

Nursing Research Methods: Towards a Clinical Science

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Historically, nursing research methods have paralleled the major concerns of the discipline. For example, in the Nightingale era, the primary considerations were poor quality of care for the sick and the need for qualified caregivers. In response, Nightingale pioneered the use of social statistics and their graphic representation (Cohen, 1984). Statistics provide an organized way of learning from experience and lead to improvement in practice. Now, one century later, nursing is concerned with its therapeutic effectiveness vis a vis the complexities of medical science and technology, and the quality of life of individuals and families.

Gortner (1983) has said that nurses will make a major contribution to science in the areas of chronicity, parenting and family functioning. Most experts agree that the unique domain of nursing views people as open interacting systems, a far cry from the fragmentary, reductionist and specialized focus of other health disciplines. This wholistic approach is reflected in the legal definition of nursing in the United States, which is understood to be the diagnosis and treatment of human response to actual or potential problems in health and disease. This definition has become a consolidating and integrative force in nursing practice and has additionally influenced the research methods used to describe response and test intervention.

Today, nursing research methods are the products of nursing's accumulated tradition and the current concerns of the profession. The prevailing methodology for nursing research has been grounded in the scientific method, but scientists, theorists and clinical researchers in nursing have begun to voice concern that an unmodified scientific approach strips away the context of the human experience - a phenomenon of prime importance in practice.

Sampson (1980) has described two major views of science, which he calls paradigms. Paradigm I has been the most dominant guiding force in nursing research, offering a purely scientific approach, value-free, demanding controls that partial out history, context, other impinging issues and related ecology. Rigorously controlled experimental and epidemiologic research are examples of Paradigm I.

Paradigm II holds the view that facts and principles are not pure isolates standing as universal truths, but are dynamic truths, embedded in and influenced by a sociohistorical context. Paradigm II science frequently assumes non-linear relationships, often is conducted in naturalistic settings, and holds observational methods to be as important and exacting as experimental. Grounded research and phenomenology are two examples of the scientific approach of Paradigm II.

As the central concerns of nursing have required use of appropriate research methods over time, a companion development has been the theory-practice relationship. In major, nursing has been an applied science, which uses technology derived from other biomedical-engineering disciplines and theories from social psychology, education and physiology. But, for the past 20 years, nursing leaders have called for the establishment of the profession's own theoretical base for practice. In response, at least 10 models have been developed, each of which have four common components: people, environment, health and nursing. Names such as Roy, Rogers, Orem, Neuman, Johnson, Orlando and others have become common parlance in schools of nursing.

A growing number of nursing studies have utilized one of the nursing theories or a theory borrowed from another discipline as the conceptual framework from which hypotheses are generated and tested. Using this inferential approach to design, the investigator's goal is to conduct experiments that shed light on the truth or falsity of the theory.

On the other hand, most nursing studies begin at the more practical end of the continuum with a clinical problem that initially may be diffuse and unfocused in nature. Research design, in this case, arises from a more inductive approach - the cognitive fusing of similar patterns identified in common environments. In this instance, the methods most apropos and relatively new to scientific tradition emerge from Paradigm II: Grounded research and phenomenology.

This paper will discuss how appropriately tailored research methodologies link nursing theory and practice, whether the process begins with theory or originates with a patient problem. The first purpose of the paper will be examined by consideration of the two ways nursing research is generated: From a

theoretical framework and from the clinical environment. The second purpose of the paper will be addressed by an exploration of specific methodologies associated with the two views of science and a presentation of exemplar studies useful to clinical nursing. In any case, research methodology becomes an instrumental force towards a clinical science.

Newman (1979) has called nursing a national resource, noting how the discipline has grown from a procedure-oriented vocation to a goal-directed professional health service. The goals and aims of nursing practice require a body of knowledge, scientifically derived and tested. This process of derivation and evaluation is nursing research. Through research, science or systematized knowledge emerges.

There are not many studies which utilize a nursing conceptual framework. In fact, a recent review of 95% of all published studies in cancer nursing revealed that only one third were built on a designated theoretical framework; a scant few were nursing theories and fewer than two-thirds of studies having a framework referred back to it when discussing the findings (Fernsler et al., 1984). Yet, a sound conceptual framework serves to center a study in a "... broader state of knowledge already available" (Grant and Padilla, 1983, p. 65).

