



# **National Center for Dental Hygiene Research & Practice (NCDHRP)**

## **Best Practices for Incorporating Dental Hygiene Research & Evidence Based Decision Making (EBDM) Into Dental Hygiene Curriculum**

**A Guide Developed for the 3rd  
North American/Global Dental Hygiene  
Research Conference**

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## **ACKNOWLEDGEMENTS**

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We wish to thank all of the Advisory Board members who contributed to this Guide by sharing the resources that they have found helpful in teaching research and evidence-based decision-making. We hope that you find these resources helpful in preparing your students to use of the best available evidence to provide quality care and to keep current throughout their careers. We invite you to share resources with us that may not be included so that we can incorporate them in future updates. Also, please note that website addresses are current as of this compilation, however as we all have experienced, they often change.

A very special thank you goes to Denise Bowen, RDH, MS, for compiling, organizing and editing the Best Practices for Incorporating Research & EBDM into Dental Hygiene Curriculum Guide and to Colgate-Palmolive/Colgate Oral Pharmaceuticals for their generous support for this project.

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# **NCDHRP Best Practices for Incorporating Research and EBDM into Dental Hygiene Curriculum**

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Produced and distributed for the 3rd North American/Global Dental Hygiene Research Conference, Oct.16-19, 2014, by the National Center for Dental Hygiene Research & Practice, Herman Ostrow School of Dentistry at the University of Southern California, Los Angeles, CA.

## **Introduction**

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### **The National Center for Dental Hygiene Research and Practice (NCDHRP) – About the Center: Mission, Goals and Projects**

The National Center for Dental Hygiene Research was established through a 3-year grant from the Bureau of Health Professions (BHP), U.S. Department of Health and Human Services in 1993. Development of the Center has been based on a collaborative model that brings together researchers, educators and clinicians to develop and conduct studies related to national dental hygiene research priorities (<http://www.adha.org/research-center>).

More recently, the National Center expanded its scope to have a focus on translational research to enhance clinical practice. This is now reflected in the name of the center, National Center for Dental Hygiene Research & Practice (NCDHRP), our mission and goals. A national panel of dental hygiene leaders and accomplished researchers serve in an advisory capacity.

#### **Mission**

The mission and dissemination of oral health research; establishing an infrastructure to support dental hygiene research; and, strengthening the scientific of the National Center for Dental Hygiene Research & Practice (NCDHRP) is to promote the health of the public by fostering the development, implementation foundation for the discipline of dental hygiene.

#### **Goals**

1. Increase awareness of dental hygienists' contributions to multidisciplinary healthcare research.
2. Serve as an authoritative source on dental hygiene practice and outcomes research.
3. Create and facilitate opportunities that promote leadership and scholarship.
4. Foster research efforts that address the objectives of oral health research agendas.
5. Promote the translation of research evidence so that it is meaningful and useful in dental hygiene education and practice.

### **Best Practices for Incorporating Research and EBDM into Dental Hygiene Curriculum**

Research and evidence-based practice content is required in the dental hygiene curriculum at all levels of instruction. In entry-level educational programs, related topics might be taught across the curriculum in various courses, contained primarily within a single course, or blended with another course such as community oral health. In baccalaureate degree completion programs and master's degree programs research methods and statistics content generally is presented in one or two courses, and mentoring or independent study allows for completion of capstone or thesis projects. Faculty members responsible for teaching research are challenged to develop creative and interesting approaches to avoid students' perceptions of research as boring, dull, not for them, or irrelevant to what they really want to do. Nonetheless, the acquisition and use of the best available evidence is critical to quality of care in dental hygiene practice and life-long learning, and an understanding of the research process is important for preparing students with the interest and desire to seek advanced degrees and, perhaps, become scholars in the discipline.

The National Center has worked since its inception to train dental hygiene and other health professions faculty in research and evidence-based practice. Collaborative efforts to bring together researchers, faculty, and clinicians have provided a foundation for interprofessional research.

The workshop and this accompanying guide for dental hygiene educators, *Best Practices for Incorporating Research & EBDM into a Dental Hygiene Curriculum*, presented at the 3<sup>rd</sup> North American/Global Dental Hygiene Research Conference, has been designed as a helpful resource for teaching introductory research methods and statistics. The goal is to suggest learning activities and teaching resources that will help dental hygiene faculty to create engaging course content. This manual is written to appeal to novice and experienced educators and graduate students who teach research methods and/or statistics. A practical orientation will help the teacher to include strategies that have the potential to engage students in meaningful activities and discussions related to course content and assignments.

The guide begins with an overview of competencies for consideration at each level of the dental hygiene curriculum: entry level, baccalaureate degree completion, and master's degree. National dental hygiene professional and educator associations also have suggested competencies for entry level and master's degree programs.

Subsequent sections outline curricular content, teaching-learning activities, and student assignments that may be used by dental hygiene faculty members responsible for teaching research methods and statistics to students at each level of the dental hygiene curriculum. The suggestions are not exhaustive but do provide some options for consideration. Our hope is that this resource will spark the educators' own creativity and offer ideas for challenging students to learn the foundational skills needed for continued competency throughout their careers.

These fundamental textbooks may be worthwhile for dental hygiene faculty members teaching research methods and evidence based decision.

- **Additional resources are listed in the Dental Hygiene Research Toolkit developed by the NCDHRP.**

### **Selected Research Methods Textbooks**

1. Blessing DJ, Forister JG. *Introduction to Research and Medical Literature for Health Professionals* (3rd ed.). Jones and Bartlett Learning; 2012.
2. Forrest JL, Miller SA, Overman PR, Newman MJ. *Evidence-based Decision Making: A translational guide for dental professionals*. Lippincott, Williams & Wilkins; 2009.
3. Gallin JL, Ognibene FP. *Principles and Practice of Clinical Research* (3rd ed.). San Diego: Elsevier; 2012.
4. Giannobile WV, Burt BA, Genco RJ. *Clinical Research in Oral Health*. John Wiley & Sons; 2010.
5. Glanz, Timer and Lewis. *Health Behavior and Health Education: Theory, Research and Practice* (3rd ed. Jossey-Bass; 2008.
6. Jacobsen KH. *Introduction to Health Research Methods: A Practical Guide*. Sudbury, MA: Jones & Bartlett Learning; 2012.
7. Leedy PD, Ormrod JE. *Practical Research: Planning and Design* (9th ed.). Upper Saddle River, NJ: Pearson; 2010.
8. Patten ML. *Understanding Research Methods: An Overview of the Essentials*. Glendale, CA: Pyczak Publishing; 2014.
9. Portney LG, Watkins MP. *Foundations of Clinical Research. Applications to Practice*. (3rd ed.). Upper Saddle River, NJ: Pearson Education Inc; 2009.
10. Pyczak F. *Making Sense of Statistics. A Conceptual Overview*. Glendale CA: Pyczak Publishing; 2010.

## The DHNet

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Explore the DHNet at <http://www.usc.edu/dhnet>

Another resource designed to be of value to dental hygiene educators teaching research is the **dhnet**. The **dhnet** serves as the home base for the National Center for Dental Hygiene Research & Practice (NCDHRP or Center) and your connection to resources that support dental hygiene education, practice and research. Within each of the sections there are several categories and quick links to major resources for your convenience. Also, each section has links to training programs, many of which are online and can be accessed at your convenience. For example, under the **Education** section, the resources are categorized under the areas of: *Databases, Position Papers, Programs and Training*.



To view and link to all the resources within this section, you can click on it from the homepage, or go directly to it: <https://dent-web10.usc.edu/dhnet/education.asp?section=4>

# **Teaching Strategies: Program Competencies for Research and Evidence-based Decision Making**

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## **Entry Level**

**Relevant Commission on Dental Accreditation (ADA CODA) Accreditation Standards for Dental Hygiene Education Programs, Effective January 1, 2013**  
<http://www.ada.org/~media/CODA/Files/dh.ashx>

At the entry level, several CODA standards directly apply to research and evidence-based decision making. For example, Standard 2-13 (p. 22) requires that graduates be competent in providing the dental hygiene process of care, which includes such areas as the:

- Provision of patient-centered treatment and evidence-based care in a manner minimizing risk and optimizing oral health; and,
- Measurement of the extent to which goals identified in the dental hygiene care plan is achieved.

One example of evidence to demonstrate compliance includes evidence-based treatment strategies.

An understanding of simple statistics also is needed to meet accreditation standard 2-16 (p. 23) requiring that graduates must be competent in assessing, planning, implementing and evaluating community-based oral health programs including, health promotion and disease prevention activities. A third example is standard is 2-21 (p. 25), which states, “Graduates must be competent in the evaluation of current scientific literature.” The intent is to assure competence as the “basis for life-long learning, evidence-based practice, and as a foundation for adapting to changes in healthcare.”

Finally, standard 2-22 (p. 25) states “Graduates must be competent in problem solving strategies related to comprehensive patient care and management of patients.” Examples include ...demonstration of the use of active learning methods that promote critical appraisal of scientific evidence in combination with clinical application and patient factors.

**Relevant American Dental Education Association (ADEA) Competencies for Entry into the Profession of Dental Hygiene, 2003**  
[www.adea.org/about\\_adea/governance/Documents/Competencies.pdf](http://www.adea.org/about_adea/governance/Documents/Competencies.pdf)

- Core Competencies:
  - Provide dental hygiene care to promote patient/client health and wellness using critical thinking and problem solving in the provision of evidence-based practice.
  - Use evidence-based decision making to evaluate and incorporate emerging treatment modalities.
  - Assume responsibility for dental hygiene actions and care based on accepted scientific theories and research as well as the accepted standard of care.
- Evaluation: Determine the outcomes of dental hygiene interventions using indices, instruments, examination techniques, and patient/client self-report.
- Professional Growth and Development: Identify career options within health care, industry, education, and research and evaluate the feasibility of pursuing dental hygiene opportunities.

## **Relevant Canadian Dental Hygienists Association (CDHA) Entry-To-Practice Competencies and Standards for Canadian Dental Hygienists: Critical Thinking**

<http://www.cdho.org/otherdocuments/entrytopractice.pdf>

- Analyze the strengths and limitations of different research approaches and their contributions to the knowledge base of dental hygiene.
  - *Example: Identify the strengths and limitations of a survey conducted to assess the use of research by dental hygienists.*
- Access relevant and credible resources through various information systems.
  - *Example: Conduct a literature search about tongue piercing using PubMed. Search the Internet for credible sites related to infection control guidelines.*
- Differentiate between more and less credible types of information including written statements and other representations of data such as figures and tables.
  - *Example: Use Health of the Net web page to guide critique of internet websites. Assess an article from MacLean's magazine about tooth whitening agents for possible misinformation.*
- Explore complex issues from many points of view recognizing biases and assumptions.
  - *Example: Analyze local newspaper articles related to fluoridation of a new community to determine the arguments being made against fluoridation. Review existing literature to determine the credibility of evidence to support or refute community water fluoridation. Examine dental hygiene regulatory issues from the perspective of the dental hygiene profession, other health professionals and the public.*
- Apply theoretical frameworks to the analysis of information to support practice decisions.
  - *Example: Apply human needs theory to the assessment of client information. Use the hydrodynamic theory of dentinal sensitivity to assess the potential value of a new desensitizing agent.*
- Support conclusions based on a variety of resources with sound rationales.
  - *Example: Develop recommendations for infection control protocols based on information from the Centers for Disease Control and professional associations.*
- Apply evidence-based decision making approaches to the analysis of information and current practices.
  - *Example: Use the best evidence available when formulating individualized treatment plans. Use reviews by the Cochrane Collaboration to make decisions about toothbrushing recommendations for clients.*
- Apply the principles of research ethics to the analysis of literature and practice issues.
  - *Example: Explain to participants how the collected information will be used when collecting information from well seniors for a national health database. Review websites related to informed consent to determine issues to consider when documenting clients' refusal of radiographs.*
- Apply the behavioural, biological and oral health sciences to dental hygiene practice decisions.
  - *Example: Make decisions about supporting water fluoridation based on the evidence related to its safety and efficacy. Discuss clients' fears about breastfeeding leading to increased caries rates for their children.*
- Assess the appropriateness of study methods including common descriptive and inferential statistical tests to sets of data.
  - *Example: Explain why studies finding positive correlations between periodontal disease and low birth weight babies should not be framed into a statement that says periodontal disease causes low birth weight babies.*

- Compare and contrast the strength and limitation of studies pertaining to dental hygiene services and public policies regarding health care delivery.
  - *Example: Critically review the evidence to determine if self-initiation improves access to care. Review studies comparing full mouth debridement and quadrant debridement to determine the sample size of the studies and the factors which might have influenced the results.*

### **Suggested CDHA Competencies Related to Knowledge Application with Sample Performance Indicators**

<http://www.cdho.org/otherdocuments/entrytopractice.pdf>

- Each dental hygienist uses current and relevant information to inform client care and practice decisions.
- Competencies related to *Knowledge Application* include the ability to:
  - Access relevant and credible resources through various information systems.
  - Apply evidence-based decision making approaches to the analysis of information and current practices.
  - Critique literature findings to determine their potential value to dental hygiene practice.
  - Support conclusions based on resources with sound rationales.
  - Integrate new knowledge into appropriate practice environments.
  - Disseminate findings to colleagues and other professionals.
  - Apply critical thinking to decision-making process and make choices to ensure optimum client outcomes.
- Examples of Performance Indicators – Illustrate how the standards could be demonstrated within the dental hygiene practice; provided as suggestions and are not considered an exhaustive list. A dental hygienist demonstrates competence by:
  - Analyzing the strengths and limitations of different research approaches and their contributions to the knowledge base of dental hygiene;
  - Differentiating between more and less credible types of information;
  - Exploring complex issues from many points of view recognizing biases and assumptions;
  - Comparing and contrasting the strength and limitations of studies pertaining to dental hygiene services and public policies regarding health care delivery;
  - Conducting a literature search about an oral health question;
  - Accessing databases that provide profiles of different populations;
  - Using Web-based ‘Point of Care’ resources to support informed and efficient clinical decisions;
  - Acting as a knowledge broker for dental hygiene and oral health information;
  - Sharing relevant information to support collaborative care and interprofessional relationships;
  - Practicing critical thinking and displaying information literacy skills;
  - Using information ethically.

