

CFDHRE PEER REVIEWED GRANT APPLICATION FORM 2010

Date of Application: October 12, 2010

Project Title: ElderSMILES (Strengthening Mouthcare in Long-Term Eldercare Settings)

Lead principle Applicant:

Co-Applicant:

Designated Authority:

1.0 Abstract

There is a need for improved oral health (OH) care for residents of long-term care (LTC) facilities. Residents often lack the dexterity necessary to perform mouthcare, and LTC staff often lack the time and/or training to do it for them. There is a need to establish effective protocols to make it easier to implement appropriate mouthcare in LTC facilities, and to standardize indices so that meaningful comparisons can be made.

The proposed research is designed as a pilot study to test the feasibility of protocols to gather and assess OH data for residents of LTC facilities. It will involve regular visits to two of these facilities by dental hygiene (DH) students, who will determine if protocols can be delivered and implemented as planned. The students will also educate staff—particularly health-care aides (HCAs)—and residents about the role and importance of daily mouthcare. The focus will be on processes such as ease of collecting OH indicators, the ability to incorporate mouthcare into daily schedules, and the identification of any barriers that may impede OH care. An assessment of brushing ability will also be completed by the students, to help determine the best approach for each person.

Recognizing that the elderly are a growing segment of the population, an important element of this study will be the socialization of DH students into an LTC environment, which may influence them to work in this field after graduation. Based on the outcomes of this study, the next step is to apply these protocols to a cluster randomized controlled trial to determine if DH student interventions improve the OH status for residents in LTC facilities.

2.0 ORGANIZATIONAL INFORMATION

2.1 Mission, goals and objectives of the organization/educational institution

The University of Alberta is renowned as one of the best public universities in the world, long recognized as a leader in research and teaching excellence. Its mission declares that: “the University of Alberta discovers, disseminates, and applies new knowledge through teaching and learning, research and creative activity, community involvement, and partnerships,” thus giving “a national and international voice to innovation in our

province, taking a lead role in placing Canada at the global forefront” (<http://www.uofaweb.ualberta.ca/facts/>). Paramount to this mission is the heart of the university, consisting of its talented faculty, staff, and students, who “with their creativity, ingenuity, and drive will join in advancing human knowledge and pursuing scientific discovery for the benefit of all” (<http://www.uofaweb.ualberta.ca/facts/>). Since the aim of this study is to identify ways to provide exceptional mouthcare to residents of LTC facilities, the research benefits will ultimately improve the lives of those individuals, thus accomplishing the goal of the University of Alberta to enhance the greater good.

2.2 Describe why the host institution/organization has the capacity to conduct the project

The University of Alberta is one of the primary research universities in the world, among the top three in Canada, and long recognized as a leader in research excellence. We have access to a liaison librarian and one of the top libraries in North America. We also have access to statistical support through the Statistical Consulting Centre in the Department of Dentistry, Faculty of Medicine and Dentistry. We have already developed working relationships with the LTC facilities. The Co-Investigators have dedicated research time within their academic positions in which to carry out the activities. (See Letters of Support following Appendix 11)

2.3 Project participants’ names, background and roles in the project

Lead Applicant, nominated Principle Investigator, is a long-time educator with expertise in conducting research utilizing qualitative methods, as well as having a record of funded research. Lead Applicant will coordinate qualitative data collection and analysis. Co-applicant, Co-PI, will liaise with project personnel and use intervention fidelity analysis to develop the plan for future quantitative data collection and analysis in the subsequent main study. Co-applicant has a prior background of extensive work with long-term care facilities in her previous roles in community health, and is currently completing doctoral research in mouthcare for residents of long-term care facilities. Both investigators will collaborate to triangulate analyses from the multiple sources.

2.4 Describe why the individual participants in the project are qualified to conduct the project

Both Lead Applicant and Co-applicant are internationally respected dental hygiene researchers with solid track records of funding, publications, and presentations. Dr. Lead Applicant is a dental hygienist with research training to the level of Ph.D., and Ms. Co-applicant is a dental hygienist and is in the final stages of completing her Ph.D. in the Faculty of Nursing at the University of Alberta.

2.5 Other participants: None

3.0 PROJECT PROPOSAL INFORMATION

3.1 Project objectives must align with the CFDHRE Mission Statement and with Guiding Research within the Dental Hygiene Profession

This pilot study aligns with the CFDHRE mission statement in that its main objective is to determine whether, and to what extent, the planned protocols can be successfully implemented in LTC facilities or whether modifications are necessary. These protocols may then be used to improve the OH status and thus the quality of life for the most frail and vulnerable population, namely, the elderly residents. The evidence gathered in this study will be primarily qualitative, since data will be gathered on feasibility of protocols and on the OH status of LTC residents, in addition to assessing the quality of mouthcare related practices of staff in LTC. This project aligns with the goal of creating and maintaining inter-professional and inter-sectoral partnerships, since it requires a collaborative effort between the University of Alberta's Dental Hygiene Program and the health-care professionals—HCAs, nurses (RNs), and administrators—who work in the LTC facilities. Everyone involved with this project will strongly adhere to the Guiding Ethical Principles of the Tri-Council Policy Statement thus maintaining the common standards, values and aspirations of the research community. The proposed research falls within the *Social, Cultural, Environmental, and Population Health* pillar since it involves the practices and policies of various societal institutions and how these affect the oral health of a particular segment of the population.

3.2 Target audience/target of the research

This pilot study will help to establish effective protocols for OH assessment and daily mouthcare practices for residents in LTC. This is valuable information that can be used by DH educators for planning similar experiences, DH students, registered dental hygienists—particularly those interested in mobile practices linked to LTC facilities—and LTC staff and administrators.

The target group is two-fold; however, for this project the main target group are the people being interviewed. First, the target group being evaluated using interviews and focus groups are the groups involved in the delivery of services for the residents in long term care and are the healthcare workers that the dental hygiene students and dental hygiene instructors will interact with when completing the oral health assessments and daily mouthcare for the elderly residents. The sample for each group was selected based on how many of each healthcare worker at each site. At site #1, there are 9 healthcare aides (HCA) on the designated floor, 2 RNs and 2 administrative staff. At site # 2, there are 8 HCAs, 2 RNs, and 3 administrative staff (2 Education Leaders and one facility leader). It is deemed important to talk with each of the 5 administrative staff and to each of the registered nurses who will interact with the dental hygiene group during the weekly experiences. Of the HCAs, a decision was made to interview a randomly selected group of 6 from each facility believing this size of group would lend appropriate perspective to this new experience.

