Nursing Research

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رؤية الكلية

تطمح كلية التمريض جامعة سوهاج أن تحتل مركزا متميزا في التعليم التمريضي والبحث العلمي بهدف الوصول للريادة لتخريج كوادر قادرة علي المنافسة في سوق العمل وتقديم أفضل الخدمات التمريضية للارتقاء بالمستوي الصحي في نطاق جنوب الوادي.

رسالة الكلية

تسعي كلية التمريض الى تخريج كوادر بشرية في مجال التمريض ذو مستوى عالي من الكفاءة وذلك عن طريق تقديم خدمة تعليمة مناسبة لاكسابهم المعارف والمفاهيم والمهارات اللازمة لسوق العمل وأجراء البحوث العلمية في مجال التخصص وتقديم خدمة متميزة للمجتمع وتنمية البيئة في محافظة سوهاج.

الأهداف الاستراتيجية للكلية

- التحقق من كفاءة برامج الكلية للتعليم التمريضي وذلك من خلال تطوير برامج الخريجين و الدراسات العليا وتطوير البيئة التعليمية
- تنمية القدرات الابداعية للخريجين فى مجال التدريب الأكلينيكى المخصص لرعاية المرضى باستخدام تكنولوجيا المعلومات الحديثة والرعاية القائمة على الدليل .
- تحديث وتطوير المهارات المهنية والإدارية لأعضاء هيئة التدريس والهيئة المعاونة .
- تنمية وتطوير القدرات البحثية لأعضاء هيئة التدريس والباحثين ودعم المشاريع البحثية والابحاث التطبيقية.
- الحصول على الإعتماد الأكاديمي من الهيئة القومية للجودة والإعتماد الاكاديمي.

- إنشاء برامج خاصة كالتعليم المفتوح لكوادر هيئة التمريض المختلفة بما يتوائم مع إحتياجات المجتمع ومتطلبات سوق العمل.
- تلبية احتياجات المجتمع المبنية على تقييم وتحديد هذه الاحتياجات من خلال التعاون مع جهات المجتمع المختلفة.
- صياغة شراكة فعالة مع أطراف المنظومة الصحية ومؤسسات المجتمع.
- تنمية الموارد الذاتية و الأمكانيات المادية للكلية من خلال تفعيل دور الوحدات الخاصة وتحويلها إلى مراكز تميز.
- تفعيل التقويم الذاتى والتحسين المستمر في جميع عناصر مجال التعليم الجامعي والبحث العلمي.
- الأرتقاء بكفاءة وفاعلية خدمة المجتمع في محافظة سوهاج.
- التطوير المستمر والشامل للقدرة المؤسسية للكلية لمواكبة التطور التكنولوجي.
- تطوير المناهج الدراسية بما يتواكب مع التطور العلمي والتكنولوجي.

Manual for Research Methodology in Nursing

Introduction:

Nursing research involves a systematic search for ¯validation of knowledge about issues of importance to the nursing profession. Nursing research has, experienced remarkable growth in the past three decades, providing nurses with an increasingly sound base, of knowledge from which to Practice .yet many health care question remain to be answered by nurse researchers and many answers remain to be utilized practicing nurses.

Definition: Is a systematic inquiry designed to developed knowledge about issues of importance to nurse including nursing practice, nursing education and nursing administration.

The purpose of nursing research:

- Changing life style behavior for better health (starting healthy behavior).
- Managing the effect of chronic illness to improve the quality of life
- Identify effective strategies to reduce health problem.
- Using advanced technologies to serve human needs.
- Enhancing end -of life experience for patients and families

The importance of nursing research:

- The ultimate goal of any profession is provide the client with maximum effective and, efficient services:
- Help the Professional nurse to know the patients need and know what has been working for them and what does not
- The finding that we obtain from. Doing research will provide us with strong foundation to what we do every day for patients.

- He1p the nurses to have evidence -based data to utilize new ways to assess, evaluate and deliver nursing care.
- Allow to professional growth by supplying us with the most accurate tools and opportunities to advance the specialty where we work.
- On personal level, it will create leader ship characteristics for yourself.

Research Methods

Outline:-

1-Definition of research

2-Objectives of research

3-Importance of research in nursing

4-Sources of human knowledge

Definition of research: Is scientific process that validates old knowledge and generate new knowledge that directly or indirectly influences clinical nursing practices. The process through which is systematic logical and empirical into the possible relationships among particular phenomena.

Objectives of research:

1- Generating knowledge.

2- Expand current body of scientific knowledge.

3- Develop and test nursing theories.

4- Increase confidence knowledge as decision making.

Importance of research in nursing:-

1-Professionalism: nursing like other occupations seeking to establish themselves profession is experiencing concerns for the development of services orientation. Research usually associated with university education it helps to improve quality of the decision by position out the effectiveness or non-effectiveness of certain practices.

2-Accountability: The quality of nursing care cannot be improved until scientific accountability becomes as much as part of nursing tradition as humanitarianism is scientific accountability is essential for the teacher in dealing with students for nurses dealing with patients.

A professional nurse who is scientifically accountability bases as many decision and actions as are possible on scientifically documented knowledge and seeks to find scientific answer to perplexing problems. Scientific accountability also includes reading the scientific literature for new knowledge so that application of this knowledge becomes part of nursing practice.

5- Social relevance of Nursing:

Nursing research has proliferated in the area of educational practices, administration practices and nursing practices. In recent years, still many practices remain to be empirically tested for their effectiveness.

There are two categories of research methods:

1- Quantitative data collection usually involves numbers, graphs and charts.

2- Qualitative data collection methods deal with feelings and other non-quantifiable elements.

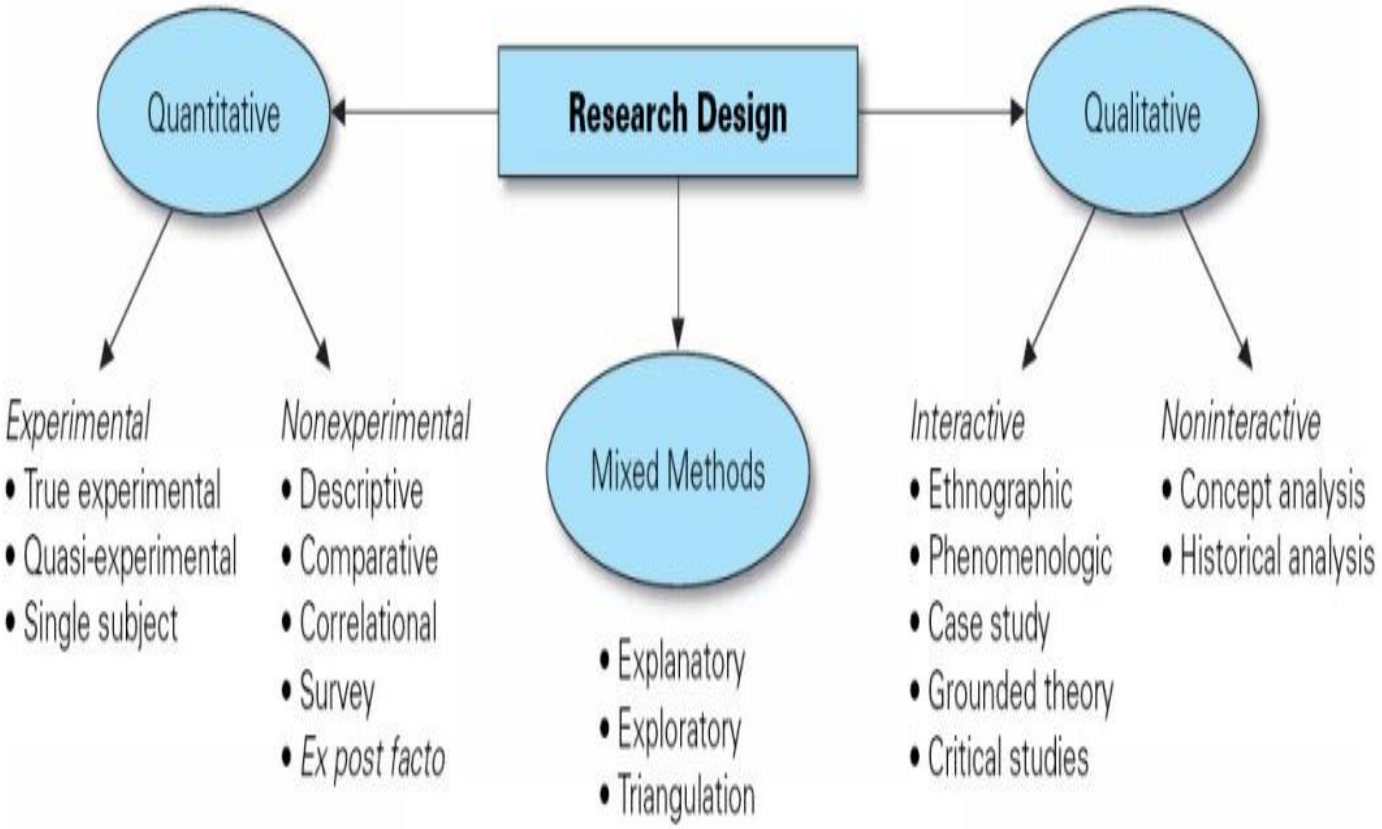
Questionnaires can be used as qualitative, as well as, quantitative method. Specifically, if open-ended questions are used qualitative methods will be used for data analysis. Alternatively, if questionnaire consists of closed-ended questions, then quantitative approach is adopted for data analysis.

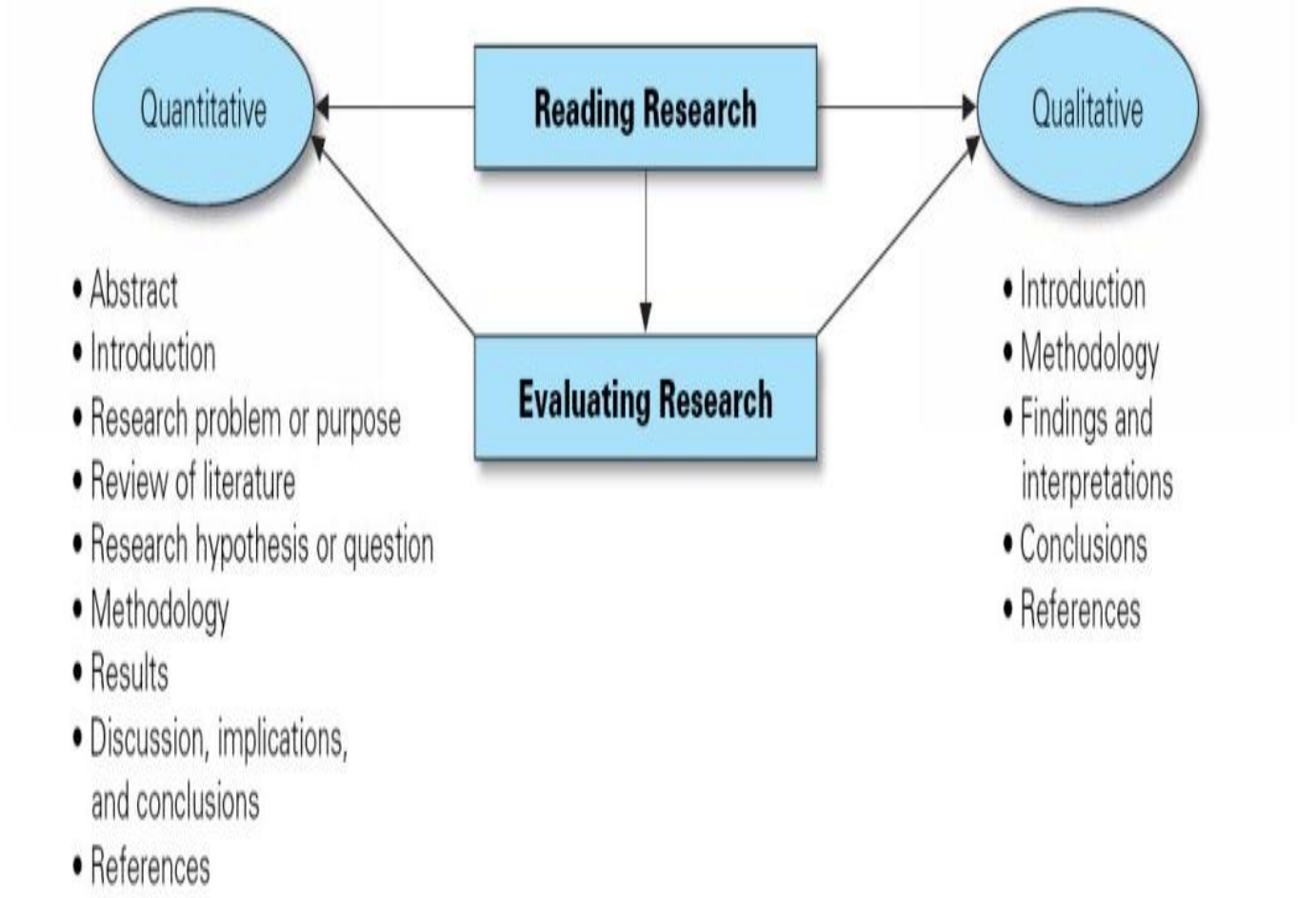
Differences between Qualitative and Quantitative Methods:

The main differences between qualitative and quantitative research methods can be summarized in the following points:

1- Data in quantitative research appears in the forms of numbers and specific measurements and in qualitative research data can be in forms of words, images, transcripts, etc.

