

RESEARCH PRIMER for Perianesthesia Nurses

2nd Edition • 2009



Published by the
American Society of PeriAnesthesia Nurses
10 Melrose Avenue, Suite 110
Cherry Hill, New Jersey 08003-3696
www.aspan.org

ACKNOWLEDGEMENTS

As with any publication, the work progresses with the assistance of many individuals. I would like to thank the following colleagues for their editorial assistance in review of this edition of the *Primer*:

Jacqueline Ross MSN RN CPAN, ASPAN Director for Research

Linda Wilson PhD RN CPAN CAPA BC CNE

Jan Odom-Forren MS RN CPAN FAAN

Vallire Hooper MSN RN CPAN FAAN

Daphne Stannard PhD RN CCNS CCRN

Jane Certo, ASPAN Director of Programs and Project Development, who graciously facilitated production.

The ideas presented by Joan Vogelsang, RN, MSN, EdD, and Susan Jane Fetzer, RN, PhD, MBA, within the original preface to the *Research Primer, 1st Edition*, remain true to our perianesthesia goals for research.

Lastly, a thank you to Lois Schick, MN MBA RN CPAN CAPA, ASPAN President 2008-2009, and Theresa Clifford, MSN RN CPAN, ASPAN Vice President/President-Elect 2008-2009, as well as the ASPAN Board of Directors for their continued support of perianesthesia nursing research. By offering this publication through our ASPAN Web site (www.aspan.org), members have easy access to a guidebook to begin their research journey.

Ellen L. Poole, PhD RN CCRN CPAN, Author

Professor of Nursing

Chamberlain School of Nursing

Phoenix, AZ

PREFACE

As an original contributor of the first edition of this *Primer*, I am delighted to present a *Research Primer* for the 21st century. The intent of this *Primer* has always been to present a basic resource for the research neophyte. Fictitious examples of current day problems assist in illustrating each section. All sections, including the resource section, have been updated for relevancy to current practice.

The *Research Primer* is designed to provide a guidebook in the research process. Each section includes a basic definition, the importance of the step, basic characteristics followed by fictitious examples pertinent to our specialty. The intent is not to provide lengthy explanations of the various research methodologies, nursing theories and conceptual models. For those wishing to further their exploration of nursing research and theories, formal education or mentoring with an experienced nurse scientist is recommended.

ELP

TABLE OF CONTENTS

	Page Number
THE RESEARCH ABSTRACT	1
THE RESEARCH PROPOSAL	2
Problem Statement	2
Purpose of the Study	3
Assumptions	4
Limitations	4
Review of the Literature	5
Theoretical Framework	6
Research Question	8
Research Hypothesis	9
Research Variables	11
Definition of Terms	13
THE RESEARCH METHODOLOGY	14
Quantitative Research Design	14
Qualitative Research Design	15
Research Sample	16
Research Setting	19
Research Instrument	20
Research Data Collection Procedure	21
Research Data Analysis	22
DISCUSSION & IMPLICATIONS	23
Discussion of Findings	23
Conclusions	24
Implications for Practice	25
ADDITIONAL CONSIDERATIONS	26
References	26
Bibliography	27
Acknowledgements	28
DISSEMINATING FINDINGS	29
Poster Display	29
Oral Presentation	31
Research Publication	32
Journal Club	33

PARTICIPATING IN RESEARCH	34
Ethics in Research	34
Institutional Review Board	35
Informed Consent	35
Examples of Ethical Situations in Perianesthesia Research	36
SUGGESTED READINGS	37
GLOSSARY	38

RESEARCH ABSTRACT

A. *Definition of the research abstract*

1. An abstract is the summary or synopsis of the research study.
2. The abstract is located at the beginning of the published article.

B. *Importance of the research abstract*

1. The abstract is designed to inform the reader about the study with a minimum investment of the reader's time.
2. A research abstract enables the reader to determine whether the study is useful, appropriate and of interest to the reader's area of practice.
3. Important aspects of the research study are emphasized in the abstract.
4. Abstracts are used by other researchers when information for a review of literature is developed.

C. *Characteristics of the research abstract*

1. The abstract contains 100 to 300 words and is written in brief, complete sentences.
2. The abstract includes statements of the research problem, purpose of the study, research question or hypothesis, study methodology, findings of the study, the researcher's conclusions and implications for practice.
3. The clarity and conciseness of the abstract reflects the soundness of the research study.

D. *Example of the perianesthesia research abstract*

Smith and Jones (2005) conducted a quasi-experimental study with random group assignment to investigate the outcome of four preoperative instructional methods on patient knowledge of postoperative instructions. One hundred adult (ages: 18-75, $M = 44.4$ years, $SD = 4.3$) ambulatory surgery patients were randomly assigned to one of four teaching groups taught by the pre-admission nurse. Four teaching groups were: structured format with time for questions and answers; less structured with time for questions and answers; video with no time for questions and answers; and the control of the usual preoperative instruction. Knowledge was measured by the researcher-developed Postoperative Instruction Questionnaire ($r=.84$). As predicted, 75% of ambulatory patients preferred the instructional method with less structure and more time for questions and answers ($p<.034$). Findings indicated postoperative knowledge was the same for all 4 groups. In practice, the findings suggest pre-admission nurses need to tailor preoperative instructions to the individual, allowing for increased time for questions and answers.

THE RESEARCH PROPOSAL

- *Problem Statement*
- *Purpose of the Study*
- *Assumptions*
- *Limitations*
- *Review of the Literature*
- *Theoretical Framework*
- *Research Question*
- *Research Hypothesis*
- *Research Variables*
- *Definition of Terms*

PROBLEM STATEMENT

A. *Definition of the research problem statement*

1. The problem statement identifies **what is and is not known** about the research topic.
2. The problem statement is the situation or nursing care dilemma that the researcher believes requires new knowledge.

B. *Importance of the research problem statement*

1. A clearly stated research problem statement allows the reader to evaluate the research study and determine whether the research study will apply to the reader's nursing practice.
2. The problem statement identifies the researcher's area of interest.
3. The problem statement narrows the focus of the research study by describing the problem, its causes and consequences.
4. The problem statement focuses the reader on issues that need and deserve better understanding.
5. The problem statement alerts the reader to the knowledge-building focus of the research study.

C. *Characteristics of the research problem statement*

1. The problem statement precedes the study purpose.
2. **Problems arise from practice, experiences, observations and interactions with colleagues.** Prior research findings or theories are also sources of problem statements.
3. The researcher derives the problem statement **by identifying gaps in nursing knowledge** and suggesting a direction for the research study.
4. The problem statement is written as a declarative statement that includes the variables and the population to be studied.
5. The research problem determines how the research question and design are related.

D. Examples of a perianesthesia research problem statement

1. Several scoring systems have been developed to evaluate recovery from anesthesia. However, none of the current systems have empirical evidence to support their use for evaluating patients' readiness for discharge from Phase I PACU.
2. Postoperative nausea and vomiting continues to be a problem in adult PACU patients following general anesthesia. Physiological triggers have not been identified.
3. A patient history of cigarette smoking is known to increase the risk of postoperative respiratory complications. The effect of cigarette smoking on postoperative oxygen saturation levels among ambulatory surgical patients is unknown.

PURPOSE OF THE STUDY

A. Definition of the research purpose of the study

1. The "purpose of the study" identifies the specific reason for the study.
2. Declaring the "purpose of the study" further refines the problem statement.

B. Importance of the research purpose of the study

1. Stating the purpose of the study clarifies the extent, significance, rationale and clinical context of the research study.
2. A clearly stated research purpose of the study allows the reader to evaluate the research study and to determine whether the research study will be helpful in the reader's nursing practice.

C. Characteristics of the research purpose of the study

1. The purpose of the study is stated in one sentence.
2. The purpose of the study includes **what will be measured (variables), who will participate (subjects), and how (methods) and where the data are collected (setting).**
3. The variables are clearly defined in the purpose statement.
4. The purpose of the study appears either before or after the review of the literature.

D. Examples of a perianesthesia research purpose of the study

1. The purpose of this study is to describe the incidence of nausea and vomiting after laparoscopic cholecystectomy in middle-aged adult males.
2. The purpose of this study is to examine the relationship between attitude toward specialty certification and years in specialty practice of ASPAN members.
3. The purpose of this study is to determine the missed cues leading to 'failure to rescue' in perianesthesia settings.

ASSUMPTIONS

A. *Definition of the research assumptions*

1. Assumptions are conditions or facts not scientifically tested and which the researcher has taken for granted when designing the study.
2. Assumptions must be met to explore, expand, or use a particular theory or conceptual framework.

B. *Importance of the research assumptions*

1. If the reader disagrees with the researcher's assumptions, the reader will judge the study findings as less applicable to his/her practice.

C. *Characteristics of the research assumptions*

1. Each assumption is stated in a single sentence.
2. Assumptions may be derived from previous research studies.
3. Assumptions should be acknowledged in all studies.