The second target group is the permanent residents of long term care facilities. The residents may be independent, partially or fully dependent, in regards to their personal daily routines. This will impact how we are able to provide or support their daily mouthcare routine. The residents will typically have some degree of cognitive impairment but we are beginning this practicum with the group of residents identified as having higher cognitive functioning, however, as we complete the assessments and education with this group and with time permitting we will continue to see residents that

have increased cognitive impairments. Site #1 has 51 residents who have a high level of cognitive functioning. Once this group has been completed, the assessments and daily mouthcare will be continued with the residents in a different wing of the facility and these residents will have a more limited cognitive functioning. There are more than 50 residents on this wing also. At Site #2, there are 98 residents in total and the assessments will be completed with every consenting resident. The facility expects at least 80 residents will be involved. The ones who are not involved is due to their very limited cognitive ability.

The two facilities were chosen based on ease of access for the dental hygiene students and that these facilities were two of five that had self identified as wanting to initiate involvement from dental hygiene. The chosen facilities provided an appropriate number of residents to work with in order to further determine the level of care that we may be able to provide in the future. The other facilities understand that once we determine the type of program that we are able to offer, that we plan to expand and would include these and more facilities.

3.3 Project need or significance

Elderly individuals living in LTC facilities are among the most vulnerable citizens, often relying upon others for activities of daily living, including adequate oral hygiene and general mouthcare. However, it has been noted that “research among residents of LTC facilities in various countries revealed widespread dissatisfaction with dental treatment, a high prevalence of oral neglect, and care that provided little more than emergency treatment.”¹ Clearly, there must be greater interdisciplinary collaboration in order to provide needed mouthcare to the growing population of LTC residents.

This study will endeavour to determine the best protocols to use in LTC facilities to assess mouthcare needs so that required mouthcare can be provided to residents. Testing and establishing these protocols will help to address many of the problems that have been identified in the literature regarding a lack of mouthcare for residents of LTC facilities. The students will assist with the mouthcare of residents, they will determine the most effective strategies to use with frail residents, and they will highlight and champion the importance of mouthcare for the overall well-being of the residents. Both LTC staff and the overall experience itself will educate and enhance DH students’ understanding about the issues and complexities of mouthcare for vulnerable and frail elderly residents.

3.4 Literature Review

As the population ages, greater numbers of people are being admitted into LTC facilities. In the past, many elderly wore dentures, but the reality today is that increasing proportions of the elderly population includes dentate and partially dentate people.² Because many aging adults are living longer with their natural teeth, they are also experiencing more dental disease than in the past, and since many of these people will be living in LTC facilities, new challenges arise for the people who care for them.³⁻⁵ One

major complication in providing mouthcare to residents of LTC facilities is that many of these individuals suffer from physical and cognitive impairment, particularly dementia, and research must recognize this and develop protocols that are effective among this unique segment of the population, which this pilot study aims to do.⁶ Studies have found that, while mouthcare is certainly a necessary component of personal care provided to residents of long-term care facilities, it is often greatly underemphasized, and in some cases neglected almost entirely.⁷⁻¹⁰ In fact, research among residents of LTC facilities in various countries has revealed not only widespread dissatisfaction with the dental treatment they receive, but a high prevalence of oral neglect, and most of the oral care provided is for emergency treatment, rather than preventative care.¹¹⁻¹³ It is usually the case that residents of LTC facilities have very poor oral health, and often suffer from chronic gingivitis, dry mouth, caried, missing teeth, chewing difficulties, and poor tooth and prosthesis hygiene, along with resulting discomfort and pain, which can severely impair their well-being.¹⁴⁻¹⁶ The elderly are no different from anyone else in that their overall quality of life is affected by the health of the mouth and teeth, thus their ability to eat, smile, and socialize may be severely hampered because of the poor mouth-care they receive.¹⁷⁻¹⁹ The state of oral health among residents of LTC facilities has quite accurately been described as “scandalous.”²⁰ But why is this so? The literature provides some answers to this question.

Many, if not most, residents of LTC facilities are unable to take care of their own teeth or dentures and thus they must rely on HCAs for their daily care. Unfortunately, many LTC facilities are under-staffed, and thus HCAs are often overloaded with other duties that they deem more important or that they prefer administering over mouthcare, and/or they lack knowledge of proper mouthcare practices and oral problems, and they may also find it difficult to complete oral care due to the residents’ physical and cognitive incapacities.²¹⁻²⁴ Studies indicate that there is a low priority given to oral health in many LTC facilities, and this is a major concern.²⁵ Instead of trying to solve this problem, it often seems to be the case that LTC staff and administrators simply blame the problem on the conflicting priorities of daily care, as well as supposed difficulties of having access to dental personnel.^{26,27} Dental personnel justify their lack of enthusiasm for services by identifying such issues as lack of financial resources to pay for services, poor equipment, and a lack of cooperation from LTC residents, staff and administrators; they also worry about having insufficient skills to deal with the physical and cognitive instability of geriatric residents.²⁸ Studies have found that a frequently observed obstacle to good oral health was that HCAs did not consider mouthcare to be a part of their daily responsibilities to patients, and yet, if LTC staff do not take care of this important aspect of a resident’s health, who will?²⁹ Incorporating dental-hygiene students into the LTC environment would address a major problem found in the literature, namely, the fact that HCAs (and sometimes RNs) at LTC facilities freely acknowledge their inability to recognize oral diseases.³⁰ This inability has serious implications for the frail geriatric population, since untreated oral problems create unnecessary pain and discomfort for individuals, and have been linked to potentially life-threatening illness such as pneumonia.³¹⁻³³

Some studies suggest that HCAs and RNs at LTC facilities should be provided with specialised training so that they are better able to administer mouthcare to residents.³⁴⁻

