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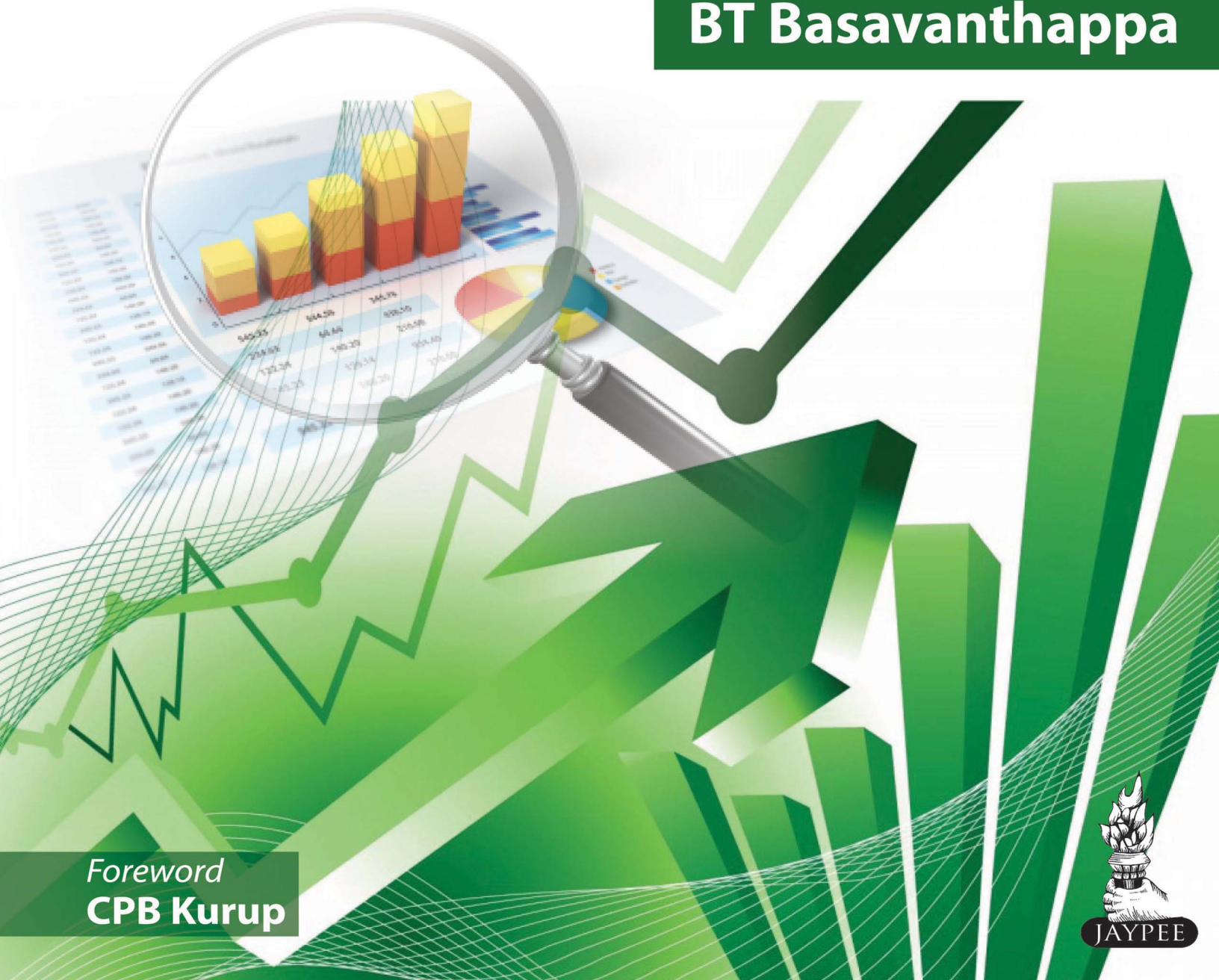
THIRD EDITION

NURSING
Research & Statistics

BT Basavanthappa



Foreword
CPB Kurup

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Contents

Section I - Nursing Research

1. Concepts of Research 3

Search for Knowledge 4
Philosophy of Science 6
Sources of Knowledge 7
Scientific Approach 12
Definitions of Research 19
Research and Problem Solving 20
Research and Nursing Process 22
Scientific Research 23

2. Research in Nursing 29

Nursing and Research 31
Significance of Research in Nursing 33
Meaning of Nursing Research 37
Need for Research in Nursing 40
Nurses Responsibilities in Relation to Research 43
Current Perspectives 45
Historical Evolution of Research in Nursing 49

3. Classification of Research 53

Classification of Research on Basis of Desire-directed 54
Classification of Research According to Methods 63
Qualitative and Quantitative Research 64
Qualitative Research Methods 65
Quantitative Research Methods 83

