



Basic Statistics and Nursing Research Module

Bachelor of Science (Honors) in Nursing Degree
Department of Nursing and Midwifery
Faculty of Allied Health Sciences
University of Sri Jayewardenepura

Basic Statistics and Nursing Research Module

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Basic Statistics and Nursing Research Module

Introduction

Research is systematic inquiry that uses disciplined methods to answer questions and solve problems. The ultimate goal of research is to develop, refine, and expand a body of knowledge. Nurses are increasingly engaged in disciplined studies that benefit the profession and its clients. Nursing research is systematic inquiry designed to develop trustworthy evidence about issues of importance to the nursing profession, including nursing practice, education, administration, and informatics.

This subject covers up the area of nursing research with emphasis on the steps of research process, types of nursing research, research ethics, the research process and utilization of research in to nursing practice. Basic statistics also will be introduced. The student will gain skills in developing research proposal and critical evaluation of existing nursing and related research literature. The module also stresses the application and relationship of research into nursing practice.

This course aims to introduce the students to the basic concepts of statistics, its scope and significance. It is also intended to introduce them to the basic concepts of research methodology to facilitate them to utilize research finding in nursing practice & conduct simples studies to find solutions. The theoretical input will be utilized in conducting the ‘Research Project’ in the final year.

Basic Statistics and Nursing Research Module

No of credits: 03

Placement: 3rd year

Contact hours: 45 Hours

Prerequisites: None

Teaching Units: Department of Nursing & Midwifery, Department of Statistics

Subject	Lecture/ Tutorial	Lec. Credits	Lab Hrs	Lab credits	Practice Hrs	Prac. credits	Total Hrs	Total credits
Basic Statistics and Nursing Research	45	3	-	-	-	-	45	3

Course objectives:

At the end of the course the students will be able to;

1. Describe basic concepts of nursing research
2. Demonstrate understanding about the research process
3. Identify research problem, research question/s, variables and hypotheses in a research study
4. Develop a conceptual framework or identify a theoretical framework related to the research problem
5. Identify the strengths and weaknesses of various research designs
6. Select appropriate sampling method based on the research question
7. Describe the terms validity and reliability in quantitative research
8. Identify the strengths and weaknesses of various data collecting tools
9. Identify and review related literature
10. Explain the concepts of basic statistics and describe central tendency
11. Critically appraise research findings
12. Utilize research findings in clinical practice towards evidence based practice

Main content areas

Main Content Area	Lectures/ Discussion/ Tutorial (Hours)	Tutorials/SG D/ PBL No. of (2hrs) sessions
1. Introduction to nursing research	04	
2. Introduction to basic statistics	04	02
3. Critical thinking	02	
4. Research ethics	02	
5. Formulation of a research problem and objectives	04	02
6. Review of the literature	03	
7. Research designs	02	02
8. Construction of data collecting tools	02	02
9. Reliability and validity in quantitative Research	02	
10. Population and sampling	02	
11. Methods of data collection	02	02
12. Research critique	02	
13. Writing research proposal for research	02	
14. Nursing audit	02	

Basic Statistics and Nursing Research Module

1. Introduction to nursing research

Intermediate Objectives	Broad Content Area	Activity	Duration (Hour/s)
To discuss the meaning and definition of nursing research	<ul style="list-style-type: none"> • The need for evidence-based practice • Describe alternative sources of knowledge for nursing practice • Need for nursing research • Roles of Nurses in Research • Define new terms 	Lecture/ Discussion	04
To identify scope of learning research	<ul style="list-style-type: none"> • Broad historical trends and future directions in nursing research 	Lecture/ Discussion	
To list types of nursing research			
To explain how research is utilized in nursing practice	<ul style="list-style-type: none"> • Types of nursing research • Utilisation of research in nursing practice 		
To overview the research process	<ul style="list-style-type: none"> • Overview of the research process 		

1. Introduction to basic statistics

Intermediate Objectives	Broad Content Area	Activity	Duration (Hour/s)
To identify basic concepts of statistics	<ul style="list-style-type: none"> • Basic concepts of statistics <ul style="list-style-type: none"> - Descriptive analysis - Levels of measurements - Frequency distribution - Probability - Measures of central tendency 	Lecture	06

2. Critical thinking

Intermediate Objectives	Broad Content Area	Activity	Duration (Hour/s)
To identify the importance of critical thinking in nursing research.	<ul style="list-style-type: none">• What Is Critical Thinking?• Difference between critical Thinking and Thinking• Elements of thoughts• Phases of critical thinking• Models of critical thinking• Core critical thinking skills• Use of critical thinking skills in nursing research	Lecture	02

3. Research ethics

Intermediate Objectives	Broad Content Area	Activity	Duration (Hour/s)
To describe the ethical aspects in nursing research	<ul style="list-style-type: none">• What is ethics?• Historical background• Potential for ethical dilemmas stemming from conflicts• Codes of ethics• Nursing ethical guidelines• Three primary ethical principles<ul style="list-style-type: none">- Beneficence- Respect for Human Dignity- Justice• Procedures for protecting study participants	Lecture	02

4. Formulation of a research problem, questions, and objectives

Intermediate Objectives	Broad Content Area	Activity	Duration (Hour/s)
To identify a research problem/research question	<ul style="list-style-type: none"> • Sources of research problem • The process of developing and refining a research problem • Characteristics of a good research question • Formulating and refining a research problem/question/research hypothesis • The functions and forms of statements of purpose and research questions for quantitative and qualitative studies 	Lecture & Tutorial	02
To define and describe the difference between general and specific objectives	<ul style="list-style-type: none"> • Define the characteristics of research objectives • Develop research objectives for research • Doran's (1981) criteria: SMART (Specific, Measurable, Appropriate, Specific, Time Specific) 	Lecture	02
To describe research variables	<ul style="list-style-type: none"> • Identification of variables • Types of variables <ul style="list-style-type: none"> - Independent variables vs Dependent variables - Extraneous variables - Categorical/numerical • Measuring variables 	Lecture/ Discussion	02
To determine the feasibility of a study	<ul style="list-style-type: none"> • Feasibility of a study 		

