**Research Methodology In Nursing**

**Introduction**

In today’s world nurses must become lifelong learners, capable of reflecting on evaluating & modifying their clinical practice based on new knowledge, expected to become producers of new knowledge through nursing research. Nursing is an important profession in the health care sector that focused on care of individual, families and communities so they may attain, maintain or recover optimal health and quality of life.(**1)** Research in nursing science is the sine of innovation, invention leading to development in nursing science. This is a systemic inquiry to answer questions or problems encountered in the field of nursing practices by providing evidence based knowledge, solution that help nurses to make sound clinical decision that would be cost effective and result in positive outcome to the patient. In the nursing care practices, the real phenomena, i.e. the morbid conditions, the disease progression, behave differently in different setting. The manifestation and amelioration of such phenomena need careful studies with well-designed research approach. Therefore, nurses are required to be well versed in research techniques and practices.**(2)** In order to induct Evidence Based Practice into nursing curriculum, there is a need to fostering critical thinking skills into a nursing curriculum at the under-graduate and post graduate level. Both competences- EBP & critical thinking are reported to be of paramount importance among the knowledge, skills, and processes needed**.(3) (4)** This will facilitate the nurses for clinical decision making, thinking beyond routines and protocols. In this backdrop this article delve into the research approach, philosophy, ethics, conceptualizing, validity and reliability of research in the field of nursing sciences.

**Philosophy of Research in nursing**

“The philosophy of practice and research in any field of science is basically guided by the philosophy of the subject. Nursing philosophy can give a direction for nurse’s practice, education, research and scholastic work. Research philosophical paradigm are sets of beliefs and practices that regulate inquiry within a discipline by providing lenses, frames and processes through which study is carried out (Steven & Edwards, 2008).**(5)** The key

components of philosophy of nursing include “ontology” and “epistemology”. Ontology deals with nature of reality; whereas, epistemology is the philosophy of knowledge or how we come to know the reality (Gortner, 1993).**(6)** The philosophy in nursing sciences guides the research questions, problems, hypotheses, plan how problem can be investigated, select research design as well as identify what methods are used and how data are collected, analyzed and interpreted. That ultimately aims at developing a body of knowledge and practices so that the nurses can optimize the efficiency of health care of individual and community with Compassion, Competence, Confidence, Conscience and Commitment.”**(7)**

**Research Paradigm**

“Nursing research paradigms are broadly classified as 2 types :-Positivist ( Empiricist) Paradigm, Naturalistic ( Post-positivist) Paradigm Positivist is rooted in 19th century thought , guided by such philosophers as comte , mill, newton & locke.” “ Positivism is a reflection of a broader cultural phenomenon that, in the humanities, is referred to as modernism, which emphasizes the rational & the scientific. Just as positivism reflects the cultural phenomenon of modernism that burgeoned in the wake of the industrial revolution. Naturalism is an outgrowth of the pervasive cultural transformation that is usually referred to as postmodernism. Postmodern thinking emphasizes the value of deconstruction that is of taking apart old ideas and structures & reconstruction ,that is putting ideas & structures together in new ways. The naturalistic paradigm represents a major alternative system for conducting disciplined research in nursing.”

The Table 1, presents comparative accounts of two research paradigms.

**Table:1:- Assumption of the positivist & naturalistic paradigm**

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|  **Assumption**  | **Positivist Paradigm** | **Naturalistic paradigm** |
| Ontologic**Example:** “What is the nature of reality”? | “Reality exists; there is a real world driven by real natural causes” | “Reality is multiple and subjective, mentally constructed by individuals.” |
| Epistemologic **Example**: “How is The inquirer related to from those being researched”?  | “The inquirer is independent from those being researched; findings are not influenced by the individual.’’ | “The inquirer interacts with those being researched; findings are the creation of the interactive process.” |
| Axiologic **Example:** “What is the role Values in the inquiry”? | “Values and biases are to be held in check; objectivity is sought” |  |
| Methodologic**Example:** “How is knowledge obtained” ? | “Deductive processes Emphasis on discrete, specific concepts. Verification of researchers’ hunches Fixed design Tight controls over context, Emphasis on measured, quantitative information; statistical analysis, Seeks generalizations”. | “Inductive processes Emphasis on entirety of some phenomenon, holistic Emerging interpretations grounded in participants’ experiences Flexible design, Context-bound, Emphasis on narrative information; qualitative analysis, Seeks patterns.” |