4. Overview of the Research Process 99

Phases of Research Process 99

5. Review of Literature 106

Definition 106
Purposes 107
Objectives 108
Uses 109
Sources 110
Characteristics of Relevant Review of Literature 111
Skills Needed for Literature Review 115
Communicating a Review of Literature 121

6. Theory and Theoretical Framework 123
Definitions of Theory 123
Theory Construction 124
Theoretical Framework 126
7. Research Problem 142
Sources of Research Problems 142
Selection of a Problem and its Criteria 147
Formulation of the Selected Problem 152
Statement of the Problem 160
8. Hypotheses 166
Definition 166
Purpose 169
Role of Hypothesis in Nursing Research 169
Advantages 170
Disadvantages 170
Characteristics of a Good Hypothesis 171
Sources 172
Classification 174
Types 175
Developing the Research Hypotheses 178
Wording the Hypothesis 180
Guidelines for Critiquing Research Hypotheses 181
9. Research Design 184
Purposes of Research Design 184
Elements of Research Design 186
Selecting a Research Design 187
Experimental Research Design 189
Types of Experimental Design 195
Non-experimental Design 199
10. Sampling 211
Terminology Used in Sampling 212
Advantages and Disadvantages of Sampling 216
Characteristics of a Good Sample 217
Sampling Process 217
Methods of Sampling 218
Probability Sampling 219
Probability Sampling Methods 220
Non-probability Sampling Methods 244
Sample Design and Choice of Sampling Technique 251
11. Ethical Issues in Nursing Research 268
Planning for the Protection of Subject's Rights 268
Ethical Implications for Nursing Research 271

Helsinki Declaration on Biomedical Research 273
Indian Council of Medical Research Policy Statement on Ethical Considerations 276
12. Research Planning Proposal/Protocol 283
Meaning of Protocol/Proposal 284
Content of Protocol/Proposal 285
Ethical Committee Clearance 300
Proforma for Registration of Subject for Dissertation 301
Guidelines for Preparing Thesis/Dissertation Protocol 301
Guidelines for Writing Reference 302
Different Types of References 302
Vancouver Style of Writing References 304
13. Methods of Data Collection 309
Types of Data 309
Need of Data 310
Sources of Data 310
Methods of Collecting Primary Data 311
Observation as a Method of Data Collection 314
Experimentation as a Method of Data Collection 321
Simulation as a Method of Data Collection 329
Non-experimental Methods 332
Sources of Data Collection 335
Interviewing as a Method of Data Collection 338
Panel Method of Data Collection 357
Mail Survey as a Method of Data Collection 359
Questionnaire as the Heart of Survey 362
Guidelines for Constructing Questionnaire/Schedule 367
Some Other Methods of Data Collection 369
Projective Techniques of Data Collection 374
Sociometry Used as Data Collection 379
Content Analysis 386
Delphi Technique of Data Collection 388
Ethologic Technique of Data Collection 389
Secondary Data Collection 390
Case Study Method of Data Collection 395
14. Techniques of Data Collection 400
Types of Tools 400
Measurement as a Technique of Data Collection 401
Observation as a Technique of Data Collection 432
Questioning and Interviews as Technique of Data Collection 445
Records of Existing Data as a Technique of Data Collection 473

15. Pilot Study 480
Purpose of a Pilot Study 481
Pretest Procedure 484
16. Data Analysis and Interpretation 485
Identifying the Data Structure 486
Editing 487
Classification of Data 489
Transcription of Data 491
Coding 494
Tabulation 496
Graphs/Charts/Diagrams 506
Plan for Data Analysis and Interpretation 511
17. Communicating Nursing Research 519
Reporting the Research 519
Format of the Research Report 522
Style of Writing 534
Preparation of the Report 543
Typing the Report 544
Presentation of Research Report in Professional Meetings 545
18. Critiquing Research Report 547
Role of Critique 547
Evaluation of Research Report 547
Methodology 552
19. Use of Computer in Nursing and Research 554
Main Uses of Computer 554
Use of Computers in Nursing 556

Section II - Statistics

20. Concepts of Statistics 563
Definition 564
Features 565
Characteristics 565
Merits and Demerits 565
Types 567
Categories 568
Parameter and Statistic 569
Scope of Statistics in Nursing 570
Type and Level of Data and their Measurement 573
21. Organization and Presentation of Data 579
Organization of Data 579
Collection of Data 579