For example, Smith, Jarvis and Martinson (1983) were interested in obtaining knowledge of how childhood cancer impacts on the child and the family. In a study conducted at the University of Minnesota, supported by the American Cancer Society, the investigators used the Roy Adaptation Nursing Model to abstract content themes of interview data from 20 parents of children with newly diagnosed cancer. This research exemplifies a grounded theory approach in which previous work conducted by the researchers on the impact of childhood cancer served as a guide for the development of a more structured,

focused interview while still making use of the open-ended question method. The investigators realized that in their first study parents rarely talked about their own personal concerns or of themselves as a couple, nor did they provide information about their child's awareness of or reactions to the seriousness of the illness. This was considered important knowledge, so the follow-up study utilized more specific open-ended questions asked in the same order each time.

You can imagine that this study of 20 in-depth interviews amassed a large quantity of banked data or transcribed interviews. Some framework for interpreting the data was needed to organize its knowledge. In choosing the framework, the authors were guided by three criteria: First, the framework should be broad in scope, covering a wide variety of patient care phenomena; second, the model must be designed to treat an array of measurable variables; and, third, the model must use clear terminology useful for nursing practice.

In this case, Roy's model was chosen because it satisfied the criteria, had been widely used and tested in nursing education and practice and is based on the philosophy that people can adapt or learn to live with chronic disease.

The Roy Model consists of four adaptation modes, physiologic, self-concept, role function and interdependence, all of which were operationally defined by the researchers. Therefore, the method was to listen to the banked data and identify its themes, categorizing them according to the most appropriate adaptational mode in the Roy Model. As part of the procedure an interrater reliability check was used to be sure that all interpreters were consistent in how they categorized content themes. There was 88 to 100% documented agreement in this study.

The adaptational modes were rank

ordered according to the percentages of messages in the interview content. Concerns about interdependence emerged as the most frequent message, followed by self-concept, physiologic and role function. Interdependence concerns revolved around financial issues, dependency and feelings of isolation; self-concept themes related to feelings of hope, optimism and learning to be patient while waiting for results; physiologic needs surrounded the child's treatment, specific procedures and their outcome in terms of cure, remission or relapse as well as the physical strain, sleep deprivation and coping difficulties of parents; role function mastery messages were the least frequent and had to do with the child's progress in school and parental problems in disciplining the child.

This study of the impact of childhood cancer on the family is an example of how existing knowledge and a theoretical framework can provide a base for a grounded research method and a way to scientifically systematize knowledge. It is an example of Paradigm II science, providing a wealth of organized data upon which support and family education programs can be built.

There are other more empirical ways to determine research questions. In 1978, Oberst published results of a study in which she used the Delphi technique, a survey method to elicit priorities in cancer nursing research from almost 600 oncology nurses in the U.S. The findings identified 10 patient welfare problems that can be reduced to three categories of research: (1) side effects of treatment, (2) pain and (3) psychosocial needs of cancer patients and their families. These problem areas arose from a consensus of opinion emerging from clinical observation. The study was conducted at Memorial Sloan-Kettering Cancer Center in New York and became a working guide for the nursing research program there.

For example, as Nurse Scientist at Memorial, staff nurses from the gynecology service came to me concerned about the emetic properties of the Cisplatin-Adriamycin-Cytosin protocol used for the treatment of ovarian cancer. Women receiving this chemotherapy in high dose were vomiting for up to 20 and sometimes 48 hours following administration. These clinicians noted that nausea and vomiting were eased when patients were helped to relax using a progressive relaxation technique originally developed by a cardiologist to reduce hypertension. They asked for help in designing a study that would test the antiemetic effect of a clinical relaxation program.

Two studies (Scott, et al., 1983; Scott, et al., 1984) designed to investigate the problem clearly emerged from the more practical end of the continuum, a clinical problem. We chose to use the stress-coping model, a conceptual framework developed at Memorial (Scott, Oberst and Dropkin, 1980) as a representation of how people cope with stress, in this case, the stress of a highly emetic treatment. We conducted a pilot study in which a new experimental protocol of progressive relaxation, guided imagery and slow stroke back massage, was tested on 10 women undergoing the CAP treatment for ovarian cancer. Based on results that indicated reduction in the frequency, duration and intensity of nausea and vomiting in relaxed patients when their course was compared to those of historical controls, a second experimental proposal was written and submitted to the American Nurses' Foundation for funding. This study was one of 12 out of 86 competitors awarded funding in 1982.

