

M88 AHBR 524 01 FOUNDATIONS OF HEALTH CARE RESEARCH

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OVERVIEW:

1. BROAD PURPOSE OF COURSE

This course is designed to introduce students to basic research methods used in health care research. The course will provide an overview of basic methodological concepts used in health care, social science, and behavioral science research. After completing this course you should be able to demonstrate an advanced understanding of all phases and components of the research process including: generating research questions and hypotheses, designing a study, selecting a study sample, measuring variables and constructs, collecting data and planning data analysis.

OBJECTIVES:

2. COURSE OBJECTIVES

Upon completion of this course, students should be able to:

1. Accurately critique different kinds of study design approaches.
2. Enhance skills in accessing and critically reviewing practice-related research.
3. Demonstrate understanding of various approaches to data collection and analysis
4. Select appropriate statistical procedures to analyze and correctly interpret different kinds of data.
5. Identify and follow appropriate procedures and rules for obtaining informed consent, preserving confidentiality, and notifying participants of benefits and risks related to research.

3. GRADING POLICY

Summaries of each assignment are provided below. Note that extended details of each assignment are included at the end of this syllabus.

Summary over Weekly Readings (20% of total grade): For this assignment, you will be required to demonstrate your interpretation and understanding of the assigned weekly readings. As a starting point for in-class discussions, you will be asked to respond to a series of questions about the assigned readings. These questions are intended to focus your reading and thinking, and should ultimately facilitate a high-quality discussion. Your summary will consist of a 10-15 minute PPT presentation.

Study Design Critique(20% of total grade): For this assignment, you are required to critique other people's scientific work, and in doing so, you will become better at critiquing your own work and become a better scientist and writer because of this practice. Your critique will consist of a 10-15 minute PPT presentation.

Overview of Existing National Database (10% of total grade): You will summarize existing national databases that are publically available for data analysis and focused on health behavior. Provide an overview of the database, pros and cons and identify potential research questions answered by the database. Your overview will consist of a 10-15 minute PPT presentation.

***** If you are absent for any of your scheduled presentations, then you will need to submit a 2-3 pages long summary of the assignment (1 inch margins, Times New Roman 12-point font and double spacing).**

Poster Presentations: 15% of final grade

You will be required to update the class on your team’s research project and summarize your progress on poster format. Do note that this is an Individual Assignment and every student should complete a unique and independent poster. This assignment will enable you to summarize your own interpretation of your team’s project and will test your own assumptions against your team members’. You will also have an opportunity to receive feedback to incorporate into your final team products. During a class session, you will present your poster to the class.

Research Project Presentations: 15% of final grade

You will be required to give a 25-30 minute presentation of your research proposal. You are allowed an additional 5-10 minutes of discussion time. The use of PowerPoint slides is preferred.

Research Project Paper: 20% of final grade

You will be required to write a research project paper of a study in a selected area of interest. One research project paper per team should be submitted. Please conform to APA format and do not include more than 1 direct quote from the literature. No late proposals will be accepted unless approved by the instructor.

METHODS OF EVALUATION

Assignments	Percentage of final grade
Summary over Weekly Readings	20
Study Design Critique	20
Overview of Existing National Databases	10
Poster Presentations	15
Research Project Presentations	15
Research Project Paper	20
Total Percentage Points Possible	100

Grade Distribution

Grade

A (100-95)	C+ (78-79)
A- (90-94)	C (75-77)
B+ (88-89)	C- (70-74)
B (85-87)	F (≤ 69)
B- (80-84)	

4. TEXTS AND READINGS

Required:

Assigned readings in course schedule calendar below are required

Recommended:

Jacobsen, K. H. (2011). *Introduction to health research methods*. Jones & Bartlett Publishers.

Publication Manual of the American Psychological Association (5th ed.). (2001). Washington, DC: American Psychological Association.

5. ACADEMIC INTEGRITY

Academic Integrity Policy

Students are expected to abide by and uphold the Academic Integrity Policy for Graduate Students from the Graduate School of Arts & Sciences. All students should have received this policy. Please contact the Office of the Dean of the School of Arts & Sciences to obtain copies of this document.