### **Baccalaureate Degree**

**(See also sample entry-level competencies.)**

- Describe the steps in the research process
- Understand the basic principles involved in research design and methodology.
- Apply basic principles of research design and methodology to the critical analysis of contemporary health related literature.

- Demonstrate research/scientific writing skills.
- Analyze and synthesize research findings to evaluate the safety and efficacy of oral health products, interventions, and/or treatments; effectiveness of educational approaches; and/or the outcomes of public health programs.
- Participate in research activities impacting oral and systemic health leading to the discovery of new knowledge of contemporary dental hygiene practice.

## Master's Degree

### **Related ADEA Core Competencies for Dental Hygiene Graduate Education (Developed as a Collaboration between ADEA and the ADHA; approved by the ADEA HOD in 2011)**

<http://www.jdentaled.org/content/76/7/908.full.pdf>

- Selected from Health Informatics and Technology
  - Demonstrate the ability to access, evaluate, and interpret data from various information systems.
  - Demonstrate effective written, oral, and electronic communication skills.
- Scholarly Inquiry and Research
  - Apply the research process to an identified problem.
    - **Appendix A. Overview of the Research Process**
  - Demonstrate professional writing and presentation skills in the dissemination of research findings.
  - Conduct a comprehensive systematic literature search relevant to a specific topic and critically evaluate the evidence gathered.
  - Demonstrate skill in proposal development and writing.
  - Interpret quantitative and qualitative data from the research literature to guide problem-solving and evidence-based decision making.
  - Synthesize information from evidence-based literature to apply to a community health, education, clinical practice, and/or research problem.
  - Design and implement a scholarly project in an area of emphasis.

## Teaching Strategies: Research Course Design, Topics, Activities and Student Assignments

**Goal for Entry Level:** Students can find and use scientific evidence and are aware of dental indices to measure oral health outcomes

**Goal as Student Level Advances:** Students understand and apply basic research principles and methods; scientific writing skills; critical analysis and/or synthesis of literature; plan and/or conduct a research project (e.g., thesis, capstone, research poster or presentation).

### Suggested Topics: Entry Level

<b>Entry Level Dental Hygiene Curriculum: Options for Incorporating Suggested Topics for Research and Evidence Based Practice Basic Skill Set</b>	
<b>Across the Curriculum</b>	<b>Single Course</b>
<p style="text-align: center;"><i>First-Year Didactic Clinical Course(s)</i></p> <ul style="list-style-type: none"> <li>• Evidence-based decision making               <ul style="list-style-type: none"> <li>○ Formulating a good clinical question</li> </ul> </li> <li>• Using PICO to answer a clinical question</li> <li>• Searching the literature to find credible evidence               <ul style="list-style-type: none"> <li>○ Use of two databases (e.g., PubMed, Cochrane)</li> <li>○ Levels of evidence</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Linking dental hygiene practice and research</li> </ul>
<p style="text-align: center;"><i>Second Year Didactic Clinical Course, Literature Review, or Seminar Course</i></p> <ul style="list-style-type: none"> <li>• Linking dental hygiene practice and research</li> <li>• Critical appraisal of literature</li> </ul>	<ul style="list-style-type: none"> <li>• Searching the literature to find credible evidence               <ul style="list-style-type: none"> <li>○ Use of two databases (e.g., PubMed, Cochrane)</li> </ul> </li> <li>• Levels of evidence</li> <li>• Critical appraisal of literature</li> </ul>
<p style="text-align: center;"><i>Community Health Course</i></p> <ul style="list-style-type: none"> <li>• Common dental indices used for measurement of oral health               <ul style="list-style-type: none"> <li>○ Dental caries, periodontal disease, gingival bleeding, oral plaque biofilm</li> </ul> </li> <li>• Introduction to statistics               <ul style="list-style-type: none"> <li>○ Descriptive and inferential statistics – central tendency and variability (e.g., mean, median, mode, % and frequency, standard deviation)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Common dental indices used for measurement of oral health               <ul style="list-style-type: none"> <li>○ Dental caries, periodontal disease, gingival bleeding, oral plaque biofilm</li> </ul> </li> <li>• Introduction to statistics               <ul style="list-style-type: none"> <li>○ Descriptive and inferential statistics – central tendency and variability (e.g., mean, median, mode, % and frequency, standard deviation)</li> </ul> </li> </ul>
<p style="text-align: center;"><i>Student Orientation, Professionalism, or Ethics Course</i></p> <ul style="list-style-type: none"> <li>• Ethical use of information               <ul style="list-style-type: none"> <li>○ Plagiarism &amp; appropriate use of references, obtaining permission</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Ethical use of information               <ul style="list-style-type: none"> <li>○ Plagiarism &amp; appropriate use of references, obtaining permission</li> </ul> </li> </ul>

### Sample Activities and Assignments: Entry Level

- See CDHA examples listed under competencies
- Have students work in pairs or small groups to design a well-developed PICO questions
  - Forrest JL. EBDM: Intro and Formulating Good Clinical Questions, course #311; Access via <http://www.dentalcare.com/en-US/conteduc/index.aspx>

- Schedule class in computer lab for pairs of students to use PubMed to search for current abstracts at higher levels of evidence related to a PICO question after online demonstration
  - Miller SA, Forrest JL. *Searching the Literature Using PubMed*, course #340; Access via <http://www.dentalcare.com/en-US/conteduc/index.jspx>
- Analyze results of a community-based oral health program using a testlet format with data collected using dental indices
- Invite a dental hygienist involved in research to class to discuss this role and answer student questions.

### **Sample Assignments: Entry Level**

- Use PubMed to search for current abstracts at higher levels of evidence related to a well-developed PICO question; submit PICO question, search strategy and abstracts (See links to related resources listed above.)
- Have students go to the Cochrane library and read a systematic review on a current topic of interest
  - *Anywhere Systematic Review, The Cochrane Library* [www.thecochranelibrary.com/view/0/AnywhereSR.html](http://www.thecochranelibrary.com/view/0/AnywhereSR.html)
- Ask students to locate abstracts depicting each of the higher levels of evidence on the Evidence Pyramid.
  - *Guide to Research Methods: The Evidence Pyramid* <http://library.downstate.edu/EBM2/2100.htm>
  - Have students write an annotated bibliography on a current topic of interest and include examples of common knowledge, paraphrasing and quotes.
- Give students case(s) describing community health programs to reduce caries and/or periodontal disease including baseline and post-intervention dental index scores. Have them analyze success of the program.
- Ask students to use an online plagiarism checking software program to determine whether they have adequately paraphrased and referenced information in a written assignment, correct errors if applicable, and submit printed results indicating ethical use of information.
  - **Appendix B. Online resources for Plagiarism Resources and Programs.**
  - *Plagiarism: What It Is and How to Recognize and Avoid It* <http://www.indiana.edu/~wts/pamphlets/plagiarism.shtml>

## **Additional Topics, Activities and Assignments for Baccalaureate Degree Students**

(See also entry-level curriculum content if applicable)

### **Topics**

- Basic principles of research
  - A systematic process of identifying a question or problem, setting forth a plan of action to answer the question or resolve the problem and rigorously collecting and analyzing data.
  - Important to choose the appropriate approach, method and design for a specific research problem.
- Scientific writing
  - *Purdue University Online Writing Lab (OWL)* <https://owl.english.purdue.edu/>
  - Hofman AH. *Scientific Writing and Communication: Papers, Proposals, and Presentations*. Oxford University Press; 2010.
- Research requirements (e.g., IRB, ethics, human subjects, informed consent)

- Research approach and design
  - Qualitative and quantitative research
    - University of Wisconsin-Madison Center for Clinical and Translational Research  
<https://sites.google.com/a/wisc.edu/qualitative-and-mixed-methods-resources/>
  - Primary vs. secondary research
    - PORT: Penn Online Research Tutorial  
[http://gethelp.library.upenn.edu/PORT/sources/primary\\_secondary\\_tertiary.html](http://gethelp.library.upenn.edu/PORT/sources/primary_secondary_tertiary.html)
  - Types of research questions and studies related to levels of evidence
  - Types of variables studied in various research designs
- Types of research
  - Experimental, Randomized Controlled Trial (RCT), or Clinical Trial
    - CONSORT (Consolidated Standards of Reporting Trials)  
<http://www.consort-statement.org>
  - Systematic versus Narrative Literature Reviews
    - **Appendix C. Comparison of Characteristics of a Systematic Review and a Traditional Literature Review**
  - Survey, questionnaires and interviews
    - Survey Research. Web Center for Social Research Methods  
<http://www.socialresearchmethods.net/kb/survey.php>
    - Indiana University Bloomington. Center for Survey Research <http://csr.indiana.edu/>
  - Comparative or correlational cohort studies
    - Longitudinal vs. Cross-sectional studies
- Critical analysis of the literature
  - Key questions and critical appraisal tools (e.g., CASP)
- Statistical analysis
  - Non-parametric and parametric tests – measures of association, t-tests, analysis of variance, p values and statistical vs. clinical significance
    - Trisha Greenhalgh. How to read a paper series, Statistics for the Non-statistician.
      - Part I: Different types of data need different statistical tests. BMJ 1997; 315: 364-366. <http://bmj.com/cgi/content/full/315/7104/364>  
<http://www.bmj.com/content/315/7104/364.full#alternate>
      - Part II: Significant relations and their pitfalls. BMJ, August 16, 1997; 315(7105): 422-425. <http://bmj.com/cgi/content/full/315/7105/422>

## **Sample Activities**

- Conduct a small group activity to discuss and describe steps needed to meet protocol requirements for a given proposed study involving human subjects using your institutional review board's guidelines.
- Provide a topic or research agendas for students to brainstorm about research questions involving quantitative and qualitative approaches to one particular research question or area in need of inquiry.
  - CDHA Research Agenda  
[http://www.cdha.ca/pdfs/Profession/Policy/research\\_agenda\\_102603.pdf](http://www.cdha.ca/pdfs/Profession/Policy/research_agenda_102603.pdf)
  - ADHA National Dental Hygiene Research Agenda <http://www.adha.org/research/nra.htm>
- Have students work in pairs, to use key questions and critically appraise a research article.
- Provide a data set of data collected using dental indices to correlate or compare two interventions and ask students to select possible approaches to statistical analyses.
  - **Appendix D. Flow Chart for Choosing a Statistical Test (last page of Guide)**

## **Sample Assignments**

- Critique a research article using key questions and/or critical appraisal tools.
  - See Miller SA, Forrest JL. Translating Evidence-Based Decision Making into Practice: Appraising and Applying the Evidence. J Evid Base Dent Pract. 2009;9:164-182.
  - CASP (Critical Appraisal Skills Programme): <http://www.casp-uk.net/>
- Develop a research protocol or brief prospectus (including the purpose of the proposed study, significance, theoretical foundation, research questions and objectives, sample description, methods, data collection methods, time frame, and bibliography), and design a research poster or oral paper for presentation. Selected potential resources follow:
  - Stanford School of Medicine. Program on Prevention Outcomes and Practices. Posters and Oral Presentations. <http://ppop.stanford.edu/ResearchPresentations.html>
  - OWL Purdue Writing Lab. Designing an Effective PowerPoint Presentation: Quick Guide. <https://owl.english.purdue.edu/owl/resource/686/01/>
- Complete a structured peer review on other students' research assignments.

## **Sample Bachelor's Degree Research Course Syllabus**

- **Appendix E. University of Southern California (USC) DHYG 424 Research Methods Syllabus**
- **Appendix F. Idaho State University (ISU) DENT 4401 Research Methodology Syllabus**

## **Additional Topics, Activities and Assignments for Master's Degree Students (may also include baccalaureate level curriculum content)**

### **Topics**

- Overview of steps in the research process (See Appendix A.)
- Determining theoretical foundation and significance of a proposed research project
- Conducting a comprehensive literature review and synthesizing findings
- Research questions and objectives or goals and hypothesis formulation
- Research protocol training (as indicated for types of projects required)
- Data Collection, sampling, validity and reliability – sampling methods, sample size, bias, threats to internal and external validity
- Data treatment and storage
- Preparation for statistical analysis consultation
- Scholarly writing
- Funding sources and grantsmanship
- Conducting a capstone or thesis research project Data Analysis
  - Holcomb, Z. C. (2013). SPSS basics: Techniques for a first course in statistics. Los Angeles, CA: Pyrczak Publishers.

