

CONTENTS

UNIT ONE. INTRODUCTION TO NURSING RESEARCH, 1

1. Discovering the World of Nursing Research, 2

Definition of Nursing Research, 2

Framework Linking Nursing Research to the World of Nursing, 3

Concrete-Abstract Continuum, 4

Empirical World, 4

Reality Testing, 4

Abstract Thought Processes, 4

Science, 7

Theory, 8

Knowledge, 8

Philosophy, 10

Significance of Research in Building an Evidence-Based Practice for Nursing, 11

Description, 12

Explanation, 13

Prediction, 13

Control, 13

2. The Evolution of Evidence-Based Practice in Nursing, 16

Historical Development of Research in Nursing, 16

Florence Nightingale, 16

Early 1900s, 18

Nursing Research in the 1950s and 1960s, 18

Nursing Research in the 1970s, 19

Nursing Research in the 1980s and 1990s, 20

Nursing Research in the Twenty-First Century, 21

Methodologies for Developing Research Evidence in Nursing, 22

Comparison of Quantitative and Qualitative Research, 22

Classification for the Research Methodologies Presented in this Text, 24

Outcomes Research, 26

Intervention Research, 26

Introduction to Best Research Evidence for Practice, 26

Definition of Best Research Evidence, 27

Levels of Research Evidence, 28

Introduction to Evidence-Based Guidelines, 29

3. Introduction to Quantitative Research, 33

Concepts Relevant to Quantitative Research, 33

Basic Research, 33

Applied Research, 34

Rigor in Quantitative Research, 34

Control in Quantitative Research, 35

Steps of the Quantitative Research Process, 37

Formulating a Research Problem and Purpose, 37

Review of Relevant Literature, 38

Developing a Framework, 39

Formulating Research Objectives, Questions, or Hypotheses, 39

Defining Research Variables, 40

Making Assumptions Explicit, 40

Identifying Limitations, 41

Selecting a Research Design, 41

Defining the Population and Sample, 42

Selecting Methods of Measurement, 43

Developing a Plan for Data Collection and Analysis, 43

Implementing the Research Plan, 43

Communicating Research Findings, 45

Types of Quantitative Research, 45

Descriptive Research, 45

Correlational Research, 46

Quasi-Experimental Research, 46

Experimental Research, 48

4. Introduction to Qualitative Research, 51

The Logic of Qualitative Research, 51

Gestalts, 51

Experiencing Gestalt Change, 52

Changing Gestalts in Nursing, 53

Philosophy and Qualitative Research, 53

Rigor in Qualitative Research, 54

Approaches to Qualitative Research, 54

Phenomenological Research, 54

Grounded Theory Research, 56

Ethnographic Research, 57

Historical Research, 58

Philosophical Inquiry, 59

Critical Social Theory, 61

More on Qualitative Research Methods, 64

UNIT TWO. THE RESEARCH PROCESS, 67

5. Research Problem and Purpose, 68

What is a Research Problem and Purpose? 68

Sources of Research Problems, 70

- Clinical Practice, 70
- Researcher and Peer Interactions, 71
- Literature Review, 71
- Theory, 73
- Research Priorities, 74

Formulating a Research Problem and Purpose, 76

- Research Topics, 76
- Generating Questions, 76
- Clarifying and Refining a Research Problem, 77
- Research Purpose, 78

Example of Problem and Purpose Development, 78

Feasibility of a Study, 79

- Time Commitment, 79
- Money Commitment, 80
- Researcher Expertise, 80
- Availability of Subjects, 81
- Availability of Facilities and Equipment, 81
- Cooperation of Others, 81
- Ethical Considerations, 81

Quantitative, Qualitative, Outcomes, and Intervention Research Topics, Problems, and Purposes, 82

6. Review of Relevant Literature, 90

- Purpose of the Literature Review in Writing Course Papers, 90
- Purpose of the Literature Review in Examining the Strength of the Evidence, 90
- Purpose of the Literature Review in Quantitative Research, 90
- Purpose of the Literature Review in Qualitative Research, 91

What is "The Literature"? 91

What is a Literature Review? 91

- Time Frame for a Literature Review, 92
- Sources Included in a Literature Review, 93