2- Research findings in quantitative research can be illustrated in the forms of tables, graphs and pie-charts, whereas, research findings in qualitative studies is usually presented in analysis by only using words.


Research Design
Quantitative
Qualitative
Mixed Methods
Experimental
• True experimental
• Quasi-experimental
• Single subject
Nonexperimental
• Descriptive
• Comparative
• Correlational
• Survey
• Ex post facto
• Explanatory
• Exploratory
• Triangulation
Interactive
• Ethnographic
• Phenomenologic
• Case study
• Grounded theory
• Critical studies
Noninteractive
• Concept analysis
• Historical analysis


Reading Research
Quantitative
Qualitative
Evaluating Research
• Abstract
• Introduction
• Research problem or purpose
• Review of literature
• Research hypothesis or question
• Methodology
• Results
• Discussion, implications, and conclusions
• References
• Introduction
• Methodology
• Findings and interpretations
• Conclusions
• References

Types of researches:

1- Explanatory research: To explain things it offers understanding of the phenomena. This type of research focuses on questions such as (Why? why such a relationship exists? Example, why premature neonates have a certain patterns of feeding and not the other?

2- Experiment research: Here the research manipulates the independent variable observes and measures the subsequent changes in the dependent variable Example: Effect of drug X on heart failure condition.

3- Historical research: It is frequently utilized by nurse researchers. It is related to the history of nursing which explores documentary data sources.

Characteristics of good research:

I- It should add new information:

a- New facts: for example: effect of exposure to sonography in utero on growth and development during the first two years of life. b-validates previous research findings.

c- New relationship among present phenomena for example: effect of moist or dry beat on healing of episiotomy.

d- Explain previous finding.

2-There should have a problem that need solution.

3-It should achieve a general objective and not personal one4-Research result should be liable to test? it if another followed the same steps, he is going to get the same result.

5-

The scientific approach should be used in the research.6- It should be ethical it does not violate the right s of patient's profession community of the researcher himself.

7- It should protect patients, profession, community and research rights.

The research Process:

The research process is the tool of science it involves a series of progressive steps that usually include some version of the following:

1- Stating a research problem.

2- Defining the purpose of the research.

3- Reviewing related literature.

4- Formulating hypothesis of the variable.

5- Selecting the research design.

6- Selecting the population and sample.

7- Conducting a pilot study.

8- Collecting the data.

9- Analysis of data 10-Communicating conclusions

Ethical aspects of nursing research:

1- Informed and voluntary consent of the subject.

2-Confidentiality of the data collected.

2- Privacy.

3- Protection of the individual from harm.

Researches process:

1-Stating.the research problem: Out line:

1- What is a research problem?

2- Sources of research problem.

3- Criteria for evaluating research problem.

4- Statement of the research problem.

What is the research problem?

A statement or question it identifies an area of concern and indicates the concepts and population to be studied and the study setting.

Sources of research problem:

1-Nursing practices and experience from observation of patient and his family patients chart.

2-Theory:

4- Research reports both published and those presented at research conference classes on thesis.

4-Literatures:

5 Technologies.

6- Refining and expanding previous studies.

7- Replication: repeat of study in other circumstances as time place or sample.

Criteria of research problem evaluation:

There are no fixed rules for making a final selection of a research problem there however some criteria that should be kept in mind in the decision process. The, four most important considerations are: The significance research,

ability, feasibility of the problem and its interest to the researchers.

I-Significance of the Problem: The problem must be significant to nursing. the research question should have the potential of contributing to the body of knowledge in nursing in a meaningful form.

II- Research ability of the problem: The problem involves variables that can be precisely defined and measured. Sometimes variables are so ambiguous vague or difficult to define. The research would have to find a mean of the concept so that could be observed and measured before proceeding to subsequent steps in the research process.

III- Feasibility of the problem: Problem that is both significant researchable may still inappropriate if they are not feasible. The issue of feasibility is a complex one and encompasses a variety of considerations.

Not all of factors are relevant for every problem but most of them should be kept in mind making a final selection:

1- Time.

2- Availability

3- Cooperation of others: It is almost always necessary to secure permission of parents or others who are responsible in institutional setting such as hospital clinics. Schools usually require administrative approval.

4-Facilities and equipment

5- Money for literature costs, personal costs, subject's costs, supplies equipment, and transportation costs computer service charge and duplicating materials.

6-Experience of the researcher

7-Ethical considerations

1V- Interest to the researcher: Genuine interest in and curiosity about the chosen research are important prerequisites chosen to a successful study.

Statement of the research problem:

The problem should be carefully stated in written from before proceeding with the design of the study.

A good statement of the problem should serve a guide to the researcher in the course of designing the study. The statement identifies the key variables that the study specifies the nature of the population being studied.

Formulating research purpose: Why the study is being done the purpose should identify the variable population and setting of the study. The purpose is the aim of the study where may be to describe, to explain or to predict something: -related to the problem's solution.

Review of related literature (Out lines) :-

Purpose of a literature review - Source of literature review- Writing the literature review.

- Formulating hypothesis.

A literature review involve the systematic identification location and summary of written materials that contain information a research problem

Purpose of literature review:

1- Sources of research idea: Helps researcher to generate idea or focus on the research topic when a general topic has already been selected reading on that topic help to being the problem and did in the formulation of appropriate research questions.

2-Orientation to what is already known of the major functions of the literature review is to ascertain what is already know in relation to the problem of interest.

3- Information on research approach: as research strategies specific procedures instruments and analysis.

Sources for literature review:

1-Books

2-Journals

3-Reports

4-Indexes as nursing or index medicine

5-Computer search

Writing the literature review: It will be useful to write outline, organize and summarize the references. Review should point out both consistence and contradictions in the literature as well as offer possible explanations.

Formulating hypothesis:

Hypothesis is an answer to the research question. It is a statement of expected outcome of the study that includes attentative prediction or expectation of relationships between two or more variable in the study.

Selecting a research design (Outline):

1-Definition.

2-Types of research

3-Characteristics

Research design: is defined as the overall plan for collecting and analyzing data including specifications for improving the validity of the study.

1-What to do?

2-When to do?

3-Where to do?

5- How to do?

5-Why to do what? where and when?

Types of research design¯:

A- Experimental research design.

B- Non experimental research design.

C- Other types of research design.

Experimental research design:

Definition: are search study which the researcher manipulate the independent variable and measures variations in the dependent variables

Types of experimental research design:

True- experimental research design: The experimental research design is scientific investigation in which observations are made and data are collected according to a set of well defined criteria

It is characterized by:

A-Manipulation

B-Control c-Randomization

A-Manipulation: These three characteristics increase the validity of the study. It grantees that the change in the dependent variable is not because any other extension variable but as a result of manipulation of the independent variable.

B- Control: the process of holding constant possible influences on the dependent variable under investigation control group refers to group of subjects in the experimental study treatment or manipulation and who's of interest.

c- Randomization

Quasi experimental research design: It is research design in which there is lack at least one of the three characteristics of the true experimental research designs which are manipulation control or randomization. Reliability & Validity

Reliability is the degree to which an assessment tool produces stable and consistent results.

Validity refers to how well a test measures what it is purported to measure.

Types of Reliability

1- Test-retest reliability is a measure of reliability obtained by administering the same test twice over a period of time to a group of individuals. The scores from Time 1 and Time 2 can then be correlated in order to evaluate the test for stability over time.

Example: A test designed to assess student learning in psychology could be given to a group of students twice, with the second administration perhaps coming a week after the first. The obtained correlation coefficient would indicate the stability of the scores.

2- Parallel forms reliability is a measure of reliability obtained by administering different versions of an assessment tool (both versions must contain items that probe the same construct, skill, knowledge base, etc.) to the same group of individuals. The scores from the two versions can then be correlated in order to evaluate the consistency of results across alternate versions.

Example: If you wanted to evaluate the reliability of a critical thinking assessment, you might create a large set of items that all pertain to critical thinking and then randomly split the questions up into two sets, which would represent the parallel forms.

3- Inter-rater reliability is a measure of reliability used to assess the degree to which different judges or raters agree in their assessment

decisions. Inter-rater reliability is useful because human observers will not necessarily interpret answers the same way; raters may disagree as to how well certain responses or material demonstrate knowledge of the construct or skill being assessed.

Example: Inter-rater reliability might be employed when different judges are evaluating the degree to which art portfolios meet certain standards. Inter-rater reliability is especially useful when judgments can be considered relatively subjective. Thus, the use of this type of reliability would probably be more likely when evaluating artwork as opposed to math problems.

4- Internal consistency reliability is a measure of reliability used to evaluate the degree to which different test items that probe the same construct produce similar results.

Validity;

Why is it necessary?

While reliability is necessary, it alone is not sufficient. For a test to be reliable, it also needs to be valid. For example, if your scale is off by 5 lbs, it reads your weight every day with an excess of 5lbs. The scale is reliable because it consistently reports the same weight every day, but it is not valid because it adds 5lbs to your true weight. It is not a valid measure of your weight.

Types of Validity:

1. Face Validity: ascertains that the measure appears to be assessing the intended construct under study. The stakeholders can easily assess face validity. Although this is not a very "scientific" type of validity, it

may be an essential component in enlisting motivation of stakeholders. If the stakeholders do not believe the measure is an accurate assessment of the ability, they may become disengaged with the task.

***Example*:** If a measure of art appreciation is created all of the items should be related to the different components and types of art. If the questions are regarding historical time periods, with no reference to any artistic movement, stakeholders may not be motivated to give their best effort or INVEST in this measure because they do not believe it is a true assessment of art appreciation.

2. Construct Validity is used to ensure that the measure is actually measure what it is intended to measure (i.e. the construct), and not other variables. Using a panel of "experts" familiar with the construct is a way in which this type of validity can be assessed. The experts can examine the items and decide what that specific item is intended to measure. Students can be involved in this process to obtain their feedback.

***Example*:** A women's studies program may design a cumulative assessment of learning throughout the major. The questions are written with complicated wording and phrasing. This can cause the test inadvertently becoming a test of reading comprehension, rather than a test of women's studies. It is important that the measure is actually assessing the intended construct, rather than an extraneous factor.

3. Criterion-Related Validity is used to predict future or current performance - it correlates test results with another criterion of interest.

***Example*:** If a physics program designed a measure to assess cumulative student learning throughout the major. The new measure could be correlated with a standardized measure of ability in this discipline, such as an ETS field test or the GRE subject test. The higher the correlation between the established measure and new measure, the more faith stakeholders can have in the new assessment tool.

Section I. 4. Formative Validity: **when applied to outcomes assessment it is used to assess how well a measure is able to provide information to help improve the program under study.**

***Example*:** When designing a rubric for history one could assess student's knowledge across the discipline. If the measure can provide information that students are lacking knowledge in a certain area, for instance the Civil Rights Movement, then that assessment tool is providing meaningful information that can be used to improve the course or program requirements.

5. Sampling Validity (similar to content validity): ensures that the measure covers the broad range of areas within the concept under study. Not everything can be covered, so items need to be sampled from all of the domains. This may need to be completed using a panel of "experts" to ensure that the content area is adequately sampled. Additionally, a panel can help limit "expert" bias (i.e. a test reflecting what an individual personally feels are the most important or relevant areas).

***Example*:** When designing an assessment of learning in the theatre department, it would not be sufficient to only cover issues related to acting. Other areas of theatre such as lighting, sound, functions of stage managers should all be included. The assessment should reflect the content area in its entirety.

What are some ways to improve validity?

1. Make sure your goals and objectives are clearly defined and operationalized. Expectations of students should be written down.
2. Match your assessment measure to your goals and objectives. Additionally, have the test reviewed by faculty at other schools to obtain feedback from an outside party who is less INVESTED in the instrument.
3. Get students involved; have the students look over the assessment for troublesome wording, or other difficulties.
4. If possible, compare your measure with other measures, or data that may be available.