³⁵ There have been a few promising studies that have found that training HCAs and/or RNs to perform mouthcare may result in at least temporarily improved oral health.³⁶⁻³⁷ However, other studies have demonstrated that attempts to train HCAs and/or RNs have been unsuccessful.³⁸⁻³⁹ The reasons provided for the latter tend to fall back on what has been discussed, namely, that staff do not have the time nor the inclination to perform proper mouthcare, even if they are provided with some training. Based on these considerations, a reasonable course of action, which has been suggested in some studies, is to try to change the system so that dedicated oral health-care personnel become more involved in the care of LTC residents, as this pilot study aims to do, since it will provide a much-needed service by people who are fully trained and comfortable in carrying out proper mouthcare.⁴⁰⁻⁴³ Of course, the challenge in this pilot study is that DH students will only be present at the LTC facilities once a week. In one study, it was found that having DH students (or a DH) provide sole mouthcare to LTC residents every three weeks, without training of and cooperation by nursing staff, had very poor results, since nursing staff failed to take on mouthcare responsibilities in the absence of the DHs.⁴⁴ However, the same study found that, when a DH trained nursing staff in proper mouthcare techniques, the residents cared for by those nurses had improved OH.⁴⁴ This pilot study will therefore include both types of interventions for all residents by incorporating a one-on-one HCA educational component, with the intent that the combination of interventions will be more effective than having only DH students or only HCAs perform mouthcare. The DH students will be able to assess the mouthcare needs of the residents and instruct the HCAs in how to perform proper daily mouthcare.

A very important part of this pilot study is the socialization of dental hygiene students into an LTC environment, which will address the problem of HCAs/RNs not carrying out proper mouthcare, since the students will provide guidance, training and incentive. Their socialization will also help to address the grim reality noted in the literature that most dental professionals have very little incentive, apart from a vague sense of professional responsibility, for attending to the needs of elderly LTC residents.⁴⁵ One study of dentistry students found that their experiences working in an LTC facility significantly increased their knowledge and understanding of the complexity of care in such an environment, and it also deepened their appreciation of the professional responsibilities that a dentist has to the geriatric population.⁴⁶ After the DH students in this pilot study have spent some time in LTC facilities, they may have similar experiences, and perhaps the rewards of the work will outweigh other considerations that may have deterred their involvement upon graduation.

Some of the studies that have been referred to above, particularly those that aimed to train HCAs and RNs in mouthcare practices, have used assessment tools and protocols suitable for non-dental professionals. One study looked at the ability of RNs to use the MDS oral health assessment (required in U.S. LTC facilities upon admission) and found that their accuracy was very poor insofar as the RNs were unable to detect oral problems, and thus the use of this tool by RNs did not benefit the residents.⁴⁷ Another study did find that after attending a training session, there was some improvement in the accuracy of assessments performed by RNs using the MDS.⁴⁸ In another study, The OHAT (Oral Health Assessment Tool) was tested in LTC facilities in Australia, and it was found to be an effective tool to be used by non-dental personnel after completion of

a training program.⁴⁹ However, since much of the research suggests that LTC facilities should have regular dental personnel on staff to handle mouthcare duties, there is a need to examine protocols that will be used by these specially trained individuals. One study found that assessments performed in LTC facilities by dental personnel were much more accurate than those performed by non-dental personnel, which led to the recommendation for more involvement of dental personnel in LTC.⁵⁰ In addition, the literature reveals that there is a need to develop tools and protocols that are specifically designed for use within the unique LTC environment and for dealing with frail elderly residents, many of whom suffer from dementia.⁵¹ This pilot study helps to fill that need by having DH students test and examine different assessment tools and protocols in order to determine which work best for these individuals. An advantage to having DH students (and any other trained dental personnel) assess mouthcare needs in LTC facilities is that these individuals would be able to make use of more specialised tools, such as CODE—An index of Clinical Oral Disorder in Elders—which was developed specifically as a comprehensive indicator of oral dysfunction in elderly residents of LTC facilities.⁵²

3.5 Approach or methodology

This pilot study is designed using mixed methods, and will incorporate numerous activities as outlined below. Two LTC facilities in Edmonton have been identified and approval has been granted for the implementation of the project. At each LTC facility, four DH students together with a Registered Dental Hygienist (RDH), who is also a Clinical Instructor in the Dental Hygiene Program at the University of Alberta, will be onsite one day per week.

The dental hygiene students will work in pairs and with an RDH, Clinical Instructor will:

- work with HCAs individually to review the resident’s mouthcare plan (MCP), and when possible, demonstrate OH technique to HCA with resident
- complete intra-oral assessment using the OHAT, OHI-S, and GBI; provide individual mouthcare instructions; develop and record the MCP; and complete intervention fidelity monitoring checklists (see Appendix 2, 3, and 4 for more details)
- determine best place to incorporate MCP—e.g., in client chart or bedside card—to best serve the needs of all (HCAs, RNs, DHs, and residents) and as agreed with the facility

An inservice session on oral health care will be provided for any staff at each facility. The session will be offered at three different time points in order to accommodate varying shifts of the various healthcare staff.

A third part of the project involves completion of individual, face-to-face interviews with HCAs, RNs, and the LTC Administrator and Education Coordinator. Additionally, focus groups will be completed with a random selection of the dental hygiene students. A trained interviewer will be recruited to conduct the following:

- individual face-to-face interviews with HCAs to determine barriers and facilitators for mouthcare provision as well as to gather feedback on our project
- individual face-to-face interview with LTC administrators and Education Coordinator to determine the effectiveness of the project
- individual, face-to-face interviews with RNs to gather feedback on the project, and if they are involved in mouthcare delivery, they will be invited to participate in focus groups if numbers are sufficient
- focus groups with a random selection of dental hygiene students.

Twenty-one individual, semi-structured interviews will be conducted. The 21 interviews include the following: 12 interviews with health care aides (HCAs), 4 interviews with registered nurses (RNs) and 5 interviews with the long term care facility administrators including the education coordinators. Three focus groups will be completed with 6-8 dental hygiene students in each group.

The qualitative data will be analyzed as follows. The interviews will be audio taped. The audio taped interviews will be transcribed. To best ensure quality of the transcription, the Principal Applicant (PA) for this project will spot-check the work of the transcriptionist. The transcriptions will be summarized and returned to the interviewees for verification of the contents of the summary.

The full transcriptions will be reviewed by the PA for the project and the Co-Applicant (Co-A) for the project will be the second reader of each transcript and will verify the thematic categorization performed by the PA. If discrepancies occur in the categorization of data into a particular theme, it will be discussed between the PA and Co-A until consensus is reached. If consensus is not reached, a third independent reviewer will be asked to review the transcript and verify the placement of data into the themes. At our academic institution, we have access to two potential individuals who could perform this task if needed.