Classification of Data 579
Methods of Data Collection 582
Processing Statistical Data 582
Presentation of Data 588
Tabular Presentation of Data 589
Graphical Presentation of Data 596
General Principles of Constructing Graphs 598
Graphical Representation of Grouped Data (Frequency Distribution) 606
22. Measures of Central Tendency 615
Objectives 616
Types 616
Mean 616
Calculation of the Mean 620
Examples of Problems and Solutions 628
Median 631
Mode 638
23. Measures of Variability/Dispersion 642
Variability 642
Purposes of Measures of Variability/Dispersion 642
Properties 643
Methods of Studying Variability 643
24. Measures of Relationship 663
Correlation 663
Calculation of Correlation Coefficient from Ungrouped Data 672
Regression 681
25. Normal Distribution 689
Concept of Probability 689
Definition of Probability 690
Some Fundamental Notions of Probability 691
26. Significance of Statistics 703
Significance of Mean and Other Statistics 703
Significance of Difference Between Mean and Other Statistics 708
Contingency Table 718
27. Application of Statistics in Health 748
Concepts of Vital Statistics 748
Basic Formula for Calculation of Vital Statistics 749
Appendices 771
Appendix I: Historical Evolution of Research 773
Appendix II: Statistical Formulas and Symbols 782
Appendix III: Criteria and Guidelines for Report Writing 786
Appendix IV: Research Course Report Evaluation 793
Appendix V: Writing Review of Literature with Footnote(s) 795

1 Chapter

Concepts of Research

INTRODUCTION

Research is a scientific process. It is called scientific because the results are verifiable. It is a systematic search for answers to questions, about facts and relationship between facts. The systematic method has an order and follows an acceptable procedure for conducting research.

Research, in every field and more so in the field of nursing, is demand of the day. Progress in any field is directly linked with research in the field. Our problems and difficulties in the field of nursing further necessitates a purposeful and sustained research effort. We need a large number of research scholars who may take up the huge task of providing guidance and directions, to our nursing theories and practices.

The word 'research' is composed of a prefix 're' and a verb 'search'. 'Re' means once again, a new or a fresh and 'search' means to look for something, examine closely and carefully, look for information, test, try, or to prove. Therefore, research means close and careful examination of facts, and their relationship to discover new knowledge.

'Nursing' is generally agreed as the body of knowledge on which the practice of nursing should be based, must be developed and structured. It is primarily derivative in nature, at least at this time. Nursing depends upon the selection and systematic application. Evaluation of knowledge is utilized in advancing nursing practice and in modifying the systems for providing nursing services. Nursing evolves its own significant contribution to human well-being. Thus, nursing is developing its own body of knowledge.

There is a strong indication that every nurse in the future can expect to be involved in research—his/her own or someone else's. For that reason, an appreciation and skills in research should be developed early in undergraduate nursing programs. The reasons for introducing research to students early in their nursing program are as follows (Treece and Treece, 1973):

1. The scientific approach, to problem solving and research methodology, and techniques will help to develop an objective attitude toward all life situations.
2. Understanding of research and some knowledge of statistics, needed in order to read professional journals, articles, etc. are important aspects of nursing education.
3. Nursing staff as well as nursing students, should be attempting to upgrade their profession through research.

JAYPEE BROTHERS

4. All individuals in the healthcare field are hopefully, at least, interested in promoting the health and welfare of their patients.
5. Research is stimulating, exciting and interesting. It provides opportunity for members of the discipline to make a lasting contribution of general knowledge.

One distinctive feature of human beings is curiosity, i.e. to know about things around us and ourselves. There are number of questions arising in the mind of human being, wherever, such questions or problems arise, person may seek answer to them or try to find some solutions to problem.

Seeking answers to questions may be based on imagination, opinion, blind belief or impression. These ways are vague, inaccurate and suffers from serious weakness and drawbacks. To overcome these drawbacks, it is always better to adopt systematic rational approach for seeking facts that is objective, precise and arrives at conclusions on the basis of observable, measurable and verifiable evidences. This is called scientific method of research.

Adapt systematic ways in finding solution to problem, seeking answers to questions, searching for new knowledge or enhancing existing knowledge. Research is the best way of doing such things because research simply means a search for facts, till they get answers to questions and solutions to problems. Research is a purposive investigation or an organized enquiry into existing facts and seeks to find explanation, to unexplained phenomenon, to clarify the doubtful propositions and to correct misconceived facts.

SEARCH FOR KNOWLEDGE

Human beings are the unique product of their creation and evolution. In contrast to other forms of animal life, their more highly developed nervous system has enabled them to develop sounds and symbols (letters and numbers) that make possible the communication and recording of their questions, observations, experiences and ideas.

New knowledge arises in various ways. It may originate in some quite unexpected observation, which occurs during an ongoing investigation in an academic department—providing this is fully exploited. Opportunities come more often to active bench workers and to those involved in new techniques or with new equipment, e.g. an electron microscope.

Serendipity is the faculty of making happy discoveries by accident and is derived from the title of the fairy tale 'The Three Princes of Serendip', the heroes of which were always making such discoveries. The role of chance in research has been discussed by several authors. Many examples of discoveries where chance played a part are given by Beveridge (1950) in 'The Art of Scientific Investigation'. James Austin (1978) in 'Chase, Chance and Creativity' analyzed the varieties of chance that contribute to creative events.