5. Review of the literature

Intermediate Objectives	Broad Content Area	Activity	Duration (Hour/s)
<p>To explain importance of literature review</p> <p>To describe the steps of reviewing literature</p>	<ul style="list-style-type: none"> • Purpose of literature review • Sources of literature • Different types of literature review (scoping review, systematic review, etc...) • Advantages and disadvantages of different types of literature review • Theoretical framework • The steps involved in writing a literature review • The style, content, and organization of a literature review • Appropriate information to include in a research literature review • Bibliographic aids for retrieving nursing research reports, and locate references for a research topic • Process of screening, abstracting, critiquing, and organizing research evidence 	Lecture & Assignment	03

6. Research designs

Intermediate Objectives	Broad Content Area	Activity	Duration (Hour/s)
To describe research designs used in nursing research	<ul style="list-style-type: none"> • Types of research designs: experimental, quasi-experimental, and non-experimental research designs 	Lecture	04

	<ul style="list-style-type: none"> • Quantitative, qualitative and mixed methods as research designs • Differences/ uses of between different research designs in nursing research 		
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7. Construction of data collecting tools

Intermediate Objectives	Broad Content Area	Activity	Duration (Hour/s)
To describe the process of constructing data collection tools	<ul style="list-style-type: none"> • Operationalization of the variable • Theoretical and conceptual framework • Developing data collection tools • Translating data collection tools: forward and backward translation • Pretesting • Pilot testing 	Lecture	4

8. Reliability and validity in quantitative research

Intermediate Objectives	Broad Content Area	Activity	Duration (Hour/s)
To describe the reliability and validity of the research	<ul style="list-style-type: none"> • Four types of validity that researchers should consider: <ul style="list-style-type: none"> - statistical conclusion validity, - internal validity, - construct validity, - external validity • Assessment of each type of validity • Types of reliability and its assessment • Evaluation of overall quality of a measuring tool used in a study 	Lecture	02

9. Population and sampling

Intermediate Objectives	Broad Content Area	Activity	Duration (Hour/s)
To describe the methods of sampling	<ul style="list-style-type: none">• Define terms: population, sampling, sampling bias etc...• Sampling designs: Non-probability and Probability sampling• Different types of sampling techniques in probability sampling and their uses:<ul style="list-style-type: none">- Simple random sampling- Stratified random sampling- Cluster sampling- Systematic sampling- Multiphase sampling- Multistage sampling• Sampling frame• Different types of sampling techniques used in non-probability sampling;<ul style="list-style-type: none">- Convenience,- Quota,- Consecutive,- Purposive• Compare their advantages and disadvantages	Lecture discussion	02

10. Methods of data collection

Intermediate Objectives	Broad Content Area	Activity	Duration (Hour/s)
<p>To identify measurement scales</p> <p>To describe strengths and weaknesses of data collecting tools</p>	<ul style="list-style-type: none"> • Use existing data or to collect new data • Major types of data collection methods: self-reports, observation, and physiologic measurement • Qualitative data collection methods • Differences between and evaluate structured and unstructured self-reports; open-ended and closed-ended questions; and interviews and questionnaires • Distinguish between and evaluate structured and unstructured observations and describe various methods of collecting, sampling, and recording observational data 	Lecture	04

11. Research critique

Intermediate Objectives	Broad Content Area	Activity	Duration (Hour/s)
To describe the process of the research critique	<ul style="list-style-type: none"> • Definition of research critique • The purpose and provide a rationale for completing a research critique. • The necessary elements/questions in a research critique • Process of the research critique • Constructive criticism • Critique a research article 	Lecture & Assignment	02

12. Writing research proposal for research

Intermediate Objectives	Broad Content Area	Activity	Duration (Hour/s)
<p>To discuss the components of the research proposal</p> <p>To improve skills in preparing a research proposal</p>	<ul style="list-style-type: none"> • Basic requirements of a research proposal • Contents of a research proposal; Introduction, <ul style="list-style-type: none"> - The content - Title page - Introduction <p>Background, Justification for the study, Objectives</p> <ul style="list-style-type: none"> - Literature review - Methods - Budget - Gantt chart - Reference list - Annexures - Application of ethical approval for a research proposal 	Lecture discussion	02

13. Nursing audit

Intermediate Objectives	Broad Content Area	Activity	Duration (Hour/s)
To describe nursing audit	<ul style="list-style-type: none"> • Define nursing audit • History of nursing audit • Purposes of nursing audit • Difference between audit and research • Methods of nursing audit: Retrospective view and concurrent review • Use of nursing audit to improve the quality of nursing care 	Lecture	02

Teaching- Learning activities:

Lecture, Tutorials
Practical
Small group discussions

Assessment

Continuous assessment	-	Assignment I-Literature review -15%	}	30%
	-	Assignment II – Research critique – 15%		

BScHons (Nursing) Part III examination

MCQ (30) - 30%

SEQ (04) - 40%

Recommended books:

- Bancroft, Huldah, introduction to biostatistics, harper and row publishers, New York
- Burns, N., & Grove, S.K. Understanding Nursing Research (7th edition). Philadelphia: W.B. Saunders.
- [Polit](#), D.F. & [Hungler](#), B.P., Nursing Research: Principles and Methods, 6th edition
- Holland , K & [Rees](#), C. Nursing Evidence-Based Practice Skills