THE UNIVERSITY OF BRITISH COLUMBIA
Food, Nutrition, and Health

FNH 398

Research Methods in Human Nutrition

Lecture Time: Wednesdays 2-5PM
Tutorial Time: Thursdays, 5-6:30PM
Location: ***Lecture:*** 221 West Mall Swing Space
Instructor: Dr. Mahsa Jessri
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Information for Students in the Dietetics Major:
This course, like all required courses in the Dietetics Major, contributes to coverage of the Integrated Competencies for Dietetic Education and Practice (ICDEP). All students in the Dietetics Major should refer to the Mapping of Curriculum to ICDEP page on the dietetics website to familiarize themselves with the requirements.

1. COURSE DESCRIPTION

Course Description (Calendar): Process of research; principles and processes in utilizing research. Restricted to students in majors in the FNH program.

Background: "The science of nutrition is the human endeavor to understand how what we eat affects our health. What kinds of diets are best to prevent chronic diseases such as heart disease, cancer, or diabetes? To what extent can good nutrition reduce stress, prevent memory loss, or even prolong longevity? What diets are best for infants, toddlers, and children to develop their optimal physical powers and mental faculties? Fuelled by overwhelming evidence that a significant reduction in the global burden of disease must be nutrition based, new discoveries are being generated at an explosive rate and are producing major shifts in understanding. Thrown into this mix is a daily barrage of miraculous health claims and counterclaims presented by the media and those with vested interests. In this environment, not only is it important for nutrition graduates to have a mastery of knowledge about nutrition *but more importantly, to have the skills and ability to learn new knowledge, to see things from different perspectives, to critically evaluate information, to judge what is useful and what is not, and to be able to communicate and apply this knowledge.* Without these skills of critical evaluation, one's knowledge will become dated very quickly." (adapted with permission from CM Skeaff, Professor, University of Otago, New Zealand)

Course Aims: The purpose of this course is to introduce the student to research principles and processes that will allow them to interpret, critically evaluate, and apply research in the nutritional sciences.

Learning Objectives:

By the end of FNH 398, students are expected to be able to:

1. Describe the importance of research and how research informs professional practice.
2. Critically read and interpret the nutrition research literature and evaluate the quality of research studies.
3. Explain the characteristics of the different research paradigms used in nutrition research including qualitative and quantitative approaches. For each paradigm, identify strengths, limitations, and indications for use.
4. Describe the various stages of the nutrition research process and what tasks need to be completed during each (conceptualization, reviewing the literature, planning and design, methodology, data analysis, interpretation, dissemination, re-conceptualizing).
5. Describe the principles underlying ethics in research including "informed consent".
6. Explain the key attributes of validity and reliability, how they are assessed and their importance for research.
7. Interpret basic statistical approaches used in nutrition research and explain core concepts needed for applying descriptive and inferential statistics to quantitative data.
8. Describe the uses, strengths and limitations of the following research approaches: qualitative studies, animal studies, cross-sectional studies, case-control studies, cohort studies, and randomized control trials, reviews and meta-analyses.
9. Critically read current nutrition literature (and know where to find it).

2. LEARNING RESOURCES

Course Readings:

- **Required readings** and on-line resources needed to prepare for class are listed on the syllabus with links provided on Canvas
- **Recommended supplemental textbook***:* Portney, L. G., & EBSCOhost. (2020). *Foundations of Clinical Research: Applications to evidence-based practice* (4th edition) F.A. Davis Company. (*Available through the University of British Columbia Library Online.)*

3. COURSE DESIGN AND PEDAGOGIC APPROACH:

Educational Strategies: This course is offered in form of a seminar and therefore students are required to actively participate and be prepared for the class. This course reflects instructor's commitment to principles of adult education and is "learner-centered" to maximise flexibility and accessibility of instruction. As a result, the 2 main pillars of this course include:

- **Online Materials:** Including PowerPoint presentations, readings, audiovisuals, or activities that should be reviewed prior to each week's class on Canvas

- **Weekly Seminars:** Including attendance and active participation in **lectures** which will include active learning and occasional guest lectures.

- **Tutorials:** Tutorials are held weekly and are meant to be a time for students to test their knowledge of the material using guided practice questions. This is also a time to ask any questions you may have. Please attend these tutorials and be an **active participant.**

The online materials for each week are designed to complement that week's lectures and therefore should be completed before attending the class. It is expected that students complete all assigned readings prior to the seminar session to actively participate in generating ideas and discussing the issues under discussion.
This course employs an active learning approach with learning strategies that include whole class discussions, and written assignments. Students are welcome to post thoughts, questions and comments on the Canvas.