### **Sample Activities**

#### **See also baccalaureate degree resources and activities**

- Provide sample research problems with summarized scholarly background information, and ask students to work in pairs or small groups to develop research questions and objectives or preliminary hypotheses, as appropriate, that might be studied to address those problems.
- Ask students to select a conceptual model, discuss underlying concepts and constructs that might be used to test it, and search for a related theory based on research findings.
  - **Appendix G. From Concept to Conceptual Model to Theory**

- ADHA Theoretical Framework for Theory Development (page 27)  
[http://www.adha.org/resources-docs/7614\\_Policy\\_Manual.pdf](http://www.adha.org/resources-docs/7614_Policy_Manual.pdf)
- Have students complete an application for IRB approval of a research study involving human subjects that they are proposing or using a published study.
- Have students complete training in research ethics
  - The Collaborative Institutional Training Initiative (CITI Program) at the University of Miami provides online research education content. <https://www.citiprogram.org/>
- Discuss how one would approach identifying the order of authorship for a collaborative research study.
  - International Committee of Medical Journal Editors. Recommendations for the Conduct, Reporting, Editing, and Publication of Scholarly Work in Medical Journals, Updated December 2013. <http://www.icmje.org/>
- Create an online venue where students from different health related disciplines can interact, learn about other professions, and find common areas of interest through a variety of activities including discussion groups, journal article reviews, and peer writing critiques.
- Provide a research question, data collection instrument (e.g., oral health-related quality of life or level of collaboration scale) and ask students to select possible approaches to statistical analyses.
  - **See Appendix D. Flow Chart for Choosing a Statistical Test**

### **Sample Assignments**

See also baccalaureate degree resources and assignments

- Develop a table listing the details of five research articles related to a narrow topic including purpose, sample, methods, findings and conclusions, then synthesize what is known and what needs to be studied based on the compilation of knowledge.
  - **Appendix H. Synthesis of Research Findings Template**
- Write a well-developed prospectus that can be used for a small scale or pilot study as a thesis research project.
- Plan and conduct a field study to be used for a capstone project.
  - **What is a Capstone Project in Graduate School?**  
<http://www.gradschoolhub.com/faqs/what-is-a-capstone-project-in-graduate-school/>
  - **How to Write an Outstanding Graduate Capstone Project**  
<http://www.juniormiageconseil.org/how-to-write-an-oustanding-graduate-capstone-project>
  - **UCSF MS in Dental Hygiene Program and Capstone Project**  
<http://dentistry.ucsf.edu/admissions/ms-in-dental-hygiene>
- Write an article to submit to a dental hygiene publication, participating as an author or co-author and, if possible, using interprofessional collaboration.
- Develop a research prospectus to convince a reader (e.g., professor, funding agency) that the research can be carried out and will yield worthwhile results. The prospectus includes a working title, research question, overview of related scholarship from the literature, a brief summary of research methods and theoretical approach and a reference list.
  - **Appendix I. Prospectus Guide**
  - **Appendix J. Sample Prospectus**

### **Sample Master's Degree Level Research Course Syllabi**

- **Appendix K. Sample MS Level Research Course Syllabus ISU**
- **Appendix L. Sample MS Level Clinical Trial Course Syllabus**

## MENTORING IN RESEARCH

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Novice and beginning dental hygiene researchers, such as graduate students or faculty members beginning an academic career, need effective mentors. The following information outlines the essential elements of the mentor-protégé relationship and provides suggestions for resources

- Definition
  - Relationship between more experienced and less experienced individuals
    - Goal is growth of protégé
  - Dynamic relationship
  - Mentors are distinct from other potentially influential people
    - Role models, advisors, teachers, supervisors, coaches
  - See Eby LT and Allen TD. *Moving Toward Interdisciplinary Dialogue in Mentoring Scholarship: An Introduction to the Special Issue. J Vocat Behav.* 2008; 72(2): 159–167.
- Advantages
  - Attitudes (e.g., work satisfaction, attitudes toward school, career expectations), interpersonal relationships, motivation/involvement, improving performance and attitudes toward school and decreasing withdrawal behavior
  - See Eby LT, Allen TD, Evans SC, Ng T, DuBois D. *Does Mentoring Matter? A Multi-disciplinary analysis comparing mentored and non-mentored individuals. J Vocat Behav.* 2008 April;72(2): 254–267.
- Situational Mentoring Model - flexibility in mentoring: the key to success
  - Gray's Mentor-Protégé Relationship Model
    - Four mentoring styles – informational, guiding, collaborative, confirming
    - Six step mentoring process
      - Understand protégé's needs, goals, attitudes and perceptions
      - Review protégé's actions and consequences
      - Identify protégé's real issue
      - Develop more productive goals, attitudes and perceptions
      - Expand protégé's thinking to consider new options
      - Agree on and commit to complete a workable action plan to achieve the revised protégé's goal
  - See *Situational Mentoring* Published by Dr. William A. Gray, available at Smashwords, © 2012.
- Overcoming Mentoring Challenges
  - It is important, manage the mentor-protégé relationships appropriately and be aware of early signs of potential problems to avoid potential damages.
  - See Chandler DE, Eby L, and McManus SE. *When Mentoring Goes Bad: A good relationship can help both mentor and protégé. Here's how to make sure that happens. WSJ, May 24, 2010.*  
<http://online.wsj.com/news/articles/SB10001424052748703699204575016920463719744>

## Appendix A. Overview of the Research Process

### Designing the Research Plan

- Identifying a broad area of interest and potential problem(s)
- Conducting an initial literature review to narrow the focus of the research and problem to be studied and determine a theoretical approach
- Defining and formulating the specific research problem
- Continuing a more comprehensive literature review to fully understand what is known and where gaps in knowledge exist
- Stating the hypothesis or research question(s)
- Selecting the research approach and potential valid and reliable measuring instruments
- Seeking statistical consultation regarding sample size, study design, and general plan for data analysis
- Identifying the population, sample, sampling and recruitment strategy as well as planning for protection of subjects as needed
- Designing the methods including investigator training or calibration, selection and administration of data collection instruments and data collection plan
- Finalizing the data analysis plan: data coding, entry, management, and storage

### Conducting the Study

- Conducting a pilot study as needed
- Implementing the research plan
  - Subject recruitment and enrollment
  - Data collection
  - Analysis and interpretation
- Preparing the research report

*Adapted from Darby and Bowen (1983) Research Methods for Oral Health Professionals.*

## Appendix B. Online Resources for Plagiarism Information and Programs

- Plagiarism: What It Is and How to Recognize and Avoid It: What is Plagiarism and Why is it Important? <http://www.indiana.edu/~wts/pamphlets/plagiarism.shtml>
- Turnitin is a comprehensive cloud-based solution (turnitin.com). It requires registration and an account for access to:
  - Check students' work for potential plagiarism by comparing it against the world's largest comparison database.
  - Give students legible, timely feedback while saving instructor's grading time.
  - Help students learn by facilitating personalized feedback.
  - Stream line peer review of manuscripts; simplify the process of checking references
- Anti-Plagiarism is software designed to effectively detect, and thus hopefully prevent, plagiarism. It can be used to identify copy-pasting of information from the Web, checking documents in \*.rtf, \*.doc, \*.docx, \*.pdf formats.
- DupliChecker is a tool designed for the user to copy-paste, or upload essays, theses, website content or articles, and obtain analysis reports quickly.
- Paper Rater offers three tools developed and maintained by linguistics professionals and graduate students: Grammar Checking, Plagiarism Detection and Writing Suggestions.
- PlagiarismChecker.com is a faculty resource to check whether a student's paper has been copied from the Internet. Authors can also use an "Author Option" to check if others have plagiarized their work online.
- Plagtracker checks whether similar text content can be found on the Web. It scans Internet pages and over 20 million academic works for plagiarized copy and generates a report.
- Viper is a fast plagiarism detection tool with the ability to scan a document downloaded by Microsoft Windows users only. The software compares the document to more than 10 billion resources and provides side-by-side comparisons for plagiarism.
- SeeSources is an online, free plagiarism checker for MS Word (.doc/ .docx), HTML (.htm) or text (.txt) formats (max. 300kB, 1000 words).
- Plagiarism Detector is software for teachers and students to check for copying of Internet material. It scans documents, detects plagiarism, and provides an instant report.

Adapted from: Christopher Pappas. Top 10 Free Plagiarism Detection Tools for Teachers, November 18, 2013.

<http://elearningindustry.com/top-10-free-plagiarism-detection-tools-for-teachers>

## Appendix C. Comparison of Characteristics of a Systematic Review and a Traditional Literature Review

<i>Characteristic</i>	<b>Systematic Review</b>	<b>Traditional Narrative Review of the Literature</b>
<b>Focus of the Review</b>	<ul style="list-style-type: none"> <li>• Specific problem or patient question;</li> <li>• Narrow focus</li> <li>• <b>Example:</b> Effectiveness of fluoride varnish as compared to topical SnF fluoride in preventing root caries.</li> </ul>	<ul style="list-style-type: none"> <li>• Range of issues on a topic</li> <li>• Broad focus</li> <li>• <b>Example:</b> Measures for preventing root surface caries; can include many types of FI; may not make comparisons between methods</li> </ul>
<b>Who conducts</b>	Multidisciplinary team	Individual
<b>Selection of studies to include</b>	<ul style="list-style-type: none"> <li>▪ <b>Pre-established criteria based on validity of study design and specific problem.</b></li> <li>▪ All studies that meet criteria are included.</li> <li>▪ Systematic bias is minimized based on selection criteria</li> </ul>	<ul style="list-style-type: none"> <li>▪ Criteria not pre-established or reported in methods. Search on range of issues.</li> <li>▪ May include or exclude studies based on personal bias or support for the hypothesis, if one is stated.</li> <li>▪ Inherent bias with lack of criteria.</li> </ul>
<b>Reported findings</b>	<ul style="list-style-type: none"> <li>▪ Search Strategy &amp; Databases Searched</li> <li>▪ Number of studies that met criteria; number that did not meet and why studies were excluded</li> <li>▪ Description of study design, subjects, length of trial, state of health/ disease, outcome measures</li> </ul>	<ul style="list-style-type: none"> <li>▪ Literature presented in literature review format and crafted by the individual author.</li> <li>▪ Search strategy, databases, total number of studies pro and con not always identified</li> <li>▪ Descriptive in nature reporting the outcomes of studies rather than their study designs</li> </ul>
<b>Synthesis of Selected Studies</b>	<ul style="list-style-type: none"> <li>▪ Critical analysis of included studies</li> <li>▪ Determination if results could be statistically combined, and if so, how meta-analysis was conducted</li> </ul>	<ul style="list-style-type: none"> <li>▪ Reporting of studies that support a procedure or position and those that do not rather than combining data or conducting a statistical analysis.</li> </ul>
<b>Main Results</b>	<ul style="list-style-type: none"> <li>▪ Summary of trials, total # of subjects</li> <li>▪ Definitive statements about the findings in relation to the specified objectives and outcome measures</li> </ul>	<ul style="list-style-type: none"> <li>▪ Summary of the findings by the author in relation to the purpose of the literature review and specific objectives</li> </ul>
<b>Conclusions or Comments</b>	<ul style="list-style-type: none"> <li>▪ Discussion of the key findings with an interpretation of the results, including potential biases and recommendations for future trials</li> </ul>	<ul style="list-style-type: none"> <li>▪ Discussion of the key findings with an interpretation of the results, including limitations and recommendations for future trials</li> </ul>

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## **Appendix D. Flow Chart For Choosing A Statistical Test**

**Developed By Kathryn Bell, RDH, MS, Pacific University, Dental Hygiene**

See the last page of this Guide

## Appendix E. Sample BSDH Level Syllabus - USC

### I. BASIC INFORMATION

<b>Course Number/Title:</b>	DHYG 424 / Research Methods
<b>Department:</b>	Dental Hygiene
<b>Course Director:</b>	Jane L. Forrest, RDH, EdD Chair, Behavioral Science Section, Division of Dental Public Health & Pediatric Dentistry Director, Nat'l Center for Dental Hygiene Research & Practice
<b>Course Type/Students:</b>	Lecture / Computer DH Seniors
<b>Term(s) Offered:</b>	Summer
<b>Units:</b>	2 units
<b>Day/Place:</b>	Tuesday: 10:00 a.m. to 11:50 a.m.
<b>Office Hours:</b>	By Appointment
<b>Room Number:</b>	DEN 4338
<b>Phone Numbers:</b>	213-740-8669
<b>E-mail Addresses:</b>	<a href="mailto:jforrest@usc.edu">jforrest@usc.edu</a>

### II. COURSE DESCRIPTION

This course is designed to help students understand the research process and how it applies to evidence-based practice. The first part of the course focuses on research design and methods, scientific database searching and evidence-based resources, and evaluating information based on evidence-based principles. The second part of the course emphasizes the application of basic research design methodology and statistical techniques to the critical analysis of current literature in order to be able to prepare a professional presentation and to become a good consumer of the research literature.

### III. COURSE OBJECTIVES

Based on readings, materials presented in class, and literature and Internet assignments, the students will be able to:

1. Explain how research informs knowledge development and daily practice.
2. Differentiate among the major sources of human knowledge as they relate to research approaches.
3. Explain how an Evidence-based Decision-Making approach enhances critical thinking and professional decision-making regarding patient care.
4. Describe the scientific method and research process.
5. Discuss different research designs and when each is appropriate to use.
6. Explain the role of the Internet and electronic resources in research and how they relate to dental hygiene education, practice and research.
7. Critically analyze different written/paper and electronic information sources.
8. Conduct an effective literature search using electronic databases [MEDLINE, PubMed and Cochrane], professional journals, government documents, product literature and other "paper" publications, video and other forms of multimedia.
9. Evaluate oral health research articles applying concepts of research design and methodology.

