CONTENTS

PART A—NURSING RESEARCH

Unit 1. Introduction to Nursing Research 3

- Methods of Acquiring Knowledge 3
- Problem Solving and Scientific Method 6
- Research 8
- Scope of Nursing Research 23
- Problems in Nursing, Health, and Social Research 24
- Evidence-based Practice 26
- Ethics in Nursing Research 31

Unit 2. Research Process 41

- Quantitative Research Process 41
- Steps in Quantitative Research Process 41
- Advantages and Disadvantages of Quantitative Research 46
- Qualitative Research Process 46
- Steps in Qualitative Research Process 48
- Advantages and Disadvantages of Qualitative Research 52
- Differences Between Qualitative and Quantitative Research 52
- Selecting Quantitative vs Qualitative Research 52

Unit 3. Research Problem and Hypothesis 57

- Meaning 57
- Sources of Research Problem 57
- Criteria for Selecting a Research Problem 59
- Formulation of Research Problem 61
- Components of Problem Statement 63
- Purposes of Research Study 64
- Research Question 64
- Research Objectives 65
- Variables 68
- Types of Variables 68
- Assumptions 74
- Hypothesis 75
- Delimitations 81
- Limitations 82

Unit 4. Review of Literature 88

- Definitions 88
- Importance of Literature Review 88
- Purposes of Literature Review 88
- Elements of a Literature Review 89
- Types of Literature Reviews 91
- Sources of Review of Literature 93
- Criteria for Selection of Sources 96
- Steps in Literature Review Process 96
- General Guidelines for Reviewing the Literature 100

Unit 5. Theory and Conceptual Framework in Nursing Research 105
- Overview of Theories 105
- Theoretical Framework/Conceptual Framework 110
- Conceptual Models 110

Unit 6. Research Approaches and Designs.....120
- Meaning and Definition 120
- Purpose of a Research Design 121
- Characteristics of a Quantitative Research Design 121
- Characteristics of a Qualitative Research Design 122
- Key Elements of Research Design 122
- Selection of Research Design 123
- Decision on Selection of Research Design 124
- Types of Research Designs 124

Nonexperimental Designs
- Descriptive or Explorative Designs 127
- Correlational Designs 128
- Cross-sectional Design (Data Collected at One Point in Time) 131
- Longitudinal Designs (Data Collected at Multiples Time Points) 133
- Retrospective Designs 134
- Prospective Designs 135
- Survey Research Designs 136

Experimental Research
- Validity of Experimental Designs 138
- Elements of Experimental Research 142
- True Experimental Designs 143
- Posttest Only Control Group Design (After Only Design) 145
- Pretest-Posttest Control Group Design 146
- Solomon Four-group Design 147
- Cross-over Design 148
- Factorial Design 149
- Randomized Block Design 150
- Randomized Controlled Trials 151
- Clinical Research 151
- Quasi-experimental Designs 153
- Nonequivalent Control Group Pretest Posttest Design 153
- After-Only Nonequivalent Control Group Design 154
- One Group Pretest Posttest Design 155
- Time-Series Design (Repeated Measures Design) 156
- Epidemiological Research Designs 157
- Ethnography 161
- Phenomenological Design 163
- Grounded Theory Approach 163
- Case Study 164
- Developing Research Plan 167

Unit 7. Sample and Sampling Techniques.....174
- Sampling Process in Quantitative Studies 178
- Sampling Techniques or Methods 180

- Sample Size 194
- Sampling Bias 200
- Sampling Errors 201
- Sampling Process in Qualitative Research Studies 202

Unit 8. Tools and Methods of Data Collection 208

- Purposes of Data Collection 208
- Concepts of Data Collection 208
- Data Sources 209
- Developing a Data Collection Plan 209
- Data Collection Process/Procedure 210
- Selection of Data Collection Method 212
- Types of Data Collection Methods 214
- Survey Method 216
- Questionnaire 217
- Attitude Scale/Attitude Questionnaire 224
- Opinionnaire 225
- Interviews 225
- Observation 234
- Ethics 240
- Biophysiological Measures 240
- Psychological Measures 241
- Records, Documents and Available Data 246
- Validity and Reliability of the Measuring Instrument 247
- Item Analysis 255
- Critiquing Data Collection Methods 257
- Implementing Research Plan 257
- Avoiding Bias—Collecting Reliable Data (Bias in Research) 260
- Pilot Study 260