D. *Examples of a perianesthesia research assumption*

1. For the purpose of this study the researcher assumes that tympanic temperature is a reflection of core temperature.
2. For the purpose of this study the researcher assumes that patients' report of NPO status is an accurate measure of actual behavior.
3. For the purpose of this study the researcher assumes that all patients receive some type of preoperative teaching.

LIMITATIONS

A. *Definition of the research limitations*

1. Limitations are situations and conditions which the researcher cannot control in the study design.

B. *Importance of the research limitations*

1. The researcher points out limitations of the study to inform the reader that the study findings may not be generalizable to other populations.
2. The reader may find the study findings even more useful when the reader also disagrees with the researcher's stated limitations.

C. *Characteristics of the research limitations*

1. Each limitation is stated in a single sentence.
2. Limitations may be derived from previous research findings.
3. Limitations are present in all studies.

D. Examples of a perianesthesia research limitation

1. The effect of age on the ability of elderly patients to remember details of their past anesthesia history are a limitation of this study.
2. One of the limitations of this study is the ability of the researcher to control the hourly fluctuations of the ambient temperature in the preoperative holding area.
3. One of the limitations of this study is the small number of individuals completing the study, thus limiting the generalizability of the study results.
4. This study is limited to female patients undergoing laparoscopic procedures.

REVIEW OF THE LITERATURE

A. Definition of the research review of the literature

1. The review of the literature is a summary of published research related to the problem statement.

B. Importance of the research review of the literature

1. A review of the literature identifies the importance of the problem statement, identifies gaps in knowledge, and supports the need to conduct the study.
2. A review of the literature provides the reader with a comprehensive background of the study variables.
3. Information gained during the review of the literature assists the researcher in developing the research methodology.
4. When the research study is completed, the study findings expand the available body of literature about the research problem and offer a guide for future studies.

C. Characteristics of the research review of the literature

1. The review of the literature includes relevant references from journals, textbooks and proceedings from research meetings.
2. **Primary sources** for the review of the literature are references from original research findings.
3. **Secondary sources** for the review of the literature are interpretations of primary sources by other authors. These sources should not be included in a review of literature.
4. When developing the review of the literature, **only use primary sources** to decrease the possibility that research bias and misinterpretation that may be inadvertently introduced by subsequent authors.
5. The review of the literature relies on **current** sources, defined as sources published within the most recent **five years**. One exception is including a classic reference or one of historical value.
6. The review of the literature focuses on the independent and dependent variables and the relationship between the variables as stated in the purpose of the study.
7. Reference information is typically paraphrased by the researcher rather than directly quoted.

8. When all the literature on the research problem has been summarized, the researcher evaluates the content available and points out any gaps in knowledge and inconsistencies in the literature.

D. Example of the perianesthesia research review of the literature

Blackburn and Schoeman (2006) found that patients can identify specific knowledge needs when presented with a checklist. Samboni (2003) asked preoperative patients to rank information needs based on 28 statements of patients needs on a 1 to 5 scale from most important to not important. Patients ranked information on pain control, nausea and vomiting, and return to normal activities as most important to their recovery.

For inpatient surgery, preoperative teaching traditionally happened one or two days prior to surgery. Research supports the positive effects of patient education on the patient in the postoperative period. Benefits include decreased patient pain, anxiety, and increased acceptance of wake up regimen (Stevenson, 2005). A calm emergence from general anesthesia has also been demonstrated in PACU when preoperative education is received (Blackburn, 2005).

Johnson (2001) explored the perceptions of nurses regarding preoperative education for ambulatory surgery patients. Nurses reported that patients did not receive instructions and were unprepared for postoperative events of pain, nausea and vomiting, and were slow to return to normal activities. Sloan (2003) questioned patients about their preoperative instructions and received inconclusive results. However, the low sample size ($n=15$) and the method of selection was unclear, leading to possible methodological issues.

While this review described patient perceptions of preoperative instructional needs (Blackburn & Schoemann, 2006; Blackburn, 2005; Sloan, 2003) and nurses perceptions of preoperative instructional needs (Johnson, 2001), none of the studies (Blackburn & Schoeman; Blackburn; Johnson; Samboni, 2003; Sloan, 2003; Stevenson, 2005) described or explained the difference between nurses' and patients' perceptions of preoperative educational needs for ambulatory surgery. By identifying common perceptions of nurses and patients, preoperative educational programs for ambulatory surgery patients can be mutually satisfying and result in positive outcomes for ambulatory surgery patients.

THEORETICAL FRAMEWORK

A. Definition of the theoretical framework

1. A theoretical framework is the logical structure of a study which allows the researcher to link study findings to the body of nursing knowledge.

2. The framework is derived from established theories, conceptual relationships, or nursing theory.
3. The framework can vary from abstract (grand theories) to concrete (practice theories).

B. Importance of a theoretical framework

1. The framework describes, explains, or predicts a relationship among the study variables.
2. The research question or hypothesis is generated within the structure of the theoretical framework.
3. The framework directs the study methodology.

C. Characteristics of the research framework

1. The reader may identify the theoretical framework in the study's review of literature.
2. The researcher identifies the framework, concepts pertinent to the framework, and relational statements implied by the framework prior to describing the research methodology.
3. A theoretical framework is a research structure which is supported by an established theory.
4. A conceptual framework is a research structure which has been derived from a proposed relationship between two or more concepts.
5. A nursing framework may be based on a nursing theory or conceptual model of nursing. The nursing framework describes relationships unique to nursing and the nursing practice setting.
6. There is no framework unique to a nursing specialty. However, there are middle-range theories specific to specialty practice.
7. Theoretical frameworks may be borrowed from other disciplines if useful in explaining nursing problems.

D. Examples of theoretical frameworks used in perianesthesia research

1. Theoretical frameworks borrowed from other disciplines: *
Mischel's Theory of Uncertainty of Illness
Bandura's Theory of Self-Efficacy
Folkman and Lazarus Cognitive Theory of Coping
2. Conceptual frameworks derived from proposed relationships:
Relationship among pain, anxiety, and parental separation
Relationship between job satisfaction and staff retention
Relationship between smoking and nausea
3. Nursing conceptual frameworks: *
Newman Systems Model
King's Conceptual System and Theory of Goal Attainment and Transactional Process

4. Nursing frameworks: *
Roy's Adaptation Model of Nursing
Orem's Self-Care Deficit Theory
Roger's Concept of Unitary Man
Kolcaba's Theory of Comfort

***Editor's note: These sections depict existing theories, rather than fictional examples.**

RESEARCH QUESTION

A. Definition of the research question

1. A research question is an interrogative statement proposed by the researcher that includes one or more variables.
2. A research question can be stated in PICOT format as described below.

B. Importance of the research question

1. A research question is used in the early stages of a research study when the researcher has insufficient knowledge to develop a hypothesis.
2. The researcher usually presents a research question when a hypothesis cannot be supported by the review of the literature.
3. A research question further delineates the researcher's topic of interest.
4. A research question is answered through the research methodology.
5. A research question directs the research methodology including the population to be studied, the setting, and the way data are to be collected and analyzed.

C. Characteristics of the research question

1. The research question frames how the study data are analyzed and reported to the reader.
2. A research question is proposed by the researcher prior to conducting the research study.
3. Several research questions may be asked by the researcher in a single study.
4. A research question is asked when the researcher cannot predict a relationship between variables based on the review of the related literature.
5. A research question is the researcher's interrogative statement about the group being studied, and the variables under investigation.
6. A research question stated in PICOT format is an interrogative statement which describes the **P**opulation of interest, **I**ntervention of interest, **C**omparison of interest, **O**utcome of interest, and the **T**ime frame.
7. The researcher develops the research question from observations in clinical practice, from previous research studies, or from the review of the literature.

D. Examples of a perianesthesia research question

1. What patient demographic characteristics (age, gender, and surgical procedure) are

associated with postoperative nausea within the first hour after surgery?
Group under study: Postoperative patients experiencing nausea
Dependent Variable: Demographic Characteristics (age, gender, surgical procedure)

2. What proportion of patients undergoing general anesthesia for more than 2 hours develop postoperative hypothermia (temperatures less than or equal to 94 degrees F.)?
Group under study: Patients undergoing general anesthesia for more than 2 hours
Dependent Variable: Postoperative hypothermia

3. Does the assessment of sensory motor dermatome level following .75% Marcaine epidural anesthesia predict patient readiness for discharge from Phase I PACU?
Group under study: Patients with .75% Marcaine epidural anesthesia
Independent Variable: Sensory motor dermatome level assessment
Dependent Variable: Readiness for discharge

4. PICOT format:
Does structured versus unstructured preoperative education for laparoscopic cholecystectomy ambulatory surgery patients improve patients' postoperative perceptions on uneventful postoperative at-home recovery for the first 3 days postoperatively?
Population: Laparoscopic cholecystectomy ambulatory surgery patients
Intervention: Structured preoperative education
Comparison: Unstructured preoperative education
Outcome: Perception of uneventful at-home recovery
Time frame: First 3 days at home

RESEARCH HYPOTHESIS

A. Definition of the research hypothesis

1. A hypothesis is a formal declaration by the researcher indicating the expected relationship between the independent and dependent variables.
2. A hypothesis is a potential or possible outcome of the research study proposed by the researcher before conducting the study.