Section II. **The issues of validity, reliability and generalizability need to be addressed in order for the research findings to be accepted as appropriate. Threats to validity and reliability can never be eliminated thoroughly, but researchers need to aim minimize the level of these threats. Research Process**

There are a wide range of options available for the selection of a research process. The following are the most suitable options for studies that involve primary data collection.

Section III. Research Process

There are a wide range of options available for the selection of research process. The following are the most suitable options for studies that involve primary data collection.

Section IV. Research Process

Section V. Option 1

Confirming research aims and objectives with the supervisor and introducing modifications if necessary.

Conducting thorough literature review by utilizing wide range of relevant sources.

Addressing methodology aspect of the work through identifying research philosophy, research approach, design of study, and devising questionnaires.

Conducting a pilot study and revising the questionnaire according to results of the pilot study

Collecting primary data with questionnaires

Discussing and interpreting the questionnaire results, comparing them to literature review findings

Completing the first draft of the research

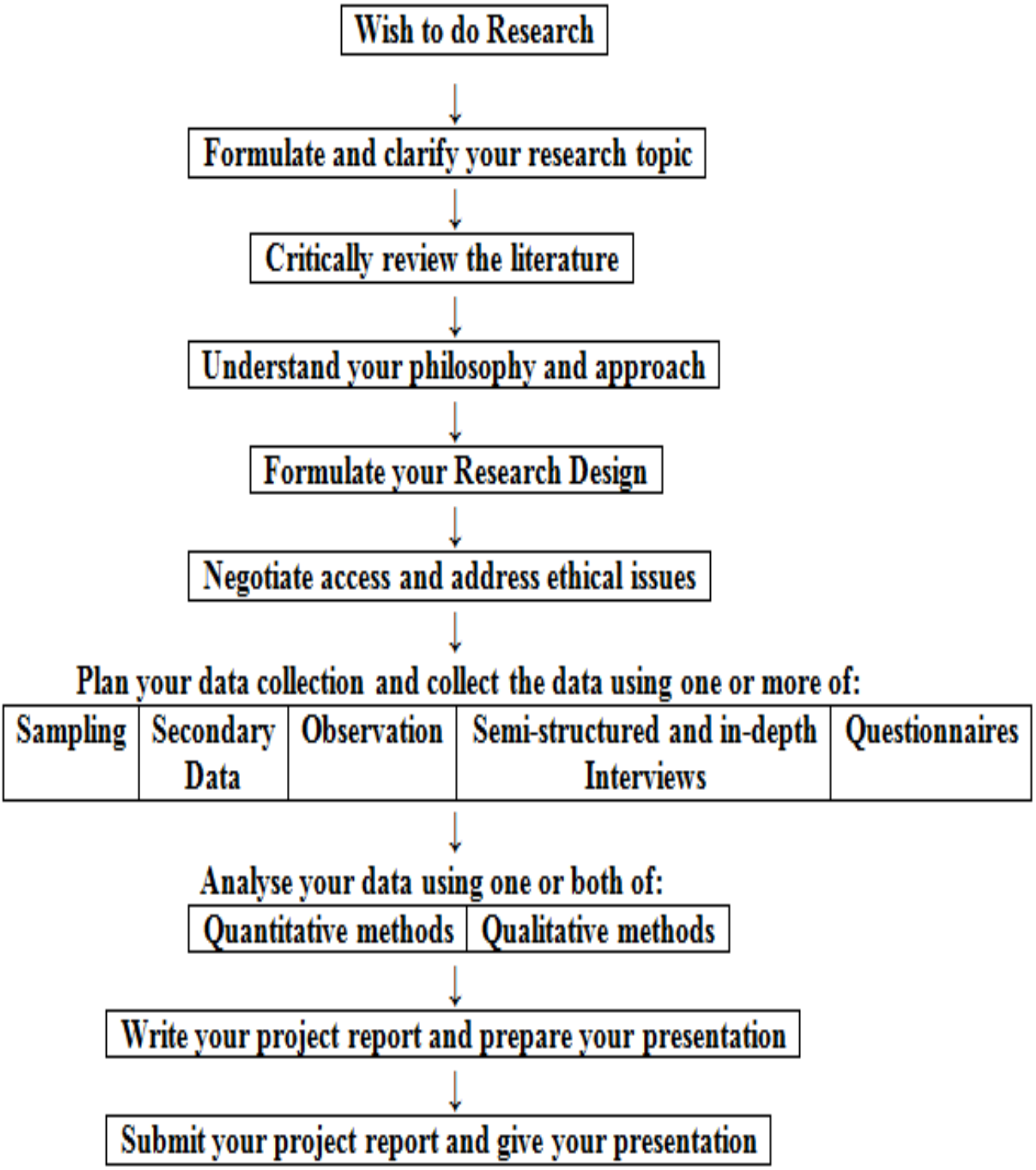
Getting feedback from supervisor for analysis and discussions and overall progress of the work, improving relevant chapters according to the feedback

Wring conclusions chapter on the basis of overall research experience

Finalizing and submitting the work before the deadline

Research Process

Section I. Option 2



Source: Saunders et al. (2007, p.10)

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Section II. Research Process

Option 3

Stage 1: Formulating and clarifying the research area, research topic, research question and objectives.

Stage 2: Critically evaluating the existing literature and pointing to the gap in the literature this research is going to fill.

Stage 3: Choosing appropriate methodology for the research, taking into account the characteristics of the current research and critically analyzing advantages and disadvantages of all available qualitative and quantitative data collection methods.

Stage 4: Undertaking primary data collection according to chosen methodology

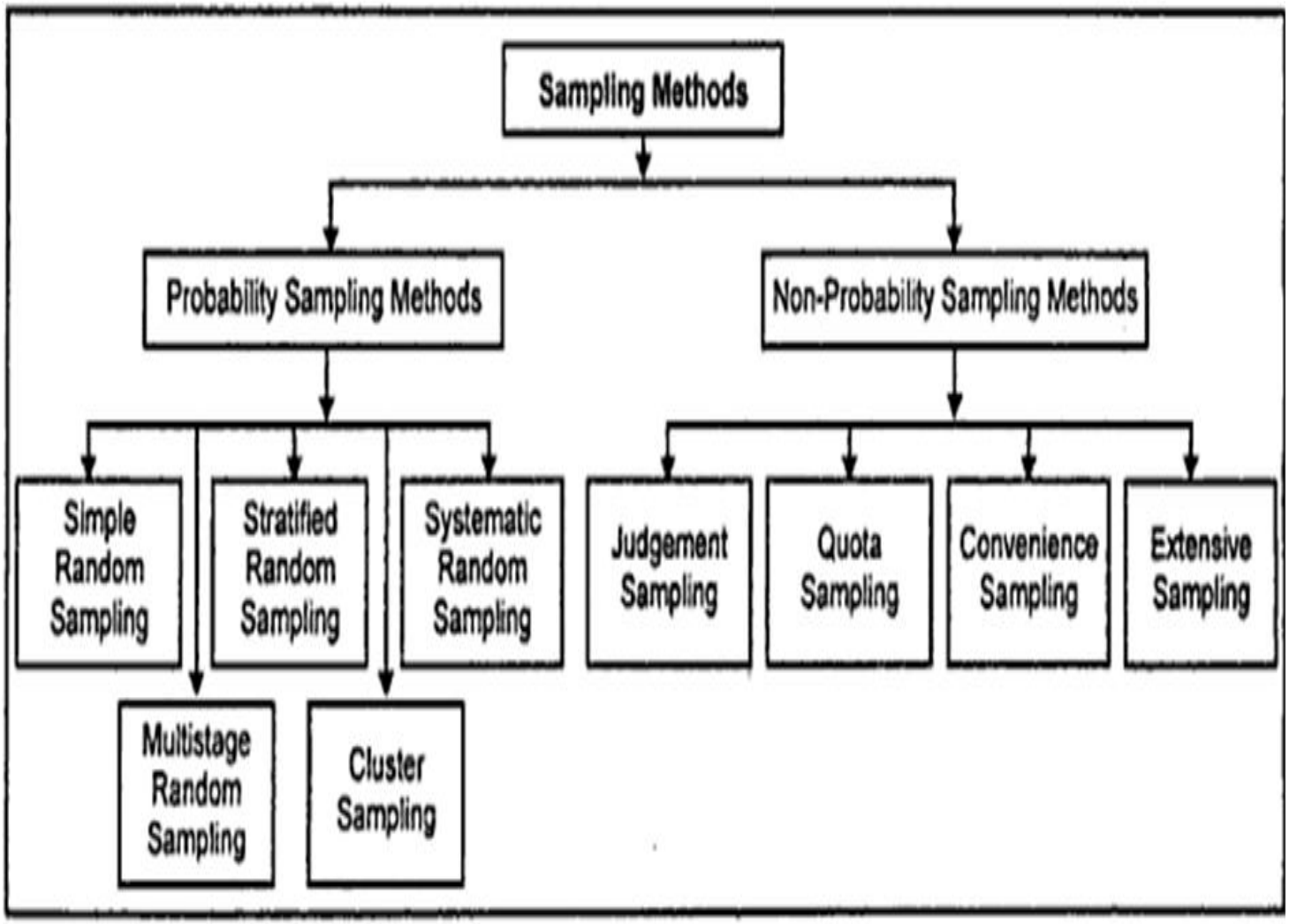
Stage 5: Explaining, discussing and analyzing the primary data and thus turning raw data into meaningful analysis that is going to form the findings chapter of the research

Stage 6: Presenting primary and secondary findings and other parts of the research in an effective manner using graphs and tables wherever necessary

Stage 7: Writing the first draft of the dissertation and revising it according to feedbacks from the supervisor.

Stage 8. Writing the final draft of the dissertation

Section III. Sampling



Sampling can be explained as a specific principle used to select members of population to be included in the study.

"A sample is some portion of a population. Because many populations of interest are too large to work with directly, techniques of statistical sampling have been devised to obtain samples taken from larger populations."

Sampling methods are broadly divided into two categories: probability and non-probability.

In probability sampling methods,

There is a known, non-zero probability of being chosen for each population member. Popular probability sampling methods are stratified, random and systematic sampling methods.

In non-probability sampling methods,

on the other hand, population members are selected on the basis of a specific non-random technique. Such non-random techniques, i.e. non-probability sampling methods include snowball, convenience, quota and judgment sampling methods.

The advantages of sampling in the following points:

a) Makes the research of any type and size manageable;

b) Significantly saves the costs of the research;

c) Results in more accurate research findings;

d) Provides an opportunity to process the information in a more efficient way;

e) Accelerates the speed of primary data collection.

Procedures to obtain representative sample from population:

1. Defining the target population.
2. Choosing the sampling frame.
3. Selecting the sampling method.

Generally, sampling procedures for this research has involved the following four stages:

Stage one: *defining the population*. It has been noted that "defining population is not always straightforward. It largely depends on your research questions and the context with which you wish to study. When defining your population, you need to establish the types of case

that make up your population, e.g. individuals, firms, households, etc" (Wilson, 2010, p.190).

Stage two: definition of the sampling frame. "Sampling frame means the list of all units comprising the population from which a sample is to be drawn" (Avasarikar and Chordiya, 2007, p.5-11). In other words sampling frame is a list of people among the population that have a chance of participating in the survey.

Stage three: determining the sample size.

The following observations need to be taken into account when determining sample size:

The magnitude of sampling error can be diminished by increasing the sample size.

There are greater sample size requirements in survey-based studies than in experimental studies.

Large initial sample size has to be provisioned for mailed questionnaires, because the percentage of responses can be as low a 20 to 30 per cent.

The most important factors in determining the sample size include subject availability and cost factors

Stage four: selection of the sampling method.

Section IV. Cluster Sampling

Cluster sampling is a technique in which clusters of participants that represent the population are identified and included in the sample

Advantages

Is the most time-efficient and cost-efficient probability design for large geographical areas

This method is easy to be used from practicality viewpoint

Larger sample size can be used due to increased level of accessibility of perspective sample group members

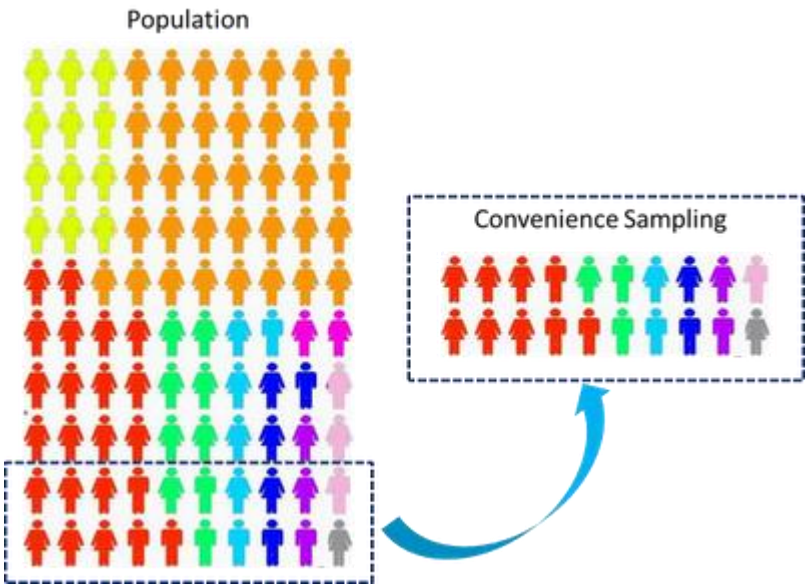
Disadvantages: 1-

Requires group-level information to be known

2- **Commonly has higher sampling error than alternative sampling techniques**

Convenience sampling as the name implies is a specific type of non-probability sampling method that relies on data collection from population members who are conveniently available to participate in study.