Chance I

Chance I is the type of blind luck, which can provide an opportunity to anyone motivated to do research. An example is the unexpected arrival of a patient with a rare metabolic disorder.

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Chance II

Here something has been added (action): Austin quotes Kettering the automotive engineer who stated "keep on going and the chances are that you will stumble on something, perhaps when you are least expecting it. I have never heard of anyone stumbling on something sitting down."

Paul Ehrlich provides a good example of this. He fervently believed in the possibility of a chemical cure for syphilis, persisting when all reasonable hope had gone and finally succeeded with Salvarsan, the 606th compound. More recent was the discovery for the first time of a virus causing malignant disease in humans: Epstein persisted in spite of many failures in searching for this in the tissues of Burkitt's lymphoma (BL), eventually culturing the cells and observing the virus under the electron microscope.

Chance III

Chance presents only a faint clue, the potential opportunity exists, but it will be overlooked except by that one person uniquely equipped to grasp its significance. As Louis Pasteur immortalized it, "chance favors only the prepared mind." For example, although, Sir Alexander Fleming discovered penicillin by serendipity in 1929, it was not until 1939 that Florey and Chain working at Oxford revealed its practical importance.

Chance IV

Here, there is "one quixotic rider cantering in, on his own homemade hobby-horse to intercept the problem at an odd angle." This type of discovery is usually due to a combination of persistence and lateral thinking.

It is understandable that their greater curiosity, implemented by their control of symbols would lead them to speculate about the operation of the universe, the great forces beyond their own control. Over many centuries people began to develop what seemed to be plausible explanation. Attributing the forces of nature to the working of supernatural powers, they believed that the Gods at their whims, manipulated the sun, stars, wind, rain and lighting.

But gradually, people began to see that the operations of the forces of nature were not as capricious as they had been led to believe. They began to observe orderliness in the universe and certain cause-and-effect relationships. They discovered that under certain conditions events could be predicted with reasonable accuracy. However, these explanation were often rejected, if they seemed to conflict with the dogma of religious authority. This reliance on empirical evidence or personal experience challenged the sanction of vested authority and represented an important step in the direction of scientific inquiry. Such steps, however, were largely unsystematic and further limited by the lack of an objective method. Observers were likely to over generalize on the basis of incomplete experience or evidence to ignore complex factors operating simultaneously, or to let their feelings and prejudices influence both their observations and conclusions.

The first systematic approach to reasoning, attributed to Aristotle and the Greeks, was the deductive method. The deductive method, moving from the general assumption to the specific application, made an important contribution to the development of modern problem solving. But, it was not fruitful in arriving at new truths. The acceptance of incomplete

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or false major premises that were based on old dogmas or unreliable authority could only lead to error. Semantic difficulties often resulted from shifting definitions of the terms involved.

Centuries later, Francis Bacon advocated direct observation of phenomena, arriving at conclusions or generalizations through the evidence of many individual observations. This inductive process of moving from specific observations to generalizations freed logic from some of the hazards and limitations of deductive thinking. Bacon recognized the obstacle that the deductive process placed in the way of discovering new truth. It started with old dogmas that religious or intellectual authorities had already accepted and thus could be expected to arrive at new truths.

The deductive method of Aristotle and the inductive method of Bacon were fully integrated in the work of Charles Darwin in 19th century. During early career, his observations of animal life failed to lead satisfactory theory of man's development. The concept of the struggle for existence in Thomas Malthus' 'An Essay on the Principle of Population', instigated Darwin and suggested the assumption that natural selection explains the origin of different species of animals. This hypothesis provided a needed focus for his investigations. He proceeded to deduce specific consequences suggested by hypothesis. The evidence further confirmed the hypothesis that the biological change in the process of natural selection in which favorable variations were preserved and unfavorable ones destroyed, resulted in the formation of new species.

The major premise of the older deductive method was gradually replaced by an assumption or hypothesis that was subsequently tested by the collection and logical analysis of data. This deductive-inductive method is now recognized as an example of scientific approach.

John Dewey (1938) suggested a pattern that is helpful in identifying the elements of a deductive-inductive process, i.e. a method of science:

1. Identification and definition of the problem.
2. Formulation of a hypothesis, an idea as a probable solution to the problem, an intelligent guess or hunch.
3. Collection, organization and analysis of data.
4. Formulation of conclusions.
5. Verification, rejection or modification of hypothesis by the test of its consequence in a specific situation.