B. Importance of the research hypothesis

1. A hypothesis translates the purpose of the study into expected findings.
2. A hypothesis informs the reader of how the researcher will narrow the topic under study.
3. A hypothesis directs the research methodology including the population to be studied, the setting, and the way data are to be collected and data analysis.
4. A complete, clear and concise hypothesis adds credibility to the research study.

C. Characteristics of the research hypothesis

1. A hypothesis is always proposed by the researcher before conducting the research study.
2. The researcher develops a hypothesis from the studies cited in the review of the literature.
3. Established theories and conceptual frameworks predict, describe, or prescribe the expected relationship between the independent and dependent variables. The predicted relationship is presented in the hypothesis.
4. Several hypotheses may be generated for the same study.
5. Hypotheses are never proven. They are supported or not supported by the research study findings.
6. Practical experience can be used by the researcher to predict the direction of the hypotheses.
7. A research hypothesis determines how the data are analyzed and reported to the reader.
8. A research hypothesis states the anticipated relationship between the independent and dependent variable and the population being investigated. The research hypothesis can also be referred to as a scientific, theoretical or directional hypothesis.
9. A null or statistical hypothesis states that no relationship exists between the independent and dependent variable. A null hypothesis is only used for statistical analysis.
10. A researcher presents the null hypothesis only after declaring the research hypothesis for the reader.

D. Examples of a perianesthesia research hypothesis

1. Research Hypothesis: Patients who smoke will demonstrate more postextubation coughing than patients who do not smoke.
Null Hypothesis: There is no difference between patients who smoke and those who do not smoke.
Group being studied: Patients intubated for general anesthesia
Independent Variable: Smoking
Dependent Variable: Postextubation coughing
Expected Relationship: A predictive positive relationship of cause and effect (smoking increases, coughing increases)
2. Research Hypothesis: A patient's compliance with the preoperative NPO regimen is not related to the receiving of preoperative teaching.
Null Hypothesis: There is no difference between patients who do or do not comply with preoperative NPO regimen and receiving of preoperative teaching.
Group being studied: Patients required to be NPO
Independent Variable: Compliance with NPO
Dependent Variable: Preoperative teaching

Expected Relationship: No relationship (Compliance increases, preoperative teaching may be present or not)

3. Research Hypothesis: Surgical patients who receive preoperative education develop fewer postanesthesia complications.

Null Hypothesis: There is no difference between surgical patients who do and do not receive preoperative education and postoperative complications.

Group being studied: Surgical patients

Independent Variable: Receiving preoperative education

Dependent Variable: Postanesthesia complications

Expected Relationship: A predictive negative relationship of cause and effect (Education increases, postoperative complications decrease)

RESEARCH VARIABLES

A. Definition of the research variables

1. A variable is a quality, property, personal characteristic, object, technique or situation that is liable to change.
2. Research variables are observed or measured when a research question or hypothesis is asked.
 - a. The **independent variable** is the variable that is intentionally altered or manipulated by the researcher during a study. The independent variable can also be referred to as the treatment or experimental variable. For example, a specific perianesthesia nursing action may be an independent variable.
 - b. The **dependent variable** is the effect the researcher measures after manipulating the independent variable. The dependent variable can also be referred to as the outcome or criterion variable. For example, a perianesthesia patient outcome may be a dependent variable.
 - c. Demographic variables are characteristics that describe or profile the group being studied.
 - d. Extraneous or intervening variables are those uncontrollable environmental or external factors which may interfere with or affect the independent or dependent variables.

B. Importance of the research variables

1. The independent and dependent variables guide the research methodology.
2. The researcher presumes or hypothesizes that changes in the dependent variable are caused by the manipulation of the independent variable.
3. When extraneous or intervening variables are controlled or described, the usefulness and application of the research findings improve.
4. By reviewing the demographic variables described by the researcher, the reader determines the applicability of the study findings to the patient population in practice.

C. Characteristics of the research variable

1. Variables can be described, measured or controlled.
2. The researcher must be able to measure dependent variables with a research instrument or tool.
3. The independent and dependent variables are usually identified in the title and the abstract of the research study.
4. The variable(s) of interest are presented clearly in the research question or hypothesis.

D. Examples of perianesthesia research variables

1. Research Hypothesis: There is a positive relationship between the application of the forced air warmer and the increase in core body temperature.
Independent Variable: Forced air warmer
Dependent Variable: Core body temperature
2. Research Study Title: A study to determine the effect of preoperative interactive video on the postoperative recovery of ambulatory surgery patients.
Independent Variable: Preoperative interactive video
Dependent Variable: Postoperative recovery of ambulatory surgery patients
3. Research Question: What is the incidence of nausea following ophthalmic surgery with retrobulbar block?
Independent Variable: Retrobulbar block
Dependent Research Variable: Nausea
4. Common demographic variables characteristic in perianesthesia research include, but are not limited to:
 - a. patient age
 - b. patient gender
 - c. surgical procedure
 - d. anesthesia type
 - e. educational level
 - f. socioeconomic background
5. Common extraneous variables in perianesthesia research include:
 - a. ambient temperature
 - b. medications administered intraoperatively
 - c. length of surgery
 - d. ASA status
 - e. Time between preoperative teaching and actual surgery

DEFINITION OF TERMS

A. *Definition of the research definition of terms*

1. **Conceptual or theoretical definitions** of variables are broad, abstract explanations derived from the research framework.
2. **Operational definitions** of variables are specific explanations that describe how variables will be identified or measured by the researcher. The operational definition includes an action or behavior.

B. *Importance of the research definition of terms*

1. Definitions explain the meaning of each study variable selected by the researcher.
2. Each variable has a definition so the reader knows exactly how the researcher defines and measures the variable.
3. Each variable in the research question or hypothesis must be defined clearly to convey common meaning for the researcher and the reader.
4. A clear understanding of each definition improves the utilization of the findings in the reader's practice.
5. Clear definitions assist in comparing variables in the current study with variables in other research studies.

C. *Characteristics of the research definition of terms*

1. A conceptual definition is transformed into an operational definition.
2. The researcher presents an operational definition for each variable.
3. The researcher states only one operational definition chosen specifically for the study.

D. *Examples of perianesthesia research definition of terms*

1. Variable: Hypothermia
Conceptual definition: Core body temperature below normal temperature range of 36 degrees Centigrade
Operational definition (Choice A): Tympanic temperature less than 36 degrees Centigrade as measured by [describes the actual tympanic instrument used].
Operational definition (Choice B): Pulmonary artery temperature less than 36 degrees Centigrade as measured by [describes the actual pulmonary artery catheter and thermistor used].
2. Variable: Pain
Conceptual definition: A subjective perception of discomfort
Operational definition (Choice A): A score of 5 or greater on the visual analog scale ranging from 0 to 10 cm. Zero least discomfort to 10, most discomfort.
Operational definition (Choice B): Patient's verbal description of discomfort or distress on a scale of 1-10 with 1 as least and 10 as most ever.

3. Variable: Systolic Blood Pressure
Conceptual definition: The pressure exerted against the peripheral vessels during systole
Operational definition (Choice A): The peak value identified by a pressure monitoring device connected to an indwelling right radial catheter.
Operational definition (Choice B): The digital systolic pressure value reported by the automatic blood pressure monitor attached to a left arm blood pressure cuff.

THE RESEARCH METHODOLOGY

- *Quantitative Research Design*
- *Qualitative Research Design*
- *Research Sample*
- *Research Setting*
- *Research Instrument*
- *Research Data Collection Procedure*
- *Research Data Analysis*

QUANTITATIVE RESEARCH DESIGN

A. Definition of the quantitative research design

1. A quantitative research design is an approach to a problem statement that describes an observable phenomenon, demonstrates relationships between observable phenomena, or tests hypotheses.

B. Importance of the research quantitative design

1. Quantitative research designs attempt to provide an answer to the research problem by asking questions or testing hypotheses.
2. Quantitative designs are best used when the research interest is to determine a correlation or cause and effect relationships between variables.

C. Characteristics of the research quantitative design

1. Quantitative research findings often are concerned with the outcomes of specific interventions.
2. The researcher attempts to maintain control over the variables throughout the study.
3. The researcher determines the procedures for data collection, but is a passive observer during data collection.
4. Data gathered from quantitative designs are **usually presented as numbers**.
5. Quantitative designs use statistical techniques to answer research questions and to test research hypotheses.

D. Examples of a perianesthesia research quantitative design

1. A descriptive research design was used to determine which preoperative teaching strategy was most effective in reducing postoperative anxiety in ambulatory surgery patients.
2. The relationship between patient voiding and discharge readiness was determined using quantitative correlational methods.
3. A quasi-experimental design was used to determine the effect of meperidine on reduction of postoperative pain.

QUALITATIVE RESEARCH DESIGN

A. Definition of the qualitative research design

1. A qualitative research design is typically multi-method in focus and involves an interpretative naturalistic approach to its subject matter.
2. Qualitative studies describe the lived experience of the participant and articulate behaviors, beliefs, meanings, rituals, practices, interacting processes, and patterns of interactions.
3. Qualitative studies answer the how and why questions.