Convenience sampling is a type of sampling where the first available primary data source will be used for the research without additional requirements. In other words, this sampling method involves getting participants wherever you can find them and typically wherever is convenient. In convenience sampling no inclusion criteria identified prior to selection of subjects. All subjects are invited to participate.



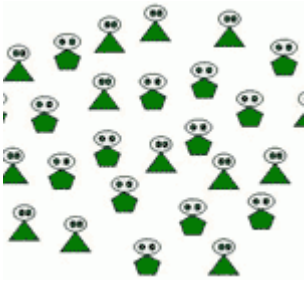
Advantages of Convenience Sampling

- Simplicity of sampling and ease of research
- Helpful for pilot studies and for hypothesis generation
- Data collection can be facilitated in short duration of time
- Cost effectiveness

Disadvantages of Convenience Sampling

- Highly vulnerable to selection bias
- General ability unclear
- High level of sampling error

Section V. Purposive sampling



Patton (1990) specifies the following cases for purposive sampling:

a) *Typical case*. Explains cases that are average and normal

b) *Extreme or deviant case*: Deriving samples from cases that are perceived as unusual or rare such as exploring the reasons for corporate failure by interviewing executives that have been fired by shareholders.

c) *Convenience*: The choice of purposive sampling only due to its convenience in terms of saving time, money and efforts. This specific case is naturally associated with lower research validity and credibility.

This sampling technique can prove to be highly effective in following circumstances:

Data review and data analysis need to be done in a simultaneous manner

Primary data needs to be obtained from a very specific group of respondents

Only representatives of certain professions can contribute to the study

This sampling method offers the following advantages:

Less time consuming compared to many other sampling methods because only suitable candidates are targeted

Results of purposive sampling are usually more representative of target population compared to other sampling methods

Purposive sampling can be the only way to recruit the members of rare or much sought after groups

Purposive sampling may be associated with the following disadvantages:

- Very high level of subjectivity by the researcher
- Limited representation of wider population

Section VI. Quota sampling

Quota sampling method can be defined as “a sampling method of gathering representative data from a group” (Business Dictionary, 2013).

Section VII. Random Sampling

In random sampling each member of population is equally likely to be chosen as part of the sample. It has been stated that “the logic behind simple random sampling is that it removes bias from the selection procedure and should result in representative samples” (Gravetter and Forzano, 2011, p.146).

Simple random sampling is the most straightforward probability sampling strategy. However, this strategy requires a list of all potential respondents (sampling frame) to be available beforehand and this can be costly and time-consuming for large studies.

Section VIII. Stratified Sampling

Stratified random sampling intends to guarantee that the sample represents specific subgroups or strata.

Advantages

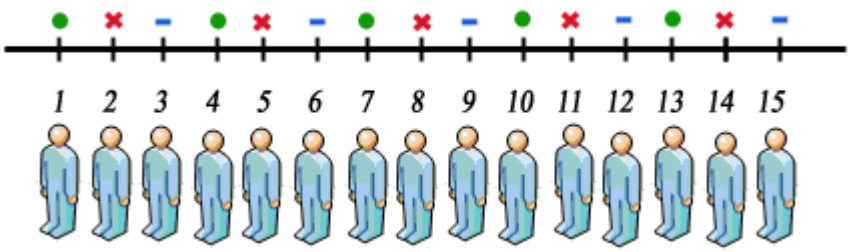
This sampling method ensures adequate representation of all subgroups. When there is homogeneity within strata and heterogeneity between strata, the estimates can be as precise (or even more precise) as with the use of simple random sampling

Disadvantages

- 1- Requires the knowledge of strata membership a priori

  2- Adds complexity to the analysis plan

Systematic sampling



Systematic sampling requires an approximated frame for a priori but not the full list. When done correctly, this method will approximate the results of simple random sampling. It has to be stressed that "in systematic sampling, the selection of a sample is very convenient and is cost and time efficient. This is an aspect of systematic sampling which makes it applicable in many situations" (Bajpai, 2010, p.266)

However, systematic sampling method has a set of disadvantages as well. For example, if periodically exists, the sample will be biased. Moreover, if study participants deduce the sampling interval, this can

bias the population as non-participants will be different from study participants.

Non experimental research design (Outlines):-

Definition.

- Reasons for choosing non experimental research design.- Types of non- experimental

Research design

Non experimental research, design in which the researcher is a passive agent that is he collects data without manipulation intervention or introduction of any new change or 'treatment.

Reasons for choosing experimental research design

1- Independent variables are inherently not manipulated:

Eg we cannot confer upon incoming hospital patients various diagnosis in order to study the effect of diagnosis upon preoperative anxiety.

2-Ethical constraints on manipulation, eg when study polio vaccine Salk or Sabin and incidence of the disease.

Group I ..... salk

Group II.....:..... sabin

Group III :..... No vaccine

Such a research could not be done for ethical reason.

3- Practical constraints__ such as

- Insufficient time. - Inconvenience

- Lack of cooperation
- Lack of adequate funds.

Types of non- experimental research design pure descriptive research design: this study is to obtain information about the current status o phenomena of interest that is to describe what exists in terms of the frequency of occurrence rather than to describe a relationship between variables. Eg : Determination of the,, _percent of teenage ~pregnant mothers, whose babies are premature.

~ Correlation descriptive research design

It is research design that explore the inter - relationship among variables of interest without .any active "intervention or manipulation the,

Independent variables by the researcher, it only 'describe the existing relationships without fully 'understanding or explaining the complex casual pathway that exist. Eg Are men more likely than` woman to become alcoholics? Whether or not a particular shape of sex chromosomes has caused a predisposition of alcohol.`

Retrospective research design:

This is a study that begins with manifestation of the dependent variable in the present (eg. Lung cancer or low birth weight) and then t to some presumed cause occurring in the past. Eg. Cigarette, smoking or addiction. A study begins with presumed causes and then goes forward in time fb observe presumed effect.

Eg. A research wants to test the hypothesis that the incidence of rubella during pregnancy is related to malformation in the spring to do this research prospectively. He begins with a sample of pregnant women (two groups) one group go to active research design, in ;an examination of rubella in pregnancy , other group did not get rubella in pregnancy and then observe the incidence of malformation in both groups. The 'result of this study would say that the incidence was higher in which group.

Other types of non- experimental research design

1- The term survey can be used to describe any research activity in which the investigator gathers data from aortionulation for.

the purpose of examining the characteristics

Opinions or intentions of populations, eg

what are people eat ? . -_ .

What is their compliance in taking medication? What are their sleeping patterns?

c- Case study

It does not have a specific research design it could be performed in several ways and steps -4 according to the phenomena to be studied according to the phenomena to be studied an the purpose of the study.

Case studies are naturalistic studies, conducted in a setting that is not controlled by the researcher, it involves one or served cases that are studied over time using multi~ Gathering methods. In fact almost all methods of data collecting could be used in the case study

Characteristics of good research design.

1-Appropriate to the research

2-Lack of bias

3-Control: The researcher must design a study that controls extraneous variable through manipulation, randomization. And use of comparison.

4-Precision,): The term precision is used to refer: to appropriateness of the statistical procedures used to analysis can detect any effect on the dependent variable by the extraneous variables.

5-Internal validity: This is concerned with the questions ' are attributed to the independent variables or other extraneous variables.

5[f]External validity: This is concerned with the generalizability of the research finding to other individual and other setting.

Data collection methods

1. Questionnaire.
2. Interviews.
3. Observation Methods.
4. Physiological measures.
5. Attitude scales
   - Liker scales.
   - Semantic differential scales.
6. Psychological tests.
7. Delphi technique.
8. Visual analogue scale.
9. Preexisting data.
10. Critiquing data-collection.

QUESTIONNAIRE

Definition: Is a paper–and pencil self-reporting instruments, it contains questions that respondents are asked to answer in writing.

Questionnaires can be used to measures knowledge levels, opinions, attitudes, factual information, beliefs, ideas, feelings, and perceptions as well as to gather information.

Characteristic of good questionnaire:

1- It is important to use a high quality printing process and paper.

2- Questionnaire should be neat in appearance, grammatically correct, and contain no typing or spelling errors.

3- Questionnaire should not be cluttered or crowded appearance to avoid confusion.

4- Adequate margin and spacing of the questions are needed.

5- It is better to add another page to the questionnaire rather than to crowding too many questions.

6- Questionnaire should be written in a respondents preferred language and appropriate for the knowledge and reading level of the least education.

7- Questionnaire should be short kept as possible.

8- A desirable length of a question is less than 20 words.

9- A question need to be divided into two questions if the length becomes excessive or the question asks more than one idea at a time.

How to write the questions?

There are some guidelines to recognize how to construct or how to write the questions:

1- State questions in an affirmative rather than negative manner.

EX: -All the following criteria should be met in research study except:

* There is a problem statement or purpose.

*The references cited in the literature are current.

*The limitation of study is acknowledged.

*The researcher provided the study hypothesis.

2- Avoid ambiguous question that contain word have more than one meaning like {many, usually, few, several}.

3- Avoid double negative questions

EX: Do not you disagree with the idea that.....?

4- Any question that implies the type of answer to be given may result in biased responses Question should neutral wording.

EX: Do you believe that smoking is a disgusting habit?

The desired question here is:

What is your opinion about cigarette smoking?

5- Avoid double barreled question.

Which asks tow question in one?

EX: do you plan to pursue a master degree in nursing and seek an administrative position graduation?

When a question contain "and" it is quite likely that tow question are needed.

Types of questionnaire:

- Demographic question.
- Open-ended question.
- Closed-ended question.
- Contingency question.
- Filler question.

1. Demographic question

-Used to describe the study sample.

-Include such factors as age .educational background and religion.

2. Open –ended questions

The researcher asks respondent to complete question in their own words in open–ended question, essay and fill-in the blank, used in combination with closed-ended question

3. closed-ended question

The most structured questions are closed-ended question which the respondent is asked to choose from given alternatives.

There may be only two alternatives as a true or false question or many as in a checklist type where respondents are asked to check all items that apply to them.

Other types of closed-ended questions include multiple-choice question and matching questions.

The following example demonstrates categories that are collectively exhaustive and mutually exclusive.

How many apples do you eat each week?

(A) None.

(B) 1 – 2.

(C) 3 – 4.

(D) More than 4.

(Exhaustive) categories

EX Please check your highest level of education

» Elementary.

» High school.

» College.

How would subjects respond that had not complete elementary school?

Adding an "other" category is needed in this condition. A blank is provided beside the word other for respondents' answers.

4. Contingency question

Questionnaire items those are relevant for some respondents and not for others.

Ex: A researcher might want to determine if a client has been satisfied with the types of nursing care received during previous hospitalization.

1- Have you ever been hospitalized before? __ Yes___ NO

2- How would you rate the care received during your last hospitalization?

__ Poor __ Fair __ Good

5. Filler question

Items in which the researcher has no direct interest but are included on a questionnaire to reduce the emphasis on the specific purpose of other question

Ex: If the main purpose of the study was to gain information concerning patients' perception of the nursing care they had received, the researcher might include a lot of other questions about the food they had been served, visiting hours.

If the subjects could determine that the only purpose of the study was to obtain their perceptions of nursing care, they might hesitate to criticize the nursing care they had received.

Placement of Question

- All questions about a certain topic should be grouped together.
- Demographic questions (which ask for factual information about the subject) should be grouped together.
- Demographic questions frequently placed in the beginning of a questionnaire
- Place simple questions at the beginning, these are easy to answer and may encourage the respondent to continue with the questionnaire.
- Others chooses to place the demographic questions at the end as they belief that this questions which asking for income or age , may be threatening to the respondent.