10. Interpret oral health data by proper application of statistical principles and tests.
11. Gain an appreciation for the role of research in evidence-based dental hygiene practice.

### **Course Competencies**

1. Assume responsibility for dental hygiene actions and care based on accepted scientific theories and research as well as the accepted standard of care.
2. Students must be competent in the evaluation of current scientific literature.

### **Specifically**

1. Accept responsibility for solving problems and making decisions by accepted scientific principles.
2. Critically analyze published reports of oral health and apply this information to the practice of dental hygiene.
3. Demonstrate the ability to communicate professional knowledge verbally and in writing.
4. Demonstrate the ability to find clinically relevant information using electronic technology.

## **IV. GRADUATION COMPETENCIES and CODA Standards**

- 2-13: Graduates must be competent in providing the dental hygiene process of care, which includes: ... d) provision of patient-centered treatment and evidence-based care in a manner minimizing risk and optimizing oral health.
- 2-16: Graduates must be competent in assessing, planning, implementing and evaluating community-based oral health programs including, health promotion and disease prevention activities
- 2-21: Graduates must be competent in the evaluation of current scientific literature, with the intent that it provides a basis for evidence-based practice.
- 2-22: Graduates must be competent in problem solving strategies related to comprehensive patient care and management of patients.  
Examples include ...demonstration of the use of active learning methods that promote critical appraisal of scientific evidence in combination with clinical application and patient factors.

## **V. LEARNING FORMAT:** Traditional Didactic, Online EBDM Courses, Group Discussion, Cases, Exercises and Use of Computer Technology and Electronic Databases

## **VI. LEARNING RESOURCES: REQUIRED Software connection, Articles and Digital/ Online Resources:**

1. Forrest JL: DHYG 424 Research Methods Course Syllabus
2. Guide to Research Methods, The Evidence Pyramid  
<http://library.downstate.edu/EBM2/2100.htm>
3. Online CE Course on EBDM: Intro and Formulating Good Clinical Questions, course 311. Access via <http://www.dentalcare.com/en-US/conteduc/index.jspx>. Print out a certificate showing successful completion of the course.
4. Complete online CE Course on Searching the Literature Using PubMed, course 340. Access via <http://www.dentalcare.com/en-US/conteduc/index.jspx>. Make sure you print out a certificate showing successful completion of the course.
5. ADA Center for EBD: <http://ebd.ada.org>

7. Abt E. Understanding Statistics series, 1 -6, Evidence-Based Dentistry journal, **2010**: 11: 60-61; 93-94; 118; **2011**: 12: 25-27; 57-58; **2012**:13:29-31, published by Nature.

#### **RECOMMENDED TEXTS/PUBLICATIONS/WEBSITES**

1. Forrest JL, Miller SA et al. EBDM: A Translational Guide for Dental Professionals (Bookstore, online)
2. Evidence Based Decision Making, <http://www.usc.edu/ebnet>
3. Cochrane website: [www.cochrane.org](http://www.cochrane.org)
4. Wilson Dental Library for Evidence Based Practice: <http://wilson.usc.libguides.com/EBD>
6. Evidence Based Dentistry Library: <http://ebdLibrary.com>

#### **Critical Appraisal Tools and Statistics for the Non-Statistician**

- T Greenhalgh. **How to read a paper series, Statistics for the Non-statistician.** BMJ

**Part I: Different types of data need different statistical tests.** BMJ 1997; 315: 364-366. <http://bmj.com/cgi/content/full/315/7104/364>

**Part II: *Significant* relations and their pitfalls.** BMJ, August 16, 1997; 315(7105): 422-425. <http://bmj.com/cgi/content/full/315/7105/422>

WEEKS & DATE	TOPIC	ASSIGNMENT DUE
<b>Session I.</b> 5/20/14 8:00-10:00 a.m. <b>Guggenheim</b>	<b>Course Introduction</b> Linking DH Practice and Research Ways of Knowing & Acquiring Knowledge <b>Article Critique – Type of Research</b>	<b>Course Requirements &amp; Expectations;</b> <b>Accessing Blackboard, P&amp;G, ADA sites</b> <b>Using your USC e-mail account</b> , send email by Noon, Monday, 5/26 to <a href="mailto:jforrest@usc.edu">jforrest@usc.edu</a>
<b>Session II.</b> Prior to 5/27/14 2 hour course	<b>EBDM: Intro and Formulating Good Clinical Questions</b> Complete online Course and Quiz	Access via <a href="http://www.dentalcare.com/en-US/conteduc/index.jspx">http://www.dentalcare.com/en-US/conteduc/index.jspx</a> Enter course <b>#32414</b> Printout Quiz; download course
<b>Session III.</b> 5/27/14 8:00-10:00 a.m. <b>Guggenheim</b>	<b>EBDM and PICO - Asking Good Questions</b> <b>Review Research Article</b> Application Activities Identify PICO Questions and Hypotheses from Research Articles <b>EBDM Worksheet, Whitening Article</b>	<b>PICO Exercises</b> 1. PICO & Type of Question Exercise 2. 5 Case Scenarios Exercise (download the 5 cases and the related form)
<b>Session IV</b> Prior 6/3/14 3 hour course	<b>Complete online Course on “Searching the Literature Using PubMed”</b>	Access via <a href="http://www.dentalcare.com/en-US/conteduc/index.jspx">http://www.dentalcare.com/en-US/conteduc/index.jspx</a> . Enter course <b>#32415</b> Printout Quiz; download course Complete search assigned topic
<b>Session V.</b> 6/3/14 <b>Learning Resource Center</b> 8:00-10:00 a.m.	<b>Searching the Literature</b> Guest Speaker: Annie Hughes, MSLS Reference Dental Librarian <b>EBDM Worksheet, Parts 1 &amp; 2</b>	<b>Review Guide to Research Methods</b> -Graphic displays of EBDM and Study Designs: <a href="http://library.downstate.edu/EBM2/2100.htm">http://library.downstate.edu/EBM2/2100.htm</a> through /2700.htm
<b>Session VI.</b> 6/10/14 <b>Learning Resource Center</b> 8:00-10:00 a.m.	<b>EBDM &amp; Research Design Levels &amp; Sources of Evidence</b> Quantitative and Qualitative Experimental and Non-Experimental, Primary & Secondary Research Independent & Dependent Variables <b>EBDM Worksheet, Part 3</b>	1. NAU DH400 Research Methods: Module 2 - Topic 1: <b>Research Methods</b> and 2. NAU Topic 2: <b>Research Design</b> 3. <b>Forrest &amp; Miller, Chapter 3</b> , EBDM, Darby & Walsh, 2014
<b>Session VII.</b> 6/17/14 8:00-10:00 a.m. <b>Guggenheim</b>	<b>Test 1: Material covered during Sessions 1 – VI</b>  <b>Sources Available for Clinical Decision Support</b>	<b>ADA Guidelines</b> on Fluorides, Sealants, Tobacco, Oral Cancer (& Chairside Guides) <a href="http://ebd.ada.org/en/evidence/guidelines/">http://ebd.ada.org/en/evidence/guidelines/</a>  6 S Hierarchy of Pre-Appraised Evidence CDS Handout
<b>Session VIII.</b> 6/24/14 8:00-10:00 a.m. <b>Guggenheim</b>	<b>Appraising &amp; Applying the Evidence</b> Research Hypothesis Key Questions Critical Appraisal Tools: CASP Article Critique	<b>EBDM Worksheet for Assigned Topic DUE</b> <b>Bring a copy of your RCT or Systematic Review to Class</b> <b>Greenhalgh, “How to read a paper”</b>
<b>Session IX.</b> 7/1/14 8:00-10:00 a.m. <b>Guggenheim</b>	<b>Intro to Statistics Data Collection, Sampling, Validity and Reliability</b> Sampling Methods, Sample Size, Bias, Threats to Internal & External validity Article Critique	<b>NAU:</b> Research Methods, pp. 5-11 <b>CASP – Statistical Terms</b>
<b>Session X.</b> 7/8/14 8:00-10:00 a.m. <b>Guggenheim</b>	<b>Descriptive &amp; Inferential Statistics</b> Central Tendency and Variability, and Scales/Levels of Measurement Application Activities	<b>NAU - Intro to Statistics, Descriptive Stats, Central Tendency</b> <b>NAU: Inferential Statistics</b>

WEEKS & DATE	TOPIC	ASSIGNMENT DUE
<b>Session XI.</b> 7/15/14 8:00-10:00 a.m. <b>Guggenheim</b>	<b>Test 2, Sessions VIII – X</b> <b>Statistical Analysis</b> Non-parametric & Parametric tests Measures of Association, t-Tests, Analysis of Variance, p values	<b>Topics on the test:</b> Critical Appraisal, Sampling, Descriptive & Inferential Statistics <b>NAU Statistical Tests</b> <b>Greenhalgh:</b> Stats for the non-statistician. Parts 1 and 2
<b>Session XII.</b> 7/22/14 8:00-10:00 a.m. <b>Guggenheim</b>	<b>Statistical Analysis (Con't)</b> Clinical vs. Statistical Significance Article Analysis	Practitioners Guide, Clinical and Statistical Significance Article Review of Statistical Analysis
<b>Session XIII.</b> 7/29/14 8:00-10:00 a.m. <b>Learning            Resource Center</b>	<b>Library Competency Exam</b> Given a case scenario, complete the PICO and Search Strategy form; conduct a search and critique the evidence found	Review "Searching the Literature Using PubMed" online course
<b>Session XIV.</b> 7/29/14 8:00-10:00 a.m.	<b>Article Critique – EBDM in Action</b> Clinical Decision Making based on Research	<b>Article Reviews</b>
Final Exam Week	<b>Test 3: Comprehensive</b> Article Critique: PICO, Research Hypothesis, Research Design, Independent/Dependent variables, Statistical Analysis	

## VII. Evaluation Methods

Course requirements must be met to receive a grade. A criterion-referenced grading model will be used to assign grades. Grades will be composed of the following components and weighted on the following basis:

<b>Weekly Homework, In-class Activities, Quizzes</b>	= 15%
<b>Specific Assignments</b>	= 20% (10% each)
• Completion of EBDM Online CE course/Quiz	= due prior to 5/27/14
• Completion of PubMed Searching CE course/Quiz	= due prior to 6/3/14
<b>Test 1</b> on Sessions 1 - 6	= 15% 6/17/14
<b>Test 2</b> on Sessions 8 - 10	= 15% 7/15/14
<b>Library Searching the Literature Competency</b>	= 15% 7/29/14
<b>Test 3 – Comprehensive Exam – Article Critique</b>	= 20% Final's Week

A = 90 – 100  
 B = 80 - 89.9  
 C = 70 - 79.9  
 D = 65 - 69.9  
 F = under 65

## COURSE POLICIES:

- Classroom activities are designed to build on basic information available from course materials. In order to benefit from these sessions, **you are required to attend all class sessions**. In case of an emergency, the course director must be notified prior to the start of class at **(213) 740-8669**. Also, you must also call Academic Affairs (213) 740-1001 and notify them that you will be absent.

Unexcused absences will result in you receiving a '0' for the assignment due that day whether or not it was already turned in or brought in that day with another student or e-mailed. A grade of '0' also will be received for any in class activities, quiz or examination. Two unexcused absences will result in your final course grade being lowered one letter grade. The third absence will result in course failure.

**It is your responsibility to contact the course instructor [not a classmate] after missing a class session to get any handouts and to arrange to make up activities missed during an absence.**

2. You are responsible for all reading and homework assignments. These should be completed prior to the class so classroom time can be used to clarify your understanding. For an excused absence, make-up examinations will be given at the discretion of the instructor.
3. As courtesy to faculty and classmates, please be prompt to all class sessions. Students not present by 10:05 a.m. will be considered absent for the day.
4. Learning activities in this course are designed to enhance your understanding of concepts. Each of you is expected to prepare in advance for each session and to participate in a professional manner.
5. Please ask questions during class. If there's a concept you do not understand, others also may have that same question. If you feel the need for more in-depth assistance, we can make an appointment to meet at a time outside of class.
6. Any behavior that tends to gain unfair advantage in an academic situation is unacceptable. During an **examination**, do not have, use or solicit any unauthorized information, copy another student's work or discuss the examination with any other person. Do not give assistance to another student. Do not fraudulently claim for credit any **homework** assignment performed by another person. You must do your own work. If you do not have a homework assignment, ask the instructor for it, do not copy another student's. Violations will result in an examination, homework or assignment failure and lowering the final course grade by two letter grades. A second offense will result in course failure.

#### **7. Use of Electronic Equipment**

- Cell phones, pagers, personal data devices, computers and other electronic equipment must be turned off while in class EXCEPT as directed by the course instructor, e.g., conducting a PubMed or search, taking notes and following slides posted on Blackboard. In general, the course syllabus and manual have the materials needed for this course.
- Sending and retrieving email or text messages, instant messaging, using Face Book, Twitter, or any other social media, playing games, and surfing the Internet while in class is strictly prohibited and will be treated the same as an unexcused absence.
- Recording devices for taping class lectures may be used upon the approval of the course instructor.

#### **VIII. National Boards**

Information provided in this course is typically tested on the dental hygiene national board examination in the following areas: literature review, research designs, and data analysis.

#### **Statement for Students with Disabilities**

Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to Academic Affairs as early in the semester as possible. DSP is located in STU 301 and is open 8:30 a.m. – 5:00 p.m., Monday through Friday. The phone number for DSP is (213) 740-0776.