B. Importance of the research qualitative design

1. Qualitative designs can provide, explicate, and articulate insight and meaning into a participant's experience which may not be measurable or captured using quantitative approaches.
2. Qualitative designs are used when the researcher aims to gain insight and understanding or generate a theory about a phenomenon.
3. Qualitative designs are sometimes used to generate research questions, hypotheses, or theories for future quantitative study.
4. Qualitative designs are used when the research focus is on discovery or exploration.

C. Characteristics of the research qualitative design

1. Qualitative data analysis occurs concurrently with data collection rather than sequentially as with quantitative research. Data analysis continues through the writing process. The data gathered from qualitative designs are in the form of **participant narratives**, or the researcher's observations and field notes.
2. Common data collection methods for qualitative research designs include: participant narratives and interviews, participant observations, videos, photographs, historical analysis, interactional or visual analysis and the researcher's introspective observations and field notes. The type of data collection depends on the goals of the research project.
3. Qualitative researchers need to critically think through the dynamic interaction between self and data collection and analysis, since most qualitative research designs utilize the researcher as the primary data collection tool and principal analyzer for

the data. This critical thinking is referred to as **reflexive thinking**, and is typically accomplished through the disciplined use of memos, whereby the researcher can explore personal feelings and experiences that may influence the study.

4. Projected sample size and selection, settings, sample probes and other research instruments, procedures and data collection evolve through the data analysis.
5. The merit and rigor of a qualitative study can be evaluated by examining coherence, agreement, and the account's practical implications. **Coherence** refers to the fidelity of the interpretive account. **Agreement** refers to others (such as perianesthesia practitioners evaluating a perianesthesia qualitative research study) judging the clarity and comprehensiveness of the interpretive account. Finally, a good interpretive account must offer increased understanding and proven practical implications of the phenomenon that was studied.

D. Examples of the perianesthesia qualitative research design

1. The patient's experience of pain management will be explored using qualitative methods.
2. The experience of family members in the ambulatory surgical waiting room will be investigated from an ethnographic qualitative perspective.
3. The phenomenon of midazolam-induced amnesia will be described from the participant's perspective in this qualitative study.

RESEARCH SAMPLE

A. Definition of the research sample

1. **The group of individuals who agree to participate in the study is called the research sample.** Patients, family, significant others, nurses, and physicians are examples of research subjects in the sample.
2. The research design determines the type of sample needed as a subset of the population selected as the data source.

B. Importance of the research sample

1. **A sample is selected because it is not feasible for the researcher to study an entire population.**
2. **For quantitative studies**, the sample represents the entire population as stated in the research question or hypothesis.
3. The sample must represent the population in order for the study findings to reflect the population.
4. The sample is described with detail sufficient to allow the reader to determine whether study findings apply to the reader's population of interest.
5. A comprehensive description of the sample allows the study to be replicated in the case of quantitative studies.

6. The researcher describes the study sample by collecting and communicating information about demographic variables of the sample.
7. The sample is biased when it is not representative of the population. **Bias** can influence the study findings. This is particularly important in quantitative studies.
8. **For qualitative studies**, after dwelling with the data and seeing repeated patterns, the researcher can evaluate the sampling strategy. This has been referred to a **conceptual saturation**.

C. Characteristics of the research sample

1. The sample is a subset of the population.
2. The population consists of all the potential participants who are known to meet the study criteria for inclusion.
3. Sampling techniques are selected by the researcher to meet the study criteria for the research questions or hypotheses under investigation.
4. Sample selection requires the researcher to establish and report the inclusion and exclusion criteria for the study.
5. **In quantitative studies**, the number and type of variables being studied is considered when determining the size of the sample. This determination is done with a power analysis and should be done prior to beginning the study.
6. The sample's ability to reflect the population on the variables being studied is referred to as **representativeness**. This is particularly important for quantitative studies.
7. Random or probability sampling provides a representative sample because all members of the population selected have an equal chance of being asked to participate in the study. Even with random sampling, the sample may not be representative of the population.
8. Nonrandom or nonprobability sampling provides a sample which is most convenient or is known to possess the characteristics or variables of interest. **Convenience samples are most commonly used in qualitative research studies**.
9. Nonrandom sampling limits the researcher's ability to generalize the research findings to the entire population but is a more feasible and practical approach to obtain participants or research subjects.

D. Examples of the perianesthesia research sample

1. A random sample of female patients who reported a history of dyspnea were selected for the study. Patients over the age of 18 years were asked to participate. The final study sample included 36 women from 20 to 62 years old with a mean age of 45 plus or minus 4 years old.
 Population: Women with dyspnea
 Sample: 36 women
 Eligibility criteria: Over the age of 18 years
 Type of sample: **Quantitative**

Female adult patients who reported a history of dyspnea were recruited for a study regarding post operative respiratory problems. Data saturation was achieved with 10 participants.

Population: Female adult patients with dyspnea

Sample: 10 women

Type of sample: **Qualitative**

2. All adult patients undergoing ambulatory laparoscopic procedures who experienced postoperative nausea and vomiting following discharge home were asked to participate in the study. Data were collected from October 1 to December 1. The convenience sample for the study consisted of 38 patients, 15 undergoing laparoscopic cholecystectomy, 3 undergoing laparoscopic herniorrhaphy and 20 requiring laparoscopic bilateral tubal ligation.

Population : Ambulatory laparoscopic patients who experienced nausea and vomiting following discharge home

Sample: 38 subjects

Eligibility criteria: Adults with post discharge nausea and vomiting during the time frame from October 1 to December 1

Type of sample: **Quantitative**

A convenience sampling of patients undergoing laparoscopic procedures who experienced postoperative nausea and vomiting following discharge home were asked to describe their experiences. Recruitment was during the fall of 2006. Saturation was reached with a sampling of 22 participants.

Population : Ambulatory laparoscopic patients who experienced nausea and vomiting following discharge home

Sample: 22 participants

Eligibility criteria: Adults with post discharge nausea and vomiting during Fall 2006

Type of sample: **Qualitative**

3. The study included the parents of ambulatory pediatric patients attending the preoperative interview. This was the first surgical experience for each pediatric patient. The parent of every third child was asked to participate until a sample size of 100 was obtained.

Population: Parents of children undergoing ambulatory surgery who attended the preoperative interview

Sample: 100 parents

Eligibility criteria: Parents of first time surgical patients

Type of sample: **Quantitative**

Parents of first time ambulatory pediatric patients who attended a preoperative interview were asked to describe their feelings regarding the perioperative experience for their children. Conceptual data saturation was reached with 32 participants.

Population: Parents of children undergoing ambulatory surgery who attended the preoperative interview

Sample: 32 parents

Eligibility criteria: Parents of first time pediatric surgical patients

Type of sample: **Qualitative**

RESEARCH SETTING

A. Definition of the research setting

1. A setting is a specific area or location where the study's data collection occurs.

B. Importance of the research setting

1. A description of the research setting allows the reader to decide whether the findings of the study can be applied to other practice areas.
2. A detailed description of the setting allows the research study to be replicated.
3. The research setting may affect the study findings by acting as an extraneous (environmental) variable.

C. Characteristics of the research setting

1. The setting may occur naturally, such as the patient unit, or be contrived such as in a mock patient unit or laboratory.
2. The researcher briefly describes the setting of the study in 1 to 2 sentences.
3. The setting may include: area of country, hospital or facility type and size, practice area, and time of day or year.
4. Environmental variables in the setting, such as temperature, noise, number of people present, may influence the study findings and are reported by the researcher in the discussion section of the research report.

D. Examples of the perianesthesia research setting

1. The setting for the study is an urban, acute care facility in the Northwest that provides cardiovascular surgery. Data were collected in the 10 bed Phase I PACU and the 18 bed Phase II Ambulatory Unit.
2. Two freestanding, for profit surgical centers in central Michigan served as the study setting. The research questionnaire was administered in the Preoperative Teaching and Testing area of each center.
3. The PACU nurses' lounge of 10 teaching acute-care institutions throughout the Northeast served as the study setting. The 10 institutions were randomly selected from the American Hospital Association Guide to Healthcare Facilities.

RESEARCH INSTRUMENT

A. Definition of the research instrument

1. An instrument is any device or tool used to collect data or gather information, specific to the concepts of interest in the study.
2. The instrument measures the independent and dependent variable and describes characteristics of the subjects.
3. The instrument makes it possible to transform concepts into a numerical quantity or descriptive quality.

B. Importance of the research instrument

1. A valid and reliable instrument increases the strength of the study findings. Instruments that are not valid and reliable diminish research findings.
2. The instrument must be consistently applied and correctly administered to all of the subjects to insure reliable data collection procedures.

