NFS 1224 H S  Nutritional Epidemiology
January to April, 2016

Time and Location:
Thursdays 10am – 1pm, FitzGerald Building, 150 College St, room 139

Instructors:
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Office hours: By appointment

Text(s) and readings:
1. Main Text:
   (note: Third Edition, 2013 is available but course readings are structured around Second Edition)
2. Supplementary Text:
3. Additional readings will be assigned

Pre- / Co-requisites:
Introductory epidemiology and introductory biostatistics, or permission of the instructors.

Evaluation:
1. Protocol outline 10% (due: Feb 11th)*
2. Presentation and critique of journal paper 30% (March 3rd/10th)
3. Oral presentation of protocol 20% (due: Mar 31st, Apr 7th/14th)
4. Written protocol 40% (due: April 21st)

*(Returned by February 25th; Drop date = March 1st)

Objective:
The overall objective of this course is to provide students with a critical understanding of theoretical
and practical considerations in the conduct of epidemiologic research related to nutrition. The
focus will be on *observational studies* of the role of diet and nutrition in chronic disease (as opposed to
food-borne infectious disease outbreaks and associated issues, or under-nutrition). The material will
have a strong methodological emphasis, and is intended for graduate students with an interest in
understanding how epidemiologic studies of diet and chronic disease are conducted. Specifically,
students will be expected to gain a critical understanding of the design, conduct, analysis and
interpretation of nutritional epidemiologic studies, including the usual methods applied for assessment
of this exposure, familiarity with methodological issues related to nutritional epidemiologic studies
such as the appropriateness of various study designs for specific research questions, and issues
regarding data analysis and interpretation.
## Timetable:

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<th>Topic</th>
<th>Speaker</th>
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| 1  | January 14| - Introduction and overview  
- General considerations  
- Overview of epidemiology | Boucher | Hanley |
| 2  | January 21| - Overview of epidemiology (con't)  
- Overview of nutritional epidemiology | Hanley |
| 3  | January 28| - Randomized controlled trials with nutritional interventions – special considerations | Lisa Martin |
| 4  | February 4 | - Nature of variation in diet  
- Food records and 24-hour recalls | Boucher |
| 5  | February 11| - Food frequency questionnaires  
(design, validity, reproducibility) | Boucher |
|     |           | → NOTE: Protocol outlines due ← |                         |
| 6  | February 18| - Biomarkers  
- Introduction to data analysis & interpretation | Hanley |
| 7  | February 25| - Data analysis (con't)  
- Special topics in the analysis of nutritional data | Hanley | Russell de Souza |
|     |           | → NOTE: Protocol outlines returned ← |                         |
| 8  | March 3  | Journal paper critiques | Students |
| 9  | March 10 | Journal paper critiques | Students |
| 10 | March 17 | New investigator in nutritional epidemiology | Bibiana Garcia Bailo |
| 11 | March 24 | Meta-analysis in nutritional epidemiology | John Sievenpiper |
| 12 | March 31 | Student protocol presentations | Students |
| 13 | April 7  | Student protocol presentations | Students |
| 14 | April 14 | Student protocol presentations | Students |
| 15 | April 21 | → NOTE: Final protocols due ← | Students |
### Readings

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| 1  | January 14 | - Introduction and overview  
- General considerations  
- Overview of epidemiology                     | Willett Ch. 1-2  
Supplementary: Margetts Ch 1                      |
| 2  | January 21 | - Overview of epidemiology (con't)  
- Overview of nutritional epidemiology             | To be assigned                               |
| 3  | January 28 | - Randomized controlled trials with nutritional interventions – special considerations         | Willett Ch 3, 4  
Supplementary: Margetts Ch 5, 6                      |
| 4  | February 4  | - Nature of variation in diet  
- Food records and 24-hour recalls                  | Willett Ch 5-7  
Supplementary: Margetts Ch 8                      |
| 5  | February 11 | - Food frequency questionnaires (design, validity, reproducibility)                        | Willett Ch 9 & 13                           |
| 6  | February 18 | - Biomarkers  
- Introduction to data analysis & interpretation                     | To be assigned                               |
| 7  | February 25 | - Data analysis (con't)  
- Special topics in the analysis of nutritional data     | To be assigned                               |
| 8  | March 3     | **Journal paper critiques**                                                               | To be assigned                               |
| 9  | March 10    | **Journal paper critiques**                                                               | To be assigned                               |
| 10 | March 17    | New investigator in nutritional epidemiology                                              | To be assigned                               |
| 11 | March 24    | Meta-analysis in nutritional epidemiology                                                  | To be assigned                               |
| 12 | March 31    | **Student protocol presentations**                                                        | To be assigned                               |
| 13 | April 7     | **Student protocol presentations**                                                        | To be assigned                               |
| 14 | April 14    | **Student protocol presentations**                                                        | To be assigned                               |
| 15 | April 21    | **Final protocols**                                                                      | To be assigned                               |
Assignments