The interview data will first be analyzed within each of the individual groups that will be interviewed (HCAs, RNs, Administrators, and students). Once this level of analysis is completed, the transcripts will be analyzed across all groups to determine if there are any common themes stemming from across the groups. For example, all groups will be asked to comment on conducting oral health assessments and on the process of providing daily oral care for the elderly residents. This data will be assessed across all transcripts to see if there is a common theme emerging. The Interview Guides will guide the interviews and the data analysis processes.

NVivo software is not being used for this project. It is not necessary to use software programs in all qualitative research and with a small sample size as in our current project; we are able to effectively manage the data without the use of computer generated software. There are no statistical calculations being used in qualitative data analysis. It is uncommon to perform any statistical calculations with qualitative data and is considered unacceptable practice by most if not all qualitative researchers. The primary objective in this feasibility study is to determine how we can perform oral health assessments in LTC facilities. In order to most accurately assess and report on the oral health status of elders in LTC, we must determine how this can be consistently measured and recorded. The individual interviews with all people will be analyzed to

gather the perspective of what worked and what didn't when oral health assessments, daily mouthcare, and oral health education was performed. Similarly, the same perspective is being sought from the focus group sessions with the dental hygiene students.

3.6 Products or outputs

We will submit a technical report to CFDHRE. We will also publish the pilot study and resulting protocols. The outcomes of this pilot study are intended to inform the development of a CIHR grant application for a controlled cluster-randomized clinical trial to determine effectiveness of the collaborative approach (DH & HCA) for daily mouthcare on oral health outcomes.

3.7 Intended results/outcome/impact of the project

This current project seeks to complete each of the four short term objectives. It is intended that each of the three long term objectives will form part of a second and larger study that would be submitted to the Canadian Institutes of Health Information (CIHR). The long term objectives were provided in this project proposal in order to demonstrate the continuum of how the future of the project is envisioned and how this has the potential for having an impact on oral health outcomes for elders in long term care settings.

Short-term objectives:

- Determine the feasibility of implementing OH assessment protocols in LTC facilities
- Enhance practice of LTC HCA staff in regards to daily mouthcare practices and procedures for residents
- Socialize DH students to the challenges and rewards of working in LTC facilities
- Provide or create "champions" for mouthcare within LTC facilities

Long-term objectives:

- Utilize the outcomes from this pilot study to determine the most effective protocols for working within this environment, and use this information to inform development of a grant application to conduct a cluster-randomized controlled clinical trial
- Contribute to a change in culture within LTC facilities so that DHs become collaborators in delivery of healthcare services and are visible on a regular basis within the environment
- Improve the OH status of residents in LTC facilities, which will contribute to and improve their overall health and quality of life

3.8 Work plan: See Appendix 6.

3.9 Knowledge translation plan

Knowledge translation strategies include the following: publication of pilot study; oral and written presentation of findings to the two LTC facilities; oral presentation of findings at a CDHA conference; oral presentation of findings at the North American Dental Hygiene Research conference; presentation of study protocols at the University of Alberta, School of Dentistry Brown Bag; presentation of the results of pilot outcomes at the Dental Public Health Conference; and presentation of findings (written or oral) to policy decision-makers at the local (Edmonton zone) and provincial levels of Alberta Health Services, including to the Alberta Health Services, Dental Officer of Health.

3.10 Evaluation plan

Intervention fidelity will be continuously monitored throughout the pilot study, and information derived from these forms and from individual interviews and focus groups will be used to evaluate implementation effectiveness and to propose revisions for subsequent main study. Qualitative data collection was selected for the project methodology to allow for more detailed and meaningful descriptions of the challenges and successes from the overall project. The interview guides will support the facilitation of a guided conversation between the interviewer and the interviewee.

This feasibility study proposal does not intend to measure health outcomes. This study seeks to determine what type and level of oral health assessments are feasible for completion in long term care (LTC) facilities. LTC facilities are complex environments with medically complex residents. This combination of factors changes how oral health assessments can be completed. This beginning study seeks to understand *how* and *what type* of oral health assessments can be completed with residents in these facilities. This information will be used to design a future research study that will use oral health assessments and oral health education with daily mouthcare to assess oral health outcomes.

4. BUDGET

Non-salary costs

a) Travel & meetings

North American Dental Hygiene Research Conference: (Travel, accommodation, registration)	\$2500
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We have targeted the North American Dental Hygiene Research Conference 2011 in Bethesda, Maryland as the conference where these results would first be presented.

Travelling from Edmonton to Bethesda for one person:

Airfare: approximately \$1,000.00 (CAD)

Hotel: 3 nights @ \$200 USD/night + taxes = \$700 USD

Conference Registration: approx \$350 USD

Meals: \$70/day x 3.5 days = \$245 USD

Airport Transfers (bus/taxi): \$60 x 2 = \$120 USD

Total estimated cost for one person to attend the above named conference = ~ \$2415.USD

b) Supplies & services

Data transcription (65 hours @ \$25/hr) \$1625

c) Other

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Sub-total \$4125

Salary & personnel

Interviewer/Focus Group Facilitator (28 hours @ \$50/hr) \$1400

The current rate for an experienced facilitator to conduct interviews and focus groups ranges from \$40-60/hour. It is important when doing focus groups in certain settings and with certain content being asked that the facilitator is independent from the setting and from the information being collected. This allows increased freedom of expression from the people being interviewed in the focus groups. The PA would be considered too close to the setting to be the facilitator. It is possible that the respondents may not be as

candid with their responses as they would have been working closely with the PA over the past 4 months. For this reason, the budget includes an independent person to be the facilitator for the focus groups and individual interviews.

Dental Hygienist – Inservice Provision (9 hours @ \$50/hr) \$450

The dental hygienist who is providing the in-service oral health education sessions is a graduate, practicing, registered dental hygienist (RDH). The average hourly wage in Alberta for an RDH is \$50/hour so we have justified offering the average hourly wage for this type of work. Students are not providing the educational inservice sessions nor are they being compensated for any of their involvement in the project. The students' involvement is part of their clinical practicum in their Dental Hygiene Program at the University of Alberta.