Cover Letter

- Should accompany all mailed questionnaires and is helpful any time a questionnaire is administered.
- The letter should be brief and contain the following:

1. Identification of the researcher and any sponsoring agency or person.
2. Purpose of the research.

3. How participant was selected.
4. Reason the respondent should answer the questionnaire.
5. Length of time to complete the questionnaire.
6. How data will be used or made public.
7. Deadline for return of questionnaire.
8. An offer to inform respondent of results of study
9. Contact phone number, address ,or both
10. Personal signature of the researcher

- The cover letter may be the single most important factor in motivating respondents to complete questionnaires.

Completion Instruction

» Information on how to complete the questionnaire must be clear and concise.

» If all questions are to be answered using the same type of format, a general set of instructions may be written at the top of the questionnaire.

» Several different types of questions are included on instrument, and instruction need to precede each type of question. It is very helpful to provide the respondent with an example of appropriate way to respond to a particular type of question.

Distribution of Questionnaire

» They may be given to potential respondents in a one –to-one contact.

Ex: **The nurse researcher distributes instruments to hospitalized patient**.

» Questionnaire may be placed in a container in a given location where potential respondents can take one.

» One of the most frequently used methods of distributing is mailing system, postal service or hospital interdepartmental mailing system.

Factors Influencing Response Rate

1) Mailing at a time other than holiday seasons or popular vacation times.
2) Hand-addressed outer envelopes.
3) Personal signature of the researcher on cover letter.

4) Information in the cover letter that motivates respondents.
5) An incentive.
6) Neatness and clarity of instrument.
7) Ease of completion of instrument.
8) Time to complete the instrument does not exceed 10 to 15 minutes.
9) Guarantee of anonymity.
10) Inclusion of a preaddressed, stamped envelope.

Advantages	**Disadvantages**
Quick and inexpensive.	Mailing can be costly.
Easy for reliability, validity.	Response rate may be low.
Less time consuming.	Respondents may provide socially acceptable answers
Data can be obtained from respondent in widespread geographical area.	Respondents may fail to answer some of the items.
Respondents can remain anonymous.	There is no opportunity to clarify items that may be misunderstood by respondents
If anonymity is assured, respondents are more likely to provide honest answers.	Respondents must be literate. Respondents may not be representative of the population
	Respondent must have no physical disability that would deter them from

	completing a questionnaire

INTERVIEW

Definition:

An interviewer obtains responses from a subject in face – to – face encounter or through a telephone call.

- Interview is frequently used in descriptive research studies & qualitative studies.
- Interview is used to obtain factual data about people as well as to measure their opinions, attitudes, and beliefs about certain topics.

TYPES OF INTERVIEW

- Un-structured Interviews.
- Structured Interviews.
- Semi structured Interviews.

Un-structured Interviews.

- The interviewer is given a great deal of freedom to direct the course of the interview.
- Conducted more like a normal conversation.
- Particularly appropriate for exploratory or qualitative research studies where the researcher does not possess enough knowledge about the topic to structure questions in advance of data collection.

Structured Interviews

Involve asking the same questions, in the same order, and in the same manner of all respondents in a study.

Structured interviews are most appropriate when straight forward factual information is desired.

Semi structured Interviews

Interviewers are generally required to ask a certain number of specific questions, but additional probes are allowed or even encouraged. Both closed-ended and open-ended questions are included in a semi structured interview.

Interview Instrument

- Interview Schedule.
- Audiotapes or Videotapes.
- Telephone interview.

Interview Schedule

Data obtained in interview are usually recorded on an instrument referred to as an interview schedule. The interview schedule contains a set of questions to be asked by the interviewer, and space to record the respondents answer.

Audiotapes or Videotapes

» Data obtained from an interview also may be recorded on audiotapes or videotapes.

» The total interview process can be captured, and the interviewer is free to observe the respondents.

» Written permission is required, and the permission form should indicate how the information will be use and how confidentiality will be maintained.

Telephone interview

Advantages	Disadvantages
Quick and inexpensive means of conducting interviews. Respondents' anonymity can be protected.	Many people have unlisted numbers. Many people have caller IDs installed on their phones, they may not answer the phone if they do not recognize the caller's phone number.

	The interviewer cannot observe non-verbal responses

The collection of data from subjects through use of phone calls rather than in face to face meetings

INTERVIEW QUESTIONS

There are 2 basic categories of questions: open-ended and closed-ended questions. **(Discussed before)**

INTERVIEWER TRAINING

The investigator of a study in which interviews will be conducted has the responsibility to provide training for all interviewers who will collect data during the study.

1. The data collector was allowed to provide input into the development of an operations manual, which includes a script and scoring guidelines regarding ways to facilitate home visits.
2. The data collector viewed a videotape of an interview being done by a skilled interviewer.
3. The data collector was given practice and feedback in a clinic setting.
4. Rehearsals were done in homes of people who would not be study participants.
5. A videotape was done of the data collector conducting a rehearsal interview.

   The principal investigator critiqued the data collector's performance on this rehearsal interview

» During the training session(s), the researcher should provide interviewers with a description of the study and its purpose.

» General procedures are discussed, and the interview schedule is reviewed in detail.

» The purpose of each question is pointed out, and the meaning of all words are clarified.

» The process of recording information must be explicitly communicated.

» Interviewer training should be carried out in group, so that all interviewers receive the same instructions.

» Role-playing of interviews helps the interviewer gain some appreciation of what the actual interviews will be like.

Interview Guidelines

- Before The Interview.
- During The Interview.
- After Interview.

INFLUENE OF INTERVIEWERS ON RESPONDENTS

- In face-to-face interviews, the interviewer may have a great deal of influence on the outcome.
- First impressions are very important in face-to- face Interviews.
- Interviewers should be neat in appearance, courteous, friendly, and relaxed.

ADVANTAGES AND DISADVANTAGES OF INTERVIEWS

ADVANTAGES	DISADVANTAGES
Responses can be obtained from a wide range of subjects. Response rate is high. Most of the data obtained are usable. In-depth responses can be obtained nonverbal behavior and verbal mannerisms can be observed	Training programs are needed for Interviewers. Interviews are time consuming and expensive. Arrangements for interviews may be difficult to make. Subjects may provide socially acceptable responses. Subjects may be anxious because answers are being recorded. Subjects may be in flounced by interviewer's characteristics.

	Interviewers may misinterpret nonverbal behavior.

OBSERVATION METHOD

Definition: Concerned with gathering data through visual observation

Determining behaviors to be observed

» Psychomotor skills (ability of diabetic patient to perform insulin injection).

» Personal habits (smoking and eating behaviors).

» Nonverbal communication pattern (facial expressions).

The types of observations that are of interest to nurse researchers are quite numerous.

RESEARCH OBSERVERS

❖ If the researcher decides to use other people to help him in collecting data, training sessions are necessary. It is preferable to have more than one observer during the training sessions so estimates of the reliability of the data can be made.

❖ Human error is quite likely to occur in visual observations.

OBSERVATION PROCEDURES

➢ The researcher must determine how and when observations will be made.

➢ The degree of structure of the observations and the period for gathering data must be considered.

DEGREE OF OBSERVATION

1) Structured observations.
2) Unstructured observations.

STRUCTURED OBSERVATION

» Are carried out when the researcher has prior knowledge about the phenomena of interest.

» The data collection tool is usually some kind of check list.

» The expected behaviors of interest have been identified on the check list.

UNSTRUCTURED OBSERVATION

» The researcher attempts to describe events or behaviors as they occur, with no preconceived ideas of what will be seen.

» Requires a high degree of concentration and attention by the observer.

EVENT AND TIME SAMPLING

» EVENT SAMPLING

Involves observation of an entire event

» TIME SAMPLING

Involves observations of events or behaviors during certain specified times.

THE ROLE OF THE NURSE VERSUS THE RESEARCHER

❖ Nurse researchers frequently have difficulty in maintaining the role of researcher in observation studies.

EX: Nurse Researcher is sitting in the patient room observing his behaviors after some treatment procedure.

PHYSIOLOGICAL MEASURES

- Involve the collection of physical data from subjects.
- These types of measures are generally more objective and accurate than many of other methods.
- Advantages: is their precision and accuracy.
- Disadvantage: special expertise may be necessary to use some of these devices .
- The presence of certain data collection instrument may adversely influence the subject.

ATTITUDE SCALE

- Self-report data collection instrument.
- Used to evaluate attitudes or feeling.
- The most commonly used attitude scales :

a) likert scale.

b) Semantic differential scale.

LIKERT SCALE

- ❑ Was named after its developer ,rinses likert
- ❑ Ex: (nursing questionnaire)

- Please read the following items and indicate your agreement or disagreement by checking the appropriate category

EX: SD = strongly disagree.

D = Disagree.

U = Uncertain.

A = Agree.

SA = strongly agree

SD D U A SA

___ ___ ___ ___ ___

Nursing diagnoses should be written on all nursing care plans. ___ ___ ___ ___ ___

The use of nursing diagnoses allows nurses to be autonomous health care professionals.

___ ___ ___ ___ ___

The medical diagnosis is more important in determining clients' health care needs than is the nursing diagnosis.

___ ___ ___ ___ ___

Nursing care should be based on the nursing diagnosis. ___ ___ ___ ___ ___

Nurses waste valuable time in trying to formulate nursing diagnosis. ___ ___ ___ ___ ___

The term nursing diagnosis is a popular phrase that will soon become forgotten.

___ ___ ___ ___ ___

SEMANTIC DIFFERENTIAL SCALES

- ❑ Definition :

The semantic differentia asks subjects to indicate their position or attitude about some concept along a continuum between 2 objects or phrases that are presented in relation to the concept being measured.

- Used to evaluate setting ,a person, a group, educational course and measurement attitudes

Ex: **EVALUATION OF CLINICAL INSTRUCTOR**

✓ Each item below concerns characteristics of instructors' .Words are presented in pairs and represent opposite characteristics. Please place (right) above the line on the scale at the place which you believe comes the closest to describing your evaluation of the instructor.

1. KIND ____ ____ _ √ _ ____ ____ ____ UNKIND.
2. FRIENDLY ____ ____ ____ ____ ____ ____ UNFRIENDL.
3. SENSITIVE ____ ____ ____ ____ ____ ____ UNSENSETIV.
4. FLEXIBLE ____ ____ ____ ____ ____ ____ INFLEX.
5. HELPFUL ____ ____ ____ ____ ____ ____ UNHELP.

PSYCHOLOGICAL TESTS

- Used to assess personality characteristics.

1. PERSONALITY INVENTORIES.
2. PROJECTIVE TECHNIQUES.

PERSONALITY INVENTORIES

» Are self-report measure.

» Used to assess the differences in personality traits, needs or , values of people.

» These inventories seek information about a person by asking question or requesting responses to statements that are presented.

» More commonly used personality inventories Minnesota multiphase personality inventory (true or false).

PROJECTIVE TECHNIQUES

» One of the criticisms of self-report psychological measures.

» More accurate in gathering psychological data.

» A subject is presented with stimuli ambiguous then the person is asked to describe the stimuli or to subject that are projected.

DELPHI TECHNIQUE

➢ DEFINITION: Used to describe a data collection technique that employs several rounds of question to seek a consensus on a particular topic from a group of experts.

➢ Used to examine the opinion ,beliefs or future predictions of knowledgeable people on some special topic of interest

CHARACTERISTICS OF THE DELPHI TECHNIQUE

» The feedback process allows and encourages the selected Delphi participants to reassess their initial judgments about the information provided in previous iterations.

» The ability to provide anonymity to respondents.

» The use of electronic communication such as e-mail to solicit and exchange information.

» Through the operation of multiple iterations, subjects are expected to become more problem-solving oriented, to offer their opinions more insightfully, and to minimize the effects of noise.

» Finally, the ability to use statistical analysis techniques is a practice which further reduces the potential of group pressure for conformity.

THE DELPHI PROCESS

» Theoretically, the Delphi process can be continuously iterated until consensus is determined to have been achieved.

» Three iterations are often sufficient to collect the needed information and to reach a consensus in most cases.

SUBJECT SELECTION

» Choosing the appropriate subjects is the most important step in the entire process because it directly relates to the quality of the results generated . Since the

Delphi technique focuses on eliciting expert opinions over a short period of time, the selection of Delphi subjects is generally dependent upon the disciplinary areas of expertise required by the specific issue.

- It is recommend to choose the subjects through :

1. The top management decision makers who will utilize the outcomes of the Delphi study;
2. The professional staff members together with their support team; and
3. The respondents to the Delphi questionnaire whose judgments are being sought"

Delphi subjects should be highly trained and competent within the specialized area of knowledge related to the target issue. Investigators need to closely examine and seriously consider the qualifications of Delphi subjects.

VISUAL ANALOGUE SCALE

Definition:

A Visual Analogue Scale (VAS) is a measurement instrument that tries to measure a characteristic or attitude that is believed to range across a continuum of values and cannot easily be directly measured.

