Doctoral Seminar
Fall 2014
Wednesdays 12-12:50 pm
McGavran 2303 OR Rosenau 241

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This one credit course is designed as a forum for second year doctoral students to critically discuss papers from current, peer reviewed journals; identify gaps that need to be filled with future research; and consider appropriate experiment designs and implications of new research. It is hoped that through careful review of published research, students will improve their critical thinking skills and ability to integrate knowledge across the different areas of nutrition. More specifically we hope you will learn to:

1. "Think on your feet", that is, to answer questions about your knowledge or state your opinions clearly to your colleagues in a spontaneous manner.
2. Describe and interpret results presented in graphs and tables.
3. Identify how a paper contributes to our understanding of critical concepts.
4. Assess research designs: is the design appropriate for testing hypotheses set out by the authors?
5. Identify questions left unanswered by a research paper, and think critically about how to fill gaps.
6. Understand translational research in terms of the interrelationship of biochemistry/genetics, epidemiology and intervention/policy around selected nutrition topics (e.g. how findings in one field inform research in another; how scientific evidence is used in development of policy and interventions, etc.).
7. Articulate study aims and key elements of a study design to address a gap in scientific knowledge.

Topic: Saturated fat and CVD

A recent and highly controversial systematic review and meta-analysis concluded that "Current evidence does not clearly support cardiovascular guidelines that encourage high consumption of polyunsaturated fatty acids and low consumption of total saturated fats". (Chowdhury et al, Annals of Internal Medicine, 2014;160:398-406). Walter Willett, commenting on this paper, suggested that it did "a great deal of damage", and even suggested that "a retraction with similar press promotion should be considered" (http://news.sciencemag.org/health/2014/03/scientists-fix-errors-controversial-paper-about-saturated-fats). We will explore the evidence relating saturated fat to various aspects of CVD risk, and consider what dietary recommendations are justified based on this evidence. Following our reviews of relevant papers, we will have integrative sessions to guide thinking about how to identify research gaps, and how to design a study to fill one or more of the gaps.

REQUIREMENTS:

Students are expected to **attend all classes**. Special allowances will be made for students with legitimate conflicts that are communicated to the faculty in advance. For missed classes, students should answer the discussion questions in writing and submit them to the instructors.

Students are expected to **come to class prepared**: this requires that you carefully read the assigned article, work on the interpretation of graphs and tables, think about the issues raised in advance by the discussant, and do any background reading that might be required to understand the paper.

Students are expected to ***actively participate in the discussions***. Don't be timid about voicing your opinions. Remember, there are no dumb questions, and don't be afraid to be wrong. You will not be judged on wrong answers! ***Students who do not regularly participate in discussions are at risk of receiving an "L" in the course***. Grades are based on class participation (30%), leadership of one of the sessions (35%), and the written work (35%).

Students' Responsibilities as Discussants:

1. Serve as primary discussant for 2 papers.

2. Identify the key issues relevant to judging the quality and scientific contribution of the paper. For example, for many epidemiology papers, the focus is on sample selection, adequacy of sample size, quality of exposure and outcome data, measurement error, etc., while the issues for papers in other areas might relate to whether the correct animal model was chosen to test a hypothesis, whether the experimental design has sufficient power and is able to elucidate mechanisms, etc. In addition, think about how you can integrate information from each paper with other papers we have discussed, or other papers you have read, to address the broader question.

3. Develop a set of questions, centering on #2 above, to guide the review and discussion of the paper. Please email the questions to the 2 instructors for review and approval one week prior to the class (exception for the first class session), and then distribute to the rest of the class by email at least 5 days before the class so students have adequate time to prepare. Discussion questions should focus on issues most relevant to the paper, and cover design, sample, key theoretical issues, interpretation of graphs and tables, etc. Please consult with one of the class instructors and/or the "expert" about appropriate discussion questions.

4. Begin the class session with a 5 minute overview and summary of the paper. Identify the key issues relevant to the quality and significance of the paper. Identify the main point of the paper, and provide any additional background you think is needed to understand the paper. Guide the discussion and evaluation of the paper.

Written work:
For each integrative session, students should prepare a 1 page statement TO BE SUBMITTED BY NOON ON THE TUESDAY PRIOR TO THE INTEGRATIVE SESSION IN CLASS. This should:

1. Identify a key unanswered research question (1-3 sentences)
2. State a specific hypothesis
3. Outline a general approach to test the hypothesis
    a. identify a population/sample
        i. animal or human?
        ii. Exclusions?
        iii. basic characteristics of "subjects"
    b. describe what will be done:
        i. protocol/intervention
        ii. approach to data analysis
4. Briefly summarize implications of findings

Students should adhere to the UNC Honor code. For written assignments, students may brainstorm research design ideas with one another, but written work should be done independently.