Searching the Literature, 93

- Develop a Search Strategy, 94
- Select Databases to Search, 94
- Select Keywords, 95
- Systematically Record References, 96
- Use Reference Management Software, 97
- Locate Relevant Literature, 97

Reading and Critiquing Sources, 104

- Skimming Sources, 104
- Comprehending Sources, 104

- Analyzing Sources, 104
- Synthesizing Sources, 110

Writing the Review of Literature, 111

- Sorting Your Sources, 111
- Developing the Written Review, 111
- Checking References, 113

Example of a Literature Review, 113

Integrative Reviews, 114

- Metasynthesis, 115
- Meta-Analysis, 119

7. Frameworks, 126

Definition of Terms, 126

- Concept, 126
- Relational Statements, 131
- Conceptual Models, 135
- Theory, 139
- Conceptual Maps, 145

The Steps for Constructing a Study Framework, 146

- Selecting and Defining Concepts, 146
- Developing Relational Statements, 147
- Developing Hierarchical Statement Sets, 148
- Constructing a Conceptual Map, 149
- Constructing a Study Framework from Substantive Theory, 151
- Constructing a Study Framework on the Basis of a Conceptual Model, 152

The Critical Analysis of Frameworks: Theoretical Substruction, 153

8. Objectives, Questions, and Hypotheses, 165

Formulating Research Objectives, 165

- Formulating Objectives in Quantitative Studies, 165
- Formulating Objectives in Qualitative Studies, 166

Formulating Research Questions, 167

- Formulating Questions in Quantitative Studies, 167
- Formulating Questions in Qualitative Studies, 167

Formulating Hypotheses, 168

- Purpose of Hypotheses, 168
- Sources of Hypotheses, 169
- Types of Hypotheses, 170
- Developing Hypotheses, 174
- Testing Hypotheses, 175

Selecting Objectives, Questions, or Hypotheses for Quantitative or Qualitative Research, 176

Identifying and Defining Study Variables, 176

- Types of Variables, 177

Operationalizing Variables or Concepts for a Study, 180

9. Ethics in Research, 184

Historical Events Affecting the Development of Ethical Codes and Regulations, 184

- Nazi Medical Experiments, 185
- Nuremberg Code, 185
- Declaration of Helsinki, 185
- Tuskegee Syphilis Study, 186
- Willowbrook Study, 187
- Jewish Chronic Disease Hospital Study, 187
- Other Unethical Studies, 187
- U.S. Department of Health, Education, and Welfare Regulations, 187
- National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 187

Protection of Human Rights, 189

- Right to Self-Determination, 189
- Right to Privacy, 194
- Right to Autonomy and Confidentiality, 196
- Right to Fair Treatment, 198
- Right to Protection from Discomfort and Harm, 198

Balancing Benefits and Risks for a Study, 200

- Assessment of Benefits, 200
- Assessment of Risks, 200
- Benefit-Risk Ratio, 200

Obtaining Informed Consent, 201

- Information Essential for Consent, 201
- Comprehension of Consent Information, 203
- Competency to Give Consent, 204
- Voluntary Consent, 204
- Documentation of Informed Consent, 205
- Authorization for Research Uses and Disclosure, 206

Institutional Review, 207

- Levels of Reviews Conducted by Institutional Review Boards, 207
- Influence of HIPAA Privacy Rule on Institutional Review Boards, 210

Research Misconduct, 212

- Role of the Office of Research Integrity in Promoting the Conduct of Ethical Research, 212
- Role of Journal Editors and Researchers in Preventing Scientific Misconduct, 213

Animals as Research Subjects, 214

10. Understanding Quantitative Research Design, 218

Evidence Base and Design, 219

- Concepts Important to Design, 219
- Study Validity, 221

- Elements of a Good Design, 226
- Triangulation, 230

11. Selecting a Quantitative Research Design, 236

Descriptive Study Designs, 237

- Typical Descriptive Study Designs, 237
- Comparative Descriptive Designs, 239
- Time-Dimensional Designs, 239
- Case Study Designs, 244

Surveys, 245

Correlational Study Designs, 245

- Descriptive Correlational Designs, 246
- Predictive Designs, 247
- Model-Testing Designs, 248