**Research Methods or approach**

* “Research methods are selected that facilitate to plan a study systemically, to collect data and investigate information.”
* “Qualitative and Quantitative are the two major research methods or approaches used in nursing studies.”
* “Qualitative is a systematic, interactive and subjective approach used to describe life experiences and give them meaning”. This type of research is conducted to describe and promote understanding of human experience, perception such as stress, trauma, quality of life etc. by using non-statistical methods of analysis. It is associated with

naturalistic inquiry which explores the complex experience of human beings. Qualitative research explores a subjective, holistic pathway which helps to develop theory (Borbasi and Jackson 2012).”**(8)**

* “Whereas quantitative research is based on scientific method, qualitative research suits behavioural and social sciences as it aids in understanding the unique nature of human beings (Burns and Grove 2009).”**(9)**
* “ Qualitative research can generate information that can help nurses by informing clinical decisions. Qualitative nursing research focuses on patients and health professionals’ experiences. Through this approach the reality of people’s experiences and lives are not over simplified and subsumed into a number or a statistic (Hoffmann et al 2013, p.223).**(10)** While, “Quantitative research is a formal, objective, and systematic process in which numerical data are used to obtain information about the world”. The example of quantitative research question: what is the prevalence/ incidence of drug abuse, disease, smoking, disability in India on a reference year” ? Both approaches are needed to provide knowledge in nursing discipline.”**(11)**

“Before understanding the two methods let’s discuss the purposes of nursing research- which can be classified as general purpose and specific purpose. The general purpose of nursing research is to answer questions or solve problems of relevance to the nursing profession. For example, “a researcher may perform an in-depth study to better understand for normal grieving processes, without having explicit nursing application in mind. Applied research focuses on finding solution to existing problems”. “The specific purposes of nursing research include identification, description, exploration, explanation, prediction, and control. Within each purpose, various types of question are addressed by nurse researchers; certain questions are more amenable to qualitative than to quantitative inquiry, and vice versa. A comparative account is given below.”

**Identification and description**

“Qualitative researchers sometimes study phenomena about which little is known. The in-depth, probing nature of qualitative research is well suited to the task of answering such questions as, “What is this phenomenon?” and “What is its name?”. Example of qualitative nature of identification is that “Weiss and Hutchinson (2000) **(12)** inquire to people with diabetes & hypertension to find out basic social problems that affect their attachment to health care directives, which can be done through in-depth interviews with clients.”

“Quantitative research by contrast, the researcher begins with a phenomenon that has been previously studied or defined sometimes in a qualitative study. Thus, in quantitative research identification typically precedes the inquiry.”

“Description of phenomena is another important purpose of research. In a descriptive study, researchers observe, count, delineate, and classify. Nurse researchers have described a wide variety of phenomena. Examples include patients’ stress and coping, pain management, adaptation processes, health beliefs, rehabilitation success, and time patterns of temperature readings. Description can be a major purpose for both qualitative and quantitative researchers. Quantitative description focuses on the prevalence, incidence, size, and measurable attributes of phenomena. Qualitative researchers, on the other hand, use indepth methods to describe the dimensions, variations, and importance of phenomena. For example a study to describe quantitative changes in psychological well-being and psychological resources 6 months after a heart transplantation comes under the ambit of Quantitative research. While a Qualitative example of description may be an in-depth study to describe the experience of waiting in a critical care waiting room.”