In comparison to the childhood cancer impact study cited before, this emetic study was designed, according to Paradigm I science, as a randomized, controlled experimental study comparing the relaxation protocol with high dose metoclopramide (Reglan), an antiemetic agent that had just become

available for clinical use. The rationales for use of both protocols in this comparison study were based on the physiologic stress response broadly described in the stress-coping model. In the second study we more broadly tested the model by designing a patient education program to provide cognitive preparation for a highly intrusive procedure (as we had been doing with preoperative teaching) and emotional support as well. The prechemotherapy program consisted of a one-hour class during which patients had an opportunity to discuss their concerns and fears, to see an 18 minutes slide-audiotape program on why side effects occur, practice with relaxation and imagery and receive a relaxation audiotape to guide later practice in preparation for treatment.

We developed a new scale, The Emetic Process Rating Scale (Scott, et al., 1984), to measure the side effects of nausea and vomiting and the effect of the two treatments. Ethical reasons disallowed a 3 group design, incorporating a no-treatment control group receiving neither relaxation nor antiemetic drugs.

Results of this study demonstrated that relaxation patients had an overall shorter duration of emetic response, and experienced an early two hour peak phase during which over 50% of the vomiting occurred. Drug group patients experienced a four hour longer total duration, but, in most cases, were spared the two hour peak phase. Metoclopramide was clearly the most powerful treatment, but necessitated additional agents - diphenhydramine and dexamethasone - to counteract undesirable side effects and required adequately maintained blood levels over a prolonged 12 hour period to remain effective.

In this study, it was concluded that both pharmacologic and self-regulatory antiemetic modalities were effective to some degree. Clearly, a combined approach is indicated in that patients want and need information about their treatment and wish to

participate actively. They generally prefer as little further chemical intrusion as possible, but accept drug intervention nonetheless. Alternating drug and behavioral methods might be right for some, or use of behavioral to augment drug method might be best for others. These were lessons taught by the research process that led to improved patient care. A new patient education program was inaugurated as a result and is currently in use and may be purchased for other settings as well. Patients, on the gynecologic service at Memorial, have use of several new transistor tape recorders to listen to relaxation tapes, purchased through the study; and, a new scale to measure emetic response was found to be clinically useful and valid.

The methods used in this study included: (1) pilot testing the clinical intervention to determine if a full-fledged study was cost-effective; (2) a 12-hour, two week workshop during which staff nurses were taught new clinical and research skills so the experimental treatment and measurement of its effects would be consistent, thus promoting inter-rater reliability. This is important since one potential criticism of an intervention study is that effects may be due to the "intervener" and not to the "intervention." When one person does all the treatment, it can be said that the effect is not generalizable until tested by other clinicians. On the other hand, when more than one clinician provides intervention, study methods must address the possibility that one may not be as effective as another. Our attempt to prevent this type of threat to validity was by providing the same training for all staff nurses participating in the study and to precept their performance with patients following the workshop experience; (3) constructing and testing a new measurement tool when those available, if any, are inadequate. We did this by asking staff nurses, taking part in the study, to

evaluate the scale's clarity, accuracy, ease or use, discriminatory power, uniformity and relevance.

This study comparing two methods aimed at reducing cancer chemotherapy-related nausea and vomiting is an example of how observed patient response can lead to formulating the research question and choosing the theoretical framework most apropos. The mostly quantitative approach attempted to support a study focused on causal inference, an example of Paradigm I science.

Note the similarities as well as the differences between the two exemplar studies. Both addressed nursing problems concerned with coping; both made use of a conceptual framework designed to assist interpretation of a nursing domain; both viewed subjects in a wholistic manner; both emerged from previous studies by the investigators; both dealt with measurement approaches necessitating construction of new tools and inter-rater reliability checks; both concluded by identifying pattern; and, both resulted in findings with direct implications for improving practice.

A research method is a systematic, logical strategy or plan designed to solve a problem. A study problem takes the form of questions to be answered by the research process, or the design, methods of observation and measurement and types of analyses employed. A major characteristic of sound, well-designed and valuable research is that the methods are appropriate to the problem under investigation and that all components of the research process are congruent or fit together. The adequacy of later data interpretation and thus the importance of the study crucially depend on these criteria (Kerlinger, 1973).