Defining Therapeutic Nursing Interventions, 249

- The Nursing Interventions Classification, 250
- Designing an Intervention for a Nursing Study, 250

Quasi-Experimental Study Designs, 250

- Random Assignment to Groups, 252
- Comparison Groups, 253
- Nonequivalent Comparison Group Designs, 254
- Interrupted Time-Series Designs, 260

Experimental Study Designs, 262

- Classic Experimental Design, 263
- Experimental Posttest-Only Comparison Group Designs, 264
- Randomized Blocking Designs, 265
- Factorial Designs, 265
- Nested Designs, 266
- Crossover or Counterbalanced Designs, 267
- Randomized Clinical Trials, 268

Studies That Do Not Use Traditional Research Designs, 271

- Primary Prevention and Health Promotion Studies, 271
- Secondary Analyses, 271
- Methodological Designs, 272

Algorithms for Selecting Research Designs, 272

12. Outcomes Research, 281

Theoretical Basis of Outcomes Research, 281

- Evaluating Outcomes, 283
- Evaluating Process, 283
- Costs of Care, 284
- Evaluating Structure, 284

Federal Government Involvement in Outcomes Research, 286

- Agency for Health Services Research, 286
- Agency for Health Care Policy and Research, 287

Outcomes Research and Nursing Practice, 288

- Nursing-Sensitive Patient Outcomes (NSPOs), 289
- Oncology Nursing Society, 291
- Advanced Practice Nursing Outcomes Research, 291
- Practice-Based Research Networks (PBRNs), 293

Methodologies for Outcomes Studies, 293

- Samples and Sampling, 294
- Research Strategies for Outcomes Studies, 296
- Measurement Methods, 305
- Statistical Methods for Outcomes Studies, 308

Disseminating Outcomes Research Findings, 310

13. Intervention Research, 317

What are Nursing Interventions?, 317

Problems with the True Experiment, 318

Intervention Research, 319

Process of Intervention Research, 319

- Project Planning, 320
- Gathering Information, 321
- Developing an Intervention Theory, 325
- Designing the Intervention, 330
- Establishing an Observation System, 331
- Testing the Intervention, 332
- Collecting and Analyzing Data, 337
- Dissemination, 338

Just You and Me: Implementing an Intervention Theory Study on a Small Scale, 339

14. Sampling, 343

Sampling Theory, 343

- Populations and Elements, 343
- Sampling or Eligibility Criteria, 344
- Representativeness, 345
- Sampling Error, 346
- Randomization, 348
- Sampling Frames, 348
- Sampling Plans, 349

Probability (Random) Sampling Methods, 349

- Simple Random Sampling, 349
- Stratified Random Sampling, 350
- Cluster Sampling, 351
- Systematic Sampling, 352

Nonprobability (Nonrandom) Sampling Methods in Quantitative Research, 353

- Convenience (Accidental) Sampling, 353
- Quota Sampling, 354

Nonprobability Sampling Methods Used in Qualitative Research, 355

- Purposive Sampling, 355
- Network Sampling, 356
- Theoretical Sampling, 356

Sample Size in Quantitative Research, 357

- Effect Size, 358
- Type of Study, 359
- Number of Variables, 360
- Measurement Sensitivity, 360
- Data Analysis Techniques, 360

Sample Size in Qualitative Research, 361

- Scope of the Study, 361
- Nature of the Topic, 361
- Quality of the Data, 361
- Study Design, 362

Research Settings, 362

Recruiting and Retaining Subjects, 363

- Recruiting Subjects, 363
- Retaining Subjects, 367

15. Measurement Concepts, 371

Directness of Measurement, 371

Measurement Error, 372

- Types of Measurement Errors, 372

Levels of Measurement, 374

- Nominal-Scale Measurement, 374
- Ordinal-Scale Measurement, 375
- Interval-Scale Measurement, 375
- Ratio-Level Measurement, 375
- The Importance of Level of Measurement for Statistical Analyses, 376
- Controversy over Measurement Levels, 376