1. **Protocol outline** 10% (due: Feb 11th)
In 1 single-spaced page (excluding references), provide an outline of your protocol, including the rationale and background information, objectives of the proposed study, and an outline of the study design and methods to be used. The intention of this assignment is to help you start thinking about what will be needed for the full protocol, which is due at the end of the course. It is expected that the protocol will describe an *analytic observational study in nutritional epidemiology* (eligible designs will be outlined in an early class) and you will apply the nutritional epidemiology methods described in the course. Please do not select a design that has a close methodological relationship to your thesis work. Students will complete this work in pairs. Submit an electronic and two paper copies.

2. **Presentation and critique of journal paper** 30% (Mar 3rd and Mar 10th)
Select a paper on the association of diet and chronic disease from a peer-reviewed journal and present a critical evaluation of the paper to the class. Issues to cover include the background to the problem and a critical analysis of the methods used and the presentation and interpretation of results. Describe strengths, weaknesses, and potential alternatives to the choice of study design, measurement methods, and analytic approaches. A full evaluation will require reading other literature! The paper should be a recent report (published in last 5 years) from an *analytical observational study in nutritional epidemiology*. Eligible study designs will be outlined in an introductory class. Approval of the paper by the instructors ahead of time is required. Please do not select a paper that 1) is from within this department, 2) has a close methodological relationship to your thesis work, or 3) does not use a *population-based* epidemiologic approach. Duration of the presentations is 60 minutes (30 minutes for the presentation, 30 minutes for questions from the class) although this will be confirmed early in the term. A one page summary of the strengths and weaknesses of the paper is to be handed in after the presentation, as well as your printed slides (two copies of each). Since all students will be expected to read your paper, please circulate the .pdf a week in advance. Critique presentations will be done in small groups (size to be confirmed early in the term), and each group will also be assigned to lead the question period and discussion of another group’s presentation.

3. **Oral presentation of protocol** 20% (due: Mar 31st, April 7th / 14th)
Give a brief presentation of your protocol, including rationale / background information, the objectives of the proposed study, and methods to be used. Duration of the presentations is 45 minutes (25 minutes for the presentation, 20 minutes for questions from the class), although this will be confirmed early in the term. Students will complete this work in pairs. Submit two copies of your printed slides.

4. **Written protocol** 40% (due: April 21st)
Your protocol should describe an *analytical observational study*, and include the background to the problem including a brief review of the relevant literature; the rationale for your proposed study; the specific objectives of your study and hypotheses and/or research questions to be addressed; details regarding the methods including study design, measurement of outcome, main exposure variables and confounders; and an outline of the analytic approach. Maximum length – 6 single-spaced pages (1 for background, 1 for research gaps and objectives/hypotheses, and 4 for methods – this does not include references, tables, figures). Again, it is important that you apply the nutritional epidemiology methods described in the course, and that you not select a design that has a close methodological relationship to your thesis work. Be sure to specify reasons for choosing your selected design and measurement methods, including strengths, limitations, and why potential alternatives were not chosen. Consider methodological features described in STROBE guidelines. If you plan to focus on the addition of new components to an established study, you must also clearly describe the original study, and where/how value is added. Students will complete this work in pairs. Submit an electronic and two paper copies.
Marking Scheme

1. Protocol outline

- Background / literature review 25%
- Identification of research gaps and statement of objectives 25%
- *Consideration of*: potential designs, assessment of exposure and outcome measures, analyses, etc 50%

*NOTE: this assignment is meant to help you get started on thinking about the topic for your full protocol, so it is not necessary that things be cast in stone at this point. Rather, you should demonstrate that you have been thinking about key issues in design, measurement, etc.*

2. Presentation and critique of journal paper

- Background to the problem (relevance, knowledge gaps etc) 10%
- Critique of objectives, methods and interpretation: strengths and limitations of design, assessment of exposure and outcome, analyses, interpretation of results and conclusion 40%
- Defense (answering questions, sharing podium within group) 25%
- Lead a post-presentation question period and discussion for one other group 25%

3. Oral presentation of protocol

- Background / literature review 15%
- Identification of research gaps and statement of objectives 15%
- Rationale for selecting: specific design, exposure and outcome measures, analytic approach. Strengths and limitations, potential problems 35%
- Defense (answering questions, sharing podium within group) 35%

4. Written protocol

- Background / literature review 15%
- Identification of research gaps and statement of objectives 15%
- Rationale for selecting: specific design, exposure and outcome measures, analytic approach. Discussion of strengths and limitations & potential problems 70%