



ZAMBIA COLLEGE OF MEDICINE & SURGERY

Advancing Specialist Care & Professional Growth

Course Curriculum & learning Guide
for
RESEARCH METHODOLOGY

ZACOMS RESEARCH METHODOLOGY COURSE

COURSE TITLE: RESEARCH METHODOLOGY

INTRODUCTION

This research methodology course lays the foundations of research for all programmes on the ZACOMS Specialist Training Programme (STP). The four modules given in this course will address all the cardinal aspects of clinical research and will ensure that upon completion, students are equipped with the skills necessary to conduct and analyse clinical research.

COURSE AIM

This course is aimed at providing students with understanding of everything about clinical research in all its forms: patient-oriented research, epidemiologic studies, translational research, clinical trials, behavioural sciences and health systems research. It will therefore take the student through all aspects of research ensuring that the theoretical and practical aspects that underpin clinical research, which anyone wishing to conduct research will need to know, are well addressed. The course also aims at providing students with skills to critically appraise published work and the technical know-how of how to solicit funds for their research.

COURSE LEARNING OBJECTIVES

At the end of this course, students should be able to:

1. Define clinical research
2. Distinguish between various types of clinical research
3. Debate the various issues that inform the research question
4. Discuss methods of choosing study subjects
5. Discuss different measurements showing understanding of precision and accuracy
6. Generate appropriate and reasonable hypotheses as the research situation demands
7. Gain insight into the various aspects surrounding ethics of clinical research
8. Debate the challenges and opportunities of the various research designs
9. Discuss practical steps of conducting clinical research
10. Distinguish various aspects significant in the appraisal of published research
11. Discuss the various options of funding research

COURSE COMPETENCIES:

1. Understand basic concepts of conducting and appraising clinical research
2. Understand various issues pertinent to funding clinical research
3. Describe various research designs
4. Conduct a systematic literature search and review of data
5. Apply various formulae to determine sample size
6. Conduct and interpret various statistical tests
7. Have a clear understanding of ethical issues governing clinical research
8. Comprehend the challenges and opportunities of conducting clinical research
9. Describe various platforms and requirements for publishing work

COURSE CONTENT

Module 1: Basic Concepts Underpinning Clinical Research

1. What is Research?
2. Estimate and Hypotheses
3. Understanding Quantitative and Qualitative data
4. Introduction to epidemiology
5. Formulating a research question and study plan
6. Literature review
7. Sampling techniques
8. Sample size and power

Module 2: Study Designs

9. Case Reports and Case Series
10. Cross-Section and Case-Control Studies
11. Cohort Studies
12. Randomized Blinded Trials

Module 3: Statistics for Clinical Research

13. Data presentation and analysis
14. Normal distribution
15. Basic concepts of statistical testing
16. Independent two-sample tests
17. Related two-sample tests
18. One sample tests
19. Tests for trend and spread
20. Measuring the relationship between two variables
21. Predicting one variable from another

Module 4: Research Management

22. Ethical Consideration
23. Questionnaires and Interviews.
24. Data Management
25. Implementing the Study and Quality Control
26. Funding a Research
27. Publication of your work.

TEACHING METHODS:

- This course will be delivered entirely online so participants should have a computer and access to internet with a reasonable speed and band width.
- The course will run for a total of 16 hours to be delivered over four consecutive weeks.
- Teaching will use the strategy of problem based learning which will include lectures, class discussions, reading assignments, reflective journals, group work and student presentations.
- Participants will have an examination at the end of the course.
- A minimum combined total of 50% of all assessments conducted during the course will be required to obtain the ZACOMS Research Methodology Course Certificate.

ASSESSMENT:

Group activities	10%
Discussion Board	20%
End of module weekly Quiz (x4)	40%
End of course Examination	30%

ENTRY REQUIREMENTS:

- First degree in any health related field.

RECOMMENDED READING:

Booth W, Colomb G, Williams J, Bizup J, FitzGerald W (2017) **The Craft of Research**, 4th Edition, The University of Chicago Press, Chicago, USA

Bruce N, Pope D and Stanistreet D (2017) **Quantitative Methods for Health Research: A Practical Interactive Guide to Epidemiology and Statistics**, 2nd Edition, John Wiley & Sons, Limited, England

Hulley S, Cummings S, Browner W, Grady D, Newman T (2013) **Designing Clinical Research**, 4th Edition, Lippincott Williams & Wilkins, Philadelphia, USA

Jackson S (2020) **Research Methods and Statistics: A Critical Thinking Approach**, 5th Edition, Wadsworth, Belmont, USA

Phyllis G. Supino and Jeffrey S. Borer (2012) **Principles of Research Methodology: A Guide for Clinical Investigators**, Springer, USA

Selvamuthu D and Das D (2018) **Introduction to Statistical Methods, Design of Experiments and Statistical Quality Control**, Springer Nature, Singapore