- Operationally a vas is usually a horizontal line, 100 mm in length, anchored by word descriptors at each end, the patient marks on the line the point that they feel represents their perception of their current state.
- VAS is simple, reliable, reproducible, valid and sensitive tool.
- The vas is being used with increasing frequency in nursing research studies. It has been found to be particularly useful with patients who are experiencing discomfort, such as nausea, pain, fatigue and shortness of breath.

EX: The amount of pain that a patient feels ranges across a continuum from none to an extreme amount of pain.

How sever is your pain today? Place a vertical mark on the line below to indicate how bad you feel your pain is today.

No Pain l_____l Very Severe Pain

PREEXISTING DATA

Definition:

Involves the use of existing information that has not been collected for research purpose

- EX: patient's charts, records from agencies and organizations and personal documentations.

CRITIQUING DATA COLLECTION METHODS

Guidelines for critiquing data collection methods:

1. **General Guidelines:**

- Were the data collection methods described thoroughly?
- Were the data collection methods appropriate to test hypothesis or answer the research questions?
- Was a self-report or psychological method used when a physiological method might have gathered more valid data?
- How many methods were used to collect data? If only one was used, would the study have benefited from more than one method?

2. **Questionnaire**

- Was information provided on the number of questions, the length of questionnaire, and how long it would take to complete the questionnaire?
- Was the response rate provided for the return of the questionnaires?
- Was sampling biases discussed?
- Was anonymity or confidentiality assured?

3. **Interviews**

- Was information provided on how long the interview would take?
- Was information provided about training for the interviewers?
- Was confidentiality assured?

4. **Other Methods**

- Was the specific method identified (e.g. semantic differential)?

- Was the rational for using the method presented?
- Was the instrument described in detail?
- Was the scoring method clearly discussed?

Data interpretation

- Introduction
- Definition of data interpretation
- Interpretation of results
- The research report & content
- The methods section
- The result section
- The discussion section
- Other aspects of the report

Introduction

- Data interpretation: Can be defined as applying statistical procedures to analyze specific facts from a study or body of research. Data interpretation questions are a part of many standardized tests.
- The final stages of a research project, like the beginning stages , are often somewhat more difficult than intermediary steps of data collection & analysis
- Statistical &Research skills are required for interpreting &reporting the findings of a study, but there is also need for creativity, intellectual in sights, logical reasoning & sensitivity to subjunctives.

Interpretation of results

- The result of data analysis procedures are only numbers with very little inherent meaning associated with them It is a researcher `s role to imbue these numbers with meaning

- **Interpreting hypothesized results**
  - When the tests of statistical significant support the original research hypotheses
  - The task of interpreting the results is somewhat easier than when the hypothesis are challenged
  - Naturally, the researchers are gratified when the results of many hours of effort offer support for their predications
  - A few cautionary suggestions should be kept in mind; it’s preferable to be somewhat conservative in drawing conclusions from the data
  - The intrusion of personal view point's &subjective judgments in inevitable in making sense of research results
  - The supportive in research hypothesis with empirical evidence never constitute proof of their veracity
- **Interpreting non-significant results**
  - The statistical procedures currently relevant are greeted toward disconfirmation of the null hypothesis.

- The failure to reject null hypothesis could occur for one or more reasons, the null hypothesis could actually be true , in these case , would accurately reflect the absence of a relationship among the research variables, the null hypothesis could be false

Errors will have been committed

- Internal validity problems
- The selection of deviant sample
- The use of a weak statistical procedure
- Too small sample
- **Interpreting un hypothesized significant results**
- There properly nothing more perplexing to a researcher than to obtain results opposite to those hypnotized for instance a nurse researcher might hypo size that individualized patient teaching of breathing techniques is more effective than group instruction but the results might reflect that the group method was better
- **Interpreting mixed results:**
- The interpretative process is often confounded by mixed results , the investigator may find some hypothesis supported by the data , while others cannot be supported or hypothesis may be accepted when one measure of the dependent variable is used but rejected when using a separate measure of the same variable of all the situations mentioned , mixed results are probably the most prevalent

The researcher Report content:

- No scientific project is ever complete until research report has been written
- It is to a researcher advantage to have a research finding known by others, because proper credit should be given to the work that has been completed
- This is & dissertations, therefore, are rather lengthy documents, on the other hand there typically short because they must complete with other reports for limited journal space &because they will be read by busy professionals

The introduction

- The purpose of the introductory section of research report is to Acquairt readers with the research problem on which the investigation has focused
- It is customary to introduce the general topic in rather board terms at first , however a precise & unambiguous problem statement phrases in question form
- The research should explain enough of the back ground of the study to make clear the reasons why the problem was considered worth pursuing
- The introductory section should incorporate definitions of concepts under investigation

The methods section

- The scientific reader need to know what has done to solve the problem
- The methods section is often subdivided into several parts
- The methods of sample selection together with the reasons for the selection of these sampling design , need to be very clearly delineated
- The design of the study is often given more detailed coverage in an experimental project than in a non-experimental one
- Identify what steps were taken to control the research situation in general & extraneous variables in particular
- Describe the instruments used to measure the targets variables
- Provide information about what steps were followed in actually collecting the data
- Any unforeseen events occurring during the collection of data that could affect the findings should be described & assessed
- A delineation of the statistical analysis & when applicable

The result section

- These section summarize the results of analysis , the researcher must be careful to report all result as accurately & completely as possible whether or not the hypotheses were supported

- If there is too many analysis for inclusion of the report , the creterian used to select analysis should be there relevance to overall objectives of the study
- When the result of several analyses are to be presented , its frequently useful to summarize the findings & title , important findings can then be highlighted in the text

The discussion section

- A bare report of the statistical findings is never sufficient to convey their full implications
- The discussion section is typically develop to a consideration of interpretations, limitations, &recommendations
- The interpretation of results as discussed earlier involves the translation of statistical findings into practical &conceptual meaning
- The interpretative process is a global one, encompassing the investigator knowledge of the results, the methodology& the sample characteristics, related research findings & theoretical issues
- Figures which present the results in graphic form are used less as an economy than as a mean of dramatizing important findings & relationship
- The research report should never claim that the data proved, verified, confirmed, or demonstrating that hypotheses were correct or in correct, hypotheses are supported or not when the result of statistical tests are reported , three pieces of information are normally included

a) The value of calculated statistic
b) The number of degree of freedom
c) The significance level

- The researcher is in the best position to detect & assess the impact of sampling deficiencies, design problems, instrument weakness & to alert the reader to these difficulties
- The implications derived from a study are often speculative &therefore should be couched in tentative terms. The discussion section should include

recommendation for investigations which would help to test these hypotheses as well as suggestions for other research to answer questions raised by findings of study

Other aspect of the report

- Every research report should have a title, the phrases **(Research Report, or Report of nursing Research investigation)** are not an adequate the title should indicate to prospective readers the nature of study, in so far as possible the dependent & independent variables should be named in the title , it also desirable to indicate the population studied , however the title should be brief ,
- (No more than about fifteen wards) so the writer must balance clarity with brevity.
- EX:-the effect of advance information on pain perception in hospitalization
- Children journals &these often require the preparation of an abstracts to precede the main body of the report, Abstracts are brief descriptions of the problem methods &finding of the study.

Types of Research Reports

This section describes the content, structure, features of three major kinds of research reports

i. Theses & dissertations
ii. Journal articles
iii. Papers for professional meetings

1- Theses & dissertations:

- Theses & dissertations typically document completely the steps performed in carrying out the research investigation
- Most universities have a preferred format for their dissertations but the format showed below
- Fairly typical.

Preliminary pages:

- Title page

- Acknowledgment page
- Table of contents
- List of tables
- List of figures

Main body

- Chapter1: introduction
- Chapter2:review of literature
- Chapter3: methods
- Chapter4: results
- Chapter5: discussion summary

Supplementary pages

- Bibliography
- Appendix

Bibliography

How to write references:

- Following the APA format: American psychological association.
- Author(s) Last name, First initial(s). (Year). Title of article -Name of journal, volume number, (italics), pages in article.

- (e.g.)Cuzack, et al., (2010).Anti-oxidants modulate induction of programmed endothelial cell death. Applied nursing research, 2nd, 122-300.
- What are references?
- References are sources of information or statements e.g. books, journal articles, web sites, which have been writing a manuscript, book, or thesis.

What is a bibliography?

- A bibliography is a list, which includes the references, but may also contain details of other documents have consulted but have not mentioned directly in your work.
- What is a quotation?
- If you copy exactly what some else has said or written you quote them.

Why do you need to write references?

- When we produce a manuscript, report or thesis, we use a large amount of background or comparative information which we obtain from other sources such as textbooks or journal articles.
- This information must be attributed to its original sources and that is why we are legally bound to make reference to these books or articles. Failure to do so is not only dishonest but is considered plagiarism (act of copying another person's work and presenting it as one's own) and could result in rejection of your work.
- Furthermore, listing your references gives the reader of your work the option to read more on the subject.

What do you need to reference?

A reference is required when you:

- Quote another person word for word (direct quotation). You will need to provide a reference from which it was taken regardless if it was a phrase, sentence or paragraph.
- Paraphrase or summarizes. Ideas or data obtained from another writer must be referenced even if you have changed the wording and/or content.
- Use of statistics. Disease prevalence, mortality, survival.

- Use of tables, figures, diagrams and appendices. The source of these must be acknowledged unless they are entirely from your own research work.
- Use controversial facts, opinions, or dates which might be challenged.
- However, information of a general nature which is common knowledge does not need to be referenced. In other words, you will need to reference any ideas or data you have used which are not your own. Please note that it is, nowadays, just as important to cite electronic sources as it is to reference print materials since they are both covered by copyright law.

What information do you need to reference a book?

i. Author(s) or editor(s).
ii. Title.
iii. Edition number, if it is a 2nd or later edition.
iv. Place of publication.
v. Publisher.
vi. Year of publication.

E.g. Nieswiadomy, Marie, Rose. (20earc08). Foundation of Nursing Research, fifth ed. U.S.A, Alexander Levin Julie.2008.

What information do you need to reference a journal article?

i. Author(s) of the article.
ii. Title of the article.
iii. Title of the journal.
iv. Year of publication.
v. Volume number.
vi. Issue number.
vii. Inclusive page numbers.

(E.g.) Mohasb, Hamido,Shadia.(2007).Effect of using Guideline technique for women with Genital ca &OL.Applied Nursing Research,fifth,39-44.

What information do you need to reference an online journal article / newspaper article?

i. Author(s) of the article (If the article does not have an author then use Anon. [abbreviation of anonymous].
ii. Title of the Journal or Newspaper.
iii. Type of medium in square brackets e.g. [online] after newspaper or journal title.
iv. Year of publication.
v. Volume number (if there is one).
vi. Part number or date and month of publication (which ever applies)
vii. Available from: Is it available via a database on the World Wide Web? For example; Available from: Science Direct on the World Wide Web (where Science Direct is the name of a database).
viii. URL: the web address where you can access the document.
ix. Date of access in square brackets, e.g. [Accessed 25 January 2002] this is the date on which you viewed the document. Internet documents undergo constant revision so the exact date that you consulted the document is vital.

Reference styles:

There are many reference styles in the literature. However, the commonest style used in medical publishing is the Vancouver Style followed by the Harvard Style. We shall first briefly describe the Harvard style then a detailed description of the Vancouver style will be presented. Regardless of the style any reference system is composed of two parts; citation of the reference in the text and the reference list at the end of the text. It is your responsibility and not the editor's / reader's to verify the references against the original documents.

1- Harvard Style

A- Citation of reference in text:

- Reference with single author
- Name of author, year publication, (Hussein, 1899)
- Author’s name part of a sentence "Hussein (1899) showed that……”
- Reference with two authors both names are given, (Hussein and Rateb, 1880)

- Reference with three authors first name followed by et al, (Rateb et al, 1890)
- Several references arrange chronologically, (Hussein, 1899, Rateb, 1900, Farid, 1911)
- Several references with the same author and same year (Farid, 1800a, Farid, 1800b)

B- Reference list:

- Order of references is alphabetical (e.g.): Aaronson, N.K., Meyerowitz, B.E., Bard M. et al. (1991b). Quality of life research in oncology: Past achievements and future priorities. Cancer, 67:839-43(suppl.).

2- Vancouver Style

- Updated information on the Vancouver Style can be obtained from the National Library of Medicine (NLM) databases http://www.nlm.nih.gov/bsd/uniform_requirements.html.
- The titles of journals should be abbreviated according to the style used in Index Medicus. Consult the List of Journals Indexed in Index Medicus, published annually as a separate publication by the library and as a list in the January issue of Index Medicus. The list can also be obtained through the library's web site (http://www.nlm.nih.gov).