Study Coordinator (98 hours @ \$28/hr) \$2744
The going rate for a study coordinator at the University of Alberta ranges from \$24 - \$35/hour, therefore we budgeted in the mid-range with \$28/hour

Sub-total	\$4594
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Sub-total Project Cost	\$8,719
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Institutional Overhead (15% of total budget)	\$1308
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Indirect costs, also called overhead, are those expenditures incurred in the conduct of research that are not directly attributed to a specific research effort. Such costs include:

- infrastructure and space maintenance
- support services for research including central research and financial services

- environmental health and safety resources
- meeting regulatory certification requirements
- providing key resources such as library and computer information services.

Maintenance of and improvements to research infrastructure require ongoing reinvestment on a significant scale. For this reason, research project funding should cover the full costs of the research allowable under University policy. The indirect costs of research at the University of Alberta average 51 per cent of the direct costs and must be recovered through a percentage assessment on the direct costs. A research project budget must include both indirect and direct costs where possible.

Total Project Cost: \$10,027

Other sources of funding: We will be submitting a grant to the Fund for Dentistry, University of Alberta to cover costs of toothbrushes (manual & powered) for residents and for distribution at staff inservices, and for development of resource materials for the project.

Total Requested from the CFDHRE: \$10,000

Budget Narrative:

la) Travel, accommodation, and registration fees for one investigator to attend the North American Dental Hygiene Research Conference.

lb): One of the main components of working with qualitative data is that the interview/focus group recordings need to be transcribed into a format that is suitable for qualitative data analysis.

lc) No expenses fall into the "Other" category.

II) The interviewer/focus group facilitator will conduct 12 one hour interviews with HCAs (6 per facility), 9 one hour interviews with RNs and Administrators, and 3 focus groups with dental hygiene students. A certain number of preparatory and debriefing hours have been included in the total. This person needs to be skilled in Interviewing technique and qualitative research methods. The dental hygienist inservice provider will provide 6 one hour inservices, three at each of the two facilities (to accommodate staff from various shifts and days off), and will require 3 hours of preparation time. The study coordinator would be on-site for a full day each time the students/instructors are there, to ensure accurate and adequate data collection, and to trouble shoot any problems. This role will also liaise between the on-site students and the researchers, and will provide regular debriefing of activities and challenges. This is critical to the feasibility/evaluative component of this project.

Institutional Overhead (15%). This is a mandatory fee charged by the host institution.

5. REQUIRED ATTACHMENTS

Ethics

Please note: All methodology involving human subjects requires ethics approval. Ethics approval must either accompany this application, or follow if the proposal is accepted.

This project requires and ethics approval: YES NO

Ethics approval attached: YES NO

Ethics approval will be sent at a later date: YES NO

Curriculum Vitae

Lead Principle Applicant CV attached: YES NO

Co-Principle Applicant CV attached: YES NO

6. OTHER ATTACHMENTS:

Appendices:

1. References
 2. Schedule of Student Daily Activities
 3. Intervention Fidelity Monitoring Checklist
 4. Oral Hygiene Care Plan for Long-Term Care
 5. Oral Health Assessment Tool (OHAT) for Long-Term Care
 6. Work Plan January – August 2011
 7. Interview Guide for Health-Care Aides
 8. Interview Guide for LTC Administrators
 9. Interview Guide for Registered Nurses
 10. Interview Guide for Focus Groups with Students
 11. Voluntary Involvement Consent Form
 12. Letters of Support
 13. CV: Lead Applicant
 14. CV: Co-applicant
- List of Acronyms

See Attached Scanned Signatures

Signature of Lead Principle Applicant

Signature of Co-Applicant

Appendix 1: References

1. Thorne, S.E., Kazanjian, A., MacEntee, M.I. (2001). Oral health in long-term care: The implications of organizational culture. *Journal of Aging Studies*, 15: 271-283.
2. Wyatt, C.C.L. (2002). Elderly Canadians residing in long-term care hospitals: Part I. Medical and dental status. *J Can Dent Assoc*, 68(6): 353-358.
3. Gammack, J.K., Pulisetty, S. (2009). Nursing Education and Improvement in Oral Care Delivery in Long-Term Care. *J Am Med Dir Assoc*, 10:658-661.
4. Hawkins, R.J., Main, P.A., Locker, D. (1998). Oral health status and treatment needs of Canadian adults aged 85 years and over. *Special Care in Dentistry*, 18(4):164-169.
5. Fitzpatrick (2000). Oral health care needs of dependent older people: responsibilities of nurses and care staff. *Journal of Advanced Nursing*. 32(6), 1325-1332.
6. Chalmers, J.M., Pearson, A. (2005a). A systematic Review of Oral Health Assessment by Nurses and Carers for Residents with Dementia in Residential Care Facilities. *Spec Care Dentist*, 25(5) 227-233.
7. Gammack, J.K., Pulisetty, S. (2009). Nursing Education and Improvement in Oral Care Delivery in Long-Term Care. *J Am Med Dir Assoc*, 10:658-661.
8. Coleman, P., Watson, NM. (2006). Oral Care Provided by Certified Nursing Assistants in Nursing Homes. *JAGS*, 54:138-143.
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Appendix 2: Schedule of Student Daily Activities

The students will work in pairs and will complete an intra-oral assessment for residents, and when appropriate, students will complete oral hygiene instructions with the resident. Students will also assess the amount of plaque and hard debris on the teeth. Students will use a disposable dental mouth mirror and a visual inspection in order to classify the soft and hard debris. At this point, only visual inspections are possible. Students will also provide demonstrations for health care aides on how to effectively complete daily mouthcare for a resident.