Reference Testing of Measurement, 376

Reliability, 377

- Stability, 377
- Equivalence, 378
- Homogeneity, 379

Validity, 380

- Content-Related Validity Evidence, 381
- Readability of an Instrument, 384
- Evidence of Validity from Factor Analysis, 384
- Evidence of Validity from Structural Analysis, 385
- Evidence of Validity from Contrasting (or Known) Groups, 385
- Evidence of Validity from Examining Convergence, 386
- Evidence of Validity from Examining Divergence, 387
- Evidence of Validity from Discriminant Analysis, 387
- Evidence of Validity from Prediction of Future Events, 387
- Evidence of Validity from Prediction of Concurrent Events, 387
- Successive Verification of Validity, 388

Accuracy and Precision of Physiological Measures, 388

- Accuracy, 388
- Selectivity, 388
- Precision, 388
- Sensitivity, 389
- Error, 389

Use of Sensitivity, Specificity, and Likelihood Ratios to Determine the Quality of Diagnostic Tests, 390
Validity in Qualitative Research, 392**16. Measurement Methods Used in Developing Evidence for Practice, 395****Physiological Measurement, 395**

- Obtaining Physiological Measures by Self-Report, 396
- Obtaining Physiological Measures by Observation, 396
- Obtaining Physiological Measures Directly or Indirectly, 397
- Obtaining Physiological Measures from Laboratory Tests, 397
- Obtaining Physiological Measures through Electronic Monitoring, 398
- Creative Development of Physiological Measures, 399
- Obtaining Physiological Measures across Time, 400
- Selecting a Physiological Measure, 400

Observational Measurement, 402

- Structured Observations, 402

Interviews, 403

- Structured Interviews, 404
- Advantages and Disadvantages of Interviews, 405

Questionnaires, 406

- Development of Questionnaires, 406
- Questionnaire Validity, 409
- Analysis of Questionnaire Data, 409

Scales, 410

- Rating Scales, 410
- Likert Scale, 410
- Semantic Differentials, 411
- Visual Analogue Scales, 412

Q-Sort Methodology, 414**Delphi Technique, 414****Projective Techniques, 415****Diaries, 416****Selection of an Existing Instrument, 419**

- Locating Existing Instruments, 419
- Evaluating Existing Instruments for Appropriateness and Performance, 419
- Assessing Readability Levels of Instruments, 421

Constructing Scales, 421

- Constructing a Scale by Using Classic Test Theory, 421
- Constructing a Scale by Using Item Response Theory, 423
- Constructing a Scale by Using Multidimensional Scaling, 423
- Constructing a Scale by Using Unfolding Theory, 424

Translating a Scale to Another Language, 424**17. Collecting and Managing Data, 429****Planning Data Collection, 429**

- Planning Data Collection Procedures, 429
- Decision Points, 429
- Consistency, 431
- Time Factors, 431
- Cost Factors, 431
- Developing Data Collection Forms, 432
- Using Electronic Devices for Data Collection, 434
- Computerized Data Collection, 435
- Developing a Codebook for Data Definitions, 438

Collecting Data, 441

- Data Collection Tasks, 441

Serendipity, 446**Having Access to Support Systems, 447**

- Support of Academic Committees, 447
- Institutional Support, 447
- Personal Support, 447

Managing Data, 447

- Preparing Data for Computer Entry, 448
- Data Entry Period, 448

18. Introduction to Statistical Analysis, 450**Concepts of Statistical Theory, 450**

- Probability Theory, 451
- Decision Theory and Hypothesis Testing, 451
- Inference, 452
- Normal Curve, 452
- Sampling Distributions, 453
- Sampling Distribution of a Statistic, 453
- The Shapes of Distributions, 453
- Standardized Scores, 455
- Confidence Intervals, 455
- Statistics and Parameters, Samples and Populations, 455
- Estimation of Parameters, 456
- Degrees of Freedom, 457
- Tailedness, 457
- Type I and Type II Errors, 457