Students with disabilities

Washington University is committed to providing accommodations and/or services to students with documented disabilities. Students who are seeking support for a disability or a suspected disability should contact the Disability Resource Center (DRC) at 5-4062 on the lower level of the Women's Building (drc@dosa.wustl.edu). The DRC is responsible for approving and arranging all accommodations for University students.

January 14
First day of class

January 21
MLK Holiday

January 28
Observational Study Design

1. Carlson, M. D., & Morrison, R. S. (2009). Study design, precision, and validity in observational studies. *Journal of palliative medicine, 12*(1), 77-82.
2. Yang, W., Zilov, A., Soewondo, P., Bech, O. M., Sekkal, F., & Home, P. D. (2010). Observational studies: going beyond the boundaries of randomized controlled trials. *Diabetes research and clinical practice, 88*, S3-S9.
3. DiPietro, N. A. (2010). Methods in epidemiology: observational study designs. *Pharmacotherapy: The Journal of Human Pharmacology and Drug Therapy, 30*(10), 973-984.

Recommended readings:

4. Lu, C. Y. (2009). Observational studies: a review of study designs, challenges and strategies to reduce confounding. *International journal of clinical practice, 63*(5), 691-697.
5. Mann, C. J. (2003). Observational research methods. Research design II: cohort, cross sectional, and case-control studies. *Emergency medicine journal, 20*(1), 54-60

February 4
Cross-sectional study design

1. Setia, M. S. (2016). Methodology series module 3: Cross-sectional studies. *Indian journal of dermatology, 61*(3), 261.
2. Von Elm, E., Altman, D. G., Egger, M., Pocock, S. J., Gøtzsche, P. C., Vandenbroucke, J. P., & Strobe Initiative. (2007). The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement: guidelines for reporting observational studies. *PLoS medicine, 4*(10), e296.
3. Schmidt, K. R. T., & Teti, D. M. (2005). Issues in the use of longitudinal and cross-sectional designs. *Handbook of research methods in developmental science, 3-20*.
4. Concato, J., Shah, N., & Horwitz, R. I. (2000). Randomized, controlled trials, observational studies, and the hierarchy of research designs. *New England Journal of Medicine, 342*(25), 1887-1892.

February 11
Cohort study design

1. Hassan, E. (2006). Recall bias can be a threat to retrospective and prospective research designs. *The Internet Journal of Epidemiology, 3*(2), 339-412.
2. Euser, A. M., Zoccali, C., Jager, K. J., & Dekker, F. W. (2009). Cohort studies: prospective versus retrospective. *Nephron Clinical Practice, 113*(3), c214-c217.
3. Song, J. W., & Chung, K. C. (2010). Observational studies: cohort and case-control studies. *Plastic and reconstructive surgery, 126*(6), 2234.
4. Weigold, A., Weigold, I. K., & Russell, E. J. (2013). Examination of the equivalence of self-report survey-based paper-and-pencil and internet data collection methods. *Psychological methods, 18*(1), 53.

February 18
Case-control studies

1. Wacholder, S., Silverman, D. T., McLaughlin, J. K., & Mandel, J. S. (1992). Selection of controls in case-control studies: III. Design options. *American journal of epidemiology, 135*(9), 1042-1050.

2. Kopec, J. A., & Esdaile, J. M. (1990). Bias in case-control studies. A review. *Journal of epidemiology and community health*, 44(3), 179.
3. Vandembroucke, J. P., & Pearce, N. (2012). Case-control studies: basic concepts. *International journal of epidemiology*, 41(5), 1480-1489.

February 25

Ecologic studies

1. Morgenstern, H. (1995). Ecologic studies in epidemiology: concepts, principles, and methods. *Annual review of public health*, 16(1), 61-81.
2. Wakefield, J. (2008). Ecologic studies revisited. *Annu. Rev. Public Health*, 29, 75-90.
3. Hickson, D. A., Truong, N. L., Smith-Bankhead, N., Sturdevant, N., Duncan, D. T., Schnorr, J., ... & Mena, L. A. (2015). Rationale, design and methods of the ecological study of sexual behaviors and HIV/STI among African American men who have sex with men in the Southeastern United States (The MARI Study). *PloS one*, 10(12), e0143823. March 4

Recommended reading:

4. Tu, J. V., & Ko, D. T. (2008). Ecological studies and cardiovascular outcomes research. *Circulation*, 118(24), 2588-2593.

