

Bridging the Gap Between Research, Practice and Theory in Nursing

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In the recent past there has been concerted effort to develop collaborative and interdisciplinary linkages across health professions in an effort to improve the quality of health care. One visible and important effort along this dimension was the formation of the Health Professions Commission by the Pew Charitable Trusts. All health professionals were represented and collectively issued their report. They envisioned a new health care system, and identified nine characteristics and 17 competencies for future health care practitioners to parallel what the health care system will look like. Highlights of this interdisciplinary report include: focus on health; expanding care to community settings; emphasis on primary care and coordination of care; accountability to patients; consideration of impact of technology, and, cultural and racial diversity as important factors within health care.

While not all of these ideas will be applicable to all the countries represented at this international conference, I suspect that many have pertinence across nations, and will have ramifications for nursing education.

Our community is now global, and requires a

greater degree of interdependence across our nations. Health issues and concerns, and approaches to them have common themes. I will therefore begin with the premise that the competencies identified by the Pew Health Professions Commission are desired in varying degrees within the global community. With this in mind, it would seem that addressing the inter-relations of theory/research/practice is timely and critical, in that the competencies require the clinician to understand theory, test the theory through appropriate research, refine the theory based on findings, and apply relevant findings to practice.

The health needs of the world are enormous. The International Conference on Primary Health Care at Alma-Ata called for health for all as a goal to be achieved in the year 2000. It is nursing's social mandate that it provide care for people; the professional standing society has accorded nursing requires that nursing activities be based on a sound scientific and ethical basis.

A number of authors agree that theoretical nursing involves propositions that address significant practice questions that provide guidance to

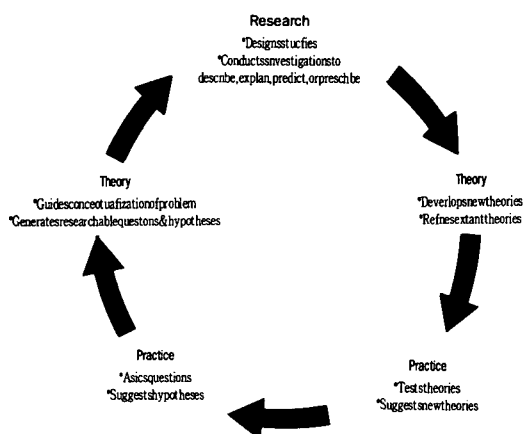
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nursing practice and direct research. The practice arena is viewed as the catalyst, in that puzzles and problems encountered in practice suggest hypotheses, theory helps conceptualize the problem and generate researchable questions ; through research systematic investigations are carried out to answer the questions ; theories are thus refined, or new theories are suggested ; nurses in practice test the findings in their settings ; therefore, the theory / practice / research phenomenon is cyclical, as illustrated in figure 1, suggested by Lutjens and Horan.

<Fig 1> The Practice-Theory-Research-Theory-Practice Cycle(Lutjens and Horan, 1992).Reprinted with permissions of the publisher & authors



Indeed, these linkages, and the interdependence of practice /theory /research are so important that in an essay discussing hallmarks of success in practice, all four of the hallmarks discussed relate to these interconnections. They are as follows : use of conceptual models to guide practice ; establishment of linkages between nursing practice and education ; recognition of clinical scholarship, emergence of nurse clinicians as clinical scholars, and the development of classification systems such as nursing diagnoses by the North American Diagnosis Association(NANDA).

Despite the importance of these linkages, it is also true that this is more of a desired, ideal state, than

one reflecting current reality. It is still the case that much nursing research goes unutilized and un-applied to practice, and we have yet to demonstrate, empirically and in specific ways, what difference research makes to enhance the quality of care patients receive. So that we need to make concerted efforts and pay specific attention to bridging each of the relationships in figure 1.

In the mid-seventies, the Western Interstate Commission on Higher Education, a regional nursing association, conducted a Delphi survey, identifying three priorities for clinical research. They were : determining ways to enhance greater utilization of research to practice ; determining ways to change nursing practices so that they are based on research ; and demonstrating the relations between research and quality of care. These priorities are still thought to be valid today, although some progress has been made.