#### **Statement on Academic, Professional and Ethical Integrity:**

USC seeks to maintain an optimal learning and patient care environment. General principles of academic, professional and ethical honesty include the concepts of respect for the intellectual and physical property of others, the expectation that individual work will be submitted unless otherwise allowed by an instructor, the obligations both to protect one's own academic work from misuse by others as well as to avoid using another's work as one's own, and the respectful and professional treatment of patients, faculty, staff members and fellow students. All students are expected to understand and abide by these principles. Should there be any suspicion of academic, professional or ethical dishonesty, students are referred to the Ostrow Student Professional Performance Evaluation Committee (SPPEC). The review process can be found in the Code of Ethics and Behavioral Guidelines on the School intranet and copies are available in the Office of Academic Affairs (Room 218 DEN).

## Appendix F. Sample BSDH Level Course Syllabus - ISU

**Idaho State University  
Department of Dental Hygiene  
Fall Semester, 2014**

**Course Title:** DENT 4401, Research Methodology  
**Instructor(s):** Tara Johnson, RDH, PhD,  
email: [johnntara@isu.edu](mailto:johnntara@isu.edu)  
Office Phone: 282-2792  
Office: Dental Arts 140  
Office Hours: Posted  
**Course Credit:** 3 Credits  
**Hours:** Friday, 10:00:00 am to 12:00  
**Location:** Rendezvous Room on course schedule

### Course Description:

This course is designed to acquaint students with research methodology and its application to the dental hygiene profession. Emphasis is placed on heightening student awareness of the need for dental hygiene research, developing student capabilities to identify research problems, encourage evidence-based decision-making, and enable accurate appraisal of literature.

### Broad Goals:

1. Introduce the student to the various types of studies conducted in research.
2. Develop student competence in evidence-based decision making
3. Strengthen the student's ability to critically evaluate current literature in the oral healthcare field.
4. Cultivate an understanding of the research process through development of a research prospectus.

### Required Text and Handouts:

- Introduction to Health Research Methods: A Practical Guide. Kathryn H. Jacobsen; Jones & Bartlett Learning; Copyright year: 2012
- APA Publication Manual 6<sup>th</sup> Ed. American Psychological Association, Washington DC. 2010.
- **Supplemental Texts and Readings:**
- Pyrczak F. Evaluating Research in Academic Journals, 4<sup>th</sup> Ed. Pyrczak Publishing, Glendale CA. 2008.
- Pyrczak F. Making Sense of Statistics: A Conceptual Overview. Pyrczak Pub. Glendale, CA 2010

Additional readings are assigned as needed from current literature (see Moodle postings).

### Course Requirements and Evaluation:

Research Prospectus	20%
Critical Analysis Competency	20%
Evidence-Based Practice Competency	20%
Midterm Exam	20%
Final Exam	20%

Research prospectus, competencies, written examinations, participation in class activities, and attendance will determine grade.

All course requirements must be completed for successful completion of the course. A competency that does not meet the 75% minimum level must be retaken a second time. Prior to retaking the competency exam, the student must meet with the course instructor for skill development outside of the scheduled class time. Failure to meet the minimum level on the second attempt will result in a zero for the competency. Grades for the first and second attempt will be averaged if the second attempt meets the competency level.

### **Course Policies:**

**Statement for Students with Disabilities** – Refer to the Department policy found in the Policies and Procedures Manual.

**Attendance** – No unexcused absences will be permitted. Missed classes must be made via a meeting with the course instructor for excused absences only. One letter grade drop will be earned for each unexcused absence.

**Extended Absence Policy** – Refer to the Department policy found in the Policies and Procedures Manual.

**Tardiness** – Students are expected to be on time for class. Should an unexpected event occur resulting in late arrival, please enter the class quietly to minimize interruption of instruction.

**Make up Examinations, Quizzes and Assignments** – Refer to the Department policy found in the Policies and Procedures Manual.

**Late Assignments** – Assignments are due at the beginning of class. Any assignment turned in after the first hour of class will result in a 5 point grade deduction.

**Spelling and/or Grammar** – Spelling will be evaluated on written examinations, competencies, and assignments, and a 0.5 deduction will be made for each error.

**Remediation** – A student earning below a 70% average or who is having difficulty in the course will be notified of the problem. Additional help is available from the course instructor by appointment.

**Academic Dishonesty** - Refer to department policy found in the Policies and Procedures Manual.

**Grade Scale:** Follows Department policy found in the Policies and Procedures Manual.

### **Learning Objectives**

Upon successful completion of the students will be able to:

1. Value the purpose of health research and its role/importance in health care
2. Search the literature using PubMed, the Cochrane Library and related databases.
3. Develop a research problem statement, describe the purpose, and write a hypothesis or research question(s) and discuss the significance of a proposed research study.
4. Identify types of research and study approaches.
5. Critically analyze study published in a research article using accepted criteria for critical appraisal.
6. Construct a research prospectus including background, research problem statement, purpose, hypothesis/research questions, significance, a focused literature review and methods.
7. Enhance writing skills and use of citations to grant appropriate credit to sources and authors cited.
8. Understand the importance and process of evidence-based decision making.
9. Use the PICO process to develop a good clinical question.
10. Demonstrate the ability to use evidence in clinical decision making.
11. Use basic statistics commonly employed in health research, including descriptive and comparative statistical tests.
12. Identify ethical principles related to research, particularly in regards to human subjects.

## DENT 4401—Research Methodology

Course Schedule

Fall 2014

Date	Topic and Class Activities	Assignment (Due on Date Listed)
Aug. 29 Friday	<p><i>Topics:</i></p> <ul style="list-style-type: none"> <li>- Course Syllabus/Schedule</li> <li>- Introduction to Health Research</li> </ul> <p><i>Class Activity:</i> PubMed and Cochrane Searches (Reminder: you previously had a library orientation the at the following Web address, so you will be using those skills <a href="https://sites.google.com/a/isu.edu/ruiling/workshops-orientations/dh-401-research-workshop">https://sites.google.com/a/isu.edu/ruiling/workshops-orientations/dh-401-research-workshop</a></p> <p><i>Class Activity:</i> Review ADHA Research Agenda and select, in small groups of 4, a maximum of two (preferably one) potential general area of interest to report back to class next week</p>	Review the library orientation website
Sept. 5 Friday	<p><i>Class Activity:</i> Report general topic interest area of group and formalize research groups of 4 students</p> <p><i>Topics:</i></p> <ul style="list-style-type: none"> <li>- Formulating a General Topic Area</li> <li>- Focusing the Research Topic Area</li> </ul> <p><i>Class Activity:</i> Finalize Topics and Groups; Identify 4 Keywords for Electronic Search; Search Keywords; <b>Turn in names of students in group, topic selected and 4 Abstracts on Topic, and category of ADHA Research Agenda</b></p>	<p>Continue to discuss and decide on a potential group and topic area</p> <p>Readings: <i>Jacobsen: Ch. 1, 2 and 4</i></p>
Sept. 12 Friday	<p><i>Topics:</i></p> <ul style="list-style-type: none"> <li>- Overview of Types of Research &amp; Study Approaches</li> <li>- Types of Reviews</li> <li>- Quantitative vs. Qualitative and Mixed Methods / The Evidence Pyramid</li> </ul> <p><i>Class Activity:</i> Brainstorm with group about approach that might be appropriate or desirable for selected research topic</p>	<p>Find and print the 4 (or 5) full text articles matching selected abstracts</p> <p><i>Jacobsen: Ch. 6, 7</i> Evidence Pyramid Handout (Moodle)</p>
Sept. 19	<p><i>Topic:</i> Critical Analysis of the Literature</p> <p><i>Class Activity:</i> Individually evaluate an assigned article and complete the critical analysis form provided; use rubric to evaluate your analysis</p>	<p><i>Readings (Moodle):</i> Miller SA, Forrest JL. Critical appraisal article</p>
Sept. 26 Friday	<p><i>Topics:</i></p> <ul style="list-style-type: none"> <li>-The Research Prospectus</li> <li>-Research Problem, Background, Purposes, &amp; Hypotheses or Questions, Significance</li> </ul> <p><i>Class Activity:</i> As a group, discuss Background, Research Problem, Purpose</p>	<p><i>Readings:</i> Articles on Moodle related to prospectus</p>
Oct. 3 Friday	<p><i>Topics:</i></p> <ul style="list-style-type: none"> <li>-The Research Prospectus (continued)</li> </ul>	<p>-Submit on Moodle results of 9/26 class activity by</p>

	<i>Competency Based Assessment: Critical Analysis</i>	9/30 -Prepare for competency assessment
Oct. 10 Friday	IDHA Meeting in Boise	Submit Hypothesis or Question according to Topic
Oct. 17 Friday	<i>Class Activity:</i> Finalize hypothesis or research question and significance and turn in <i>Midterm Exam</i>	Prepare for activity and midterm
Oct. 31 Friday	<i>Topics:</i> - Experimental Research Design - Randomization - Ethical considerations	Jacobsen: Ch. 13
Nov. 7 Friday	<i>Topics:</i> Evidence-Based Decision Making (EBDM) & PICO <i>Class activity:</i> Practice PICO and literature search	Forrest JL. EBDM/PICO article on Moodle
Nov. 14 Friday	<i>Topics:</i> - Sampling and Estimating Sample Size <i>EBDM Competency Assessment</i>	Jacobsen: 16, 17 Prepare for EBDM competency
Nov. 21	<i>Topics:</i> -Review EBDM Competency Assessment - Questionnaires and Interviews - Overview of Basic Health Statistics - Descriptive	<i>Readings:</i> Jacobsen: Ch.18
Nov. 28	Happy Thanksgiving	Enjoy!
Dec. 4	<i>Topics:</i> - Descriptive and Comparative Statistics - Writing the Methods Section of the Prospectus	Jacobsen Ch. 26 and 27
Dec. 12	Finalization of the Prospectus	Draft methods section
Week of Dec. 15	Comprehensive Final Exam	Study!

## Appendix G. From Concept and Conceptual Model to Theory

### Starting with the Most General

**Concept** – a general notion or idea that is shaped by one’s mental view or combination of all of its characteristics or particulars

**Example** – Health and Wellness or Illness, Aging, Caregiving (may mean different things to different people because they are broad notions shaped by various images one has).

**Construct** – an entity, or something we think about) that is conceived and defined in a direct way or given a specific label; to describe a phenomena.

**Example** – Quality of life, optimal oral health; operational definitions are specific means of defining constructs, not as a dictionary would but specifically related to a particular concept, model or proposition (hypothesis). Constructs related to oral health might include periodontal disease and dental caries, both of which can be defined and measured by various indices and assessment tools depending on the operationalization of the terms. In a given study: Would a smooth white spot lesion be included as caries? Would bleeding or bone loss be necessary for periodontal disease? How would these disease characteristics be measured?

**Conceptual Framework and Model** – a school of thought or schematic developed to identify component elements of a concept by listing or integrating the constructs or concepts being considered as its parts; the configuration might take the form of a diagram with the concept at the top and the specific components diagramed to provide meaning or outline propositions. A *conceptual framework and model* is used in research to outline possible courses of action or to present a preferred approach to an idea or thought.

**Example** – One looking at health and wellness might examine particular components of exercise, diet, and stress as they relate to given constructs such as morbidity and mortality or quality of life. Another model might involve deterrents to health such as smoking, obesity, and substance abuse. An oral health professional might include daily oral self-care as an element of health and wellness. One looking at aging might consider ambulatory or non-ambulatory status, or need for better end-of-life options, or edentulous versus dentate.

**Paradigm** – a pattern that affects the lens with which one looks at a concept or conceptual model.

**Example** – An individual who views a dental hygienist as a “member of the dental team who cleans teeth and performs this list of functions with dentist supervision” would develop a different *conceptual model* than someone who conceives of a dental hygienist as a primary oral health care provider who is responsible for preventing oral disease, maintaining health, and non-surgically treating oral disease. This difference in viewpoint would shape the conceptual model, even though both relate to the concept of health and wellness and consider the construct of oral health, periodontal disease and dental caries.

Paradigm concepts are the actual concepts selected for study in a given conceptual model, depending on the viewpoint embraced in that model. In dental hygiene, there are four paradigm concepts: the client, the environment, health/oral health, and dental hygiene actions.

### Moving Into the More Specific

**Theory** – is a set of statements, based on related research findings, that explains, predicts, or controls a given phenomenon. Because there is evidence to support the interrelationship stated

between variables, a theory is more concrete than a concept because there are findings to support it. It falls short of a *fact*, however, because cause-and-effect cannot be proven.

**Example** – *Theoretically*, smoking causes lung cancer; however, 40% of all people diagnosed with lung cancer never smoked, and not all smokers get lung cancer. One *theory* to explain this phenomenon is related to the potential impact of second-hand smoke. Another is related to air quality or chemical and radiation exposure as a child. Individuals with these differing *paradigms* and constructs in their *conceptual model* of *illness*→*cancer*→*lung cancer*→*etiology* would study this *theory* differently.

In sum, a *theory* should be able to explain, predict, and control phenomenon(a); a *conceptual model* hasn't gotten that far yet –it is a well-informed maybe.