Students will be at the facility one full day each week for 13 weeks. There are two facilities involved and four students are going to each facility and can see a maximum of 8 residents per day at each facility. The time needed to complete assessment and oral health education will vary with each resident and in some cases there may be less or more residents

9:00 am – 9:30 am	Review Resident Charts
9:30 am – 10:30 am	Student Team A - Resident 1, Student Team B - Resident 2
10:30 am – 11:30 am	Student Team A - Resident 3, Student Team B - Resident 4
11:30 am – 12:00 pm	Debrief and Complete Intervention Checklist
1:00 pm – 1:30 pm	Review Resident Charts
1:30 pm – 2:30 pm	Student Team A - Resident 5, Student Team B - Resident 6
2:30 pm – 3:30 pm	Student Team A - Resident 7, Student Team B - Resident 8
3:30 pm – 4:00 pm	Debrief and Complete Intervention Checklist

Appendix 3: Intervention Fidelity Monitoring Checklist

ID Code _____ Location _____

Chart Review Performed

Medical Alerts _____

Age _____ Gender _____

Oral Health Assessment Tool (OHAT) Completed Partial Not at all

Geriatric Index-Simplified (GI-S) Completed Partial Not at all

Bleeding Index Completed Partial Not at all

Challenges Observed _____

Mouthcare Intervention with Health-Care Aide

Oral Hygiene Technique Demonstrated Yes No


Comment _____

The following OH aids were provided: _____

Review of Discussion _____

Challenges Identified _____

Appendix 4: Oral Hygiene Care Plan for Long-Term Care

ORAL HYGIENE CARE PLAN for LONG-TERM CARE					Resident:
Level of Assistance Required <input type="checkbox"/> Independent <input type="checkbox"/> Some assistance <input type="checkbox"/> Fully dependent					Date:
Assessment of Natural Teeth & Tissues: <i>(please circle)</i>	Upper	Yes	No	Root tips present	Interventions for oral hygiene care: <i>(check all that apply and indicate frequency as needed)</i> <input type="checkbox"/> Regular large handled toothbrush <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. <input type="checkbox"/> Use 2 toothbrush technique <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. <input type="checkbox"/> Suction toothbrush <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. <input type="checkbox"/> Regular fluoridated toothpaste <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. <input type="checkbox"/> Do not use toothpaste <input type="checkbox"/> Interproximal brush/ floss/ end tuft <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. <input type="checkbox"/> Dry mouth products _____ <input type="checkbox"/> Other:
	Lower	Yes	No	Root tips present	
	General <i>Indicate any other findings on chart below:</i>				
					
Assessment of Dentures: <i>(please circle)</i>	Upper	Full	Partial	Not worn	<input type="checkbox"/> Brush mouth tissues & tongue <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. <input type="checkbox"/> Scrub denture(s) with denture brush <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. <input type="checkbox"/> Soak denture(s) over night in 1 part water/1 part vinegar solution <input type="checkbox"/> Scrub denture cup & lid weekly with detergent & water <input type="checkbox"/> Dry mouth products as needed <input type="checkbox"/> Identify denture(s) <input type="checkbox"/> Other:
	Lower	Full	Partial	Not worn	
		Name on denture: Yes No		No denture	
		Name on denture: Yes No		No denture	
Regular Barriers to Oral Care or Dental Treatment <i>(check all that apply)</i>	<input type="checkbox"/> Forgets to do oral hygiene care <input type="checkbox"/> Can't remember how to do oral care <input type="checkbox"/> Refuses oral hygiene care <input type="checkbox"/> Won't open mouth <input type="checkbox"/> Bites toothbrush <input type="checkbox"/> Can't or doesn't follow directions <input type="checkbox"/> Can't swallow properly (dysphagia) <input type="checkbox"/> Can't rinse or spit <input type="checkbox"/> Swallows all toothpastes or liquids			<input type="checkbox"/> Responsive behaviours: <input type="checkbox"/> Pushes away <input type="checkbox"/> Hits <input type="checkbox"/> Turns head away <input type="checkbox"/> Bites <input type="checkbox"/> Spits <input type="checkbox"/> Swears <input type="checkbox"/> Other _____ <input type="checkbox"/> Constantly grinding / chewing <input type="checkbox"/> Won't take dentures out at night <input type="checkbox"/> Difficulty getting dentures in or out	
	<input type="checkbox"/> Head faces downwards <input type="checkbox"/> Head is constantly moving <input type="checkbox"/> Dexterity or hand problems / arthritis <input type="checkbox"/> Can do some oral care but not all <input type="checkbox"/> Tired, sleepy or poor attention <input type="checkbox"/> Requires financial assistance for dental treatment <input type="checkbox"/> Other:				
Completed by:					

Appendix 5: Oral Health Assessment Tool (OHAT) for Long-Term Care

ORAL HEALTH ASSESSMENT TOOL (OHAT) for LONG-TERM CARE				Resident:		
Nursing Admission <input type="radio"/> Quarterly <input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3				Date:		
NOTE: A Star * and underline indicates referral to an oral health professional (i.e. dentist, dental hygienist, denturist) is required.						
Category	0 = healthy	1 = changes	2 = unhealthy	Score	Action Required	Action Completed
Lips	Smooth, pink, moist	Dry, chapped, or red at corners	<u>Swelling or lump, white/red/ulcerated patch, bleeding/ulcerated at corners*</u>		1=intervention 2=refer	<input type="checkbox"/> YES <input type="checkbox"/> NO
Tongue	Normal, moist, pink	Patchy, fissured, red, coated	<u>Patch that is red and/or white, ulcerated, swollen*</u>		1=intervention 2=refer	<input type="checkbox"/> YES <input type="checkbox"/> NO
Gums and Tissues	Pink, moist, Smooth, no bleeding	<u>Dry, shiny, rough, red, swollen around 1 to 6 teeth, one ulcer or sore spot under denture*</u>	<u>Swollen, bleeding around 7 teeth or more, loose teeth, ulcers and/or white patches, generalized redness and/or tenderness*</u>		1 or 2 = refer	<input type="checkbox"/> YES <input type="checkbox"/> NO
Saliva	Moist tissues, watery and free flowing saliva	Dry, sticky tissues, little saliva present, resident thinks they have dry mouth	<u>Tissues parched and red, very little or no saliva present: saliva is thick, ropery, resident complains of dry mouth*</u>		1=intervention 2=refer	<input type="checkbox"/> YES <input type="checkbox"/> NO
Natural Teeth <input type="checkbox"/> Y <input type="checkbox"/> N	No decayed or broken teeth/ roots	<u>1 to 3 decayed or broken teeth/roots*</u>	<u>4 or more decayed or broken teeth/ roots, or very worn down teeth, or less than 4 teeth with no denture*</u>		1 or 2 = refer	<input type="checkbox"/> YES <input type="checkbox"/> NO
Denture(s) <input type="checkbox"/> Y <input type="checkbox"/> N	No broken areas/teeth, dentures worn regularly and name is on	1 broken area/tooth, or dentures only worn for 1 to 2 hours daily, or no name on denture(s)	<u>More than 1 broken area/tooth, denture missing or not worn due to poor fit, or worn only with denture adhesive*</u>		1 = ID denture 2 = refer	<input type="checkbox"/> YES <input type="checkbox"/> NO
Oral Cleanliness	Clean and no food particles or tartar on teeth or dentures	Food particles/ tartar/ debris in 1 or 2 areas of the mouth or on small area of dentures; occasional bad breath	<u>Food particles, tartar, debris in most areas of the mouth or on most areas of denture(s), or severe halitosis (bad breath)*</u>		1=intervention 2=refer	<input type="checkbox"/> YES <input type="checkbox"/> NO
Dental Pain	No behavioural, verbal or physical signs of pain	<u>Verbal and/or behavioural signs of pain such as pulling of face, chewing lips, not eating, aggression*</u>	<u>Physical signs such as swelling of cheek or gum, broken teeth, ulcers, 'gum boil', as well as verbal and or behavioural signs*</u>		1 or 2 = refer	<input type="checkbox"/> YES <input type="checkbox"/> NO
				Completed by: _____		
FOLLOW UP						
<input type="checkbox"/> Oral Hygiene Care Plan - Date: _____ <input type="checkbox"/> Oral Health Assessment to be repeated on - Date: _____						
<input type="checkbox"/> Person and/or family/guardian refuses: a) <input type="checkbox"/> Referral - Date: _____ b) <input type="checkbox"/> Dental Treatment - Date: _____						