C. Characteristics of the research instrument

1. More than one instrument may be required to measure the variables under study.
2. Types of instruments include questionnaires, interviews, and physiological devices such as thermometers and ECG machines.
3. The researcher describes how the instrument is specifically applied to collect data from the subject.
4. **Validity** is the instrument's ability to actually measure the concept is intended to measure. For example, an instrument designed to measure pain would not be a valid instrument to measure comfort.
5. **Reliability** is the instrument's ability to collect data that are consistent and dependable both over time and among different individuals. For example, a continuous heart rate monitor is a more reliable instrument to measure heart rate than a 15 second radial pulse count.
6. The researcher defends the appropriateness of the instrument by describing its qualities, abilities, established reliability and validity to the reader.
7. The instrument used to measure the study variables may be either previously developed or newly created by the researcher. **Reliability and validity must be reconfirmed when a previously established instrument is amended or adapted by the researcher.**

D. Examples of a perianesthesia research instrument

1. The instrument used in the study to measure anxiety is the Visual Analog Scale (VAS). The VAS is a horizontal 100 centimeter line. At one end of the line is written, "No Anxiety At All", and at the other end is written, "Extremely Anxious." The VAS takes approximately 30 seconds to complete. The VAS has been used previously and reliability and validity are established.
2. Data were collected using the First Deep Sea Genius tympanic temperature device in the core mode to maintain validity. Temperature is taken by nurses instructed by

the nurse researcher on the proper use of the device. Temperature was obtained from the right auricle only. The manufacturer reports a reliability of plus or minus 0.02 degrees Centigrade. The clinical engineering department tested the calibration daily during data collection.

3. The data collection tool for this descriptive study was developed by the researcher to record information from the patient's chart including patient age, duration of surgery, type of anesthesia, type of surgery, and discharge score.

RESEARCH DATA COLLECTION PROCEDURE

A. Definition of the research data collection procedure

1. The data collection procedure outlines and describes the process required of the researcher to acquire subjects and collect data needed to answer the research question or test the hypothesis.

B. Importance of the research data collection procedure

1. The procedure tells the reader the conditions under which the study was conducted and can be replicated.
2. The procedure needs to be followed precisely so data collected is consistent for all subjects.
3. Researcher bias can be introduced if procedures are not clear or detailed sufficiently to control for extraneous environmental variables.

C. Characteristics of the research data collection procedure

1. The procedure is described in a chronologic order of events from recruitment of subjects to documentation of data collected.
2. Concerns with the data collection procedure are communicated to the reader in the discussion section. Details of the researcher's concerns may include changes in the setting not under the researcher's control such as noise, equipment failure or staffing.

D. Examples of a perianesthesia research data collection procedure

1. After approval by the Institutional Review Board (IRB), the nurse researcher attended the preoperative education class and invited patients who met the sample criteria to participate in the study. Patients who agreed to participate signed an informed consent. At the conclusion of the class, participants were given thirty minutes to complete the questionnaire. Questionnaires were collected by the researcher and examined for completeness before the participants left the classroom.
2. The nurse manager of each PACU was approached by the investigator to participate in the study previously approved by the Institutional Review Board of the institution. When informed consent was obtained, the investigator observed each nurse manager for three eight-hour shifts chosen at the convenience of the researcher over a three month period. The number of interactions with staff nurses,

supervisors, physicians and patients was recorded on the data collection tool by the researcher.

3. After obtaining Institutional Review Board approval, all ambulatory patients who met the study criteria were invited to participate in the study when they attended the preadmission interview. A copy of the signed informed consent was included in the patient's record. Following surgery, on admission to the Phase I PACU, all patients were given three warmed cotton blankets. Study subjects were also provided with an additional warmed blanket folded 3 times over their thorax. Tympanic temperatures and patient perception of cold were measured on all patients every 10 minutes for 60 minutes and recorded on the data collection tool.

RESEARCH DATA ANALYSIS

A. *Definition of the research data analysis*

1. **Data analysis transforms the raw data obtained from the research instrument into a form that can be interpreted.**
2. Interpretation of the data analysis answers the research question or tests the research hypothesis.

B. *Importance of the research data analysis in quantitative studies*

1. **Data analysis organizes, processes and gives meaning to the collected data.**
2. Data analysis allows the reader to identify actual study findings.

C. *Characteristic of the research data analysis in quantitative studies*

1. Data analysis requires the use of mathematical formulas and statistical techniques.
2. Data analysis results are organized and presented to the reader in relation to the research question or hypothesis.
3. Data analysis results are often supported with graphs, tables or charts.
4. Data analysis appears in the results section of a research article.
5. The statistical techniques chosen for data analysis are dependent upon the type of data gathered with the instrument. Each type requires different statistical methods for accurate analysis.
6. The statistical techniques chosen for data analysis are dependent upon the intent of the researcher to describe, correlate, explain or predict.
7. Statistically significant findings are accompanied by a level of significance or “p” value. Significance indicates the data did not result from chance, but may indicate a difference in the findings.
8. The level of significance set for the study identifies whether the study findings allow the researcher to accept or reject the null hypothesis. The level of significance is represented by a “p” value, usually set at $<.05$.

D. Examples of a perianesthesia research data analysis in quantitative studies

1. Descriptive statistical techniques were used to analyze the data obtained from the data collection tool. Demographic data and mean scores with standard deviations are reported in Table 1.
2. The first hypothesis was tested using a t-test for independent samples to determine the difference between the two warming devices. The findings were statistically significant with $t = 1.27$ ($p < .05$) level.
3. The relationship between amount of pain medication and level of preoperative anxiety was determined by computing the Pearson Product Moment correlation coefficient. The findings indicated a statistically significant positive correlation of $r = .57$ ($p < .05$).

DISCUSSION & IMPLICATIONS

- *Discussion of Findings*
- *Conclusions*
- *Implications for Practice*

DISCUSSION OF FINDINGS

A. Definition of the research discussion of findings

1. **The discussion section of the research article translates the results of data analysis into findings.**
2. The findings represent the interpretation of the data analysis to answer the purpose of the study.

B. Importance of the research discussion of findings

1. **The discussion of findings provides an interpretation of the data analysis for the reader. Other researcher's interpretations of the data may be feasible.**
2. Findings from the study are linked to findings of previous research reported in the review of the literature.
3. The reader analyzes the discussion of findings to determine whether the research question or hypothesis has been answered.
4. Findings cannot be proven. Findings offer support or refute the research framework, research question or hypotheses guiding the study.

C. Characteristics of the research discussion of findings

1. A discussion of findings appears in the research article after the data analysis.
2. The discussion of findings restates the research purpose of the study, and is organized to answer each research question or hypothesis.
3. The discussion of findings includes a comparison of the current study findings with the existing body of knowledge described in the review of the literature.

4. The researcher discusses any research findings that are contrary to other studies.

D. Examples of a perianesthesia research discussion of findings

1. Findings from this study indicated that the patient's postoperative level of anxiety is reduced when visitation is made available in the PACU. This finding supported those of previous research.
2. The findings of the study showed that the modified Aldrete scoring system was not related to the nursing assessment of readiness for Phase I discharge. This finding is contrary to published reports of the usefulness of the modified Aldrete system.
3. Findings of this study did not support the proposed research hypothesis that a positive relationship existed between pulse oximetry and arterial oxygen level. These findings supported research that included hemoglobin level and temperature in the interpretation of arterial saturation.

CONCLUSIONS

A. Definition of the research conclusions

1. **The conclusions are specific outcome statements of the research study.**
2. Conclusions are based on the research question or hypothesis.

B. Importance of the research conclusions

1. **The researcher conscientiously avoids developing any conclusion that is not supported by the data analysis.**
2. The reader analyzes the study findings to compare their impressions with the researcher's conclusions. This will confirm the importance of the study to the reader's area of practice.

C. Characteristics of the research conclusions

1. The conclusions appear near the end of the research article.
2. The conclusions are succinct statements. New information is not presented in the conclusion and elaborations are not recommended.
3. The conclusions include a restatement of the purpose of the study.
4. The conclusions are organized to parallel the order of the research question(s) or hypothesis(es).
5. One conclusion is reported for each research question or hypothesis.

D. Examples of a perianesthesia research conclusion

1. The findings in this study led to the following conclusions: 1) patients who receive visitors in the PACU demonstrate lower anxiety and 2) patients desire visitors in the PACU when offered a choice.
2. These research findings support the conclusion that patients will be less likely to experience emergence excitement if therapeutic touch is administered preoperatively.

3. The conclusion of this study is that postoperative television in Phase II will predict an early discharge of ambulatory surgical patients to home.

IMPLICATIONS FOR PRACTICE

A. Definitions of the research implications for practice

1. The implications for practice are the researcher's suggestions for ways that the study findings might be applied in nursing practice, nursing education, nursing administration or future research studies.

B. Importance of the research implications for practice

1. Implications for practice translate the research findings to solve a clinical problem.
2. Implications for practice allow the reader to bridge the gap between traditional and research based practice.
3. The implications section considers the clinical and practical significance of the statistical data analysis.
4. Implications for practice suggest ways the reader may use the study findings.
5. The researcher must avoid projecting subjective judgments or biases when interpreting the data analysis.