Bridging the Gap

The challenge then is to come up with ways to bridge the gap at each point in the linkage, the greatest and most challenging of which is that between research and practice.

What is research? A well accepted definition is provided by Waltz and Bausell : "Research is a systematic, formal, rigorous and precise process employed to gain solutions to problems and /or discover and interpret new facts and relationships." The conceptions of research in nursing have evolved in the recent past to incorporate a variety of approaches, and Waltz and Bausell's thinking reflects this ; note that it does not specify the observation or empirical method and thus allows for a range of approaches to investigations.

Research and Practice

In considering ways in which the various gaps in the linkage model can be bridged, it is useful to consider the evolving thinking in this regard. Lindeman

proposed a contemporary view (in contrast to the traditional view) that emphasize collaboration and partnerships between scientists and clinicians, and views knowledge application as part of the research process. This general view that research and clinical practice are inextricably related has general acceptance, and many steps are now being taken to make this a reality.

In the mid-seventies I conducted a study to find out to what extent nursing research was being implemented in practice. To accomplish this, I selected a series of findings related to nursing procedure, temperature determination, which had been published widely, and queried 87 nurses as to how they take patient temperatures. Only one of the 87 nurses indicated correct placement time for oral temperature determination, but she also said she "never" used the oral mode. The majority of the nurses who used the oral mode, and indicated incorrect placement time thought the rectal mode was the most accurate method for determining patient temperatures (but they did not use that mode). At that time I concluded that : (1) there was a complete discrepancy between research findings and practice in the clinical setting, and (2) there was similarly a great discrepancy between a person's thought and action, in that they had a view of what was accurate, but engaged in a routinized behavior that yielded erroneous information. This study had a galvanizing effect. Much has happened in the intervening years, and much more remains to be done. It is not known, however, what the results would be if such a study were conducted today. Some approaches can be utilized for bridging research and practice.

Education. One method of bridging the gap between research and practice is through the educational process. But how can this be done, in view of the fact that in some countries like the United States there are multiple routes to nursing preparation, and many levels of education as well, such as diploma, associate degree, baccalaureate degree, master's degree, and the doctoral degree? Is it poss-

ible for all these individuals to conduct research, or to evaluate research? The ANA Code for Nurses states that the nurse contributes to the profession's knowledge development. Can the practicing nurse conduct research? The American Nurses Association has issued "Education for participation in nursing research," which has provided guidance in this regard. It articulates the types of research-related activities that nurses prepared at each level of education can engage in. Briefly stated, they provide for awareness of research (associate degree), evaluation and application of research (baccalaureate degree), facilitating others to apply research-based knowledge, conducting evaluation studies to monitor quality (master's degree), develop methods, conduct research, test and develop theories (doctoral and postdoctoral levels). Using these distinctions, educators can develop educational objectives for the type of research competency to be attained, given the type of program.

Such a conceptualization is a more recent evolution and fits within the contemporary view that there are different levels of participation in research ; previously, it was maintained that only doctorally prepared individuals could do research. But that is a very narrow and short-sighted conception, which fortunately does not have currency any longer.

Collaborative activities. These provide another means for bridging research and practice. Collaborative activities between nursing and other disciplines are becoming more and more critical, both in the area of educational preparation and practice. Fagin has detailed benefits that accrue to patients when nursing and medicine collaborate. For purposes of this paper, we will deal specifically with collaboration between education and practice.

What types of integrative and collaborative activities between nursing education and practice might bridge research and practice, and serve to facilitate staff nurse participation in research, and resultant improvements in practice? Examples of these will be identified below.

1. Partnerships. These would involve designated

faculty members holding responsibilities within the nursing service department and within the school of nursing. This would give them full faculty status ; they are paid by the university.

2. Joint appointments. In the case of joint appointments, individuals are appointed boty by a clinical agency and a school of nursing, with divided responsibilities.

3. Faculty practice plans. In a growing number of institutions faculties are establishing clinics run by them for the purpose of providing service, conducting research, and providing teaching experiences for students. In the beginning, such clinics tend not to generate income. Over time, as these efforts become sytematized, some schools are reporting modest revenue. In staffing such faculty practice clinics, schools and clinical agencies cooperate to provide service on a regular basis, as faculty and student schedules do not always allow for coverage 40-60 hours a week.