**Proposition or hypothesis** – to study something, one must propose something is going to happen (or not happen) given a phenomenon and a related set of constructs or variables. A *hypothesis* makes a proposition that is based on theory or theories documented in the literature and stated in such a way that it can be tested. Independent variables might be manipulated to see whether the dependent variable are impacted or not impacted, and a proposed outcome is tested. The outcome of that study impacts the *theory* or adds to it, so further study will consider all possible propositions from differing viewpoints or *paradigms*. This process is how theories are developed or built. Findings from these studies become a part of the theoretical basis for a given study and, as such, are related back to the theory and related research findings when discussing them.

ADHA Theoretical Framework for Theory Development  
[http://www.adha.org/resources-docs/7614\\_Policy\\_Manual.pdf](http://www.adha.org/resources-docs/7614_Policy_Manual.pdf) (page 27)

*Developed by: Denise M. Bowen, RDH, MS, Emeritus Professor in Dental Hygiene, Idaho State University, April 2011*

*Based in part on: Darby ML. Theory development and basic research in dental hygiene: review of the literature and recommendations. Report for American Dental Hygienists Association, 1990, 1–86.*

## Appendix H. Synthesis Of Research Findings Template

### SYNTHESIS OF RESEARCH FINDINGS

*Subtopic 1: (Specify)*

Author(s), Year, Title, & Instrument	Study Sample/Topic, Purpose of Study and Study Type	Major Findings and Conclusions	Strength of Evidence/ Recommendations for Future Study	Agrees/ Disagree s
<b>Synthesis (bottom line)</b>  <b>What is Known/ Agreement</b>  <b>Unknown/ Disagreement</b>				

*Form developed by Denise Bowen, RDH, MS, Professor Emeritus in Dental Hygiene, ISU,  
1/2011*

# Appendix I. Research Prospectus General Guidelines

## Research Overview

Research, in general, is a quest for knowledge through diligent literature searching, investigation and/or experimentation. It is aimed at discovery and interpretation of new knowledge, or at resolving debatable existing knowledge. It involves a systematic set of procedures for investigation targeted toward identification of new information. At this level of professional education, in the field of dentistry and dental hygiene, one goal is to look beyond what is written and **contribute to the scientific body of knowledge** that directs our discipline. As a beginner, one is usually unsure of how to approach research.

The purpose of these guidelines is to outline the main steps in producing a standard prospectus for a research project. The research proposal is an expanded version of the prospectus, providing more detail about the research project and plans, to be developed after approval of the prospectus by a funding agency, thesis or dissertation advisor, or other interested parties.

## Identifying a Focused Research Topic

Identification of a pertinent topic cannot be accomplished without becoming familiar with the literature within a general area of interest. A thorough review of the literature will help you define the problem that needs to be addressed. You can draw inspiration from other researchers and make use of similar ideas, rather than coming up with your own completely new, unique idea. You can also repeat or reproduce what someone else has done, especially if there are conflicting results within the literature. For example, one can challenge the hypothesis of certain studies or confirm if the study is true for a population of a different ethnicity from the original study.

**Subsequently, the initial literature review will help you identify if your question has already been answered.** Therefore, a **thorough** literature review is mandatory. You do not want to put a lot of time and energy into a project only to find out later that there have already been a substantial number of trials, quantitative studies, or reviews performed, and your research question has been answered. It is not only important to know how much was already published on your topic, but also what the quality of the current evidence is. The idea that leads to your research question not only needs to be **fresh**, but also needs to be **feasible** regarding the availability of adequate subjects, technical expertise, time, money and most importantly **scope**. The idea most definitely needs to be **interesting to the investigator, relevant to scientific knowledge** and, last but not least, **ethical**.

## Components of a Research Prospectus

A prospectus is a document that explicitly states the reasoning behind and the structure of a research project.

A research prospectus usually includes the following components:

- Project Title Page
- Background
- Statement of the Problem
- Significance of the Study
- Purpose of the Study
- Literature Review
- Hypothesis and/or Research Questions
- Research Design
  - Description of Setting
  - Sample Population/Participants
  - Instrument(s)
  - Procedures and/or Protocols
- Proposed Statistical Analysis
- References

## **Background**

The background section is your opportunity to **briefly** (2-3 paragraphs) introduce readers to your topic and show that your research is relevant. In other words, the background section should be a carefully constructed, subtle argument for the fact that your research simply **needs** to be done.

## **Statement of the Problem**

The purpose of this section is to provide a concise, clear statement(s) (2-4 sentences) of the problem. What is the problem that the proposed research will help resolve?

### **Example**

There are decreasing numbers of dentists providing restorative and emergency care, especially to those in underserved communities; therefore, practical, adequate and cost-effective interventions will be needed to enhance access to oral health care and reduce costs. New or alternative interventions will need to be delivered based upon a sound evidence base. Silver nitrate has long been used for caries prevention and treatment and has documented anti-microbial and remineralizing properties.

## **Significance of the Study**

This section of the prospectus (1-2 paragraphs) indicates **why** the proposed research is important. What is the potential impact of the study? What area of a specific professional, government or health organization's research agenda will the study address (ADHA, Healthy People 2020, NIH, NIDCR, etc.)

## Purpose of the Study

Clearly and precisely (1 sentence) describe the **intent** of the study.

### Example

“The purpose of this study is to investigate the efficacy of multiple applications of a 25% silver nitrate (AgNO<sub>3</sub>) solution followed by 5% sodium fluoride (NaF) varnish in the arrest and prevention of caries among high risk children age 5 to 9 over a twelve month period.”

## Literature Review

The literature review shows readers/reviewers that you understand your field and have the base knowledge to perform the tasks you propose. Make sure your review includes the most recent publications in the field and the majority of references are from **primary sources**. As a general rule, citations more than 10 years old should **not** be used unless they are absolutely necessary in making the case for the proposed study (such as foundational or landmark studies). The topic of the research prospectus should be selected only **after** you have reviewed the literature and found some gap in it. At this stage of preparing a prospectus, a somewhat more extensive and critical review of the existing knowledge about the research problem is essential. You must find out whether or not others have investigated the same or a similar problem. This is important because it helps further your understanding of the problem and leads to formulating the “statement of the problem”. By analyzing relevant literature, it helps identify what others have reported on the issue, including highlights of ongoing research and gaps in existing knowledge. Critical review of the literature and expansion of this section into a chapter occurs when writing the proposal.

It also helps you become familiar with various methods and instruments that have been used, which could also be used in your proposed study. The parameters to be assessed and various end-points to be observed during a study can be proposed in the prospectus only after reading and studying the methods of previous researchers in the topic. The details of the methods section are expanded with Appendices added in the full research proposal.

## Hypothesis and/or Research Questions

The goal of your study is to find the answer to your hypothesis/research question(s). They are going to be the framework for the methodology of the study. Make sure that the content (words and phrasing) of the hypothesis/question(s) reflect the study goals and procedures.

## Research Design (Description of Setting, Sample Population/Participants, Instruments, Procedures and/or Protocols)

The study design is the researcher’s overall plan to obtain the answer(s) to the hypothesis and/or research questions. The design spells out strategies for obtaining information that is accurate, objective, and meaningful, and explains the methods that will be used to collect the data. Once the study design has been described, it is necessary to include the sampling

methods (study settings, sample size, inclusion/exclusion criteria, etc.); the instrument to be used (survey/questionnaire, indices, diagnostic technique, skill measurement, etc.); and what procedures or protocols will be followed in administering the instrument.

## **Proposed Statistical Analysis**

This section indicates potential tests to be used for analysis, interpretation or explanation, and presentation of data. Statistical measurements are techniques that render data meaningful and intelligible. The basic idea of statistics is simple: you want to extrapolate information from the data that you have collected to make general conclusions about the larger population or problem. To do this, the data are subjected to statistical analysis, which serves two related purposes: description and inference. Descriptive statistics can be used to summarize the data and describe the sample. The choice of statistical analysis is dependent on the purpose of investigation (establish a relationship, identify differences, make comparisons, etc.). Once you develop your prospectus and begin work on the full proposal, a statistician will be consulted to determine the most appropriate statistical analysis plan.

## **References**

Use APA format for citing and listing.

*Developed by Dr. Tara Johnson, Assistant Professor, Department of Dental Hygiene, Idaho State University*

## Appendix J. Prospectus Example

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Oral Hygiene Behaviours and Attitudes among East Asian Immigrants in Vancouver,  
British Columbia, Canada

Keiko Ogami

Idaho State University

### Background

Acculturation is one of the major factors that influence general and oral health when people move from their home countries to other countries, especially from less developed to more developed countries (Lassetter & Callister, 2009; Gao & McGrath, 2011). Although there has been extensive research in acculturation and general health for over 40 years, there are limited studies published regarding acculturation and oral health. Nonetheless, the influence of acculturation on oral health has received attention in recent years (Gao & McGrath, 2011).

When people migrate from their native countries to other countries, they are exposed to new and sometimes unfamiliar cultures. The term *acculturation* refers to the “phenomena when groups of individuals having different cultures come into continuous first hand contact, with subsequent changes in the original culture patterns of either or both groups” (Redfield, Linton, & Herskovits, 1936, p. 149). Berry (2003) observed that people experience four possible acculturation outcomes after they reside in new countries for a period of time: assimilation (adoption of the dominant culture), rejection (reconfirmation of the traditional culture), integration (combination of the two cultures), or marginalization (detachment from both cultures). Based on these constructs, Barry (2001) developed the East Asian Acculturation Measure (EAAM) as a useful tool for researchers and clinicians to investigate the acculturation patterns of East Asian immigrants. These different outcomes and levels of acculturation are important indicators in assessing health-related knowledge, attitudes, beliefs and practices that possibly influence health status, the utilization of the healthcare system, and clinical outcomes. Mariño, Stuart, Wright, Minas, and Klimidis (2001) found that focusing on cultural factors might be more important than focusing on immigrants’ socioeconomic status (educational level, employment status, or language) when developing public health programs or treatment approaches.

Currently, oral health disparities exist in subpopulation groups including, First Nation populations (indigenous people), the elderly, and new Canadians (landed immigrants) in Canada (Asadoorian, 2009). Oral health disparities are often observed as differences in dental caries rates, periodontal disease, tooth loss, edentulism, oral cancer, and tobacco use. Although strategies for improving general and oral health outcomes have been identified and implemented, these disparities still exist (Charbonneau, Neufeld, Craig, & Donnelly, 2009). Based on findings from two recent studies, certain ethnic groups in the United States, for example, had higher levels of oral disease without regard to income level (Kreps, 2006; Vazquez & Swan, 2003). Charbonneau et al. (2009) stated that addressing level of income and access to care may be only part of health disparity problems. Researchers have explored

differences in cultural values, how different ethnic groups view dental professionals in oral care settings and access to oral care (Dong, Loignon, Levine, & Bedos, 2007; Lai & Chau, 2007). Dong et al. (2007) found that Chinese immigrants in Canada had a strong traditional belief in regards to swelling and bleeding of gingiva. Chinese immigrants believed that gingival swelling was associated with poor oral hygiene as well as *internal fire*, a general factor “which signals an imbalance of body humors in traditional Chinese medicine” (Dong et al., 2007, p. 1346). These researchers suggested that healthcare providers have to be aware of oral health beliefs of Chinese immigrants and acculturation processes in order to understand and provide culturally competent health care to those immigrants (Dong et al., 2007). In addition, researchers working with older Chinese immigrants in Canada reported that most of the top barriers to services were associated with language, cultures, or ethnic difference between the immigrants and healthcare providers or the services provided by those healthcare professionals (Lai & Chau, 2007).

The literature indicates that different levels of acculturation have affected immigrants’ oral health. For example, one study found that immigrant students in Canada have a lower rate of dental visits and poorer oral health status, including gingivitis and caries, than Canadian-born students. However, immigrants who had been in Canada more than six years had better oral health than those who migrated less than two years ago (Locker, Clarke, & Murray, 1998). Mariño et al. (2001) studied acculturation and oral health in depth. They observed that immigrants with a medium level of acculturation had significantly higher decayed, missing, and filled surfaces (DMFS) scores than those with low or high acculturation as both original and mainstream cultures may have protective effects on oral diseases.

### **Statement of the Problem**

To date, there have been insufficient studies published regarding acculturation and its impact on oral health care behaviors and attitudes. An investigation of a relationship between different acculturation patterns and oral health care behaviours and attitudes, therefore, is needed to identify potential factors that may ultimately clarify the complex relationship between acculturation and oral health.

### **Purpose(s) of the Study**

The purpose of this study is to examine relationships between different acculturation patterns and oral hygiene behaviors and attitudes among East Asian adult immigrant populations in Vancouver, British Columbia (BC), Canada.

### **Significance of the Work**

As mentioned, immigrants in Canada have exhibited oral health disparities. Dental hygienists should be able to positively impact these disparities through advocating for policy changes, performing preventive interventions, providing oral health education, including cancer screenings or tobacco cessations, and providing oral health education for other health professionals who deliver their services to underserved populations.

Because dental hygienists are responsible for reducing barriers to care for ethnic minorities by providing culturally appropriate care, knowledge of psychological and behavioral acculturation may provide essential information for public health programs and practitioners. Researchers and dental professionals may be able to identify factors that influence different

patterns of acculturation and are linked to specific oral health behaviours and attitudes, leading an improvement in culturally-related oral health behaviors and attitudes of ethnic minority groups.