1- Citation of reference in text:

- References should be numbered consecutively in the order in which they are first mentioned in the text. Identify references in text, tables, and legends by Arabic numerals in parentheses. Use superscript numbers between brackets e.g. (1). Separate 2 reference numbers by “,” e.g. (1,2) Separate >2 reference numbers by “–“ e.g. (1-3) Information from manuscripts submitted but not yet accepted should be cited in the text as 'unpublished observations' (in parenthesis).

2- Reference list in Journals

Standard journal article

- List the first six authors followed by et al. (Note: NLM now lists all authors.) (e.g.) Halpern SD, Ubel PA, Caplan AL. Solid-organ transplantation in HIV-infected patients. N Engl J Med. 2002 Jul 25; 347(4):284-7.
- As an option, if a journal carries continuous pagination throughout a volume (as many medical journals do) the month and issue number may be omitted.
  (e.g.) Halpern SD, Ubel PA, Caplan AL. Solid-organ transplantation in HIV-infected patients. N Engl J Med. 2002; 347:284-7.
- More than six authors:
  Rose ME, Huerbin MB, Melick J, Marion DW, Palmer AM, Schiding JK, et al. Regulation of interstitial excitatory amino acidconcentrations after cortical contusion injury. Brain Res. 2002;935(1-2):40-6.
  Organization as author
- Diabetes Prevention Program Research Group. Hypertension, insulin, and proinsulin in participants with impaired glucose tolerance. Hypertension. 2002; 40(5):679-86.
  Both personal authors and an organization as author
  (This example does not conform to NISO standards.)
- Vallancien G, Emberton M, Harving N, van Moorselaar RJ; Alf-One Study Group. Sexual dysfunction in 1,274 Europeanmen suffering from lower urinary tract symptoms. J Urol. 2003;169(6):2257-61.
  No author given
- 21st century heart solution may have a sting in the tail. BMJ. 2002;325(7357):184.

WHAT MUST BE INCLUDED IN A BIBLIOGRAPHY?

- AUTHOR
- TITLE
- PLACE OF PUBLICATION
- PUBLISHER
- DATE OF PUBLICATION

- PAGE NUMBER(S) (For articles from magazines, journals, periodicals, newspapers, encyclopedias, or in anthologies).

AUTHOR

- Ignore any titles, designations or degrees, etc. which appear before or after the name, e.g., The Honorable, Dr., Mr., Mrs., Ms., Rev., S.J., Esq., Ph.D., M.D., Q.C., etc. Exceptions are Jr. and Sr. Do include Jr. and Sr. as John Smith, Jr. and John Smith, Sr. are two different individuals. Include also I, II, III, etc. for the same reason.

Examples:

- Last name, first name: Berkel, Catharina van. Christensen, Asger. Wilson-Smith, Anthony.
- Last name, first and middle names: Price, David Robert James.
- Last name, first name and middle initial: Schwab, Charles R.
- Last name, initial and middle name:Holmes, A. William.
- Last name, initials: Meister, F.A.
- Last name, first and middle names, Jr. or Sr. designation:

TITLE AND SUBTITLE

- If the title on the front cover or spine of the book differs from the title on the title page, use the title on the title page for your citation.
- UNDERLINE the title and subtitle of a book, magazine, journal, periodical, newspaper, or encyclopedia, e.g., Oops! What to Do When Things Go Wrong, Sports Illustrated, New York Times, Encyclopedia Britannica.
- If the title of a newspaper does not indicate the place of publication, add the name of the city or town after the title in square brackets, e.g. National Post [Toronto].
- Sample, Ian. "Boy Mixes Saliva with Web Savvy to Locate Birth Father." Globe and Mail [Toronto]3 Nov. 2005: A1+.

  Furuta, Aya. "Japan Races to Stay Ahead in Rice-Genome Research." Nikkei Weekly [Tokyo] 5 June 2000: 1+.

- CAPITALIZE the first word of the title, the first word of the subtitle, as well as all important words except for articles, prepositions, and conjunctions, e.g., Flash and XML: A Developer's Guide, or The Red Count: The Life and Times of Harry Kessler.
- Use LOWER CASE letters for conjunctions such as and, because, but, and however; for prepositions such as in, on, of, for, and to; as well as for articles: a, an, and the, unless they occur at the beginning of a title or subtitle, or are being used emphatically, e.g., "And Now for Something Completely Different: A Hedgehog Hospital," "Court OKs Drug Tests for People on Welfare," or "Why Winston Churchill Was The Man of The Hour."
- Separate the title from its subtitle with a COLON (:), e.g. "Belfast: A Warm Welcome Awaits."

PLACE OF PUBLICATION - for Books Only

- DO NOT use the name of a country, state, province, or county as a Place of Publication, e.g. do not list Australia, Canada, United Kingdom, Great Britain, United States of America, California, Ontario or Orange County as a place of publication.
- Use only the name of a city or a town.
- Choose the first city or town listed if more than one Place of Publication are indicated in the book.
- It is not necessary to indicate the Place of Publication when citing articles from major encyclopedias, magazines, journals, or newspapers

Austin, TX:

Englewood Cliffs, NJ:

London, ON:

Medicine Hat, AB:

- Use "n.p." to indicate that no place of publication is given.

PUBLISHER - for Books Only

- Be sure you write down the Publisher, NOT the Printer.

- If a book has more than one publisher, not one publisher with multiple places of publication, list the publishers in the order given each with its corresponding year of publication, e.g.: Conrad, Joseph. Lord Jim. 1920. New York: Doubleday; New York: Signet, 1981.

DATE OF PUBLICATION

- For a book, use the copyright year as the date of publication, e.g.: 2005, not ©2005 or Copyright 2005, i.e. do not draw the symbol © for copyright, or add the word Copyright in front of the year.
- For a monthly or quarterly publication use month and year, or season and year. For the months May, June, and July, spell out the months, for all other months with five or more letters, use abbreviations: Jan., Feb., Mar., Apr., Aug., Sept., Oct., Nov., and Dec. Note that there is no period after the month. For instance, the period after Jan. is for the abbreviation of January only. See Abbreviations of Months of the Year, Days of the Week, and Other Time Abbreviations. If no months are stated, use Spring, Summer, Fall, Winter, etc. as given, e.g.:
- DO NOT UNDERLINE the title and subtitle of an article in a magazine, journal, periodical, newspaper, or encyclopedia; put the title and subtitle between quotation marks:

  Baker, Peter, and Susan B. Glasser. "No Deals with Terrorists: Putin." Toronto Star29 Oct. 2002: A1+.

  Fields, Helen. "Virtual Healing." U.S. News & World Report 18 Oct. 2004: 70.

  Penny, Nicholas B. "Sculpture, The History of Western." New Encyclopaedia Britannica.

How do you write references? (Example)

- Hrtmuller, Desmond &Beck.(2004).Professional & patient prospectives on nutritional needs of patients with cancer. Oncology Nursing Forum, 31,989-996. (Article example).

- (Book Example): _Schel,Badley &Lyons.(2005).What to Do When Things Go Wrong, Sports Illustrated, New York Times,7,345-367, Encyclopedia Britannica.

Research critique

- Researcher Qualifications
- Title
- Abstract
- Introduction
- Purpose
- Problem Statement
- Review of the Literature
- Theoretical/Conceptual Framework
- Assumptions
- Limitations
- Hypothesis(es)
- function of Terms
- Research Design
- Setting
- Population and Sample
- Data-collection Methods
- Data-collection Instruments
- Data Analysis
- Discussion of Findings
- Conclusions
- Implications
- Recommendations
- Other Considerations
- Summary

Introduction:

Critiquing research articles is particularly helpful to the beginning researcher because the critiquing process aids in the development of research skills. As the reader assesses the parts of a published study, ideas come to mind for the development of future research projects or for improvements in studies that have already been conducted or those that are in progress.

The research critique involves a thorough examination of all the parts of the study. Generally, the best way to conduct a critique is to read the entire study and make an initial evaluation of the report. Then each part of the study should be subjected to an in-depth evaluation.

Probably the most important part of a research article to focus on, after a cursory review, is the area where the design is discussed. This area will usually be found in a section titled "Methods." After you determine how the researcher actually carried out the study, then you can go back and see if the other parts of the study are congruent. For example, if the design is described as a pretest-posttest design, two groups should show up in the problem or purpose statement, two groups should be listed in the hypothesis, and two groups should be mentioned when the population and sample are being discussed.

Beginning researchers frequently take pride in the ability to find faults in the research reports that they read. This success in uncovering the errors in published reports often results in questions such as, "How could this study have been published?" It is well to remember that the author of the published report has had the courage and motivation to become involved in nursing research, whereas many other nurses have not. This is not to say that critiques should be lenient in their evaluation of published research. It is important, however, that nursing research be conducted, and severe criticism of their work may dim the enthusiasm of nurse researchers. This is especially true for those who are just beginning to

become involved in nursing research. Keep in mind that it is much easier to evaluate the research of others than to conduct research yourself.

Some guidelines for evaluating research reports follow. These guidelines are certainly not an exhaustive list. Many other guidelines could be used and questions posed when reading research. As ideas come to mind while you are critiquing research reports, jot them down. In this way, you will be able to develop your own research critique assessment tool to use in the future.

Frequently, there are no "right" or "wrong" answers when evaluating research reports. Even experts may disagree about certain aspects of a particular study. In evaluating research, reviewers should be as objective as possible and present sound rationale for their judgments.

Several nursing journals have published guidelines to use in critiquing research reports. A recent article in AJN (December 1996) presents such a set of guidelines.

GUIDELINES FOR USE IN CRITIQUING RESEARCH REPORTS

Researcher Qualifications

The first question to ask about research studies concerns the persons who conducted the research and their qualifications regarding that particular study. Many nursing studies in past years were conducted by non-nurses. As nurses have become more qualified to conduct research, the majority of these studies are now being conducted by nurses.

Authorities in a certain subject area are generally more qualified than other people to conduct research in that particular area. Frequently, there is a brief biographical sketch that will assist the reader in evaluating the qualifications of the author or authors. If this information is not provided, the initials after the name, such as M.S. or Ph.D., will inform the reader of the educational background of the researcher. If the research has been funded by some organization, such as the American Nurses' Foundation, this information should be provided.

Title

Clarity and conciseness are the major considerations in evaluating the title of a research article or report. The focus of the research should be apparent in the study title. It should contain the population and the major variable(s). The title should be brief, containing no more than 15 words, if possible. Extraneous words like "A study of … ," "The relationship between ... ," or "The effects of …" should be avoided. Nouns serve as the key words in the title.

One of the most important determinants of the use of research findings is the ability of the research consumer to obtain the study findings in the literature. Today, a literature review is often accomplished through a computerized search process. This search process uses the words or phrases in the title to locate studies of interest to the research consumer. It is very important that the title contain the critical words or phrases that describe the research project.

Abstract

Research reports, particularly those published in journals, frequently contain an abstract or summary of the study. Because the abstract may be the only section of the article that is read, the researcher should present the essential components of the study in the abstract. Typically, abstracts are 100 to 200 words in length and contain the hypothesis(es) or research question(s), methods, description of subjects, and the major findings.

Introduction

Although a research report is not meant to be a literary work of art, there is no reason to write the report in a dull and uninteresting fashion. The introduction should catch the interest of the reader and set the stage for the presentation of the research report. The best way to accomplish this is through a brief exploration of the study area. Background information on the problem and the significance of this problem to nursing is presented. The study purpose may be included in this section.

Purpose

The author should leave no doubt in the reader's mind about the purpose of the study. The reason or reasons for undertaking the study should have been clearly formulated before the research was begun, and the researcher should convey this information to the reader in the form of the study purpose. The broad purpose of the study may be made more specific in the form of objectives or goals.

Problem Statement

The problem of the study should be clearly identified. This is best accomplished through a formal and concise statement of the problem in one sentence. This sentence may be declarative or interrogative, but the interrogative form is preferable. The problem statement should contain the population and the major variable(s) and be empirically testable. The ethical nature of the study should be clear. The feasibility and significance of the study can be evaluated through reading the problem statement. Sometimes it may appear that a researcher has made the focus of his or her study too broad and tried to examine too many variables in one study.

Although few research articles follow this format, a formal heading should precede the statement of the problem or the purpose. This heading would call attention to the exact nature of the investigation early in the report of the study. Frequently, the research consumer must read the hypothesis(es) to determine the explicit nature of the study because the purpose or problem statement is not clearly identified.

The purpose and problem statement are separate entities; however, many research reports only identify one of these aspects of the research process. In many published reports, the purpose of the study may be identified more clearly than is the specific statement of the problem.