March 11

Spring Break

March 18

Poster presentations

March 25

Randomized controlled trials

1. Kendall, J. M. (2003). Designing a research project: randomised controlled trials and their principles. *Emergency Medicine Journal*, 20(2), 164-168.
2. Spieth, P. M., Kubasch, A. S., Penzlin, A. I., Illigens, B. M. W., Barlind, K., & Siepmann, T. (2016). Randomized controlled trials—a matter of design. *Neuropsychiatric disease and treatment*, 12, 1341.
3. Bhide, A., Shah, P. S., & Acharya, G. (2018). A simplified guide to randomized controlled trials. *Acta obstetrica et gynecologica Scandinavica*, 97(4), 380-387.
4. Sessler, D. I., & Imrey, P. B. (2015). Clinical research methodology 3: randomized controlled trials. *Anesthesia & Analgesia*, 121(4), 1052-1064.

April 1

Quasi-experimental study designs

1. Eliopoulos, G. M., Harris, A. D., Bradham, D. D., Baumgarten, M., Zuckerman, I. H., Fink, J. C., & Perencevich, E. N. (2004). The use and interpretation of quasi-experimental studies in infectious diseases. *Clinical Infectious Diseases*, 38(11), 1586-1591.
2. Thompson, C. B., & Panacek, E. A. (2006). Research study designs: experimental and quasi-experimental. *Air medical journal*, 25(6), 242-246.

3. Bärnighausen, T., Tugwell, P., Röttingen, J. A., Shemilt, I., Rockers, P., Geldsetzer, P., ... & Bor, J. (2017). Quasi-experimental study designs series—paper 4: uses and value. *Journal of clinical epidemiology*, 89, 21-29.

April 8

Retrospective studies and chart reviews

1. Gearing, R. E., Mian, I. A., Barber, J., & Ickowicz, A. (2006). A methodology for conducting retrospective chart review research in child and adolescent psychiatry. *Journal of the Canadian Academy of Child and Adolescent Psychiatry*, 15(3), 126.
2. Matt, V., & Matthew, H. (2013). The retrospective chart review: important methodological considerations. *Journal of educational evaluation for health professions*, 10.
3. Wickson-Griffiths, A., Kaasalainen, S., Ploeg, J., & McAiney, C. (2014). Revisiting Retrospective Chart Review: An Evaluation of Nursing Home Palliative and End-of-Life Care Research. *Palliat Med Care*, 1(2), 8.

April 15

Qualitative Methods

1. Gill, P., Stewart, K., Treasure, E., & Chadwick, B. (2008). Methods of data collection in qualitative research: interviews and focus groups. *British dental journal*, 204(6), 291.
2. Fusch, P. I., & Ness, L. R. (2015). Are we there yet? Data saturation in qualitative research. *The qualitative report*, 20(9), 1408-1416.
3. Sutton, J., & Austin, Z. (2015). Qualitative research: data collection, analysis, and management. *The Canadian journal of hospital pharmacy*, 68(3), 226.

April 22

Systematic reviews and meta-analyses

1. Mallett, R., Hagen-Zanker, J., Slater, R., & Duvendack, M. (2012). The benefits and challenges of using systematic reviews in international development research. *Journal of development effectiveness*, 4(3), 445-455.
2. Ioannidis, J. P., & Lau, J. (1999). Pooling research results: benefits and limitations of meta-analysis. *The Joint Commission journal on quality improvement*, 25(9), 462-469.
3. Crowther, M., Lim, W., & Crowther, M. A. (2010). Systematic review and meta-analysis methodology. *Blood*, 116(17), 3140-3146.

April 29

Last Day of Class Presentations

Recommended Reading:

Pierson, D. J. (2004). The top 10 reasons why manuscripts are not accepted for publication. *Respiratory care*, 49(10), 1246-1252.