The objectives of methodology are to provide answers to research questions and to control variance or error. Since there is a wide array of methods to choose from, the first

qualitative perspective. These methods are not designed to replace quantitative types, but to complement them.

Phenomenology is a qualitative method that examines the human experience as it is lived. Phenomenology is a method, a philosophy, an approach which uses induction and description, and begins with no preconceived expectations or categories. In comparison to preceding examples, the phenomenologic method does not begin with a preconceived framework or set of operational definitions. "The goal of the method is to describe the total systematic structure of lived experience, including the meanings that these experiences had for the individuals who participated in them" (Omery, 1983, p. 50). Spiegelberg (1960, 1970) has defined six steps in the method: (1) direct description of the phenomenon as free as possible from preconceived notions, (2) identifying essential structures in the phenomenon and their relationships, (3) determining the clearest or most dominant modes of the phenomenon from a less clear background, (4) exploring the way the phenomenon takes shape in consciousness, (5) reducing the phenomenon to the most explicit phases of its process, and (6) interpreting the concealed meanings in the phenomenon, not concretely apparent in the data obtained from direct observation, description and analysis.

There are many phenomena well-suited to this method: pain, orientation, restoration and recovery, stress, caring and suffering to name a few. Omery (1983) interprets the philosophy of this approach as a method for nursing science by addressing the phenomenon of pain. Two major methodologic questions in this instance would be (1) what are the constituents of the experience called pain? and (2) how does the pain experience affect the patient and the nurse's practice?

In comparison to grounded theory, the phenomenologic approach seeks only true and accurate descriptions of an experience, not to generate a representative model or to develop theory.

I will describe two exemplar investigations that come closest to the phenomenologic approach.

Boehm (1985) described a scenario where over a three year period, staff nurses in a midwestern U.S. hospital became aware that following myocardial infarction, many patients have need for reorientation to time and place and a restoration of healthy body image. They began to note how use of touch seemed to augment the reorientation and restoration processes. Touch seemed to facilitate patients' exploration of new life style changes that would be needed for recovery over time. And, as patients responded to touch with wider and more in-depth explorations, nurses tended to touch them more. Somehow the nurse's touch augmented a freer-flowing patient perception of his life and the changes that would reduce risk and make it healthier. Next, the staff began to operationalize the concept of touch with a wide range of behaviors from touching the patient's shoulder, to holding her hand, to stroking the brow and gently brushing the hair back from the forehead. Finally, it was observed that by use of touch during conversation where date, time and place were repeated, patients seemed to become reoriented sooner than did those who were not touched. These phenomenologic observations over time led to a pilot study and ultimately a funded project that found that "... the 'touch' group initiated more discussion of ideas for changing life styles and did so approximately two days sooner than the 'nontouch' group did" (Boehm, 1985, p. 42).

Another example of nursing research which utilizes phenomenology for pattern methodology is Battenfield's (1984) work on suffering. Recognizing the universality of this process and

have found sleep apnea to be 40% higher in older than younger persons. In one case study reported, a 72 year old sleep research subject experienced several apnea episodes when sleep was induced with 30 mg of flurazepam. When the episodes reached three minutes in length, the investigator became alarmed and aroused the man.

It should be noted that research in both etiology of falls and sleep disturbance in the elderly is sparse and yet represents a fertile field for investigation. Older people comprise a growing proportion of the population of those needing acute care services and of those admitted for hospital care each year. Most of the information available in these two examples of risk characteristics of this group has been amassed, not by systematic research, but by empirical observation. There is ample evidence that the two phenomena may be related and are quite appropriate for the application of causal inference research methods. Even more exciting is the realization that these are important areas for nursing research. Both problems, falls and sleep disturbance, are inherent in the nursing domain and present risks to life and health that may be connected and should certainly be addressed.

In most research, causal inference and its most respected method, the randomized, double-blind, cross-over, large sample clinical trial is considered most rigorously scientific. This method best answers questions encompassing a limited number of variables and very measurable, quantifiable effects as desirable outcomes. The best examples of this approach are inherent in the domain of medicine: drug trials and studies comparing results of one surgical or radiologic procedure with another.