Communication:
- A discussion board has been created on Canvas to enable students to post questions and to exchange thoughts and ideas or comments about the course content or assignments. Students are encouraged to respond to each other, and instructor and teaching assistants will respond on a regular basis.
- To improve the course content continuously, Canvas announcement section will be updated regularly to alert students with time-sensitive or critical course items. Please check the Canvas on a regular basis.
- Please email the instructor directly with issues of personal nature or your feedbacks regarding course administration. Emails should be answered within a time frame of 24 hours. This might change if your email has been sent on a weekend or holiday.

4. STUDENT EVALUATION

Your final grade will be calculated out of 100 and will then be converted using the University of British Columbia's grading system.

- All assigned reading is to be done **prior to** class meetings in order to be prepared for class discussions.
- All assignments must be handed in on time. Assignments 1 & 2 and Article Review Form should be handed in **on Canvas**. The Canvas log will confirm that the assignment was submitted on time.
- Any assignment turned in after the due date will be graded late and points will be automatically deducted. **A 10% penalty will be given per day late.**
- All assignments should have **page numbers**, and your **student ID at the top of each page**.

Components	Weight of total Mark	Due Date
I) Assignment #1: Searching the Scientific Literature	10%	Oct. 5th
II) Assignment #2: Quality Criteria Checklist Assignment	10%	Dec. 2nd
III) On-line Homework (2 @ 4% each)	8%	Oct. 2nd Nov. 13th
IV) Online Mini-Quizzes (2 @ 3% each)	6%	Oct. 15h Nov. 16th
V) Mid-Term Exam	24%	Oct. 19th
VI) Final Exam	33%	TBD
VII) Completed Article Review Form (1@ 1%)	1%	Nov. 2nd
VIII) Graded In-Class Questions	4%	Throughout the Semester
IX) Class Participation	4%	Throughout the Semester

During the first week of the class, no assignment or reading is due. I want to make sure that everyone has access to the course materials and has a chance to read over the outline and understand responsibilities. A brief summary of each assignment is provided below. Please refer to Canvas for the full instructions and assignment templates.

I) Assignment #1: Searching the Scientific Literature

1. Using the scenario provided on Canvas as a guide, develop a clear research question using the PICO framework.
2. Conduct a Medline search on the Ovid platform to identify key studies that have examined your research question.
3. Save and submit the abstracts for three research articles identified through your search that are most relevant to your PICO question.
4. For each of the papers that you selected:
   - Provide a full citation for the article
   - Name the type of research article
   - Briefly describe *why* you selected the research article
5. Sign up for a journal alert/electronic table of contents for a peer-reviewed scientific journal. Submit the confirmation of sign-up received from the journal.

II) Assignment #2: Critically Reviewing the Literature (Quality Criteria Checklist)

- Review/summarize the paper using the Form for Abstracting Research Papers and fill out the Quality Criteria Checklist using the templates provided on Canvas.
  An example of an abstracted article is posted here:
  http://www.andeal.org/worksheet.cfm?worksheet_id=250517

III &IV) Online Homework & Online Mini-Quizzes:

These MUST be completed during the scheduled time periods. If not, a score of zero is assigned. We recommend that you note these dates now, and do not forget them!! If you miss an online mini quiz you will receive a score of zero.

V) Mid-Term Exam:

You will have the full class session (80 minutes) to complete the midterm which will focus on all materials presented before the date of midterm exam. Midterms will mainly include multiple choice questions and short answer questions.

VI) Final Exam

You will have up 2.5 hours to complete the final exam. It will include mainly multiple-choice questions and short answer questions. The final exam is ***cumulative*** (i.e., it will cover the whole term) with an emphasis on material covered since the midterm.

When preparing for course exams, you will *not* be expected to memorize specific methodological details from primary research studies that we reviewed or that you critiqued for article reviews or assignment #2. However, you will be expected to be able to critically evaluate research studies, interpret data and findings from original studies, describe and discuss the approaches used in various research studies and apply the skills and language used throughout this course to answer questions about similar nutrition-related research studies.

VII) Completed Article Review Form

Please follow directions on Canvas.

VIII &IX) Graded In-Class Questions & Class participation

In order to encourage in-class participation, in-class questions will on occasion be used to assess comprehension and critical analysis from assigned readings.