Unit 9. Plan for Data Analysis and Interpretation 265

- Advantages of Planning for Data Analysis 265
- Phases of Quantitative Data Analysis 266
- Types of Quantitative Analysis 270
- Qualitative Data Analysis 280

Unit 10. Dissemination (Communication) and Utilization of Research Findings 288

- Meaning of Dissemination 288
- Features of Dissemination 288
- Criteria for Effective Dissemination 290
- Research Report 291
- Dissertation or Thesis 301
- References 305
- Research Critique 311
- Research Utilization 312
- Bridging Gap Between Research and Practice 319
- Barriers in Utilization of Research Findings 322
- Research Utilization Studies 325
- Research Proposal 325
- Role of Computers in Research Process 329

PART B—BIOSTATISTICS

Unit 11. Introduction to Biostatistics.....337
- Historical Notes 337
- Definitions 337
- Characteristics of Statistics 338
- Limitations of Statistics 338
- Uses of Biostatistics in Medicine 338
- Significance of Biostatistics in the Field of Nursing 338
- Scope of Biostatistics 338
- Terminology 339
- Commonly Used Symbols in Statistics 339
- Types of Data and its Measurement 339
- Types of Statistics 343
- Organization and Presentation of Data 344

Unit 12. Measures of Central Tendency.....364
- Characteristics of a Good Statistical Average 364
- Mean (Arithmetic) 364
- Median 366
- Mode 369
- When to Use the Mean, Median, and Mode 370

Unit 13. Measures of Variability.....374
- Dispersion 375
- Measures of Variability (Dispersion) 375

Unit 14. Normal Probability Distribution.....393
- Normal (Gaussian) Distribution 394
- Skewness 396
- Kurtosis 396

Unit 15. Measures of Relationship.....399
- Correlation 399
- Correlation Coefficient 399
- Types of Correlation 400
- Need for Correlation 403
- Measures of Correlation 403
- Regression Analysis 409
- Regression Line 410
- Regression Equation 410
- Comparison Between Correlation and Regression 411

Unit 16. Inferential Statistics and Hypothesis Testing.....414

Inferential Statistics
- Purposes of Inferential Statistics 414
- Types of Inferential Statistics 414

Hypothesis Testing
- Types of Hypothesis 418
- Steps in Hypothesis Testing 419
- Errors in Hypothesis Testing 419
- Parametric and Nonparametric Tests 422
- Parametric Tests Used in Nursing Research 428
- Nonparametric Tests Used in Nursing 440

Unit 17. Application of Statistics in Health and Use of Computers for Data Analysis ...457

- Definitions 457
- Need for Vital Statistics 457
- Sources of Vital Statistics (Mechanisms for Collection) 457
- Uses of Vital Statistics 459
- Basic Formulae in Vital Statistics 460
- Basic Measurements in Vital Statistics 461
- Statistical Packages 466
- Use of Computers for Data Analysis 467

Glossary ***471***

Appendices ***489***

- Appendix 1: Distribution of *t*-Probability 489
- Appendix 2: Significant Values of *F* 490
- Appendix 3: Distribution of χ^2 Probability 493
- Appendix 4: Significant Values of the Correlation Coefficient 494
- Appendix 5: Mann-Whitney U Test Table 495
- Appendix 6: Table of Critical Values for the Wilcoxon Test 496
- Appendix 7: Table of Random Numbers 497
- Appendix 8: Model Information Sheet for Research Participants and Consent Form 498
- Appendix 9: Model Letter to Institutional Ethics Committee 501
- Appendix 10: Model Summary Sheet of the Research Project Submitted to the Institutional Ethics Committee 502
- Appendix 11: Model Research Proposal Format 504
- Appendix 12: CONSORT 2010 Checklist of Information to include when Reporting a Randomized Trial 506
- Appendix 13: CONSORT Flow Diagram 508
- Appendix 14: The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) Statement: Checklist of Items that should be addressed in Reports of Observational Studies 509
- Appendix 15: CARE Checklist (2013) of Information to include when Writing a Case Report 511
- Appendix 16: PRISMA 2009 Checklist for Reporting of Systematic Reviews and Meta-analyses 512
- Appendix 17: PRISMA (2009) Flow Diagram 514
- Appendix 18: TREND Statement Checklist 515
- Appendix 19: TREND Flow Diagram 519

Index ***521***