Nursing has attempted to follow suit, agreeing in principle with this concept. However, when tested in the real world, the precise definition and strict control neces-

sary to the experimental method are incongruent with the majority of research questions nurses are asking. When examined closely, most published nursing research takes the form of exploratory or descriptive research and those considered experimental or quasi-experimental are, in reality, intervention studies with small samples and large numbers of variables. This may be due largely to the fact that we are just beginning to define nursing's domain and, in this phase, find it to be quite unique in comparison with other disciplines, particularly medicine. In general, nursing does not prescribe medicine or do surgery. Perhaps there needs to be a refocus on nursing's unique interests and concerns followed by the choice of a scientific paradigm and methods best fit to our own questions.

The one area that nursing and medicine do have in common arises from their legal definitions of practice and the taxonomies of diagnoses both professions have constructed. That commonality is the recognition and description of pattern in the person being diagnosed. This has led Newman (1983) to observe that since pattern for nursing is reflective of the whole person interacting with environment, "... that the methodology appropriate for the development of nursing knowledge is the methodology of pattern" (p. x).

There are many active areas of nursing research that fit well with Newman's idea. Interestingly enough, most emerge from the observations and intuitive understandings of staff nurses, those professionals in the most direct proximity with patients for the longest periods of time.

In an attempt to identify pattern, many researchers have found the traditional scientific method to be constraining. Current trends in behavioral science research especially are demonstrating that there are other methods available to study the human individual from a more

step is to identify the problem of interest from the nursing domain and then choose well-suited methods.

For example, many nursing research questions seek to demonstrate causal inference among variables. Ryan (1983) has said that a systematic accumulation of knowledge from related and, in many cases, sequential studies should be an important goal in nursing science. She conceptualizes causal inference as a pyramid of methods from raw clinical observations at the base to experimental research at the pinnacle. Ryan argues that the seven methods comprising the pyramidal framework be viewed as a building process with each step based on findings of the previous step.

There are many problems in the nursing domain that might benefit from the causal inference-building approach. Two examples can be drawn from the important area of gerontology: Hospital falls and sleep disturbance. Both problems have been found to occur in the elderly more than any other age group.

The phenomenon of hospital falls in the elderly has been well-documented by record review. The clinical observation level would identify variables associated with this traumatic incident and the present knowledge connecting variables such as age, diagnosis, medication, cognitive alertness, sensory impairment, season, time of day, assistive ambulatory devices, and use or non-use of siderails. Survey and descriptive studies would next attempt to identify demographic variables common to incidence in several hospitals. Next, cross-sectional study would attempt to compare elderly patients who fall with those who do not to further differentiation. A retrospective study would involve the review of incident reports and other pertinent records to document variables significant to those patients who did fall. In comparison, a prospective study would take more time with the

objective of tracking all hospital admissions of elderly persons over a one-year period in order to check for the presence of the risk characteristics previously identified. This method is designed to provide beginning predictive data about who is likely to fall or to identify the high-risk elderly patient. The final step, an experimental study would test the effect of a nursing intervention, such as use of siderails, or night lights, in reducing the incidence.

Sleep disturbance is another common problem in the aged. Empirical evidence suggests that circadian asynchrony, emotional stress, physical illness and drugs have been implicated as causative factors. Further examination of these major categories has specified other such groupings. Circadian asynchrony may involve central nervous system deterioration, sensory impairment, and changes from biphasic to polyphasic sleep patterns. A connection between sleep disturbance and physical illness has been found in coronary artery disease, duodenal ulcers and chronic obstructive pulmonary disease (COPD) (Colling, 1983).

The elderly are considered a high risk population not only because of the frequency of sleep disturbance but also due to the high use of hypnotic agents within the group. Basen (1977) reported that over one-third of secobarbital and diazepam prescriptions are for persons over 60. Other investigators (Allan, Greenblatt and Noel, 1979) report the elderly to be the heaviest purchasers of over-the-counter sleep preparations with self-poisoning as a common consequence. For older persons, there are many concurrent risks other than sleep disturbance related to heavy and indiscriminate use of drugs. Two concerns include untoward drug reactions due to polypharmacy and the respiratory effects of a drug-depressed central nervous system during sleep. Several investigators (Carskadan, Brown and Dement, 1980)

its impact on the human condition, she began with a conceptual description and content analysis of an operational schema of suffering and, if possible, to identify a stage of relief for the sufferer.

She approached the phenomenon of suffering with only two preconceived notions: That it existed as an important part of the human condition and that the experience of suffering did not fit the grieving-behavioral model.