PHILOSOPHY OF SCIENCE

Human knowledge works at two levels. At the primary level, it functions on the basis of useful human activities. For example, physician uses his knowledge to cure diseases. At the secondary level, knowledge is employed to obtain increments in the existing knowledge. The activity that produces this new knowledge is known as 'research'. Philosophy and science has a common goal of developing and expanding knowledge. But in reality, the approaches of philosophers and scientists are different. A philosopher uses intuition, reasoning, contemplation and introspection to examine the purpose of human life, the nature of being and reality, the theory and the limits of knowledge, whereas the scientist observes,

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verifies, constructs, definitions, makes and verifies predictions and conducts experiments to derive scientific laws and interpret reality.

Philosophy deals with abstract, i.e. metaphysical questions about the nature of being or reality, for example, What is knowledge? Whereas science deals with questions that are empirical, i.e. they come from experience and observations, e.g. relationship between two, i.e. cause-and-effect. The development of knowledge about the discipline of nursing depends on both philosophy and science. Nursing knowledge comes from many sources such as intuition, tradition, trial and error, logical reasoning and scientific inquiry and is developed within the context of a particular philosophical stance. Philosophy representing the belief systems of nursing also guides research approaches of the nursing. These beliefs influence our thinking about nursing, nursing science and the metaphysical or empirical knowledge needed to support or further the development of nursing.

Many views have influenced the development of nursing's philosophy of science as follows:

- Science as an orderly process, accepted and directed by the discipline and changed by revolution within the discipline
- Science is based on facts
- Science employs methods of analysis
- Science employs hypothesis
- Science free from emotional bias
- Science employs objective measurement
- Science is an economical problem-solving process that advances in an orderly progressive fashion
- Science then takes into account the influences of gender, authors, society and shared history, as typified by feminism and critical theory perspectives.

Science can be viewed as a body of theoretical knowledge and as a method or process of enquiry. As a body of knowledge, science is particularly concerned with inter-related principles, laws and theories; the method or process of enquiry, science becomes the medium for systematically collecting, analyzing and evaluating data.

The nurse investigator develops philosophical stance on the basis of education and experience, i.e. through philosophy of human behavior, health and patient care, guides the intent and direction of a research project. Accordingly, she/he studies the problems. Further the investigator uses logic and reasoning to organize, formulate and verify ideas and relationships the process known as scientific approach. In this way the investigator's philosophical shapes the framework for studying the problems.

SOURCES OF KNOWLEDGE

A well-developed and reliable body of knowledge is a foundation for any profession. This most sought after knowledge can be acquired from highly structured, as well as loosely arranged processes or methods. Traditionally, loosely-arranged methods are used to develop knowledge such as inherited traditions, experience, intuition and trail and error method. However, with increased complexity in development, researchers discovered more structured methods for generation of new knowledge. Nursing professionals largely believe in development of knowledge from highly structured methods such as problem solving, scientific methods and research.

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Ideas are generated in many ways. Some sources of knowledge are highly structured and are generally bound by defined rules of process or method, e.g. which includes scientific enquiry, critical thinking and logical reasoning. Other sources are less structured and have few defined rules; they include empathy, intuition, trial and error experience, and meditation. For nursing research point of view, these approaches to generate knowledge.

They are divided into two groups as follows:

1. Unstructured—traditions, authority, experience, trial and error, and intuition.
2. Structured—induction, deduction, nursing process and research.

Human beings acquire knowledge in many ways. A person continuously takes in and processes numerous pieces of information to understand experiences. The scientific researcher also seeks to explain or understand reality, but the scientist's process of acquiring knowledge is systematic and logical. This process or scientific methods are the foundation of research. Scientific research is most reliable and objective of all methods of gaining knowledge. Now, the sources of acquiring knowledge are discussed in brief.

Unstructured Sources of Knowledge

People will acquire knowledge in the following ways:

1. Tradition.
2. Authority.
3. Experience.
4. Trial and error.
5. Intuition.

Tradition

One way of learning is by tradition. One generation passes knowledge to the next. For example, children often learn about traditional holidays such as 'Dussera, Diwali or Christmas' through traditional or customary family practices. In nursing, certain traditional methods of practice such as the change-of-shift report and other daily hospital work practices are passed from one nurse to the next. Tradition is an efficient way of learning, although, it can limit the ability to seek new ways of doing things. If tradition becomes so ingrained that a person does not question the custom, other more appropriate or efficient ways may be overlooked.

Authority

Knowledge is also acquired by seeking information from experts in a particular field. Experts are often asked to solve problems or answer for questions. For example, at income tax calculation time, an accountant's help is sought to fill out tax forms. Similarly, nursing students often seen the advise of instructors and practicing nurses when assessing and caring for clients. Authority like tradition is not infallible, although, it is commonly treated as absolute truth.

