

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:

Willett W. Nutritional Epidemiology, **Second Edition**. Oxford University Press, 1998.

(note: Third Edition, 2013 is available but course readings are structured around Second Edition)

2. Supplementary Text:

Margetts B and Nelson M. Design Concepts in Nutritional Epidemiology, Second Edition. Oxford University Press, 1997.

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

**(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:

Wk	Date	Topic	Speaker
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) → NOTE: Protocol outlines due ←	Boucher
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 → NOTE: Protocol outlines returned ←	Hanley Russell de Souza
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

Wk	Date	Topic	Reading
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	
3	January 28	- Randomized controlled trials with nutritional interventions – special considerations	To be assigned
4	February 4	- Nature of variation in diet - Food records and 24-hour recalls	Willett Ch 3, 4 Supplementary: Margetts Ch 5, 6
5	February 11	- Food frequency questionnaires (design, validity, reproducibility)	Willett Ch 5-7 Supplementary: Margetts Ch 8
6	February 18	- Biomarkers - Introduction to data analysis & interpretation	Willett Ch 9 & 13
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	
13	April 7	Student protocol presentations	
14	April 14	Student protocol presentations	
15	April 21	Final protocols	

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%