C. Characteristics of the research implications for practice

1. Implications may be included, under the heading of “recommendations for practice” in the research article.
2. The researcher attaches importance to findings obtained from the data analysis in the implications section of the research article.
3. Implications for using the findings in similar settings are stated.
4. At least one implication is reported for each conclusion reported by the researcher.

D. Examples of perianesthesia research implications for practice

1. Implications for nursing practice from this study suggest that preoperative teaching is best accomplished prior to the admission assessment. Additional time may be required when scheduling this nursing intervention.
2. The study findings suggest that certified PACU nurses are more effective mentors to new staff than nurses who are not certified. Nurse managers are encouraged to consider the role of certification when making assignments.
3. The study findings have implications for the use of oxygen when transporting patients to the PACU from the OR. The researcher recommends that after general anesthesia, patients, especially pediatric patients, be transported with oxygen from the OR to the PACU. The task that nurse managers must consider when facilitating this practice is assuring an adequate supply of oxygen tanks. Nurse educators are responsible for including transport policies and procedures when orienting new staff members. Further research is needed to determine the appropriate rate of oxygen delivery when transporting patients after general anesthesia from the OR to the PACU.

ADDITIONAL CONSIDERATIONS

- *References*
- *Bibliography*
- *Acknowledgements*

REFERENCES

A. Definition of the research references

1. References are a list of sources cited throughout a research article to credit authors for previous ideas, facts and knowledge.

B. Importance of the research references

1. References link the study with the existing body of knowledge.
2. References provide a source of knowledge available on the research topic and a path to further readings.

C. Characteristics of the research references

1. A list of references appears at the end of the research article.
2. A reference citation contains the specific details necessary to access the reference and includes: author, year of publication, source, title, pages.
3. References are cited throughout the research article.
4. The format or order of reference citations is determined by the publisher of the research article.
5. References include publications in journals or texts, lectures, personal communications or materials owned by institutions such as policies and procedures.
6. References are provided for pictures, graphs, tables or instruments after permission is obtained from the original publisher and author.

D. Examples of perianesthesia research references

1. American Medical Association (AMA) style for the *Journal of PeriAnesthesia Nursing (JoPAN)*
 1. Quinn S: Families' assumptions about perceived needs in the PACU. *Crit Care Nurs* 27:34-44, 2007
 2. Fisher WJ, Campbell AC, Dugall D, et al: Patient centered nursing in the PACU: An evaluation of care. *J PeriAnesth Nurs* 27:8-21, 2007
 3. Clay T: The effects of music therapy on anxiety in surgical patients. *J PeriAnesth Nurs* 26: 50- 54, 2006
 4. Stanley J: The lived experience of the ambulatory surgery patient. *J PeriAnesth Nurs* 27: 89-95, 2007. Available at: www.jopan.org. Accessed on December 11, 2007.

2. American Psychological Association (**APA**) style for other nursing journals Clay, T. (2006). The effects of music therapy on anxiety in surgical patients. *Journal of PeriAnesthesia Nursing*, 26(4), 50-54.
 - Fisher, W.J., Campbell, N., Dugall, D. Klein, E., & Jefferson, P. (2007). Patient centered nursing in the PACU: An evaluation of care. *Journal of PeriAnesthesia Nursing*, 27(3), 8-21.
 - Quinn, S. (2007). Families' assumptions about perceived needs in the PACU, *Critical Care Nurse*, 27(5), 34-44.
 - Stanley, J. (2007). The lived experience of the ambulatory surgery patient. *Journal of PeriAnesthesia Nursing*, 27(3), 89-95. Retrieved on December 11, 2007 from www.jopan.org

BIBLIOGRAPHY

A. Definition of the research bibliography

1. The bibliography is a list of published literature reviewed prior to and during a study and pertinent to, but not cited in, the research article.

B. Importance of the research bibliography

1. The bibliography provides the reader with additional publications related to the research topic.

C. Characteristics of the research bibliography

1. A bibliography is optional.
2. The bibliography is placed after the reference list.
3. A bibliographic citation includes the specific details necessary to access the source and includes: author, year of publication, source, title, pages.
4. The format or order of the bibliographic citations is determined by the publisher of the research article.

D. Examples of the perianesthesia research bibliography

1. American Medical Association (**AMA**) style for *Journal of PeriAnesthesia Nursing (JoPAN)*

Davis F: The lived experience of spinal anesthesia. *J PeriAnesth Nurs* 25:78-85, 2006

Frost WJ, Cooper N, Howard D, et al: The effect of spinal anesthesia on postoperative voiding. *Anesth & Analg* 91:8-21, 2007

Willsher M: Urometrics following spinal anesthesia. *Crit Care Nurs* 27:34-44, 2007

Zucker E: The effects of shortened NPO status on postoperative nausea and vomiting. *AORN J* 86: 700-710.

Available at: <http://www.aorn.org/AORNJournal/>

Retrieved on December 12, 2007.

2. American Psychological Association (**APA**) style

Davis, F. (2006). The lived experience of spinal anesthesia. *Journal of PeriAnesthesia Nursing*, 25(4), 78-85.

Frost, W.J., Cooper, N., Howard, D., et al. (2007). The effect of spinal anesthesia on postoperative voiding. *Anesthesia & Analgesia*, 91(3), 8-21.

Willsher, M. (2007). Urometrics following spinal anesthesia. *Critical Care Nurse*, 27(5), 34-44.

Zucker, E. (2007). The effects of shortened NPO status on postoperative nausea and vomiting. *AORN Journal*, 86(5), 700-710. Retrieved on December 12, 2007 from <http://www.aorn.org/AORNJournal/>

ACKNOWLEDGEMENTS

A. Definition of the research acknowledgements

1. An acknowledgement formally recognizes individuals who contributed to the completion of the research study or the preparation of the manuscript.

B. Importance of the research acknowledgements

1. Research is a collaborative effort that is fostered by publicly recognizing the assistance of others.
2. Revealing sources of assistance is an ethical responsibility of the researcher.
3. Assistance provided to the researcher in the form of support or product technology is described in detail.
4. The researcher must reveal any financial or technological support in a statement of benefits.

C. Characteristics of the research acknowledgements

1. The acknowledgement recognizes assistance in any phase of the research process including participation by librarians, statisticians, artists, mentors, data collectors, or critical manuscript reviewers.
2. The name and title of individuals or name and address of companies are included in the acknowledgement with a brief description of the assistance, services or equipment provided.
3. An acknowledgement is positioned at the end of the research article prior to the references.

D. Examples of a perianesthesia research acknowledgement

1. This research study was supported by a grant from the American Society of PeriAnesthesia Nurses.
2. The researcher appreciates the assistance of Judy Smith, MLS, for reference acquisition.
3. ABC Electronics provided the cardiac monitors and tympanic membrane equipment used in data collection.

DISSEMINATING FINDINGS

- *Poster Display*
- *Oral Presentation*
- *Publication*
- *Journal Club*

POSTER DISPLAY

A. *Definition of the research poster display*

1. A research poster display visually presents the major sections of a study on a display board.

B. *Importance of the research poster display*

1. A poster display visually communicates a summary of the study.
2. A poster display allows timely presentation of recently completed research studies which have not been published.
3. A poster display is one strategy to bridge the gap between research and practice.

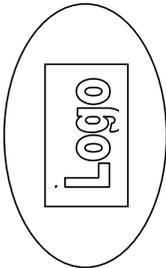
C. *Characteristics of the research poster display*

1. The important parts of a research study are included in the sections of a poster display.
2. Poster displays are constructed for a freestanding board or table assembly.
3. Each section of a poster display has 6-10 lines so the poster display can be read in 2-3 minutes.
4. Poster display lettering is clearly readable at a distance of 6-8 feet.
5. An abstract may accompany a poster display as a handout for the reader.
6. The researcher is present during scheduled poster display sessions to answer questions and dialogue with interested readers.

D. *Example of the perianesthesia research poster display*

Key for diagram on next page:

1. Organizational Logo (optional)
2. Title of Presentation, Presenter(s), Affiliations
3. Background
4. Demographic Data
5. Pictures that illustrate project
6. Purpose
7. Charts of Data: Pie charts, etc.
8. Methods
9. Results
10. Conclusion
11. Acknowledgements: Funding, etc.



Title of Presentation
Presenter(s)
Affiliations

Background

Demographic Data

Picture

Chart Title

Picture

Chart Title

Picture

Purpose

Methods

Results

Conclusion

Acknowledgements

ORAL PRESENTATION

A. *Definition of the research oral presentation*

1. An oral presentation is a verbal report of the major sections of a study presented at a scientific or professional meeting.

B. *Importance of the research oral presentation*

1. An oral presentation communicates a summary of the study while providing the opportunity for limited discussion and dialogue between the researcher and the audience.
2. The audience has the opportunity to seek clarification of the research methods or findings from the researcher during an oral presentation.
3. The oral presentation allows timely presentation of recently completed research studies which have not been published.
4. An oral presentation is one strategy to bridge the gap between research and practice.