Experience

A person also learns through experience without this process, a person would have to relearn a procedure every time, it was performed. Practice leads to the development of routines

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that helps in building skills. For example, student nurse taking a blood pressure measurement for the first time may feel awkward and unsure of the hearing sounds, but with practice the student's technique and confidence improves. Although, experience is an important way of learning, it has limitations. A person may continue to do something simply because it was learned that way and may overlook improved for other ways of doing the same thing. If experience causes a person to learn something incorrectly, the person uses knowledge inappropriately.

Trial and Error

Learning by trial and error is yet another way of gaining knowledge. Making mistakes or repeatedly trying various ways of accomplishing, something will eventually result in problem solving. This method of learning is practical, but it is unsystematic and often a haphazard way of learning is practical. In nursing, as client's health status depends on nursing actions, trial and error are not an appropriate way of acquiring new knowledge.

Intuition

Intuition is a "power of knowing or knowledge obtained without recourse to inference or reasoning." It is a frequently used method of problem solving. It can operate in one of two ways: as a form of interference in which intuition closely resembles sensory perceptions or as an extrasensory experience independent of sensory input. Intuition helps people to gain a deeper understanding of reality that can be obtained from analyzing data later on. Intuition is a leap of understanding, grasping of a larger concept unreachable by other intellectual means, yet fundamentally is an intellectual process. Intuition and practical reasoning may well underlie all forms of reasoning including scientific reasoning and the production of scientific knowledge.

Structured Sources of Knowledge

Science is a unified body of systematized knowledge concerned with specific subject matter obtained by establishing and organizing facts, principles and methods. A goal of science is to develop theories that can describe, explain and predict phenomenon and that can ultimately be used to control phenomena. Phenomena are facts or events known through the senses (what we observe, hear, smell, touch or taste) rather than by thought or intuition and that can be scientifically described.

Scientific methods are defined as controlled, systematic investigations that are rooted in objective reality and that aim, to develop general knowledge about natural phenomena.

Based on the above definition, the characteristics of scientific methods are as follows:

1. They are orderly and systematic processes.
2. Scientists attempt to control external factors that are not under direct investigation.
3. Their findings are based on the empirical evidences.
4. Findings of scientific methods can be generalized, which means these can be used in situations other than the one under study.
5. Scientific methods are based on assumptions or hypothesis.
6. They are basically conduced to develop or test theories.

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The basic purposes of scientific methods are description, exploration, explanation, prediction, control, prescription and identification of relationship of the facts. Research is a scientific endeavor. It involves scientific method. "The scientific method is a systematic step-by-step procedure following the logical processes of reasoning. Scientific method is a means of gaining knowledge of the universe. It is characterized by an intellectual attitude, i.e. scientific attitude, which is one of the component of scientific approach."

The scientific method is based on certain 'articles of paths' they are:

1. Reliance on empirical evidence.
2. Use of relevant concepts.
3. Commitment to objectivity.
4. Ethical neutrality.
5. Generalizations.
6. Verifiability.
7. Logical reason of process.

Reliance on Empirical Evidence

Truth is established on the basis of evidence. Conclusions are admitted only, when it is based on evidence for which relevant data are collected. The validity and reliability of data checked carefully and the data are analyzed thoroughly using appropriate method of analysis. Conclusions are reached on the basis of the result of analysis.

Use of Relevant Concepts

Person experience a number of facts through his senses. Facts are things, which actually exists. In order to deal with them, people use concepts with specific meanings. Concepts are logical constructs or abstractions created from sense impressions, precepts and experiences. They are symbols representing the meaning that holds, which help in thinking and communication.

Commitment to Objectivity

Objectivity is a hallmark of the scientific method. It means, forming a judgment upon facts unbiased by personal impressions. Objectivity is the willingness and ability to examine evidence dispassionately. The conclusions should not vary from person-to-person. It should be same for all persons.

Ethical Neutrality

Science does not pass normative judgment on facts. It does not say that they are good or bad. Science states that it never imposes anything and it aims at nothing, but making true and adequate statements about its objects.

Generalization

Scientists are concerned with commonality of a series of events and aimed at discovering under the surface layer of diversity, and the thread of uniformity. Around a discovered uniformity a logical class and its observed pattern, a descriptive generalization is formulated.

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Verifiability

The conclusion arrived as by scientists should be verifiable. They must make known to others how they arrived at these conclusions. They should expose their own methods and conclusions to critical scrutiny, when others test their conclusions under the same conditions then it is accepted as correct.

Logical Reasoning Process

The scientific method involves the logical process of reasoning. The reasoning process is used for drawing inferences from the finding of a study or arriving at conclusions. The logical reasoning process consists of induction and deduction.

Inductive reasoning: It is the logical thought process of reasoning from particular facts (specific observations) to a general conclusions "it is a way of thinking, which is loosely described as moving from the specific to the general." Inductive reasoning begins with specific observations and moves to generalizations.