4. Other types of appointments. Examples of these are courtesy faculty appointments of agency staff in the capacity of adjunct faculty, and conversely, nursing service appointments to faculty as adjunct clinicians or adjunct administrators. Unless these are carefully thought through, they can turn into "dry" appointments with no meaning. In my institution, there is provision for this type of appointment for both faculty and clinical agency personnel. Whenever a faculty member receives an adjunct nursing service appointment, the individual meets with relevant people from the agency, and a specific plan is outlined for the faculty member's service involvement. In two instances faculty members help direct a major research project for the institution that is designed to evaluate the effects of institutional innovations. The research team thus is comprised of faculty and agency staff. This type of collaboration benefits the agency in taking advantage of faculty research expertise ; at the same time, faculty provide mentorship to those with limited experience in research. The faculty members benefit as a result of their immersion in the types of

problems encountered in practice, and the exchange is beneficial to all. Groups of graduate students are involved in the project at all times, obtaining supervised experiences, co-authoring papers for presentation at professional meetings, as well as in preparing manuscripts for publication.

Other examples of faculty involvement are membership on critical clinical agency committees where staff nurses also serve, working with staffs of specific nursing units to provide ongoing consultation on patient care problems, to collaborate on writing of manuscripts, and the like.

Agency staff who hold adjunct faculty appointments are called upon to give guest lectures, to serve on some school of nursing committees ; the chief of nursing holds a formal appointment in the school of nursing as assistant dean for clinical affairs. The potential for this type of mutual involvement and benefit is limitless, and has to be expanded. The nursing service realities and urgencies can be brought home to faculties by clinicians and administrators when they are active participants in an educational unit's decision making efforts, such as occurs during curriculum development.

Clinical scholarship. Clinical scholarship takes many forms, and individuals may hold varying titles. This entails recognition that clinical scholarship is a professional imperative. According to Palmer, it "(1) is rooted in observations of the health-sickness phenomena of people, (2) mandates extensive knowledge in those sciences used in the practice of nursing as well as knowledge of nursing itself, (3) requires significant extensive experiences in the clinical practice of nursing, and (4) demands intellectual activity : thinking, analysis, and synthesis." Clinical scholars have the ability to transmit and communicate knowledge derived from their efforts to the wider community through various means. Within the past few years a variety of opportunities have been made available to provide training for this type of role and activity.

In some cases individuals in clinical nurse re-

searcher(CNR) roles have functioned as clinical scholars. These have been developed as a means for assisting nurses in the clinical setting to conduct research, as well as to facilitate the research of others. These individuals serve as consultants as well. Staff nurses can be helped to identify clinical problems they encounter and design modest studies to systematically collect data. CNRs can assist staff in identifying and evaluating relevant research studies, and can help them implement findings in their practice. Schutzenhofer has identified a number of benefits that accrue to both the service sector and the education sector : fostering joint research efforts ; provide structure for discussing health care concerns ; unify and strengthen the voice of nursing in the health care environment and within the community ; enhance the learning climate for students, faculty, and staff ; enable effective use of resources.

Directors of nursing research. These roles and somewhat similar to the clinical scholar role, and we have seen an expansion of them across many institutions. Directors of nursing research serve as catalysts to the conduct of research relevant to practice, can help translate theoretical research to practice-oriented research, and in the testing and application of research findings to practice. With the heavy emphasis on effectiveness of care and clinical outcomes, as well as cost containment, individuals in these roles can play a "bridging" function.

Basic Research

There are occasions when research is basic and mostly of theoretical interest. In these cases it is not intended for application into practice. When this occurs, we should not trivialize it as insignificant, but encourage its pursuit. The profession needs research of all kind, as well as those that are on the basic to applied spectrum. More will be said on this later.