Battenfield performed five steps in her methodologic procedure. She did review the literature to extract a nomenclature of suffering responses. Secondly she used the nomenclature to guide observation and recording of responses. Based on the assumption that attitudes and behaviors indicative of suffering could be determined by interview, the third step was to devise a continuum that rated subjective affect from contentment to turmoil. Fourth, she subjected the interviews to content analysis and determined the patient's position on the nomenclature scale. Lastly, she looked for the level of agreement between the contentment-turmoil rating and the content analysis. Chi square analysis of equal probability at the .05 level of significance was the statistical application used to compare content analysis with contentment-turmoil ratings. Five categories of feeling tone in the schema of suffering were delineated: initial impact, turmoil without resolution, coping, accepting-understanding, and finding meaning. "Finding meaning" was considered to be the apex of the suffering process, after Frankl (1963) who said, "Suffering ceases to be suffering...at the moment it finds meaning." In this study, the feeling content of the interview data was determined by a panel of six experts who were guided by the nomenclature originally extracted from the literature. In seven out of nine interviews conducted in this study, the contentment-turmoil rating and content analysis category

were the same.

The conclusions of this research were that from language and behavioral expression of feeling, a person's progression in the suffering process can be determined; and, nurses, with their many refined skills, art and knowledge as comforters, have the potential to aid patients to expand self-awareness, clarify and reappraise values and free creative potential for problem solution and effective coping. Battenfield believes that skilled and sensitive nursing intervention can guide sufferers to the apex process, finding understanding and a concomitant resolution of the suffering. But for Battenfield, this exploration was enough, another characteristic of the phenomenologic approach.

This paper has presented two major paradigms of science and the related research methodologies inherent in each. Paradigm I, the traditional scientific approach, employs causal inference-building as its process. Research methods consistent with the process range from clinical observation to the type espoused as most pure and rigorous, controlled experimental research. Commonly, these methods best fit epidemiologic, cause and effect type questions concerned with a limited number of well-controlled variables that are measurably quantifiable. In most cases, outcomes are clear and can be directly measured. The scientific process of causal-inference building is based on sequential or related studies whose focus is built upon the knowledge findings of previous work.

Paradigm II, which views the world in a more qualitative perspective, makes use more often of descriptive methods such as grounded theory or phenomenology. Rather than causal analysis, these methods seek to identify phenomenon; rather than domination through intervention, the aim is better understanding of the dynamic human experience. These methods expect and include context and do not try to exclude or control it as

bias. The central assumption is the acceptance of experience as it exists and is communicated by the individual. The naturalistic backdrop is accepted rather than partialled out.

Both scientific approaches and their methods can be useful to nursing. Their selection is determined by the domain of knowledge or practice in question and the nature of the phenomenon under investigation. The appropriate means of inquiry is determined by the subject matter and how much is known about the phenomenon and its documented nature, more often supported than refuted by previous research. The strength of these methods lies in their revelation of "... patterns, structures, significant features, critical processes, and 'what it's like to be participating in the scheme,' surely a more realistic description by participants than investigator-devised constructs validated or negated by participants assumed to be using the same referents, shared experiences and meanings" (Smith, 1984, p. 45). The proposed outcome of these research methods is predicted to be a new body and order of knowledge which can be factor-mapped into frameworks clearly showing what still needs to be done or what variables need further identification and positioning in the schema. Traced to its full conclusion, this framework as a propositional inventory would be fully accessible to clinicians, educators, administrators, researchers and theoreticians.

An eclectic approach to choice of method for scientific inquiry allows for the study of a variety of dimensions of phenomenon, physiologic, cognitive, affective or functional. The skill and training of investigator is related to the ability to select the mode of inquiry or method that best serves the research purposes. Sampson (1980) suggests that a synthesis of Paradigm I and II methods would result in the higher organization of the opposites in both

paradigms allowing a better opportunity for nursing to develop its own unique body of knowledge (Tinkle and Beaton, 1983). This synthesis may be a way to advance the theoretical structure from a model level to one consisting of universal, well-tested principles and perhaps even laws of transaction among person, environment, health and nursing.

In conclusion, the present is a pioneering, exciting time for nursing and its research. Research in nursing is only 35 years old, and clinical research has less than a 15 year history. We, as researchers and clinicians, are plowing new ground and creating a new science, youthful as it may be. In the process I wish you courage and persistence as you contribute to the fascinating process of research as the connection between theory and practice in nursing.

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