The inductive method consists of studying several individual cases and drawing a generalization. Therefore, induction involves with processes—observation and generalization. Conclusions from induction are tentative inferences and they are subject, to further confirmation based on more evidence. This method is followed when new facts are studied, new truths are uncovered and new generalization are formulated from a research project.

For satisfactory induction, four essential conditions are required as given below:

1. Observations must be correctly performed and recorded, data collected should be accurate.
2. Observations must cover representative cases drawn from a specific universe.
3. Observations must cover an adequate number of cases.
4. Conclusions must be confined to inference drawn from the findings.

There are two basic types of induction viz. enumerative and analytic. Enumerative induction involves, generalized from samples and generalization are usually derived through the analysis of data. Where an analytic induction involves, case-by-case analysis of specific features.

Deductive reasoning: It is the logical thought process of reasoning from generalizations (general conclusions) to specific conclusions "it is a way of thinking, which is loosely described as moving from the general to the specific." Deductive reasoning begins with generalizations and moves to specific observations.

Deduction is reasoning process of applying a general accepted principle to a specific individual case falling under the general principle. It is regarded as reasoning from the general to the particular. This reasoning establishes a logical relationship between a major premise, a minor premise and a conclusion (e.g. all men are mortal, A is a man, A is mortal). This deductive method of moving from the general assumption to the specific application is useful for solving problems. But it is not useful in arriving at new truths.

The conditions necessary for valid deduction are:

1. The general rule or assumptions must be correct.
2. The general rule must be applied only to the cases, which properly fall under it.

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In developing systematized knowledge, investigation uses both inductive and deductive reasoning. For example, using inductive reasoning in nursing process—client assessment consists of gathering specific facts and observation, putting them together, then reasoning from these observations and facts to a general conclusion, the nursing diagnosis. Conversely, using deductive reasoning when given a client nursing diagnosis and reasoning from general conclusion, which has been made about the client (the nursing diagnosis) to the specific facts that making the nursing diagnosis.

SCIENTIFIC APPROACH

Scientific approach is a system of logical and orderly elements, which directs a formal structured enquiry process in the effort to obtain knowledge. Research is accepted as scientific approach to knowledge generation, when the processes that are use adhere to principles of logic, standards for data collection and analysis, absence of investigator's bias and rules governing generalizability or universality of findings.

The scientific approach is the most advanced method of acquiring knowledge those humans have developed. The scientific method combines important features of induction and deduction together with severe characteristics to create a system of obtaining knowledge, which though fallible is generally more reliable than tradition, authority, experience or inductive or deductive reasoning alone. One important aspect, which distinguishes the scientific approach from other methods are understanding its capacity of self-evaluation, i.e. scientific research uses checks and balances, which minimize the possibility that the researcher's emotions of biases will affect the conclusions.

Research approach involves the mental processes of logical reasoning, concerning the existence and properties of phenomena about which more information and new knowledge are sought through a systematically planned investigation. As already stated that, there are two major modes of logical reasoning, i.e. inductive and deductive or induction and deduction.

Inductive

The reasoning involves the observation of a particular set of instances, which belong to and can be identified as a part of larger set. This reasoning moves from the particular to the general and underlies qualitative approaches to enquiry, e.g. application of particular nursing conclusions are developed from specific observation. The inductive approach beings with an observation or some other way of obtaining information and leads to a conclusion.

Deductive

The reasoning moves from the general to the particular. It uses two or more variables to related statements that when combined from the basis for concluding assertion of a relationship between the variables and is applied through quantitative enquiry approaches. For example, a specific hypothesis can be deduced from a theory or on organizing statement about abstract concepts, which serves as a more general statement or network of inter-related concepts. As a result of deduction, observation can be made and prediction tested.

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The scientific method is the most advanced objective means of acquiring knowledge or is characterized by systematic orderly procedures, which although not without fault, seek to limit the possibility for error and minimize the likelihood that any bias or opinion by the researcher might influence the results of research and thus the knowledge gained.

Polit and Hungler (1991) described the characteristics of scientific investigation as follows:

1. The steps of planning and conducting an investigation are undertaken in a systematic orderly fashion.
2. Scientists attempt to control external factors that are not under direct investigation, but that can influence a relationship between phenomena they are studying. For example, if a scientist was studying relationship between diet and heart disease, other contribute factors of the disease.
3. Evidence that if part of reality (empirical data) is gathered, directly or indirectly through use of human senses and is the basis for discovering new knowledge.
4. The goal is to understand phenomena in such a way that the knowledge gained can be applied generally, not just to isolated cases or circumstances.
5. Scientists strive to conduct investigations that contribute to testing or developing theories, thereby advancing the knowledge, which can be applied toward increasing and understanding of people, places and life events.

The details of the characteristics of the scientific approaches are as follows.

