers exist for clinicians who wish to become involved in research. As evident from the fieldwork involved in this SOHAP study, the hours can be long. Travel to sites often involved 1 or more overnight stays, which made balancing family life and regular academic schedules a bit of a juggling act (Fig. 1). Certainly, research does not provide the same monetary reward as clinical work. Further, although the examiners were not involved in obtaining funding for this research, for those whose primary activity is research, this additional layer of responsibility can be quite discouraging.

Opportunities

Nonetheless, stepping outside the comfort zone of clinical teaching and administration provided many rewards. Each challenge encountered posed an opportunity for collaborative problem-solving and innovation.

One of the greatest learning experiences for the clinicians was understanding the difference between conducting a clinical examination on a patient in the dental clinic and conducting one on a subject for research purposes (Table 3). As clinicians, we tend to present our findings to patients to educate them and to discuss recommended treatment. In this research study, the purpose was to record the findings to make summary statements about a population as a whole. A procedure was developed for alerting participants to the need for follow-up care or the need to continue periodic routine dental care, based on protocol for the National Health and Nutrition Examination Survey III study.⁵ Nonetheless, participants in the study often asked what needed to be done, so the examiners practised divorcing themselves from their clinician selves.

From these experiences, a manual for the clinical examination component of the research project was developed and updated on an ongoing basis throughout the data collection process as new questions and discrepancies arose. The examination process was modified somewhat in an attempt to reduce the amount of intraoral

examination time each participant underwent, while allowing the researchers to collect and conclusively analyze a sufficient amount of data. This experience and training, which was rewarding in itself, should be invaluable for training future researchers.

Conclusions

The implementation of a research mentorship program makes building the research capacity of clinicians in dental schools an attainable goal. Such a program encourages research-oriented clinicians to develop skills and gain experience that will allow them to conduct patient-centred research. Dental clinicians with research capacity may find their academic duties more rewarding because they provide greater intellectual challenges, in addition to promoting their academic portfolios. Further, individual research capacity leads to a better understanding about how clinical research projects are conducted and their relevance to dealing with oral diseases that affect different population groups. Making a contribution to present and future research designs that allows more efficient, effective and reliable data collection is an important and rewarding role for the clinician-researcher. ✦

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The authors have no declared financial interests.

This article has been peer reviewed.

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