Johnson, C., & Green, B. (2009). Submitting manuscripts to biomedical journals: common errors and helpful solutions.

Lin, P. Y., & Kuo, Y. R. (2012). A guide to write a scientific paper for new writers. *Microsurgery*, 32(1), 80-85.

*** Assignments will be presented to all students on the first class day.

Summary over Weekly Readings

Instructions:

Summarize the article:

- Describe the study design
- Strengths and limitations
- When is the study design appropriate

From your reading, what is the most important point made in this article? Why is this important?
What ideas in this article are new to you and especially interesting?

You should prepare a 10-15 minute PPT presentation summarizing these points.

Study Design Critique

Instructions: For this assignment, you are required to identify a research study that utilized the study design assigned for the week (i.e., study design will align with the course schedule). We are all conditioned to trust what we read at first glance if it is in print but it is important to be critical about what we are reading and distinguish what is trustworthy from what is untrustworthy. As you critique other people's work, you should also become better at critiquing your own work and you will likely become a better writer because of this practice.

You should prepare a 10-15 minute PPT presentation summarizing the items below.

- Title of the Study
- In your own words, state the purpose of the study
- State the theory/framework, concepts, and the relationship to health and behavior
- State the research question or hypothesis
- List the dependent and independent variables
- Describe the sample
- Describe the ethics of the study
- State the data collection procedure
- Discuss the data analysis
- Describe strengths and limitations of the study, in general, and the study design
- Consider alternative study designs that are better suited for the research question
- Discuss results, recommendations, and implications.

Overview of Existing National Databases

Instructions: You will summarize existing national databases that are publically available for data analysis and focused on health behavior. Provide an overview of the database, pros and cons and identify potential research questions answered by the database.

You should prepare a 10-15 minute PPT presentation summarizing these points and a hardcopy of an outline or summary for your classmates.

Poster Presentation

Instructions: For this project, you will be conducting a *secondary analysis* of existing data. One of the most time-efficient ways to write a paper is to analyze an existing dataset and write up the results as a formal manuscript. There are many organizations that make their data files available to other researchers and encourage them to publish their results in peer-reviewed journals. Specifically, you will be downloading an existing individual-level dataset from a trusted organization (such as the U.S. CDC or the WHO), selecting a study question that you can explore with the (latest available) data, conducting basic statistical analysis, and writing up your findings. Your analytic techniques do not have to be complex, but you must have a clear study question and specific objectives for your analysis and you must answer these with your results section. You will present your results as a poster.

During a class session, you will present your poster to the class. You will also have an opportunity to receive feedback to incorporate into your final product.

Present your research in a poster format: *“Posters are widely used in the academic community, and most conferences include poster presentations in their program. Research posters summarize information or research concisely and attractively to help publicize it and generate discussion. The poster is usually a mixture of a brief text mixed with tables, graphs, pictures, and other presentation formats. At a conference, the researcher stands by the poster display while other participants can come and view the presentation and interact with the author.”*

Content Checklist for Poster:

- ❖ The title and the author’s name appear at the top center of the poster.
- ❖ The poster does *not* include an abstract
- ❖ The poster has separate sections for the background, methods, results, and conclusions; additional content, such as a section for goals or objectives and a section for references, may also be helpful
- ❖ Images are used instead of words as often as possible; when words are needed, short sentences and bulleted lists are used rather than paragraphs
- ❖ The poster includes at least 3 separate images, such as tables, figures, flowcharts, photographs, or maps

Design Checklist for Poster:

- ❖ The text is large enough that it can be read from several feet away from the poster; Arial size 24 font or Times New Roman size 28 font is the smallest recommended size for primary content (the reference list and other secondary content can be a smaller font)
- ❖ All parts of graphs, tables, and other images – including the title, axis labels, and keys – can be read from several feet away

For additional guidance see this article:

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1955747/>

Research Project Presentation

Instructions for Research Project Presentations: For this presentation, you will expand on your poster presentation above (*secondary analysis* of existing data). You will be required to give a 10-15 minute presentation of your research proposal. You are allowed an additional 5-10 minutes of discussion time. The use of PowerPoint slides is preferred.