C. *Characteristics of the research oral presentation*

1. The important parts of a research study are included in the oral presentation: title, researcher, problem, purpose, research question or hypothesis, methodology, results, discussion of findings, conclusions and implications for practice.
2. Sufficient detail is presented to allow the audience to critique the findings and to determine applicability to practice.
3. The formal presentation usually lasts 10 to 20 minutes; the researcher concludes by inviting questions and comments from the audience. Five to 10 minutes is allowed for verbal exchange between the researcher and the audience.
4. Audiovisuals such as slides or power point enhance the presentation and emphasize the main points.
5. The research abstract may be offered as a handout for the audience.

D. *Examples of a perianesthesia research oral presentation*

1. The effects of aromatherapy on nausea and vomiting in ambulatory surgical patients. Presented by Heather M. Cox, BSN RN CAPA, April 4, 2007, at the 2007 National Conference of the American Society of PeriAnesthesia Nurses, Research Track, Houston, Texas.
2. Patients talk about their postanesthesia pain: A qualitative survey. Presented by Jim Bogart MSN RN CPAN, at the 2006 Scientific Sessions of the American Society of Anesthesiologists, Southern Regional Meeting, May 13, 2006, Orlando, Florida.
3. Ongoing research linking pre-op oxygen saturation and post-op extubation in debilitated patients. Presented by Rita Kenwood, PhD, RN, at the June Meeting of the California Society of PeriAnesthesia Nurses, June 15, 2007, San Diego, California.

RESEARCH PUBLICATION

A. *Definition of the research publication*

1. A research publication is the manuscript of a research study which is disseminated in writing.

B. *Importance of the research publication*

1. Publication is the final step in the research process.
2. The research publication communicates study findings which contribute to the body of knowledge in the topic area.
3. A research publication is a public and permanent presentation of the study of findings to the scientific community.
4. A research publication is one strategy to bridge the gap between research and practice.

C. *Characteristics of the research publication*

1. Research manuscripts can appear in research journals, specialty publications, newsletters and books.
2. The research publication is prepared as a simple, objective manuscript following the guidelines established by the publisher.
3. The important parts of a study are included in the research publication: abstract, problem, purpose, research question or hypothesis, methodology, results, discussion of findings, conclusions and implications for practice.
4. The research manuscript is peer-reviewed by experts in the topic area according to guidelines established by the editors.
 - Prior to acceptance for publication, the editor may request the researcher revise, expand or clarify the manuscript based on reviewer comments.
5. Research completed to meet academic requirements such as class projects, theses or dissertations require significant manuscript revision prior to submission for publication.
 - Thesis and dissertations can be shortened and focus on the needs of the journal's audience. The format must adhere to the journal's requirements.
6. The time between the completed study and research publication varies with the journal or book from 9 to 18 months.

D. *Examples of perianesthesia research publications*

1. Smith S: Continued contact with a familiar nurse affects men's perceptions of the ambulatory surgical experience. *J PeriAnes Nurs* 26(3):82-86, 2007
2. Allen B: The relationship between nausea and NPO status in healthy adults. *Breathline* 27(4):24-25, 2006
3. Blake S: The phenomenon of numbness during regional anesthesia: The lived experience of patients. *West J Nurs Res* 49(2):82-94, 2007

JOURNAL CLUB

A. *Definition of the nursing journal club*

1. A journal club is a group of nurses who meet regularly to discuss and critically analyze publications related to their practice area.

B. *Importance of the nursing journal club*

1. A journal club narrows the gap between research and practice, informs members of current research topics and is a forum for group decisions to incorporate research findings into practice.
2. Membership in a journal club is an effective way for nurses to keep abreast of specialty nursing practice.

C. *Characteristics of the nursing journal club*

1. Members of a journal club come from within a nursing unit, a health care facility, or a specialty organization.
2. The format, organization, and structure of a journal club depend upon the specific goals and objectives of the members.
3. When establishing a journal club, ask the following questions:
 - a. How often will the club meet?
 - b. Will there be a consistent location or is the meeting site to be rotated?
 - c. Who will select the topic or research publications? Will there be a leader or facilitator?
 - d. Will specific membership requirements be required? What are the roles and responsibilities of members?
 - e. Will the format be group discussion or formal presentation of selected publications?

D. *Examples of a perianesthesia journal club announcement*

1. The journal club from the Methodist Outpatient Surgery Unit will meet Thursday, October 9, at 7:30 PM in the nursing conference room to discuss the research article - Clay T: The effects of music therapy on anxiety in surgical patients. *J PeriAnesth Nurs* 27(4):50-54, 2007. Heather Smythe will facilitate the discussion. All interested nurses are welcome to attend. Copies of the article are available in the nursing conference room.
2. At the next FLASPAN Journal Club meeting, various strategies for decreasing postanesthesia shaking will be discussed. The selected publications will be available from Suzanne Thompson. All FLASPAN members are urged to attend and participate. Knowledge of the research process is not required.
3. The Pain Management Journal Club will discuss research publications related to epidural analgesia at its monthly meeting to be held at University Hospital. The Club librarian, Pat Jones, can be contacted for copies of the articles at 723-428-7153. The objective of the meeting is to establish a research-based epidural dosing protocol.

PARTICIPATING IN RESEARCH

- *Ethics in Research*
- *Institutional Review Board*
- *Informed Consent*
- *Examples of Ethical Situations in Perianesthesia Research*

ETHICS IN RESEARCH

A. *Definition of ethics in research*

1. **Ethical behaviors required of all researchers include:**

- a. **Objectivity** requires the researcher to set aside personal beliefs which may influence the study.
- b. **Cooperation** requires the researcher to comply with institutional guidelines for conducting research.
- c. **Integrity** requires the researcher to take responsibility to protect the “rights” of participants.
- d. **Honesty** requires the researcher to explicitly describe the purpose of the study prior to receiving informed consent.

B. *Importance of ethics in research*

1. **As a patient advocate, the researcher is a protector of the vulnerable patient.**
2. Adherence to ethical guidelines prevents harmful effects and abuse of patients in the pursuit of knowledge.

C. *Characteristics of ethics in research*

1. The researcher protects the rights of study participants. **Human rights include the right to self-determination, privacy, anonymity, confidentiality, fair treatment and protection from harm.**
2. The researcher ensures that the potential **benefits to the participants outweigh the harm** for participating in the study.
3. The researcher obtains **Institutional Review Board approval** and participant informed consent before beginning data collection.
4. The researcher protects patient identity in compliance with the Health Information Portability and Accountability Act (HIPAA) of 1993.
5. The researcher reports the study findings without bias, and honestly acknowledges individuals who were instrumental in completing the study and manufacturers who contributed financially to the research study.

INSTITUTIONAL REVIEW BOARD

A. *Definition of the Institutional Review Board*

1. An Institutional Review Board (IRB) is a group of individuals who determine the ethical implications of the research methodology involving human or animal participants.

B. *Importance of the institutional review board*

1. The Institutional Review Board (IRB) is authorized to approve or disapprove research proposals for their organization.
2. All proposed research studies must receive Institutional Review Board (IRB) approval before participants are recruited for data collection.
3. Any institution receiving federal funding must have an established Institutional Review Board (IRB) to review all research proposals involving human or animal participants.
4. Only research studies approved by an Institutional Review Board are considered for publication in peer-reviewed journals.

C. *Characteristics of the institutional review board*

1. The Institutional Review Board (IRB) is composed of professional and community members.
2. Facilities without a formal Institutional Review Board (IRB) have a Human Subjects Committee which approves proposed research studies.

INFORMED CONSENT

A. *Definition of informed consent*

1. Informed consent is the voluntary agreement to become a participant in a research study based on an understanding of the procedures involved. It is an **ongoing process** for the entire time of the research study.

B. *Importance of informed consent*

1. Informed consent is obtained from each participant **before** data collection is started.
2. Informed consent is designed to protect the “rights” of participants.

C. *Characteristics of informed consent*

1. The informed consent contains sufficient information to enable the participant to make a sound decision about participation in the study.
2. **Participant consent may be verbal, written or implied.** The Institutional Review Board (IRB) will determine the type of informed consent required for the proposed research study.
3. The participant must be able to understand and comprehend the informed consent statement and have the opportunity to ask questions of the researcher prior to signing the form.

4. The participant must be free to choose participation and they have the right to withdraw from the study without penalty **at any time.**
5. **Elements of informed consent** include: study purpose, reason participant was selected, explanation of procedures participant will be exposed to, time required of participant, risks and benefits to participation, availability of treatment if injury results from study procedures, alternative procedures if informed consent is not granted, procedures for maintaining anonymity and confidentiality, information on voluntary withdrawal without penalty, researcher's qualifications and a way to be contacted during and following completion of the study.

EXAMPLES OF ETHICAL SITUATIONS IN PERIANESTHESIA RESEARCH

1. Ethical Situation:

As part of a research study, the PACU nurse is asked to apply a new warming device to every other patient who is admitted to the PACU and to obtain tympanic temperatures every 5 minutes. The PACU nurse is provided with a copy of the research study protocol which indicates the Human Subject's Committee of the institution has approved the proposed research study. The patient has signed an informed consent form which has been included in the patient's medical record. The warming device has been inspected and approved for patient use by the institution's biomedical department. If the patient's temperature drops more than two degrees while the new device is being used the PACU nurse is to revert to established warming methods.