Saturated Fat and risk of CVD	
Aug 20 *Rosenau 241*	***Introduction, selection of papers*** Brief review of dietary guidelines for saturated fat intake: US Dietary Guidelines 2010 (http://www.cnpp.usda.gov/DGAs2010-PolicyDocument.htm) American Heart Association Guidelines http://www.heart.org/HEARTORG/GettingHealthy/NutritionCenter/HealthyDietGoals/Fish-and-Omega-3-Fatty-Acids_UCM_303248_Article.jsp
Aug 27 **McG 2303**	***Motivation: This paper generated extensive press coverage and debate.*** *Chowdhury R, Warnakula S, Kunutsor S, Crowe F, Ward HA, Johnson L, Franco OH, Butterworth AS, Forouhi NG, Thompson SG, Khaw KT, Mozaffarian D, Danesh J, Di Angelantonio E. Association of dietary, circulating, and supplement fatty acids with coronary risk: a systematic review and meta-analysis. Ann Intern Med. 2014 Mar 18;160(6):398-406. Erratum in Ann Intern Med. 2014 May 6;160(9):658.* *See Comment in: BMJ. 2014;348:g2238, also popular press article and commentary by Walter Willett:* (http://news.sciencemag.org/health/2014/03/scientists-fix-errors-controversial-paper-about-saturated-fats).
Sept 3 *Rosenau 241*	***Biochemistry: Do saturated fats differ in their effects on cardiometabolic disease risk?*** *Background papers:* Flock MR, Kris-Etherton PM. Diverse physiological effects of long-chain saturated fatty acids: Implications for cardiovascular disease. *Curr Opin Clin Nutr Metab Care*. 2013;16(2):133-140. Micha R, Mozaffarian D. Saturated fat and cardiometabolic risk factors, coronary heart disease, stroke, and diabetes: a fresh look at the evidence. Lipids. 2010 Oct;45(10):893-905. For discussion: cultured cells treated with different chain length SFA Harvey KA, Walker CL, Pavlina TM, Xu Z, Zaloga GP, Siddiqui RA. Long-chain saturated fatty acids induce pro-inflammatory responses and impact endothelial cell growth. Clin Nutr. 2010 Aug;29(4):492-500.
Sept 10 *Rosenau 241*	***Biochemistry: Mechanisms*** Background: Afonso MdS, Castilho G, Lavrador MSF, et al. The impact of dietary fatty acids on macrophage cholesterol homeostasis. *J Nutr Biochem*. 2014;25(2):95-103. Mouse knockout model: Machado RM, Nakandakare ER, Quintao EC, Cazita PM, Koike MK, Nunes VS, Ferreira FD, Afonso MS, Bombo RP, Machado-Lima A, Soriano FG, Catanozi S, Lottenberg AM. Omega-6 polyunsaturated fatty acids prevent atherosclerosis development in LDLr-KO mice, in spite of displaying a pro-inflammatory profile similar to trans fatty acids. Atherosclerosis. 2012 Sep; 224(1):66-74.
Sept 17	***Biochemistry: Mechanisms*** Genetic modification of effects of dietary fat intake:

Rosenau 241	Loria-Kohen V, Espinosa-Salinas I, Ramirez de Molina A, Casas-Agustench P, Herranz J, Molina S, Fonollá J, Olivares M, Lara-Villoslada F, Reglero G, Ordovas JM. A genetic variant of PPARA modulates cardiovascular risk biomarkers after milk consumption. Nutrition. 2014 Mar 12.
Sept 24 *Rosenau 241*	***Integration I. Biological mechanisms: what are the gaps? Propose study to fill gaps.***
Oct 1 ***McG 2303***	***Epidemiology: Reducing saturated fat in isocaloric diets require substitution: choice of substitute matters!*** de Oliveira Otto MC1, Mozaffarian D, Kromhout D, Bertoni AG, Sibley CT, Jacobs DR Jr, Nettleton JA. Dietary intake of saturated fat by food source and incident cardiovascular disease: the Multi-Ethnic Study of Atherosclerosis. Am J Clin Nutr. 2012 Aug;96(2):397-404.
Oct 8 *Rosenau 241*	***Epidemiology: Prospective cohort study*** Khaw KT, Friesen MD, Riboli E, Luben R, Wareham N. Plasma phospholipid fatty acid concentration and incident coronary heart disease in men and women: The EPIC-norfolk prospective study. PLoS Med. 2012;9(7):e1001255.
Oct 15	NO CLASS
Oct 22 *Rosenau 241*	***Epidemiology: Heterogeneity of saturated fat effects*** Forouhi N et al. Differences in the prospective association between individual plasma phospholipid saturated fatty acids and incident type 2 diabetes: the EPIC-InterAct case-cohort study. www.thelancet.com/diabetes-endocrinology **Published online August 6, 2014 http://dx.doi.org/10.1016/S2213-8587(14)70146-9**
Oct 29 *Rosenau 241*	***Integration: Epidemiology***
Nov 5 ***McG 2303***	***Intervention/Policy: A randomized controlled diet trial.*** Domenech M et al. Mediterranean Diet reduces 24 hour Ambulatory Blood Pressure, Blood Glucose and Lipids: One year randomized clinical trial. Hypertension 2014 64:69-76.
Nov 12 *Rosenau 241*	***Intervention/Policy: Adherence to recommendations and use of food labels*** Lichtenstein AH, Carson JS, Johnson RK, Kris-Etherton PM, Pappas A, Rupp L, Stitzel KF, Vafiadis DK, Fulgoni VL 3rd. Food-intake patterns assessed by using front-of-pack labeling program criteria associated with better diet quality and lower cardiometabolic risk. Am J Clin Nutr. 2014 Mar;99(3):454-62.
Nov 19 *Rosenau 241*	***Intervention/Policy: Informing and evaluating Policy*** O'Keeffe C, Kabir Z, O'Flaherty M, Walton J, Capewell S, Perry IJ. Modelling the impact of specific food policy options on coronary heart disease and stroke deaths in Ireland. BMJ Open. 2013 Jul 3;3(7)
Nov 26	*Thanksgiving recess: No class*
Dec 3	***Integration IP: what are the gaps? Propose study to fill gaps***

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