Research Project Paper

Instructions for Research Project Paper: For this research project paper, you will expand on your poster and research project presentations above (*secondary analysis* of existing data). You will be required to write a research project paper of a study in a selected area of interest based on your findings. Please conform to APA format and do not include more than 1 direct quote from the literature. No late paper will be accepted unless approved by the instructor. Papers should be about 10 to 15 pages long with 1" margins (font should be 12 Times New Roman). Please do not include more than 1 direct quote from the literature. The content of the proposal should include the following:

1. Title page
2. Introduction (1-2 pages)
 - a. Specific aims
 - b. Research questions to be answered
3. Review of the Literature (3 – 5 pages)
4. Significance of the study (1 – 2 pages)
5. Methods/Results section (4 – 6 pages)
 - a. Descriptions of the participants
 - b. Procedures
 - c. Measures
 - d. Data analysis
 - e. Results
6. Discussion/Summary (1-2 pages)
7. References

No late proposals will be accepted unless approved by the instructor.

National Datasets

1. *Behavioral Risk Factor Surveillance System (BRFSS)* is the nation's premier system of health-related telephone surveys that collect state data about U.S. residents regarding their health-related risk behaviors, chronic health conditions, and use of preventive services. Established in 1984 with 15 states, BRFSS now collects data in all 50 states as well as the District of Columbia and three U.S. territories. BRFSS completes more than 400,000 adult interviews each year, making it the largest continuously conducted health survey system in the world. <https://www.cdc.gov/brfss/index.html>
2. *National Health and Nutrition Examination Survey (Centers for Disease Control and Prevention)*—A survey conducted by the National Center for Health Statistics that collects information regarding the health and diet of people in the United States through the use of interviews and a health test. <http://www.cdc.gov/nchs/nhanes.htm>
3. *National Health Interview Survey (Centers for Disease Control and Prevention)*—A survey that assess family demographics, income, and health care accessibility. <http://www.cdc.gov/nchs/nhis.htm>
4. *Youth Risk Behavior Survey (Centers for Disease Control and Prevention)*—A nationally coordinated survey of each state that identifies high-risk youth behaviors through the use of school and classroom samples. Data from this survey are available for participating states every 2 years, enabling the monitoring of trends in risky youth behavior. <http://www.cdc.gov/nccdphp/dash/yrbs/yrbsaag.htm>
5. *National Household Survey on Drug Use and Health (formerly National Household Survey of Drug Abuse; Substance Abuse and Mental Health Services Administration)*—A survey on the prevalence, patterns, and consequences of drug and alcohol use and abuse in the United States. <http://www.samhsa.gov/oas/nhsda.htm>
6. *Global Tobacco Survey (Centers for Disease Control and Prevention)*—World Health Organization and CDC developed the Global Youth Tobacco Survey (GYTS) to track tobacco use across countries using a common methodology and core questionnaire. The surveillance system is intended to enhance the capacity of countries to design, implement, and evaluate tobacco control and prevention programs. http://www.cdc.gov/tobacco/global/gyts/GYTS_intro.htm
7. *Health and Retirement Study (HRS)*- The University of Michigan Health and Retirement Study (HRS) is a longitudinal panel study that surveys a representative sample of more than 26,000 Americans over the age of 50 every two years. Supported by the National Institute on Aging and the Social Security Administration, the HRS explores the changes in labor force participation and the health transitions that individuals undergo toward the end of their work lives and in the years that follow.
8. *The Panel Study of Income Dynamics (PSID)* - is the longest running longitudinal household survey in the world. The study began in 1968 with a nationally representative sample of over 18,000 individuals living in 5,000 families in the United States. Information on these individuals and their descendants has been collected continuously, including data covering employment, income, wealth, expenditures, health, marriage, childbearing, child development, philanthropy, education, and numerous other topics.
9. *National Longitudinal Surveys (NLS)* are a set of surveys designed to gather information at multiple points in time on the labor market activities and other significant life events of several groups of men and women. For more than 4 decades, NLS data have served as an important tool for economists, sociologists, and other researchers. <https://www.bls.gov/nls/#overview>