Review of the Literature

The most important consideration in the review of the literature section of a research report is the relevance of the sources to the research under

consideration. Other important considerations are the conciseness and comprehensiveness of the review. Both classic sources and current sources need to be included, and primary sources should be used when possible. If most of the references are from journals, you will have more confidence that primary sources were used.

A good review of the literature presents theory and research that both support and oppose the expected study results. Frequently, the reader is not made aware of opposing ideas until the discussion section of the research report. When this occurs, it appears as if the researcher conducted another literature review to help explain the study findings that are counter to the expected results.

The literature review should flow logically. Generally, classic sources are presented, and then current sources are discussed. Key sources should be critically compared and appraised, rather than simply being alluded to. Paraphrasing is preferred rather than the use of large numbers of direct quotations. Finally, the review should conclude with a sentence or two that indicates how the present study will contribute to the existing body of knowledge in that subject area.

The reader of a research report published in a journal article must keep in mind that the review of the literature section may have been reduced to meet the requirements for article length. If the research consumer is seriously interested in the study topic, it may be possible to obtain a copy of the complete research report by contacting the author.

Theoretical/Conceptual Framework

Many nursing study reports published today are based on a theoretical or conceptual framework. As the nursing profession tries to build a knowledge base for practice, research with a sound theoretical base will be the greatest means of achieving the desired nursing knowledge.

The most critical point to assess in the evaluation of the framework used in a study is whether a theoretical or conceptual framework is actually identifiable.

If, in fact, a framework is identified, is this framework the most appropriate one for the study? Is the framework based on a nursing theory or a theory from another discipline? With the great emphasis on theoretically based nursing research, researchers are becoming aware of the need for a framework but may not choose the most appropriate framework for the study.

In searching for the study framework, the reader may find a clearly identified section for the framework, or this information may be found in the introductory section or the literature review section of the research article or report. When a theoretical or conceptual framework is included in a research report, the reader should then evaluate the thoroughness of the presentation. Concepts should be clearly defined, and the relationship between concepts should be indicated and explained.

Assumptions

All studies are based on assumptions. These assumptions may be of the universal type, such as "all human beings need to feel loved." Assumptions also come from theory and previous research. Finally, the researcher may make some commonsense assumptions that are necessary to proceed with the research. Such an assumption might be, "The respondents will answer the questions honestly."

Explicit assumptions are those that are asserted by the researcher and are clearly identifiable by the reader. Implicit assumptions are those that are made by the researcher but are not clearly identified in the research report.

The reader should search for the researcher's explicit assumptions but should also try to identify assumptions that it appears were made by the researcher but were never stated specifically. For example, if the study sought to determine if giving a back rub at bedtime would decrease patients' requests for sleeping medications, the researcher has made at least three assumptions: adequate sleep is necessary for patients, sleeping medications are not the most healthful type of

sleep enhancer, and one of the roles of nurses is to try to assist patients in obtaining adequate sleep.

Limitations

Uncontrolled variables may affect research results. The researcher should clearly identify those aspects of the research situation over which no control has been exercised. In experimental studies, internal and external threats to validity should be listed under the section on limitations.

The reader should not have to search out the limitations of a study. Frequently, the first mention is found in the discussion section. The author will, after the fact, comment on the inappropriateness of the instrument or the small sample size. These limitations should be openly and honestly stated in the early part of a research report.

As is the case with the assumptions of a study, many research reports do not contain a separate section on the study limitations. Because the researcher frequently acknowledges some of the study limitations in the discussion section, study limitations may be easier to identify than the assumptions on which the study was based. Readers frequently are able to identify additional limitations of a study other than those acknowledged by the researcher.

Hypothesis(es)

All studies that examine relationships between variables should contain hypotheses. Many nursing studies contain hypotheses. Studies of a purely descriptive nature and methodological studies are types, of research that usually do not contain hypotheses. When hypotheses are not needed for a study, research questions may be used.

Hypotheses should be clearly and concisely stated in a declarative sentence and in the present tense. Hypotheses should be based on theory or research findings. Directional research hypotheses, rather than null or nondirectional hypotheses, are the preferred type. The exception is those situations where there

is no available research or theory that predicts the relationship between the variables that are being examined.

The hypothesis should contain the population and the variables and reflect the problem statement. Sometimes it appears as if one person wrote the problem statement and another person wrote the hypothesis because different terms are found in the problem statement and the hypothesis. For example, if the variable "depression" is used in the problem statement, this word should also appear in the hypothesis rather than a similar word like "despair."

Hypotheses should be empirically testable and should contain only one prediction. To be testable, it must be possible to gather empirical or objective data o

n the variables of interest. Single predictions are necessary in a hypothesis to avoid the "partial support" crisis that occurs when two predictions are made and only one is supported. An error that sometimes is detected in published hypotheses is the multiple predictions they contain.

Definition of Terms

A section on definition of terms may not be included in a journal article because of space constraints. Definitions of key terms in a research report are necessary, however, to make explicit what is being studied. Replication of studies is aided by clear definitions of terms. The key terms generally reflect the theoretical or conceptual framework for the study; therefore, some of the definitions of the terms may be derived from the study framework. Terms should be defined both conceptually and operationally. A conceptual definition presents an overall meaning of a word. This definition may be a dictionary definition or may be derived from a theory. Operational definitions indicate the observable, measurable phenomena associated with the study variables. Frequently, the operational definition is provided through the research instrument that is being used to gather data.

Research Design

The research design should be clearly identified and adequately described. The reader can then make the determination of the appropriateness of the design for the study under consideration. Quantitative designs and qualitative designs are evaluated with different criteria.

In experimental studies, the research consumer is concerned with the experimental treatment. Is the treatment adequately described and appropriate for the particular study? The method of assigning subjects to groups, if there is more than one group, should be discussed. Means to control threats to internal and external validity should be included in the section on research design.

In nonexperimental quantitative studies, the means of selecting study participants should be discussed. Any extraneous variables that have been controlled, such as age and educational background of the respondents, should be identified.

Qualitative research reports may be very difficult to critique. Guidelines are not clear-cut, and each qualitative study is unique. The main task for the reader is to try to determine if the particular qualitative approach that was used was appropriate to obtain data to answer the research questions. Also, the data-collection process needs to be fully discussed in the research report, as well as how the researcher was able to keep personal bias from influencing data collection and analysis.

Setting

The setting for the research project needs to be described. Many agencies do not want to be identified in research reports. The description of the setting is usually of a general nature. This description might be "a small, private psychiatric institution in the southeastern United States." The reader must then determine if the setting seems appropriate for the particular study.

Population and Sample

Generally, the study sample is easily determined when reading a research article. The target population and the accessible population may not be as easily identified. The author has the responsibility to mention the broad group of interest as well as that available group from which the sample was selected.

The section on the sample should include the identification and description of the sampling method. The reader has the right to know the specific type of probability or non-probability sampling method that was used. Then a determination can be made of the appropriateness of this sampling method.

A description of the demographic characteristics of the sample and the sample size should be included. The percentage of the population represented by the sample should be listed. Acknowledgment must be made of any dropout of subjects that occurred during the study and any other potential sampling biases that may have been recognized by the researcher. Finally, the section on population and sample should discuss the methods taken to protect subjects' rights. There is generally little information provided about ethical issues because of space limitations in published articles. Most research articles only contain one or two sentences on this aspect of a study. Anonymity or confidentiality should be discussed and the permissions that were obtained to conduct the study should be mentioned.

Data-collection Methods

The data-collection section would need to be very long and explicit to allow exact replication of a study. Space limitations, particularly in journal articles, require the deletion of many of the details of the data-collection procedures.

Five general questions asked in evaluating the data-collection section concern "what, how, who, where, and when." What data will be collected? How will the data be collected? Who will collect the data? Where will the data be collected? When will the data be collected?

The specific data-collection method(s) will dictate additional questions that need to be asked. For example, if questionnaires were used, the research report

should provide enough information for the reader to determine if a questionnaire was the most appropriate method to collect data. If interviews were used, the interviewer training process should be explained. Observation research requires that the reader be told how observations were made, who made the observations, and how data were recorded. If physiological instruments were used, the means of assessing the accuracy of these instruments needs to be addressed.

Data-collection Instruments

All of the data-collection instruments used in a study should be clearly identified and described. Scoring procedures and the range of possible scores on the instrument should also be included, where appropriate.

Many studies make use of several data-collection instruments. The characteristics of each instrument should be discussed. If an instrument has been used in previous research, the results of this use should be presented in the discussion of the instrument.

The most important characteristics of an instrument concern its reliability and validity. The reader must determine if the appropriate type of reliability and validity have been reported and if the evidence of the reliability and validity is adequate for use of the instrument in the present study. Pilot study results should be included for any newly developed or revised instrument.

Data Analysis

Many research consumers cringe when reading the data analysis section of a research report because they are fearful of the statistics that are discussed in this section. A beginning knowledge of statistics will be sufficient, however, to evaluate the majority of the published research findings. The research consumer must decide if appropriate statistical tests were selected and if the results are presented accurately and completely.

Descriptive statistics on the characteristics of the study sample are generally presented first. Next, the subjects' scores on the various instruments are reported. Finally, inferential statistics are presented if the study tested a hypothesis. The

author should state whether the study hypothesis was supported or not supported. The results of the statistical test, the degrees of freedom, and the probability value are given. These findings should be clearly presented in both the text and the tables.

Discussion of Findings

Research reports vary in the material presented in the discussion of findings section. In some reports, data analysis, interpretation of findings, conclusions, implications, and recommendations are all included in this section. This chapter on critiquing will consider each of these areas separately.

The findings or facts of the study should be presented in a completely objective fashion. In the discussion of findings section of a research report, the author interprets the study results. This material may be more subjective than the information in the findings section.

The author compares the present study findings with those of other studies discussed in the literature review. No new literature sources should be introduced in the discussion of the findings that were not referred to in the review of literature section of the report.

The findings should also be discussed in light of the theoretical or conceptual framework that was tested. The author must make it clear that the findings either supported or failed to support the framework of the study.

Both statistical and clinical significance should be discussed. These two types of significance are not always congruent. Findings that are statistically significant may have little or no clinical significance. Results that were determined to be statistically non-significant could, in fact, have clinical significance.

The researcher should discuss the study limitations and how these limitations are thought to have affected the study results. This is not the time for "true confessions," however. Frequently, the discussion section will contain the author's apologies for all of the "bad" things about the study. The author may convince the reader that any findings that do not support a given theory are

strictly the result of mistakes on the part of the researcher. Although study limitations need to be identified and discussed, readers should be allowed to come to their own decisions about the worth of the findings.

Conclusions

Conclusions answer the "so what?" question that might be posed to a researcher at the end of a study. Through the conclusions, the author demonstrates the meaning and worth of the research. The study conclusions are the author's attempt to make generalizations based on the study findings. Conclusions are often difficult to write, and many authors merely restate the findings or go to the other extreme and make overgeneralizations.

The findings are strictly data-bound; the conclusions are data-based. The researcher has, therefore, some freedom to go beyond the data when presenting the conclusions. Although subjectivity may enter into the author's formulation of the study conclusions, personal experiences and opinions should not influence the conclusions.

Implications

Implications need to be explicitly identified by the researcher for nursing practice, nursing education, and nursing research. The implications section of a research report contains the "should" that result from the research findings. For example, nurse educators should include material in nursing curriculums on the topic of the study or nurse researchers should conduct more research in the area of interest. When the study findings are not statistically or clinically significant, the implications of the study may be that no changes are recommended as the result of the present study.

Recommendations

Although recommendations may be made for nursing practice and nursing education, recommendations generally concern future research that is needed. A suggestion may be made that the study be replicated. Another suggestion may concern further development of the instrument or use of a larger sample size.

Recommendations should take into consideration the limitations of the present study. The recommendations should consider the findings of previous studies. Nursing can ill afford to conduct impractical or irrelevant research or to "reinvent the wheel."

Other Considerations

Although the most important areas to evaluate in a research report are the components of the research process, there are other areas to be evaluated. Correct grammar, sentence structure, and punctuation are essential. The research consumer may have difficulty evaluating the merits of the research report if structural errors are found. The author's writing style and use of words are also important to the reader. If too many complex words or technical terms are used, the reader may become discouraged and never finish reading the report.

Another important area to evaluate is the accuracy and completeness of the reference list. It is very discouraging to the reader to discover a source of interest in the literature review section and then be unable to find this source listed in the reference section. It is not uncommon to find sources in the reference section that were never referred to in the research report.

SUMMARY

Most research studies have both strong and weak points. A critical evaluation of all the sections of a research report is essential in determining the usefulness of the research results. Although many additional questions may be raised when examining research reports, this chapter has presented some guidelines that will be useful to the beginning researcher as she or he appraises published research reports.