Level of Significance: Controlling the Risk of a Type I Error, 459

Power: Controlling the Risk of a Type II Error, 460

Clinical Significance, 460

Parametric and Nonparametric Statistical Analysis, 461

Practical Aspects of Data Analysis, 461

Purposes of Statistical Analysis, 461

Process of Data Analysis, 461

Preparation of the Data for Analysis, 461

Description of the Sample, 462

Testing the Reliability of Measurement, 462

Exploratory Analysis of the Data, 463

Confirmatory Analysis, 463

Post Hoc Analysis, 464

Storing Computer Printouts from Data Analysis, 464

Resources for Statistical Analysis Computer Programs, 464

Statistical Assistance, 465

Choosing Appropriate Statistical Procedures for a Study, 465

19. Using Statistics to Describe Variables, 470

Using Statistics to Summarize Data, 470

Frequency Distributions, 470

Measures of Central Tendency, 471

Using Statistics to Explore Deviations in the Data, 472

Measures of Dispersion, 472

Using Statistics to Describe Patterns Across Time, 474

Analysis of Case Study Data, 475

Survival Analysis, 475

Time-Series Analysis, 476

20. Using Statistics to Examine Relationships, 478

Scatter Diagrams, 478

Bivariate Correlational Analysis, 478

Pearson's Product-Moment Correlation Coefficient, 479

Testing the Significance of a Correlational Coefficient, 480

Spurious Correlations, 481

Spearman Rank-Order Correlation Coefficient, 482

Kendall's Tau, 483

Role of Correlation in Understanding Causality, 484

Multivariate Correlational Procedures, 484

Factor Analysis, 484

21. Using Statistics to Predict, 489

Simple Linear Regression, 489

Interpretation of Results, 490

Multiple Regression, 491

Multicollinearity, 491

Types of Independent Variables Used in Regression Analyses, 491

Results, 493

Cross-Validation, 494

Discriminant Analysis, 494

22. Using Statistics to Examine Causality, 498

Contingency Tables, 498

Chi-Square Test of Independence, 499

Phi, 501

Cramer's *V*, 501

Contingency Coefficient, 501

Lambda, 502

***t*-Tests, 502**

t-Test for Independent Samples, 502

t-Tests for Related Samples, 504

One-Way Analysis of Variance, 505

23. Qualitative Research Methodology, 507

Data Collection Methods, 507

Unstructured Observations, 508

Unstructured Interviews, 510

Focus Groups, 513

Collecting Stories, 515

Constructing Life Stories, 518

Case Studies, 519

Data Management and Reduction, 519

Using the Computer for Qualitative Analysis, 519

Transcribing Interviews, 520

Immersion in the Data, 521

Data Reduction, 521

Data Analysis, 522

Multimedia Analysis, 523

Analysis of Focus Group Data, 524

Generalization from Focus Group Analysis, 524

Displaying Data for Analysis and Presentation, 525

Drawing and Verifying Conclusions, 526

Building a Logical Chain of Evidence, 527

Making Conceptual/Theoretical Coherence, 527

Content Analysis, 528

Narrative Analysis, 528

Reporting Results, 529

Research Methodology of Specific Qualitative Approaches, 529

Phenomenological Research Methods, 529

Grounded Theory Methodology, 533

Ethnographical Methodology, 534
 Historical Research Methodology, 535
 Philosophical Studies, 539
 Critical Social Theory Methodology, 541

Qualitative Research Issues, 542

Theoretical Frameworks, 542
 Researcher-Participant Relationships, 543
 Reflexivity, 545
 Auditability, 546
 Appraisal of Qualitative Studies, 546

24. Interpreting Research Outcomes, 552

Examining Evidence, 553

Evidence from the Research Plan, 553
 Evidence from Measurement, 553
 Evidence from the Data Collection Process, 554
 Evidence from the Data Analysis Process, 554
 Evidence from Data Analysis Results, 554
 Evidence from Previous Studies, 556

Determining Findings, 556

Forming Conclusions, 557

Exploring the Significance of Findings, 559

Generalizing the Findings, 560

Considering Implications, 560

Suggesting Further Studies, 561

25. Disseminating Research Findings, 564

Content of a Research Report, 564

Quantitative Research Report, 565
 Qualitative Research Report, 575
 Theses and Dissertations, 579

Audiences for Communication of Research Findings, 580

Strategies for Communicating Research to
 Different Audiences, 581

Presenting Research Findings, 583

Verbal Presentations, 583
 Poster Session, 585

Publishing Research Findings, 586

Publishing Journal Articles, 588
 Publishing Research Findings in Online Journals, 591
 Publishing Research Findings in Books, 592
 Duplicate Publication in the Nursing Literature, 592

