Nutritional Epidemiology

BE-8063/PH8066-- Fall (3 credits)

Course director and Instructor:
Tianying Wu, M.D. Ph.D.
Associate Professor

Class sessions: Thursday 3:30 pm-6:00 pm

Course description: The course will focus on the fundamentals of nutritional epidemiology by introducing the concepts of study design and analysis in nutritional epidemiology and reviewing the function of macronutrient and micronutrients. Participants will discuss several specific diet-disease relationships discovered in large clinical trials and observational studies, and integrate information from molecular epidemiology, cardiovascular epidemiology, cancer epidemiology, and environmental epidemiology. The instructor will discuss the strengths and weaknesses of previous epidemiologic studies on the associations between nutritional factors and chronic diseases. Students will have opportunities to work on their own projects.

Course learning objectives:
1) Describe major study designs used in nutritional epidemiologic studies, and the advantages and disadvantages of each study design.
2) Describe strengths and weaknesses of common methods of dietary assessment in epidemiological research, and critically evaluate when different methods may be most appropriate.
3) Correctly interpret and critically evaluate nutritional epidemiology literature, taking into account issues such as the study design, measurement error, and bias in key variables, and approaches to analyzing data.
4) Identify major dietary etiologic factors for heart disease, diabetes, and cancer.
5) Write an epidemiologic proposal to address a nutrition topic using the guidelines described below.

Pre-requisites:
No course prerequisites; Graduate standing. The course is primarily open to students in the Department of Environmental Health degree program including Epidemiology & Biostatistics, Clinical & Translational Research, and Master of Public Health. The course is also open to students from other degree programs within and outside of the Department of Environmental Health. Preferred course prerequisite: BE7076 (introduction of epidemiology) or taking BE7076 at the same time.

Grading:
Grading will be as follows:
Final projects: 50%
Presentation: 20%
Homework: 20%
Attendance: 10%
Research proposal for nutritional epidemiology course

Proposal: Nutrition related topics or diet–environment interactions.

Abstract. Include a structured abstract, no longer than 30 lines of text, using the following headings: Background, Objective, Specific Aim, Study Design, Method, and Significance and Impact. Use the font and margin suggested below, single-spaced.

Find an example in AJE or JAMA

Main Body:
Font size: 12 point or larger
Margin: Minimum of 0.5 inch in all directions
Page limit: No less than 3 pages and no more than 5 pages (does not include abstract and references), double-spaced
  a. Background
  b. Objective
  c. Specific aim
  d. Study Design: to be aware of issues related to differences between observational studies and clinical trials, matching in observational studies, and population selection
  e. Methods: describe the methodologies used for dietary assessment; how to validate dietary instruments, and how to assess exposure and outcome variables. Statistical analyses are optional, but need to state what associations will be assessed if it is an observational study or what causal effect will be determined if it is a clinical trial
  f. Confounding factors: general confounding factors, confounding factors related to nutrients, and how to control confounding factors
  g. Unique feature or innovation of this study
  h. Significance and impact
  i. Strengths and limitations: need to cover 1) study design and 2) methods of dietary assessment
  j. References: no page limit

Reference textbook is recommended but not required. Nutritional Epidemiology by Walter Willett, third edition or earlier.

Course Schedule:

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topic</th>
<th>Instructor</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sept 2</td>
<td>Overview of epidemiologic study design</td>
<td>Wu</td>
</tr>
<tr>
<td>2</td>
<td>Sept 9</td>
<td>Overview of study design; general nutrition knowledge</td>
<td>Wu</td>
</tr>
<tr>
<td>3</td>
<td>Sept 15</td>
<td>24-hr recall and Food record; discussion</td>
<td>Wu</td>
</tr>
<tr>
<td>Week</td>
<td>Date</td>
<td>Topic</td>
<td>Instructor</td>
</tr>
<tr>
<td>------</td>
<td>--------</td>
<td>----------------------------------------------------------------------</td>
<td>------------</td>
</tr>
<tr>
<td>4</td>
<td>Sept 22</td>
<td>Food frequency questionnaire; discussion for nutrition topics</td>
<td>Wu</td>
</tr>
<tr>
<td>5</td>
<td>Sept 29</td>
<td>Total Energy adjustment; nutrient analyses (lab)</td>
<td>Wu</td>
</tr>
<tr>
<td>6</td>
<td>Oct 6</td>
<td>Biomarker for nutrient assessment; nutrient analyses (lab)</td>
<td>Wu</td>
</tr>
<tr>
<td>7</td>
<td>Oct 13</td>
<td>Diet and obesity; discussion for nutrition topics</td>
<td>Wu</td>
</tr>
<tr>
<td>8</td>
<td>Oct 20*</td>
<td>Diet and diabetes; guest lecture</td>
<td>Wu</td>
</tr>
<tr>
<td>9</td>
<td>Oct 27</td>
<td>Reading day</td>
<td>Wu</td>
</tr>
<tr>
<td>10</td>
<td>Nov 3</td>
<td>Diet and heart disease; guest lecture</td>
<td>Wu</td>
</tr>
<tr>
<td>11</td>
<td>Nov 10</td>
<td>Diet and cancer; guest lecture</td>
<td>Wu</td>
</tr>
<tr>
<td>12</td>
<td>Nov 17</td>
<td>Diet and cancer; discussion for projects</td>
<td>Wu</td>
</tr>
<tr>
<td>13</td>
<td>Nov 24</td>
<td>Student presentation</td>
<td>Wu</td>
</tr>
<tr>
<td>14</td>
<td>Dec 1</td>
<td>Student presentation</td>
<td>Wu</td>
</tr>
<tr>
<td>15</td>
<td>Dec 7</td>
<td>Student presentation</td>
<td>Wu</td>
</tr>
<tr>
<td>16</td>
<td>Dec 14</td>
<td>Project due</td>
<td></td>
</tr>
</tbody>
</table>

*: Dates homework is due

**Attendance and Participation Policy:**
1. Attendance will be checked each time through a sign-in sheet;
2. Missing every two classes will be deducted 5 points from the final score (100 points in total);
3. Attending the class 90 minutes later will be considered missing the entire class;
4. Missing 5 classes in total will receive an “I” (incomplete) from the course.

**Academic Integrity:** All students shall comply with the Code of Student Conduct of the University of Cincinnati (UC) [http://www.uc.edu/conduct/Academic_Integrity.html](http://www.uc.edu/conduct/Academic_Integrity.html). Academic misconduct will be zero tolerated in this course. Regardless of the type of assignment, students found responsible for violating the UC Academic Integrity Policy will receive an "F" for the course. All violations will be forwarded to the Office of University Judicial Affairs, Department of Student Life where a university disciplinary file will be created.