This study will address one of the pillars of the Canadian Institute of Health Research (CIHR): Social, Cultural, Environmental and Population Health (Canadian Dental Hygienists Association [CDHA], 2003). As examples of research areas associated with this pillar, CDHA (2003) indicated social and economic impact of oral health and disease on populations, barriers and opportunities for oral care for all populations, and cultural and linguistic relevance of dental hygiene services. This study will address one aspect of these research areas that focus on social, cultural environmental and population health rather than traditional biomedical and clinical research. Focusing on this pillar will follow a trend of oral health research in Canada away from the cellular level and towards a focus on individual/population health (CDHA, 2003). **Note: This study was proposed for Canada. Similar document in the US might be the ADHA Research agenda or Health People 2020.)**

As a result of dissemination of the findings of this study, awareness of patterns of acculturation and oral hygiene behaviors and attitudes of East Asian immigrants may increase among dental hygienists. Ultimately, dental hygienists may utilize the findings from this study in their patient care and education.

### **Research Question(s)**

- Are patterns of acculturation in East Asian adult immigrant populations in Vancouver, BC, Canada related to self-reported oral hygiene behaviors and attitudes scores?

### **Definitions**

**Acculturation.** Phenomena when groups of individuals having different cultures come into continuous first hand contact, with subsequent changes in the original culture patterns of either or both groups (Redfield, Linton, & Herskovits, 1936, p. 149). The focus of this study will be patterns of acculturation.

**Patterns of acculturation.** Framework of acculturation that consisted of assimilation (adoption of the dominant culture), rejection (reconfirmation of the traditional culture), integration (combination of the two cultures), or marginalization (detachment from both cultures; Berry 2003). This variable will be measured by the EAAM to explore patterns of acculturation in this study.

**East Asian adult immigrant populations.** Eastern Asia includes China, Hong Kong, Japan, Korea, Macau, Mongolia, North Korea, Paracel Islands, South Korea, and Taiwan. This study will include landed immigrants who are over 18 years old and came from two East Asian countries, Japan and China. In this study, this population will be the target population from immigrants residing in Vancouver, BC, Canada.

**Self-reported oral hygiene behaviors and attitudes.** Responses of individuals regarding their dental health beliefs s, perceptions, and practices (e.g., toothbrushing, interdental cleaning, home fluoride and frequency of use, which consists of a dichotomous response format (Kawamura, 1988). These variables will be measured by a questionnaire developed by Makoto Kawamura called Hiroshima University-Dental Behavioral Inventory (HU-

DBI) and contains 20 items which are related to tooth brushing behaviours and perception about one's oral health (Kawamura, 1988.)

## **Literature Review**

This literature review will provide a discussion regarding the importance of oral health behaviors and attitudes of adult immigrants. Subtopics include: (a) acculturation related to general and oral health, (b) oral health status and dental care utilization in Canada: native vs. immigrant populations, (c) oral hygiene behaviors, attitudes, and health beliefs in East Asian populations. Databases searched for this literature review included MEDLINE through PubMed and CINAHL using combinations of the following search terms: acculturation, Asian ethnicity, oral health, oral disease, behaviors and attitudes, health disparities, oral health disparities, and Canada.

### **Acculturation Related to General and Oral Health**

An acceleration of international immigration occurred during the last century. The number of people who live outside their birth countries increased from 80 to 185 million worldwide between 1970 and 2002. As a result, ethnic and racial diversifications exist in many different countries (Martin & Midgley, 2006). Immigrants normally encounter new cultures when moving from countries of origin to other countries. As mentioned earlier in chapter I, different patterns of acculturation (assimilation, rejection, integration, and marginalization) are exhibited over the time among immigrants (Berry, 2003). The speed and extent of acculturation depends on individuals. Nonetheless, acculturation has practical implications on people's health (Gao & McGrath, 2011).

Researchers have been investigating the impacts of acculturation on general health since the 1960s. There have been many studies of health and behaviours, but results of these studies were inconclusive. For example, one systematic literature review identified a lack of association between culturally and linguistically diverse (CALD) migrants and sport and physical activity (O'Driscoll, Banting, Borkoles, Eime, & Polman, 2013). Another systematic literature review revealed that acculturated immigrants experienced unhealthy weight gain particularly in men, but not in women (Delavari, S nderlund, Swinburn, Mellor, & Renzaho, 2013). Moreover, in a study involving a Latino population, the association between generation and diabetes was significant; however, the association between acculturation and diabetes was not significant (Afaible-Munsuz, Mayeda, P rez-Stable, & Haan, 2013). Published articles of research findings contain information about limitations of existing published studies, and the authors of published articles have made suggestions for further acculturation studies. The concept of acculturation, for example, was not well understood in the field of study of minority ethnic groups. Developing a valid and reliable instrument of measuring acculturation also has been difficult and complex because different variables such as age at the time of immigration or length of residence in new countries influence the process of acculturation, and there has been also a lack of uniformity in measurement used in studies (O'Driscoll et al., 2013; Delavari et al., 2013; Afaible-Munsuz et al., 2013). Therefore, utilization of a standardized international acculturation scale has been recommended by some researchers (Delavari et al., 2013; Afaible-Munsuz et al., 2013).

Research of the impact of acculturation on oral health has increased over last two decades, and findings appear to be inconclusive. A study of Somali refugees living in

Massachusetts, for example, found that acculturation is a more important factor for preventive dental care utilization than language skills (Geltman et al., 2013b). Another study of the effects of acculturation on oral health in Haitian immigrants in the United States (US) revealed low caries rate in those immigrants, possibly due to reliable access to dental care (Cruz, Shore, Le Geros, & Tavares, 2004). However, as mentioned, Mariño et al. (2001) reported that moderately psychologically acculturated people tended to have higher DMFS indexes than lower or higher acculturated groups since original and mainstream cultures may have protective effects on dental diseases. Further research of the impacts of patterns of acculturation on oral health self-care behaviors and attitudes, therefore, is necessary in order to provide better information for effective delivery of oral health interventions and reducing oral health disparities (Gao & McGrath, 2011).

Although there have been various acculturation studies in Western countries, for example, Australia, Canada, and the United States, there are limited or no studies published based on the immigrant populations in Vancouver, BC, Canada. The studies conducted in other Western countries or cities have revealed that acculturation impacts general and oral health and utilization of dental services (Locker et al., 1998; Gao & McGrath, 2011; Lassetter & Callister, 2009; Newbold & Patel, 2006; Mariño et al., 2001). The studies also identified factors that influence acculturation such as length of residency and proportion of life in host countries, age at the time of immigration, languages, countries of birth, socio-economic status, cultures, traditional health beliefs, and ethnic difference between the patients and service providers (Cruz et al., 2009; Dong et al., 2007; Lai & Chau, 2007).

*(Note: This is only the first subtopic of the literature review. The student would ultimately add the remaining two subtopics: (b) oral health status and dental care utilization in Canada: native vs. immigrant populations, (c) oral hygiene behaviors, attitudes, and health beliefs in East Asian populations.*

### **Study Design**

Participants will complete two different valid and reliable instruments of self-administered questionnaires: the Hiroshima University-Dental Behavioral Inventory (HU-DBI) and the East Asian Acculturation Measure (EAAM) or the East Asian Acculturation Measure-Chinese version (EAAM-C) if participants are Chinese. The HU-DBI will consist of 20 questions regarding tooth brushing behaviours and perception about one's oral health (Kawamura, 1988). The EAAM will consist of 29-item and the EAAM-C will contain 16 items of self-administered questions related to different status in acculturation: assimilation, separation (rejection), integration and marginalization (Barry, 2001; Kuo, Chang, Chang, Chou, & Chen, 2013).

### **Sample**

Participants will be East Asian immigrants in Vancouver, BC, who are older than 18 years old and whose primary languages are not English. Those participants, however, should be able to understand English sufficiently, or be able to obtain someone else's help, to complete questionnaires. The participants also must have migrated to Canada less than 30 years ago (*I may need to consult with a statistician regarding appropriate resident years of participants in Canada*). Asian immigrants can be Chinese, East Indians, Philippines, Korean, Japanese, and others who are from South East Asia. Thirty (*this is tentative numbers and need to discuss with a statistician*) participants will be recruited as a convenience sample through local churches,

community-based organization, and other social groups in Vancouver, BC. Newspaper advertisements, especially in those published for Asian audiences, will be used for recruitment as needed. A snowball sample in which subject identify other potential participants also may be used. An incentive such as a drawing for a gift card may be offered as an incentive to enroll in and complete the study.

### **Methods of Data Collection and Analysis**

An application for expedited review and approval of the study will be submitted to the Idaho State University Human Subjects Committee for approval prior to conducting the survey. Before completing questionnaires, the individuals who agree to participate in the project must sign consent forms. Participants will have opportunities to ask questions and address concerns about the project. Instructions will explain that participants need to be able to read and understand English, or when the participants do not understand English, someone else has to translate from English to the participants' language in order to obtain informed consent. Questionnaires are available in English, Chinese and Japanese languages, so one of those three languages would be required for enrollment. Other inclusion criteria included 18 years of age or older and immigration from Japan or China to Canada. As outcomes of the HU-DBI, EAAM, and EAAM-C are dichotomous variables, these results will be analyzed through logistic regression models (Jacobsen, 2012). *I will ask a statistician if there is simpler analysis for the project and will need to find out how to analyze data.*

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## Appendix K. Sample MSDH Level Research Course Syllabus

### Idaho State University Health Research/Principles of Research DENT 6646 - Fall 2014

**Professor:** Tara Johnson, RDH, Ph.D. Office: Dental Hygiene Sciences, Office 140; Phone: 208.282.2792 / E-mail: johntara@isu.edu

**Course:** 3 credits/online

#### Course Aims

**Aim 1:** To acquaint the student with the process of scientific research in the health sciences. - Research plays a critical role in advancing our basic and clinical knowledge in the health sciences. While not all students in health science programs become researchers, the majority of health science professionals make use of research to guide their clinical decisions. Familiarity with the research process will help the student apply research results to the student's clinical and teaching endeavors. However the student views research, it is imperative that the student becomes a good consumer of research in that the student is able to read, analyze, interpret, and understand research processes and results.

**Aim 2:** Facilitate the identification of a thesis topic and help the student begin writing a prospectus document. The purpose of a writing a prospectus document is to provide an avenue for the student to develop a clear and concise overview of the proposed study, so both the student and thesis/capstone faculty committee can determine the feasibility and conceptualization of the planned study. Specifically, the prospectus document will include: Statement of the Problem, Purpose of the Study, Hypothesis or Research Questions, Significance of the Study, Literature Review (brief, current and high quality), Study Design, Population/Sample, and Proposed Methods. The thesis project is a major component of the student's course of study. Learning to write well is a continual process and is helped through practice and external input. Therefore, the course is designed with opportunities to enhance the student's writing skills through practice and constructive peer and instructor feedback.

**Aim 3:** Create an online venue where students can interact, and find common areas of interest through a variety of activities, including, discussion groups, journal article reviews, and peer writing critiques.

#### Specific Course Objectives

1. Students will understand the process of research and the scientific method.
2. Students will critically analyze research articles, including the abstract, review of literature, methods, results, and discussion sections.
3. Students will become familiar with commonly used principles and terminology in statistical analysis.
4. Students will be familiar with ethical considerations when conducting research.

5. Students will understand the application of quantitative and qualitative research methods
6. Students will complete the course with a written research prospectus (Statement of the Problem, Purpose of the Study, Hypothesis or Research Questions, Significance of the Study, Literature Review (brief, current, and high quality), Study Design, Population/Sample, and Proposed Methods) that is clinically relevant, using sound methodology, written in APA format that can form the foundation for a master's thesis project.

### **Important Notes**

The benefit of an online course includes the freedom it gives each of you to access the course and its instructional materials at any time from any location with an Internet connection. A potential drawback is the need for the student to be self-directed and motivated to complete the work in a timely fashion. Please pay close attention to the weekly assignments and prospectus development assignments and provide enough time to thoroughly “digest” and learn the information.

The assignments utilized to meet the interactive goals of Aim 3, listed above, are an important component of the course; please use these opportunities to provide meaningful content for discussion groups, peer reviews, and writing critiques; you and your classmates and the instructor will all benefit.

### **Required Texts**

- Introduction to Health Research Methods: A Practical Guide. Kathryn H. Jacobsen; Jones & Bartlett Learning; Copyright year: 2012 eText: ISBN-10 1-4496-4078-8, ISBN-13 978-1-4496-4078-1 Print: ISBN-10 0-7637-8334-X, ISBN-13 978-0-7637-8334-1
- Writing the Winning Thesis or Dissertation: A Step by Step Guide. Randy L. Joyner, William A. Rouse, Allan A. Glatthorn. 3<sup>rd</sup> edition. ISBN-13: 978-1452258782.
- Publication Manual of the American Psychological Association 6th Edition, Copyright year: 2010 ISBN: 9781433805622

### **Recommended Texts**

- Mastering APA Style: Student's Workbook and Training Guide 6th Edition, Copyright year: 2009
- Writing Empirical Research Reports: A Basic Guide for Students of the Social and Behavioral Sciences 7th Edition Copyright: 2011; 162 pages ISBN: 1-884585-97-3

### **Course Format**

This online course will consist of weekly assignments, online discussion and peer reviews, first drafts of each section of the research prospectus, and the final research prospectus.

### **The Research Prospectus**

A significant aim of this course is to have the student become familiar with the research process. In order to accomplish this goal each student will be responsible for writing a research prospectus, which will include the following areas: Statement of the Problem, Purpose of the Study, Hypothesis or Research Questions, Significance of the Study, Literature Review (brief, current and high quality)), Study Design, Population/Sample, and Proposed Methods; a more detailed explanation and examples of these areas will be provided within the first few weeks of

the semester. Pay attention to the due dates for different sections of the research prospectus assignments.