5. CLASS POLICIES

Absentee Policy

We expect you to be present and prepared for all class meetings. In the event that you are unable to attend a scheduled class because of illness or emergency, you are responsible for any material presented in class. UBC's policy regarding illness and accommodations are available at http://www.calendar.ubc.ca/Vancouver/index.cfm?tree=3,48,0,0. You are expected to contact the instructor for any absence that requires accommodation.

Academic Accommodation

This course will follow the policies regarding accommodation set out by the University for students with disabilities (http://www.calendar.ubc.ca/Vancouver/index.cfm?tree=3,34,0,0), when academic concession is required (http://www.calendar.ubc.ca/vancouver/index.cfm?tree=3,48,0,0) and regarding religious accommodation:
https://senate.ubc.ca/J-136_Religious-Cultural-Observances_20200415_0/
In resolving any discrepancy regarding policies for this course, Academic Calendar regulations and University policy take precedence.

Policy Regarding Late or Missed Assignments or Term Paper

Please contact the instructor immediately if you miss any of the assignments or paper. Unless for a compelling reason (e.g., illness or personal distress) students will be given a grade of zero if they miss the assignments. Arrangements must be made with the instructor to make up for the missed assessment.

Policy Regarding Missed In-Class Engagement Activity
Since in-class engagement activities are designed for evaluating students' learning and participation for each session, there will be no opportunity to make up for an engagement activity, unless in compelling circumstances (e.g., illness, personal distress, etc.). Please be in touch with the instructor. Students will be given a grade of zero for each activity missed.

Policy Regarding Re-read of Assignments
University of British Columbia's students have the right to request a grade review or to appeal grades. If you have concerns or need explanation about grading of your assignment, you may request a re-read within two weeks after assignments are marked. To request a re-read, clearly identify the sentences in your assignments in a separate sheet, and explain why you think you should receive extra marks, and submit the sheet to the instructor/teaching assistants prior to the meeting. Your marks can go up, down or stay the same.

6. ACADEMIC INTEGRITY

Please be aware that plagiarism or cheating of any kind will be cause for "no credit" on the assignment, and possible failure in the course.
Students and instructor have the important responsibility of maintaining the integrity of learning and teaching relationship, which is characterized by honesty, fairness and mutual respect. Academic integrity is a fundamental value at the University of British Columbia. The academic fraud and dishonestly are defined as actions that compromise academic integrity and consequences of such acts, which are available at: http://www.calendar.ubc.ca/vancouver/?tree=3,286,0,0
Any academic misconduct is taken seriously and is punishable by appropriate disciplinary action at the University of British Columbia. Students should be familiar and abide by the regulation on academic conduct which outlines the kinds of actions that constitute *fraud including, plagiarism or cheating, submitting works that are not fully the student's own, presenting results that are falsified or fabricated, copy or allowing others to copy one's work, submitting the same work or the large part of the same work in more than one course, falsifying academic evaluations, unauthorized aids in assignments, submitting work prepared in collaboration with others when such collaborations have not been allowed*. Plagiarism is defined by the UBC Calendar as "intellectual theft (that) occurs when an individual submits or presents the oral or written work of another person as his or her own." (The University of British Columbia. Calendar 2008/09, p.59). Plagiarism is a growing concern at UBC, as indicated in the following statement from the website of UBC's Vice President Academic:

> "Fortunately, the Internet, which has made plagiarising easier, also provides a system for possible detection. As one part of an institutional response to the issue of plagiarism, UBC has subscribed to an electronic service called TurnItIn. While the focus is primarily on this Internet-based service, information is also provided about the larger context in which plagiarism must be addressed, including UBC Policies on Plagiarism and suggestions on Reducing Plagiarism."

If you have not already done so, you should familiarize yourself with UBC's policies, and the steps you can take to avoid plagiarism. The UBC Library has an excellent site on plagiarism, with links to online tutorials http://help.library.ubc.ca/planning-your-research/academic-integrity-plagiarism/.

Although plagiarism of written work can now be detected through services such as TurnItIn, it is more difficult to detect situations when students use the work of others (including their fellow students) when completing individual assignments. Studying with others or discussing issues with them is completely legitimate and is encouraged; **however, collaborating with others while completing individual assignments or sharing unauthorized material is not.**

7. COURSE EVALUATIONS

Mid-Course Evaluation: I am interested in improving this course and need to hear from you. Please feel free to make constructive suggestions at any point during the term. At the mid-point of the course, I will gather feedbacks and recommendations from you asking students to anonymously administer and deliver course evaluations. All students are encouraged to participate actively in this process and will be notified of the date in advance.