**Explorations**

* “Exploration begins with a phenomenon of interest; but rather than simply observing and describing it, exploratory research investigates the full nature of the phenomenon, the manner in which it is manifested, and the other factors to which it is related. For example, a descriptive quantitative study of patients’ preoperative stress might seek to document the degree of stress patients experience before surgery and the percentage

of patients who actually experience it. An exploratory study might ask the following: What factors diminish or increase a patient’s stress?”

* “Is a patient’s stress related to behaviors of the nursing staff? Is stress related to the patient’s cultural backgrounds? Qualitative methods are especially useful for exploring the full nature of a little-understood phenomenon.”
* “Exploratory qualitative research is designed to shed light on the various ways in which a phenomenon is manifested and on underlying processes. Quantitative example of exploration studied the incidence and severity of nausea accompanying

combinative antiretroviral therapies among HIV infected patients, and explored patterns of nausea in relation to patient characteristics.”

* “Qualitative example of exploration: Through in-depth interviews, Sadala and Mendes (2000)**(13)** explored the experiences of 18 nurses who cared for patients who had been pronounced brain dead but kept alive to serve as organ donors.”

**Explanations**

 In the ambit of qualitative research approach, explanation can be sought in the nature of questions such as “What is the full nature of the phenomenon ?”

* “What is the process by which the phenomenon evolves?”. While in quantitative methods, we seek answer to questions such as what factors causes such phenomena, what is the measurable association between the phenomena.
* “Quantitative example of explanation: Resnick, Orwig, Maganizer, and Wynne (2002)(**14)** tested a model to explain exercise behavior among older adults on the basis of social support, age, and self-efficacy expectations.”
* “Qualitative example of explanation: Hupcey (2000)**(15)** undertook a study that involved the development of a model explaining the psychosocial needs of patients in the intensive care unit. Feeling safe was the overwhelming need of patients in the intensive care unit.”

**Prediction and Control**

* “What will happen if we alter a phenomenon or introduce an intervention? If phenomenon A occurs, will the phenomenon B follow is prediction. How can we make the phenomenon , happen or alter its nature or prevalence, can the occurrence of the phenomenon be prevented or controlled are examples of controlling the phenomena. Many phenomena defy explanation.”
* “Yet it is frequently possible to make predictions and to control phenomena based on research findings, even in the absence of complete understanding. For example, research has shown that the incidence of Down syndrome in infants increases with the age of the mother.”
* “We can predict that a woman aged 40 years is at higher risk of bearing a child with Down syndrome than is a woman aged 25 years. We can partially control the outcome by educating women about the risks and offering amniocentesis to women older than 35 years of age.”
* “ Note, however, that the ability to predict and control in this example does not depend on an explanation of why older women are at a higher risk of having an abnormal child. In many examples of nursing and health-related studies—typically, quantitative ones—prediction and control are key objectives.”
* “Studies designed to test the efficacy of a nursing intervention are ultimately concerned with controlling patient outcomes or the costs of care.”

**Current Issues In Nursing Research**

**Phases of Research:-**

**The Conceptual Phase:**

* Lack of significant research problem.
* Inadequate search strategy & other assistance.
* Conceptual framework : need or obstacle.
* Challenge to know & test hypothesis.

**The Design & Planning Phase:**

* Lack of expertise of researcher to identify appropriate research design.
* Inability to understand power analysis.
* Neglecting the importance of eligibility criteria.
* Lack of standardized tools.
* Handling of ethical issues.

**The Empirical Phase:**

* Data collection.
* Arranging & preparing data for analysis.
* Inadequate training & understanding of data collection methods.
* Technical constraints to organize & prepare data for analysis.

**The Analytic Phase:**

* Analysing the data.
* Interpreting results.
* Complete dependency on bio-statistician for analysing data.
* Difficulty to interpret the findings or analysed data.