The assignments related to the research prospectus consist of a sequence of activities that will move the student through the process of writing the prospectus. Writing is a process and, generally, the more time you give to writing practice, the better you'll become at writing. The weekly assignments listed in Moodle will provide the student with the information to help complete each portion of the research prospectus. It is recommended that students plan in advance for submission of prospectus sections and use the ISU Online Writing Lab (OWL), available by appointment for review of writing skills.

### **Grading:**

- Weekly assignments: 10%
  - First Draft of Background Information and Purpose of the Study: 5%
  - First Draft of Problem Statement, Hypothesis or Research Questions, and Significance of the Study: 5%
  - First Draft of Literature Review Section: 20%
  - First Draft of Methods Section: 10%
  - Final Written Research Prospectus Assignments: 35%
  - Discussion Groups, Article Reviews, and Writing Critiques: 15%
- |             |             |             |             |             |
|-------------|-------------|-------------|-------------|-------------|
| A = 95-100% | A- = 90-94% | B+ = 87-89% | B = 83-86%  | B- = 80-82% |
| C+ = 77-79% | C = 73-76%  | C- = 70-72% | D+ = 67-69% | D = 63-66%  |
| D- = 60-62% |             |             |             |             |

### **Reasonable Accommodation**

Our program is committed to all students achieving their potential. If you have a disability or think you have a disability (physical, learning disability, hearing, vision, psychiatric), which may need a reasonable accommodation, please contact Disability Services located in the Rendezvous Complex, Room 125, 282-3599 as early as possible (<http://www.isu.edu/ada4isu/>). Topics, assignments and readings subject to change; consult Moodle for updates and for writing and other assignments.

**The tentative course schedule for the semester follows. Additional details will be posted a couple of weeks in advance on Moodle regarding readings and assignments and providing instructions for online group discussions and peer reviews.**

**Week 1: 8/25**

**Introduction and Selecting a General Topic Area**

### **Readings:**

Jacobson: Ch. 1, 2, 3

Forrest JL, Miller SA. Strategies for Searching the Literature Using PubMed, updated April 2014  
<http://www.dentalcare.com/en-US/dental-education/continuing-education/ce340/ce340.aspx?ModuleName=introduction&PartID=-1&SectionID=-1>

### **Assignments:**

- Introduce yourself to classmates on Moodle
- Search PubMed, locate and submit 5 abstracts related to your general topic area and submit abstracts

**Week 2: 9/2**

**Research Article Structure / Citing / Conducting a Focused Literature**

Readings: Jacobsen Ch. 29, 30; Joyner, RL et al. Ch. 4

Assignments:

- Share general research topic with classmates
- Conduct a Focused Literature Review, read the abstracts, locate full manuscripts and begin to organize literature into files

**Week 3: 9/8**

**Overview of Types of Research and Study Approaches / Types of Reviews / Quantitative vs. Qualitative and Mixed Methods / The Evidence Pyramid**

Readings:

Jacobsen: Ch. 6, 7; Joyner RL et al: Types of Research, pp. 72-78

The Evidence Pyramid Handout (to be posted on Moodle)

Assignments:

- Provide comments on each of your class mate's topics and direction posted last week on Moodle
- Continue to search the literature for articles related to your general topic to begin to narrow the focus.
- Submit an outline of the main topic, related subtopics, and citations within each subtopic (non-graded, for feedback only)

**Week 4: 9/15/14 – 9/21**

**Focusing the Research Problem**

**Introduction, Background of the Study, Purpose of the Study**

Readings:

Joyner RL. et al.: Chapter 3, pp. 90-91, 134-136, Ch 14 (Note: in the prospectus, there are not chapters, but content of these sections is similar albeit more brief and less detailed)

Assignments:

- Review Prospectus Examples on Moodle
- Re-submit outline of the main topic, related subtopics, and citations within each subtopic incorporating suggestions provided
- Continue focused literature search and review

**Week 5: 9/22 – 9/28**

**Focusing the Research Question (continued)**

**Problem Statement and Hypothesis or Research Questions / Preliminary Choice of Research Method**

Readings:

Jacobsen: Read chapter that relates to your own preliminary choice of research method

Joyner et al.: pp. 137-140 (Note: in the prospectus, there are not chapters, but content of these sections is similar)

Assignments:

- Review Prospectus Examples on Moodle
- Submit first draft of Background information (from the literature related to your topic) section, and the purpose of the study section of your prospectus
- Continue focused literature search and review
- Work with OWL as needed for writing assignments.

**Week 6      9/29/14 – 10/5**

**Critiquing the Literature and Writing the Literature Review**

Readings: Joyner, RL et al. pp. 142-145., Ch. 4, 14 (Note again: the prospectus is more brief and will not contain chapters or be as definitive or detailed as Ch. 2, but the components are similar) ; Online resource: TBA

Assignment:

- Submit first draft of research problem statement, hypothesis or research questions, and significance sections of prospectus
- Begin writing draft of literature review section (e.g., first subsection) of prospectus

**Week 7      10/6 – 10/12**

**Research Ethics and CITI training introduction**

Readings:

Jacobsen: Ch. 21, 22; Online resource: TBA

Assignments:

- Complete case reviews related to ethics in research, discuss on Moodle with classmates
- Submit brief article critique using format provided on Moodle
- Continue writing literature review section of prospectus [e.g., next subsection(s)]

**Week 8      10/13 – 10/19**

**Sampling and Estimating Sample Size**

Readings:

Jacobsen: Ch. 16, 17; Online resource: TBA

Assignments:

- Continue writing literature review section of prospectus [e.g., next subsection(s)]

**Week 9      10/20 – 10/26**

**Overview of Basic Health Research Statistics / Data Management / Descriptive Statistics / Comparative Statistics**

Readings:

Jacobsen: Ch. 25, 26, 27

Assignment:

- Continue writing literature review section of prospectus
- Work with OWL as needed for writing review and revision

**Week 10      10/27/14**

**Research Methods: Survey/ Questionnaires and Interviews / Qualitative Research**

Reading: Jacobsen: Ch.: 18, 19, 14

Assignment:

- Begin finalizing literature review section of prospectus, writing introduction and summary -
- Work with OWL as needed for writing review and revision

**Week 11      11/3/14**

**Experimental Research / Randomization / PRISMA**

Reading: Jacobsen: Ch.: 13

©Assignment: Submit first draft of literature review section

**Week 13 11/17/14**

**Correlational Studies / Correlation**

**Selecting a Methodology and Writing the Methods Section of the Prospectus**

Reading: Jacobsen: Ch.: 8

Joyner, RL et al.: pp 148-149, Ch. 16 (Note again: the prospectus will not contain chapters or be as definitive or detailed as Ch. 3, but the components are similar)

Assignment:

- Begin outlining and writing first draft of methods section of prospectus

**Week 14 11/24/14 Thanksgiving Break**

**Week 15 12/1/14**

**Critically Revising Your Writing and the Prospectus**

Reading:

Jacobson: Ch. 32

Assignment:

- Submit Rough Draft of Methods section of prospectus

**Week 16 12/8/14**

**TBA / Discussion questions regarding finalizing prospectus**

Assignment: Finalize all sections of prospectus

**Week 17 12/15/14**

**Submit Final Prospectus by 12/18/14**

## Appendix L. Graduate Level Course On Clinical Trials

### **COURSE DESCRIPTION:**

Clinical trials are those studies conducted in human populations in order to systematically determine what factors (new drugs, treatments or biopsychosocial factors) impact specific health outcomes. In this course, we will explore the theoretical and practical knowledge required for the design of, and ethical conduct of clinical trials. Key concepts of clinical trial design will be discussed relative to various health topics. The implications of clinical trials in clinical decision making, patient care and public health practice will be explored. In this course, experienced clinical researchers will demonstrate how the core elements of clinical trials are adapted to special situations depending on the discipline under study, research question, target population or ethics of human experiments. Assigned exercises (both in and out of class) are designed to give the student an opportunity demonstrate application of principles of good clinical practice, and to increase students' competency in evaluating and planning clinical trials. This knowledge is indispensable for certificate, masters or doctoral level programs in the health sciences. This course is intended for all health professional students who desire advanced training in methods to help them plan, conduct and interpret findings from clinical studies.

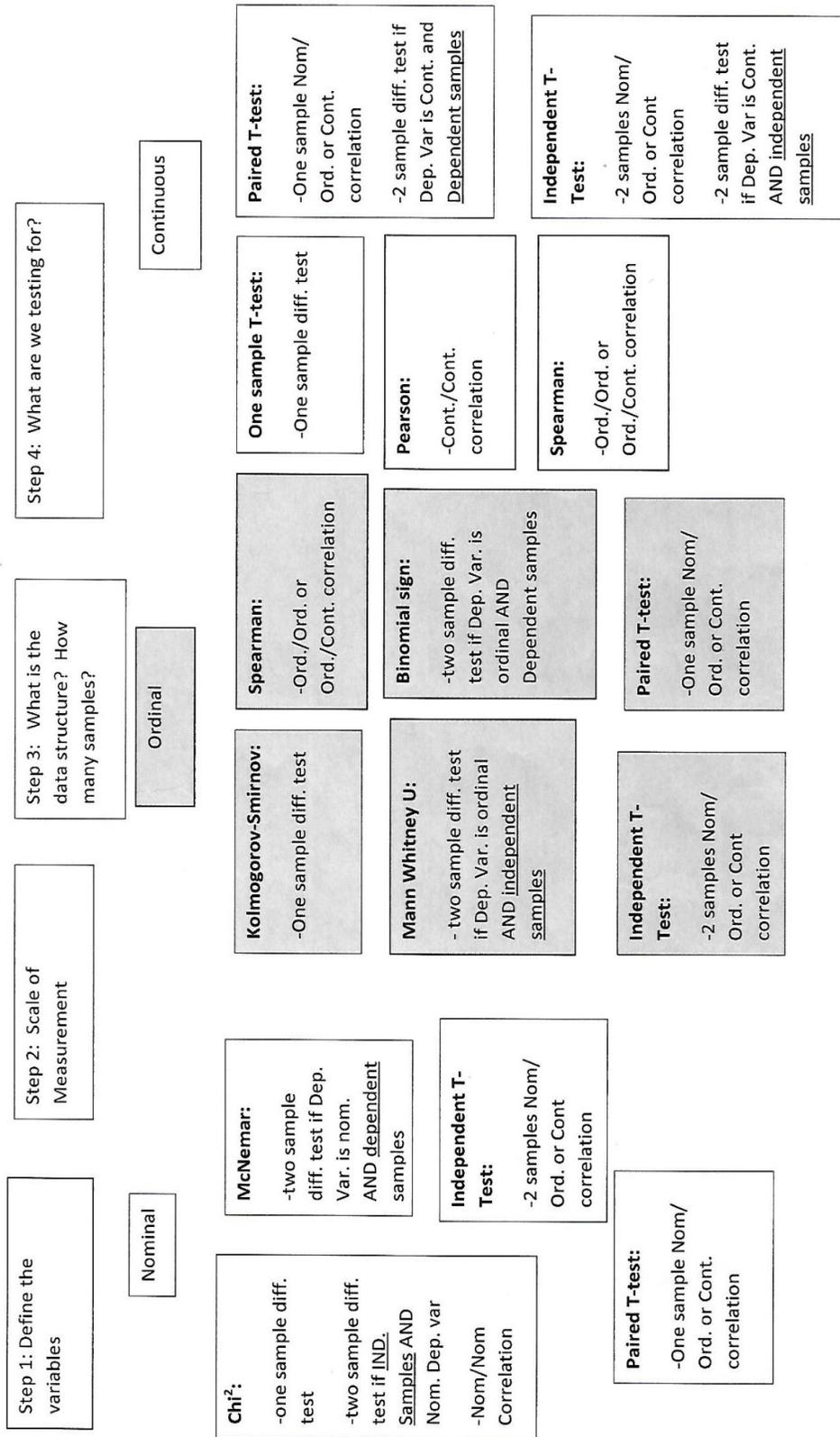
### **COURSE OVERVIEW AND OBJECTIVES**

Cognitive psychology has shown that students learn most effectively when they participate in active construction of both meaning and application of materials. Therefore, this class will be primary experiential with class sessions organized to include an initial review of key concepts of the clinical trial "system", followed by either group discussion or guest presentations from clinical trials researchers from various disciplines.

Specifically, the course will enable you to:

1. Apply principles of human subjects' research to the critical evaluation of clinical trials designs in various health-related disciplines.
2. Describe the designs and phases used in clinical trials and identify appropriate application of these designs to various research questions.
3. Understand the relationship between theory and the identification of a meaningful research question and research design principles needed to answer it.
4. Define and appropriately use clinical trials terminology.
5. Analyze and discuss the potential impact clinical trials have on the practice of medicine or allied health.
6. Estimate the sample size for a clinical trial given multiple contingencies such as availability of subjects, meaningful effect size estimates and study design.
7. Describe role of ethics committees, HIPAA and Data Safety Monitoring Boards in oversight of clinical trials.
8. Utilize current guidelines for conducting and reporting results from clinical trials (ICH Guidelines, ClinicalTrials.gov, CONSORT Statement).

Flow Chart for Choosing a Statistical Test:



Developed by Kathryn Bell, RDH, MS, Pacific University, Dental Hygiene