Appendix 7: Interview Guide for Health-Care Aides

The hired facilitator will conduct the interviews with the health care aides.

I expect the interview to take approximately 45-60 minutes. The interview will be audio-recorded and transcribed. I may also make some hand written notes while you are speaking. You are free to not respond to any question if you so choose.

The project is being conducted in accordance with the Freedom of Information and Protection of Privacy Act and the information will only be used for educational purposes such as program improvements and academic publications and presentations.

Note for Facilitator- Present the consent form to the interviewee prior to beginning the interview.

Questions:

1. Describe your previous training in mouthcare.
2. What do you do for resident mouthcare?
3. Describe your experience working with the dental hygiene students.
4. Do you wear any personal protection such as gloves and mask when providing mouthcare to residents?
5. Do you have any problems with administering mouthcare to residents? If yes, what kinds of problems?
6. How many times have you had an individual demonstration in mouthcare techniques from a dental hygiene student?
7. Have you been able to follow the mouthcare plan set out by the dental hygiene students? If not, what are the challenges?
8. Have you noticed any changes or improvements in resident oral hygiene since this project began?
9. Is there anything that you can recommend to help improve mouthcare for residents?

Appendix 8: Interview Guide for LTC Administrators

I expect the interview to take approximately 45-60 minutes. The interview will be audio-recorded and transcribed. I may also make some hand written notes while you are speaking. You are free to not respond to any question if you so choose.

The project is being conducted in accordance with the Freedom of Information and Protection of Privacy Act and the information will only be used for educational purposes such as program improvements and academic publications and presentations.

Note for Facilitator - Present the consent form to the interviewee prior to beginning the interview.

Questions:

1. How do you feel the project is working with the dental hygiene students?
2. Are you satisfied with how the dental hygiene students interact with the HCAs and the residents? Do you have any suggestions for their interactive style?
3. Have you received any feedback, positive or negative, about the project? If so, can you share some of the feedback with me?
4. Do you have any recommendations for changes that you think may help improve the overall project?
5. Would you like to see the project continue?

Appendix 9: Interview Guide for Registered Nurses

I expect the interview to take approximately 45-60 minutes. The interview will be audio-recorded and transcribed. I may also make some hand written notes while you are speaking. You are free to not respond to any question if you so choose.

The project is being conducted in accordance with the Freedom of Information and Protection of Privacy Act and the information will only be used for educational purposes such as program improvements and academic publications and presentations.

The care plan is incorporated into the overall care plan for the resident's overall health. A Registered Nurse (RN) is responsible for overseeing that all aspects of the resident's care plan are completed. At the end of each day when our dental hygiene team is attending the facility, the RN is alerted if modifications or additions were made to the oral health (mouth) care plan for a resident. The RN will arrange for dental/hygiene treatment as possible and in accordance with approvals from the resident or their designated authority.

Note for Facilitator - Present the consent form to the interviewee prior to beginning the interview.

Questions:

1. Describe your role in mouthcare for the residents.
 - a. If involved with mouthcare, have you noted any change in the residents' oral hygiene practice since the project began?
2. Have you had the opportunity to observe or work with the dental hygiene students?
 - a. If so, what did you observe?
 - b. Do you have any recommendation for change based on what you observed the students doing?
3. What is your perception of how the dental hygiene students are managing with the residents?
4. What is your perception of how the dental hygiene students are managing with the HCAs?
5. Do you have any recommendations for change to the overall project?

Appendix 10: Interview Guide for Focus Groups with Students

I expect the focus group to take approximately 60 minutes. The session will be audio-recorded and transcribed. I may also make some hand written notes while you are speaking. You are free to not respond to any question if you so choose.

The project is being conducted in accordance with the Freedom of Information and Protection of Privacy Act and the information will only be used for educational purposes such as program improvements and academic publications and presentations.

Note for Facilitator - Present the consent form to the focus group participants prior to beginning the session.

1. From, your practicum in LTC, describe the learning experience that stands out most for you. (*Note to facilitator – try to have each student respond to this question*)
2. Describe any challenges you experienced.
3. Describe how communication and directions transpired from the time you entered the facility to completion of the day's experience. For example, were you met upon arrival and directed to your area as planned, etc.
4. Describe any challenges you had with performing the oral assessments.
5. Describe any challenges you had with mouthcare instruction with residents.
6. Describe any challenges you had with mouthcare instruction with HCAs? Others? (If others, who were they? RNs? Other caregiver?)
7. How do you feel you were able to communicate with residents? HCAs? Others? (If others, who were they?)
8. Did you feel part of an interdisciplinary team? If so, how? If not, why not? (provide an example)
9. Please share any suggestions for the future of this oral health project

Appendix 11: VOLUNTARY INVOLVEMENT CONSENT FORM

Dental Hygiene Program

Department of Dentistry, University of Alberta

I, _____, hereby consent to be

- Interviewed, and
- Tape-recorded by _____

I understand that:

- I may choose not to respond to any question
- I may withdraw from the project at any time without penalty
- I may request to review the interview transcription and make changes
- All information gathered will be treated confidentially and discussed only with the two project coordinators
- Any information that identifies me will be shredded upon completion of the project
- I will not be identifiable in any documents resulting from this research
- This study is being conducted in accordance with the Freedom of Information and Protection of Privacy Act.