UNIT THREE. PUTTING IT ALL TOGETHER FOR EVIDENCE-BASED HEALTH CARE, 597

26. Critical Appraisal of Nursing Studies, 598

Evolution of Critical Appraisal of Research
 in Nursing, 598

When are Critical Appraisals of Research
 Implemented in Nursing? 599

Critical Appraisal Process for Quantitative Studies, 601

Step I: Comprehension, 602
 Step II: Comparison, 604
 Step III: Analysis, 605
 Step IV: Evaluation, 608
 Step V: Conceptual Clustering, 608

Critical Appraisal Process for Qualitative Studies, 609

Skills Needed to Critically Appraise Qualitative
 Studies, 609
 Standards for Critical Appraisal of Qualitative
 Studies, 610

27. Strategies for Promoting Evidence-Based Nursing Practice, 616

Criticisms and Benefits of Evidence-Based Practice in Nursing, 616

Criticism of Evidence-Based Practice in
 Nursing, 617
 Benefits of Evidence-Based Practice in
 Nursing, 618

Guidelines for Synthesizing Research Evidence, 619

Guidelines for Implementing and Evaluating a
 Systematic Review, 619
 Conducting Meta-Analysis to Synthesize Research
 Evidence, 620
 Conducting Integrative Reviews of Research, 621
 Conducting Metasummary and Metasynthesis of
 Qualitative Research, 622

Models to Promote Evidence-Based Practice in Nursing, 623

Stetler Model of Research Utilization to Facilitate
 Evidence-Based Practice, 623
 Iowa Model of Evidence-Based Practice, 625
 Application of the Iowa Model of Evidence-
 Based Practice, 626

Implementing Evidence-Based Guidelines in Practice, 632

Development of Evidence-Based Guidelines, 632
 Implementing the JNC 7 Evidence-Based
 Guideline in Practice, 634
 Evidence-Based Practice Centers, 637

UNIT FOUR. PROPOSING AND SEEKING FUNDING FOR RESEARCH, 641

28. Writing Research Proposals, 642

Writing a Research Proposal, 642
 Developing Ideas Logically, 642

- Determining the Depth of a Proposal, 643
- Identifying Critical Points, 643
- Developing an Aesthetically Appealing Copy, 643
- Content of a Research Proposal, 643**
 - Content of a Student Proposal, 643
 - Content of a Condensed Proposal, 650
 - Content of a Preproposal, 650
- Seeking Approval for a Study, 650**
 - Approval Process, 651
 - Preparing Proposals for Review Committees, 651
 - Social and Political Factors, 652
 - Verbal Defense of a Proposal, 652
 - Revising a Proposal, 653
- Sample Quantitative Research Proposal, 653**

29. Seeking Funding for Research, 666

- Purposes for Seeking Research Funding, 666**
- Ways to Learn Grantsmanship, 667**
 - Attending Grantsmanship Courses, 667
 - Developing a Reference Group, 667
 - Joining Research Organizations, 667
 - Serving on Research Committees, 668
 - Networking, 668
 - Assisting a Researcher, 668
 - Obtaining a Mentor, 669
 - Becoming a Funded Researcher, 669
 - Conducting Research on a Shoestring, 670
 - Seeking Funding From Specialty Practice Nursing Organizations, 671

- Seeking Funding from Industries, 671
- Obtaining Foundation Grants, 671
- Obtaining Federal Grants, 672**
 - Researcher-Initiated Proposals, 672
 - Requests for Proposals, 673
 - Requests for Applications, 673
 - Developing a Proposal, 673
 - Electronic Submission of Grant Proposals, 674
 - The Federal Grant Review Process, 674
- Grant Management, 675**
 - Managing the Budget, 675
 - Training Research Personnel, 675
 - Maintaining the Study Schedule, 675
 - Coordinating Activities, 675
 - Submitting Reports, 675
- Planning Your Next Grant, 675**

Appendixes, 677

- Appendix A. Percentage Points of Student's t Distribution, 677**
- Appendix B. Percentage Points of the F Distribution, 678**
- Appendix C. Critical Values of the χ^2 Distribution, 682**
- Appendix D. Statistical Power Tables (Δ = Effect Size), 683**

Glossary, 687

Index, 729