Characteristics of Scientific Approach

The scientific approach to enquiry refers to a general set of orderly disciplined procedures used to acquire dependable and useful information. The term 'research' designates the application of this scientific approach to the study of a question of interest. As stated earlier, Kerlinger (1973) has defined scientific research as "systematic, controlled, empirical and critical investigation of hypothetical propositions about the presumed relations among natural phenomena."

On the basis of the definition, the characteristics of scientific research are as follows.

Order and Control

The scientific method is a systematic approach to problem solving and to the expansion of knowledge. In systematic research, a problem is identified and defined, and predictions concerning anticipated outcomes are advanced, information bearing on the solutions of the problem is collected according to a predesignated scheme, the information is subjected to an analysis and finally conclusions are drawn.

Control is a key element of the scientific approach. In trying to isolate relationships between phenomenon (cause-and-effect), the scientists must attempt to control factors that are not under direct investigation.

Empiricism

The term empiricism refers to the process, whereby evidence rooted in objective reality and gathered directly or indirectly through the human senses are used as the basis for generalizing knowledge. Empirical inquiry imposes a certain degree of objectivity on the

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research situation because ideas or hunches are exposed to testing in the real world situation. Empirical evidence that consists of observations made known to us by way of our sense organs. The observations are verified through sight, hearing, taste, touch or smell.

Generalization

Generalization is the application of finding from the study sample to the broader population from which the sample was drawn, application of findings to a broader situation. Generalizability of research findings are an important criterion for assessing the quality of an investigation.

Theory

Scientific generalizations are facilitated by the development of theories. Theories represent a method of organizing, integrating and deriving abstract conceptualizations about the manner in which phenomena are inter-related, offer an opportunity for bringing together observed events and relationships for explaining—how and why phenomena are associated with one another and predict the occurrence of future events and relationships. Theories are strongly linked with the concept of generalizability.

Assumptions of Scientific Approach

Assumptions refer to basic principles, which are accepted on faith or assumed, to be true without proof or verification. The scientists assume that, there is an objective reality that exists independent of human discovery or observation. The assumptions of determining refer to the belief that all phenomena have antecedent cause. Natural events or conditions are assumed not to be haphazard, random or accidental. Much of the activity not which a scientific researcher engages is directed towards an understanding of cause-and-effect relationships. Scientific beliefs that antecedent factors relating to all phenomena exist and can be discovered. For example, heart disease may be caused by smoking, diet, stress and so on. The identification of these causes, i.e. the search for an explanation of why the things are as they say, are one of the chief goals of science.

Purposes of Scientific Approach

The scientific approach is a method of inquiry or a system for acquiring knowledge. The purposes of nursing researches are to observe in order to know, to know in order to predict, to predict in order to control, to control in order to practice and prescribe in a professional manner. A scientific research study may have two or more goals.

Brief explanations of objective or goals are as follows.

Description

To observe in order to know is the aim of all nursing research. The nurse who observes, verifies and documents his/her observations work at a crucial level of research. These studies are often called descriptive or explanatory. A careful and deliberate description is often essential as a foundation for the development of theories. Descriptive research generally does not begin with a theory, but it has got its own importance in development of theories.

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NURSING
Research & Statistics

Most of the researches in nursing are done at the doctoral and postdoctoral levels. Increasing number of clinical nurses with master degree and bachelor degree are beginning to participate in research activities as part of their nursing role. If nursing has to be research-based practice, it is reasonable to expect the nurse in the clinical area to have some awareness of the process and language of research. Nurses should be sensitive to the issues related to protecting the rights of human subjects. They should participate in the identification of significant researchable problem and be a consumer of research findings for which the nursing students are expected to learn research functions early in their career.

This book entitled *Nursing Research and Statistics* is based on course and curriculum of nursing students. This book has been designed for nursing students to provide the knowledge and skills they need to become competent in assuming research functions in several ways. It has been written in simple language covering the concepts of research required by the nurses. The author has made earnest attempt to give enough exposure to nursing students for better understanding of the concepts of nursing research. This title is organized into 27 chapters. Ideally, the text is followed sequentially, but every effort has been made to respect the differing needs of diverse curriculum and students. Also, every attempt has been made to maintain simplicity and lucidity of language and style throughout the text. So that students can grasp the subjects very clearly and completely.



BT Basavanthappa MN PhD has attained superannuation from Karnataka Government Service, as Professor and Principal of Government College of Nursing, Bengaluru, Karnataka, India, in 2006. He has vast experience in the field of nursing. Also, he worked as staff nurse for 16 years at McGann Hospital, Shimoga, Karnataka, India. He did his BSc Nursing (1978), Master of Nursing (1988) and Doctoral Degree in Nursing, i.e. PhD in Nursing (1993). He is the first person who earned and was awarded PhD in Nursing in the State of Karnataka.

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