I also understand that the results of this research will be used only in the following:

- Further development of the oral health care project
- Presentation and publication to other academic colleagues

Print Name of Interviewee

Signature

Date Signed: _____

Appendix12. Letters of Support



UNIVERSITY OF ALBERTA

October 5, 2010

Judy Lux, Program Director
Canadian Foundation for
Dental Hygiene Research and Education
(CFDHRE)
96 Centrepointe Drive
Ottawa, ON K2G 6B1

Dear Judy:

Re: Grant Application "ElderSMILES"

I am writing to express my support from the Department of Dentistry, Faculty of Medicine and Dentistry at the University of Alberta for the above-listed research proposal. I strongly believe in the important role of dental hygienists in the oral health of elderly in Long Term Care (LTC) settings. It is well known that elderly in LTC are not receiving adequate mouth care and their overall health can be impacted by lack of optimal oral health. I believe this research proposal will make a significant contribution to the improvement of oral health of residents in LTC. Additionally, and very importantly, the project will expand the clinical experience for the dental hygiene students and increase the potential for them to work in similar settings upon graduation.

Dr. Sharon Compton and Sandy Cobban have the expertise and the dedicated time to conduct this project. Sandy is currently completing her PhD and her research is focused in this area so this will be a natural continuation of her research area. The Department of Dentistry is currently in discussions with a hospital-based treatment facility in Edmonton where the dentistry and dental hygiene students can provide treatment for elderly residents. This initiative together with the proposed project is totally complimentary and will provide a comprehensive learning experience for the students. The Department is very encouraged to be a part of the growth in this area and believe we will make an impact on the oral and overall health of residents in LTC.

The Department of Dentistry is willing to partner in this project with in-kind donations of physical office location for the project coordinator, access to photocopying, computer, internet and other office needs. We look forward to the opportunity to be part of this research proposal and appreciate CFDHRE for offering these funding envelopes to further dental hygiene research.

Sincerely,

Dr Paul Major, DDS, MSc, FRCD(C)
Lead, School of Dentistry

Department of Dentistry
Faculty of Medicine and Dentistry

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October 12, 2010

Judy Lux, Program Director
Canadian Foundation for Dental Hygiene Research and Education (CFDHRE)
96 Centrepointe Drive
Ottawa, ON K2G 6B1

Dear Judy,

Re: Grant Application "ElderSMILES"

I am writing to express my support for the above named research proposal. Our Program Manager and two of our Education Coordinators met with Dr Sharon Compton to discuss the proposed project and we are excited to be a part of this new initiative with the Dental Hygiene Program.

At Jasper Place, we are proud of the warm and caring environment we have created for the residents and staff and welcome the addition of the dental hygienists. We currently have a Registered Dental Hygienist with a mobile practice who provides treatment on contract as needed. The dental hygiene students will further enhance the provision of mouthcare for the residents and provide support for the Healthcare Aides (HCA) working with the residents on a daily basis.

We recognize the complexities involved when providing mouthcare for the elderly and understand the importance of oral health for overall health and well-being. It will be beneficial for the residents and the HCAs to work with the students. At Jasper Place, there are students from other health disciplines who receive learning experiences at our facility and the dental hygiene students will be part of the group.

We look forward to having the dental hygiene students involved in the care for the residents and anticipate how this project could lead to development of a model for incorporating oral health with overall health care. On behalf of our group here at Jasper Place facility, we support Sharon and her team and wish them much success on the proposed project.

Sincerely,

Margaret Plazier RN, GNC(c)
Executive Director

Appendix 13. CV: Lead Applicant

Received and on file

Appendix 14. CV: Co-applicant

Received and on file

List of Acronyms

The following is a list of all acronyms contained in the proposal.

OH	oral health
LTC	long-term care This is a facility for elders who require some level of assistance and care. May also be referred to as a nursing homes or continuing care centres, or
DH	dental hygiene
HCA	health-care aide This is a support care worker who provides personal care, support and basic health care services for residents under the direct or indirect supervision of a regulated nurse or other regulated health care professional. This care includes taking care of the person' mouth with tooth brushing or denture care as needed.
PI	Principle Investigator
RN	Registered Nurse
MDS-RAI	Minimum Data Set: Resident Assessment Instrument

This is a comprehensive assessment and care-planning instrument used to assess long-term care facility, community and home care program clients.

US	United States of America
OHAT	<p>Oral Health Assessment Tool</p> <p>OHAT was developed by Dr J Chalmers in 2004. Featured in Registered Nursing Association of Ontario Nursing Best Practice Guideline: <i>Oral Health: Nursing Assessment and Interventions (Fall 2007)</i>. Modified with permission by Halton Region Health Department and MOHLTC (Ministry of Health, Long Term Care) Regional Best Practice Coordinators. The OHAT is a tool designed for the systematic assessment of oral health specific to the elderly.</p>
CODE	<p>An index of Clinical Oral Disorder in Elders</p> <p>This index was developed specifically as a comprehensive indicator of oral dysfunction in elderly residents in long term care.</p>
RDH	Registered Dental Hygienist
MCP	<p>mouthcare plan</p> <p>The mouthcare plan is a care plan developed specifically to address a person's oral health needs. The MCP being incorporated in this study the plan developed by Ontario's Halton Health Region. It is available on their website as a resource for professional use.</p>
OHI-S	<p>Simplified Oral Hygiene Index</p> <p>Defined in Wyche CJ & Wilkins EM. Indices and Scoring Methods. In: Wilkins EM, Clinical practice of the dental hygienist. 10th ed. Lippincott Williams & Wilkins; 2009. p 333-335.</p>

GBI Gingival Bleeding Index

Defined in Wyche CJ & Wilkins EM. Indices and Scoring Methods.
In: Wilkins EM, Clinical practice of the dental hygienist. 10th ed.
Lippincott Williams & Wilkins; 2009. p 340-341.

CIHR Canadian Institutes of Health Research