**The Dissemination Phase:**

* Communicating the findings.
* Utilizing the findings.
* Lack of guidance/ impatience to share findings/ academic pressure creates improper dissemination of research finding.
* No plan of utilizing the findings.
* Inadequate understanding of research methodology especially qualitative and mixed method.
* Lack of scientific training for research methodology.
* Inadequate knowledge of plagiarism.
* Overlapping of research studies.
* Limit explore of multi-disciplinary research.
* Lack of adequate and timely secretarial assistance.
* Insufficient library management.
* Limited scope of laboratory research in India.
* Measuring qualitative phenomenon through quantitative way.
* Lack of understanding of evidence-based nursing or practice.

**Future Trends In Nursing Research**

1. **Continued focus on Evidence Based Practice**
* “Encouragement for nurses to engage in evidence-based patient care is sure to continue.”
* “In turn, improvement will be needed both in the quality of studies and in nurses skills in locating, understanding, critiquing and using relevant study result.”
* “Relatedly there is an emerging interest in translational research – research on how findings from studies can best be translated into practice.”
* “Translation potential will require researchers to think more strategically about long-term feasibility, scalability, and sustainability when they test solutions to problems.”
1. **Development of a stronger evidence base through confirmatory strategies**
* “Practicing nurses are unlikely to adopt an innovation based on weakly designed or isolated studies.”
* “Strong research designs are essential, and confirmation is usually needed through the replication of studies with different client, in different clinical settings, and at different time to ensure that the findings are robust.”
1. **Greater emphasis on systematic review**
* “Systematic review are a cornerstone of EBP and will take on increased importance in all health disciplines. Systematic reviews rigorously integrate research information on atopic so that conclusions about the state of evidence can be reached.”
* Best practice clinical guidelines typically rely on such systematic reviews.
1. **Innovation**
* “There is currently a major push for creative and innovation solutions to recurring practice problems. Innovation has become an important buzzword throughout NIH and in nursing associations.”
* For example, the 2013 annual conference of the council for the advancement of nursing science was “ innovative approaches to symptom science”.
* “Innovative intervention and new methods for studying nursing questions are sure to be part of the future research landscape in nursing.”
1. **Expanded local research in health care settings**
* Small studies designed to solve local problems will likely increase.
* This trend will be reinforced as more hospitals apply for magnet status in the united states and in other countries.
* “Mechanisms will need to be projects becomes available to others facing similar problems, such as communication within and between regional nursing research alliances.”
1. **Strengthening of interdisciplinary collaboration**
* “Collaboration of nurses with researchers in related fields is likely to expand in the 21st century as researchers address fundamental health care problems. In turn, such collaborative efforts could lead to nurse researchers playing a more prominent role in national and international health care policies.”
* “ One of four major recommendations in a 2010 report on the future of nursing by the institute of medicine was that nurses should be full partners with physicians and other health care professionals in redesigning health care.”
1. **Increase focus on cultural issues & health disparities**
* “The issues of health disparities has emerged as a central concern in nursing and other health discipline; this in turn has raised consciousness about the cultural sensitivity of health interventions and the cultural competence of health care workers. “
* “There is growing awareness that research must be sensitive to the health belief, behaviours, and values of culturally and linguistically diverse populations.”
1. **Clinical significance & patient input**
* “Research findings increasingly must meet the test of being clinically significant, and patient have taken centre stage in efforts to define clinical significance.”
* “A major challenge in the years ahead will involve getting both research evidence and patient preferences into clinical decisions, and designing research to study the process and the outcomes.”

**Trends/ Challenges In Nursing Research**

* Professional judgement.
* Defining “care”.
* Electronic network & computer use.
* Problem based learning.
* Multidisciplinary health team approach.
* Independent area of practice.
* Holistic care approach.
* Specialized services.
* Use of advance technology.
* Human relation in nursing.
* Provision for nurse consultant, specialist nurse, nurse advisor, nurse researcher, nurse manager.

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