Ethical Decision:

The PACU nurse, assured that the study adheres to ethical research principles, agrees to participate as a data collector for the research study.

2. Ethical Situation:

The Ambulatory Surgery Unit (ASU) nurse is invited to participate as a co-investigator in a research study about preoperative teaching. The nurses's responsibility will be to obtain the participant's signature on the informed consent document. A copy of the proposed research study is not available and the informed consent letter omits any reference to potential risks of participating or confidentiality.

Ethical Decision:

The ASU nurse refuses to participate and informs the nurse manager. The nurse manager requests that the researcher obtain IRB approval before returning to the ambulatory surgical unit to select participants.

3. Ethical Situation:

An anesthesiologist is conducting a study on the effectiveness of a new antiemetic drug. Patients have been informed of the study and agree to participate during the preoperative visit. On the day of surgery, one patient tells the ASU nurse that he has changed his mind and does not want to try the new drug.

Ethical Decision:

The ASU nurse informs the anesthesiologist of the participant's withdrawal. The signed informed consent form is removed from the medical record and returned to the patient. The ASU nurse acts as a participant advocate to maintain an ethical research study.

SUGGESTED READINGS

Books on Nursing Research

1. Burns N, Grove SK. *The Practice of Nursing Research: Conduct, Critique and Utilization*. 5th ed. Philadelphia: Elsevier Saunders; 2005.
2. Lobiondo-Wood G, Haber T. *Methods and Critical Appraisal for Evidence-based Practice*. 6th ed. St. Louis: Mosby Elsevier; 2006.
3. Melynk BM, Fineout-Overholt, E. *Evidence-based practice in nursing and health care: A Guide to Best Practice*. Philadelphia: Lippincott Williams and Wilkins; 2005.
4. Polit DE, Beck CT. *Nursing research: Principles and Methods*, 7th ed. Philadelphia: Lippincott Williams, & Wilkins; 2004.

Publications on Presenting Research Reports

1. Coughlan M. Step-by-step guide to critiquing research. Part 1: quantitative research. *Br J Nurs*. 2007; 16(11): 658-63.
2. Ryan F. Step-by-step guide to critiquing research. Part 2: qualitative research. *Br J Nurs*. 2007; 16 (12): 738-44.
3. Ross J. Creating research posters. *Breathline*, 2008; 28(1): 12.

Books on Nursing Theory

1. Chinn PL, Kramer MK. *Integrated knowledge development in nursing*, 6th ed. St. Louis, MO: Mosby; 2004.
2. Denzin N, Lincoln Y. *The sage handbook of qualitative research*, 3rd ed. Thousand Oaks, CA: Sage; 2008.
3. Fawcett J. *Contemporary nursing knowledge: Analysis and evaluation of nursing models and theories*, 2nd ed. Philadelphia: F.A. Davis Co; 2004.

Web Sites

1. **ASPAN** www.aspan.org
 - **Research resources (IRB, abstract, statistical information, etc)**
 - **Authorship guidelines**
 - **Evidence based practice educational information**
2. HIPAA Privacy Rule and Research <http://privacyruleandresearch.nih.gov/>
3. Human Participant Protections Education for Research Teams <http://cme.cancer.gov/clinicaltrials/learning/humanparticipant-protections.asp>
4. National Guideline Clearinghouse™ <http://www.guideline.gov/>

5. Office for Human Research Protections (OHRP) <http://www.hhs.gov/ohrp/policy/>
6. PubMed <http://www.ncbi.nlm.nih.gov/sites/entrez>
7. Agency for Healthcare Research and Quality <http://www.ahrq.gov/>

GLOSSARY

Abstract - summary or synopsis of the research study found at the beginning of the publication

Acknowledgement - a formal recognition of individuals who contributed to the completion of the research study or the preparation of the manuscript

AMA Format - a publication style specified by the American Medical Association

Anonymity - collecting research data so that subjects' name cannot be linked to their response by the researcher

APA Format - a publication style specified by the American Psychological Association

Assumption - a condition or fact the researcher has taken for granted when designing the study and that has not been tested scientifically

Bias - a preconceived influence of the researcher or an action in the methodology that distorts the research findings

Bibliography - a list of sources consulted prior or during a research study but not cited in the research article.

Citation - reference information provided in the review of literature

Clinical significance - the usefulness of the research findings to a clinical setting

Conceptual definition - a broad abstract explanation of a variable derived from the research framework

Conclusion - a presentation of the researcher's view of the outcome of the study based on the research question or hypothesis

Confidentiality - collecting research data so that subjects' identities are known only to the researcher and cannot be matched with their responses

Consent form - a written, tape recorded or videotaped record that documents a participant's agreement to become a participant in a research study

Control group - a group of participants which is not exposed to an experimental treatment in a research study

Data analysis - transformation of raw data obtained from the instrument into a form that can answer the research question or test the hypothesis

Demographic variable - a variable which describes a characteristic of the population being studied

Dependent variable - a variable which is affected by the researcher's manipulation of the independent variable

Directional hypothesis - a hypothesis which states an anticipated relationship between the independent and dependent variables

Evidence based practice - using the best information available to make clinical decisions to provide the highest quality care.

Experimental group - a group of participants which is exposed to an experimental treatment in a research study

Extraneous variable - a variable which may interfere or affect the independent or dependent variables

Findings - the interpretation of the data analysis

Generalizability - the degree to which research findings have implications for the entire population, not only the sample under study

Health Information Portability and Accountability Act (HIPAA)- U.S. federal law to protect individual health information also applies to researchers. Researchers specifically identify how information will be de-identified in the study either in the informed consent or through a separate informed consent

Hypothesis - a formal declaration proposed by the researcher of the expected relationship between the independent and dependent variables

Implications - the researcher's suggestions on ways the study findings might be utilized in nursing practice, education, administration, health policy or future research studies

Independent variable - a variable which is intentionally altered or manipulated by the researcher during a study

Informed consent - the voluntary agreement to become a participant in a research study based on understanding of the procedures involved

Instrument - a device or tool used to collect data or gather information about dependent variables

Institutional Review Board - a group of individuals who determine the ethical implications of the research methodology involving human or animal participants

Journal club - a group of nurses that meets on a regular basis to discuss and analyze publications related to their practice area

Level of significance - the statistical probability as selected by the researcher to judge the how well the data to accept or reject the null hypothesis

Limitation - a situation which the researcher cannot control in the study design

Nonrandom sampling - a technique to obtain a sample which is the most convenient

Null hypothesis - a hypothesis which predicts that no relationship exists between the independent and dependent variables

Operational definition - an explanation which describes how variables will be identified or measured by the researcher

Oral Presentation - a verbal report of the major sections of a study presented at a scientific or professional meeting

p value - statistical notation for the level of significance

Peer review - the critique of a manuscript prior to publication by experts in the topic area

PICOT question - a clinically relevant research question which identifies the population, intervention, comparison, and outcomes of interest for examining the evidence

Pilot study - a preliminary version of a research study conducted to refine the research methodology using a limited number of participants

Population - all of the individuals who meet the study criteria for inclusion

Poster display - a visual presentation of a research study using a display board

Practical significance - the ability of the study's findings to be utilized in the practice setting

Primary source - an original article or research study used in the literature review

Problem statement - situation which requires new knowledge provided by the research study

Procedure - steps taken by the researcher to acquire study subjects and collect study data

Proposal - written plan for a study which includes the major elements of the research process

Purpose of the study - statement which identifies specific reason for the study

Qualitative research - a research approach to the problem statement that describes the total experience of the participant, usually from the perception of the participant

Quantitative research - a research approach to the problem statement that describes an observable phenomenon, demonstrates relationships between observable phenomena, or tests hypotheses

Random sampling - a technique used to obtain a sample in which every subject selected has an equal chance of being asked to participate in the study

References - a list of the resources cited throughout a research article

Reliability - the ability of a research instrument to collect data which are consistent and dependable over time and among different individuals

Replication - repeating a research study methodology to determine if the same research findings are obtained from different participants

Research hypothesis - see DIRECTIONAL HYPOTHESIS

Research publication - a manuscript of a research study which is disseminated in writing

Research question - an interrogative statement proposed by the researcher that includes one or more variables

Results - see FINDINGS

Review of the literature - a summary of previously published research related to the problem statement reflecting what information is available about the problem statement

Sample - a group of individuals participating in the research study; one subset of the population

Secondary source - a description of a research study used for the review of literature written by someone other than the original author

Setting - a specific area or location where the study's data collection occurs

Statistical significance - the ability of the study's findings to be predicted by the independent variable and not due to chance

Statistical hypothesis - see NULL HYPOTHESIS

Theoretical definition - see CONCEPTUAL DEFINITION

Validity - the ability of a research instrument to actually measure what it is supposed to be measuring

Variable - a quality, property, personal characteristic, or situation of interest to the researcher that is liable to change