Final Evaluation: Towards the end of the course (Nov. 16th- Dec. 2nd), you will receive a standardized summative evaluation on a pre-specified date by student monitors. Anonymity is guaranteed.

8. COPYRIGHT

All materials of this course (course handouts, recordings, lecture slides, assessments, course readings, etc.) are the intellectual property of the Course Instructor (Dr. Mahsa Jessri) or licensed to be used in this course by the copyright owner.

Redistribution of these materials by any means without permission of the copyright holder(s) constitutes a breach of copyright and may lead to academic discipline. Note that only the course instructor is permitted to record/share the class sessions and tutorials.

Tentative Course Topics & Schedule

Week	Date	KEY TOPICS/ACTIVITIES	READINGS
Part I: Introduction to Research			
1	09/07	Introduction and course overview	(Porter & Matel, 1998) Chapter 1
1	09/07	Overview of research design and the language of research (with examples)	(Blumberg et al., 2010)
2	09/14	Tools for searching the literature. *Katherine Miller, Reference Librarian Woodward Library, UBC*	Please view the Library research guide for FNH 398: http://guides.library.ubc.ca/nutrition/FNH398 ***Make sure to watch all videos*** *(Medline (Ovid) ~20 minutes of videos)*
2	09/14	The language of research (Cont'd); Criteria for causation	(Potischman & Weed, 1999) (Gray & Gray, 2002)
3	09/21	Selecting a sample	(Gleason et al., 2010) Chapter 13
Part II: The Research Process and Research Methods			
3	09/21	Measurement, reliability and validity	Chapter 8 and 9 **Tutorial** – Katherine Miller Presentation – PLEASE ATTEND this tutorial as it will be very important.
4	09/28	Reliability and validity (Cont'd) ***Online Homework #1 available this week on Canvas and due October 2***	(Guenther, Reedy, Krebs-Smith, & Reeve, 2008) Chapter 10
4	09/28	Descriptive statistics	Chapter 20
5	10/05	Inferential statistics ***Assignment #1 due October 5th on Canvas***	Chapter 23
5	10/05	Inferential statistics continued ***Mini Quiz #1 Oct. 9 on canvas***	Chapter 23 (*recommended* additional readings: Chapters 19-25)
6	10/12	Ethics and Role of Community-Engaged Research	(Nestle, 2001) (Ahmed,et al. 2004) Chapter 7
6	10/12	Qualitative Research	(Harris et al., 2009) Chapter 20 (page 306-312)

Week	Date	KEY TOPICS/ACTIVITIES	READINGS
7	10/19	*****MIDTERM EXAM******	
Part III: Research Study Design & Example Nutrition Studies			
7	10/19	Survey research	Chapter 11
8	10/26	Survey research article discussion	(Crocker et al., 2011)
8	10/26	Case-control studies	(Bruemmer et al., 2009) Chapter 19
9	11/02	Case-control study article discussion	(Kim et al., 2009)
9	11/02	Cohort studies ***Completed article review form due online on November 2***	Chapter 19 (page 659-671)
10	11/09	Cohort study article discussion ***Online Homework #2 available this week on Canvas and due Nov. 13***	(Cho et al., 2006)
10	11/09	Basic research and animal models	(Baker, 2008)
11	11/16	Experimental designs ***Mini Quiz #2 on Nov. 16 on canvas***	Chapter 16 (page 174-185)
11	11/16	Experimental designs continued	An article will be assigned, and you will need to use it to complete assignment #2
12	11/23	Meta-analyses, scoping reviews and systematic reviews	(Akobeng, 2005) (Autier & Gandini, 2007) (Moher & Tricco, 2008)
12	11/23	Practice-Based Evidence in Nutrition	Review PEN website and any related PEN resources on Canvas: http://www.pennutrition.com/aboutpen.aspx
13	11/30	Course summary and exam review ***Assignment #2 due on Dec. 2***	

Core Course Readings:

Ahmed, S. M., Beck, B., Maurana, C. A., & Newton, G. (2004). Overcoming barriers to effective community-based participatory research in US medical schools. Educ Health, 17(2), 141-151. https://www.ncbi.nlm.nih.gov/pubmed/15763757

Akobeng, A. K. (2005). Understanding systematic reviews and meta-analysis. Archives of disease in childhood, 90(8), 845-848. http://www.ncbi.nlm.nih.gov/pubmed/16040886

Aleliunas, R. E., Aljaadi, A. M., Laher, I., Glier, M. B., Green, T. J., Murphy, M., et al. (2016). Folic Acid Supplementation of Female Mice, with or without Vitamin B-12, before and during Pregnancy and Lactation Programs Adiposity and Vascular Health in Adult Male Offspring. J Nutr. doi:10.3945/jn.115.227629 https://www.ncbi.nlm.nih.gov/pubmed/26962174

Baker, D. H. (2008). Animal models in nutrition research. J Nutr, 138(2), 391-396. http://www.ncbi.nlm.nih.gov/pubmed/18203909

Blumberg, J., Heaney, R. P., Huncharek, M., Scholl, T., Stampfer, M., Vieth, R., et al. (2010). Evidence-based criteria in the nutritional context. Nutrition reviews, 68(8), 478-484. http://www.ncbi.nlm.nih.gov/pubmed/20646225

Bruemmer, B., Harris, J., Gleason, P., Boushey, C. J., Sheean, P. M., Archer, S., et al. (2009). Publishing Nutrition Research: A Review of Epidemiologic Methods. Journal of the American Dietetic Association, 109(10), 1728-1737. http://www.sciencedirect.com/science/article/B758G-4X9F7CD-G/2/fb92d62917205cfba3d36655c8568ce0

Cho, E., Chen, W. Y., Hunter, D. J., Stampfer, M. J., Colditz, G. A., Hankinson, S. E., et al. (2006). Red meat intake and risk of breast cancer among premenopausal women. Arch Intern Med, 166(20), 2253-2259. http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=17101944

Crocker, B., Green, T. J., Barr, S. I., Beckingham, B., Bhagat, R., Dabrowska, B., et al. (2011). Very high vitamin D supplementation rates among infants aged 2 months in Vancouver and Richmond, British Columbia, Canada. BMC Public Health, 11, 905. http://www.ncbi.nlm.nih.gov/pubmed/22151789

Gray, G. E., & Gray, L. K. (2002). Evidence-based medicine: applications in dietetic practice. J Am Diet Assoc, 102(9), 1263-1272. www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=12792624

Gleason, P. M., Harris, J., Sheean, P. M., Boushey, C. J., & Bruemmer, B. (2010). Publishing Nutrition Research: Validity, Reliability, and Diagnostic Test Assessment in Nutrition-Related Research. Journal of the American Dietetic Association, 110(3), 409-419. http://www.sciencedirect.com/science/article/pii/S0002822309019567?via%3Dihub

Guenther, P. M., Reedy, J., Krebs-Smith, S. M., & Reeve, B. B. (2008). Evaluation of the Healthy Eating Index-2005. Journal of the American Dietetic Association, 108(11), 1854-1864. http://www.sciencedirect.com/science/article/B758G-4TT89NH-G/2/c88c0b31e9e0f7e5a1415384df44ac52

Harris, J. E., Gleason, P. M., Sheean, P. M., Boushey, C., Beto, J. A., & Bruemmer, B. (2009). An introduction to qualitative research for food and nutrition professionals. J Am Diet Assoc, 109(1), 80-90. http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=19103326

Kim, J., Lim, S. Y., Shin, A., Sung, M. K., Ro, J., Kang, H. S., et al. (2009). Fatty fish and fish omega-3 fatty acid intakes decrease the breast cancer risk: a case-control study. BMC Cancer, 9, 216. http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=19566923

Moher, D., & Tricco, A. C. (2008). Issues related to the conduct of systematic reviews: a focus on the nutrition field. Am J Clin Nutr, 88(5), 1191-1199. http://www.ncbi.nlm.nih.gov/pubmed/18996852

Nestle, M. (2001). Food company sponsorship of nutrition research and professional activities: a conflict of interest? Public Health Nutr, 4(5), 1015-1022. http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=11784415

Porter, C., & Matel, J. L. S. (1998). Are we Making Decisions Based on Evidence? Journal of the American Dietetic Association, 98(4), 404-407. http://www.sciencedirect.com/science/article/B758G-48B4S1N-2V/2/c4d5e7d4b761cc06a1e225fbd24adf36

Potischman, N., & Weed, D. L.(1999). Causal criteria in nutritional epidemiology. Am J Clin Nutr, 69(6),1309S-1314S. http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=10359231