Linking Theory and Practice

What is theory? Various definitions of theory have been provided in the literature, some specifying restrictions, others not. Kerlinger's definition is most commonly accepted ; it requires that research address relationships across two or more concepts. It states : "A theory is a set of interrelated constructs(concepts), definitions, and propositions that present a systematic view of phenomena by specifying relations among variables, with the purpose of explaining and predicting the phenomena." It is generally contended that scientific progress cannot be made without addressing relationships. Theory is framed in such a way as to be testable through propositions derived from it.

A theory is distinguished from conceptual models, which are global, and provide a perspective, a way of looking at phenomena that concern a discipline. They are expected to guide theory development and suggest areas of inquiry ; they are not directly testable.

The notion of theory-based education and theory-based practice has been generally endorsed in the literature and in accreditation criteria for undergraduate and master's degree programs. However, in these contexts theory tends to be used generally and globally, and no distinction is made between specific theories and conceptual models. Theories are specific, and address a given phenomenon in the real world, providing an explanation or prediction of what happens in a given situation, what variables influence or mediate an event, and the like ; for example, a theory might explicate how certain types of patients cope with their condition or disability ; what factors influence it, and what intervention strategies might lead to effective coping. In order to be useful in practice, such a theory would have been tested, with specific hypotheses accepted or rejected with a given probability. Most of the time these are specific to certain patients. A coping theory for patients undergoing liver transplant sur-

gery is not necessarily applicable to patients undergoing breast surgery due to a cancer diagnosis. To determine whether the former theory is applicable, it has to be tested with breast cancer patients, confirming, disconfirming, or modifying the original theory. Once testing has occurred through research, cautious application of relevant findings may be appropriate. In this example, this takes the form of application of both theory and research.

In the case of conceptual frameworks /models, which are global, and represent a perspective addressing the overall concerns of nursing, some authors advocate use of these in practice as well, without distinguishing the application of a specific theory from that of a conceptual framework. Examples are provided by Frik and Pollock, on how various conceptual models can guide practice. It is difficult to see how such global frameworks such as Orem's Self-Care Model or Roy's Adaptation Model can be useful in interventions. In addition, this raises a serious question about applying to practice any ideas that have not been sufficiently tested through rigorous and systematic investigations, whether they be theories or conceptual models.

There are dissenting voices concerning the relations between theory and practice. They point to alternative ways of knowing, or gaining knowledge, other than the empirical. Some contend, for example, that theory is a limiting force, in that it imposes structure at the expense of the art of nursing. In this view, practice is changing constantly ; this and over-reliance on theory fosters a theory-practice gap, that there is a danger of nurses becoming victims of theory, that theory-prescribed practice is disempowering for nurses ; theory is said to be a tool. When theory does not reflect and inform practice reality and is not deemed useful, it can be subjected to this type of criticism. Also, we need to be clear in instances where theory is just that and is not intended for application at the moment.

There are theories that are thought of as "borrowed", because they have been developed in

other disciplines. Before these are utilized in practice their relevance and validity needs to be tested with regard to nursing care situations.

Theory and Research

The interconnection between theory and research is in some ways the least contentious. Theory development relies on research for confirmation or disconfirmation. Research relies on theory, in that theory delineates the nature and dimension of the phenomena and expected relationships, and generally provides guidance to the research direction. This type of transaction between theory and research is sometimes referred to as a dialectic.

There are different types of theories, and different kinds of research or modes of inquiry. A well accepted typology is that proposed by Carper, identifying four patterns of knowing : empirics, ethical, esthetic, and "personal." Similarly, Wolfer has developed a conception of value theory ; he endorses the recognition by Dickoff, James and Wiedenbach that nursing needs more than a "practice" or "prescriptive" theory ; that scientific theory from an investigation needs to be organized at a "higher" level of theory grounded in practice, and incorporating goals based on values. He claims that "practice theory requires the development and articulation of relevant normative and ethical theory." Further, that articulating the normative /ethical rationale for goals and practice priorities is not based on empirical fact, and advocates methods of inquiry for developing value theory as an inherent part of practice theory, and contends that the approaches to these are through philosophical or scholarly research rather than empirical research. Wolfer gives explicit recognition to the idea that there are different ways of knowing for different aspects of reality, and that this is consistent with the range of human experiences.

There is growing recognition in nursing that each of these different types of theories /modes of inquiry is essential for professional practice ;

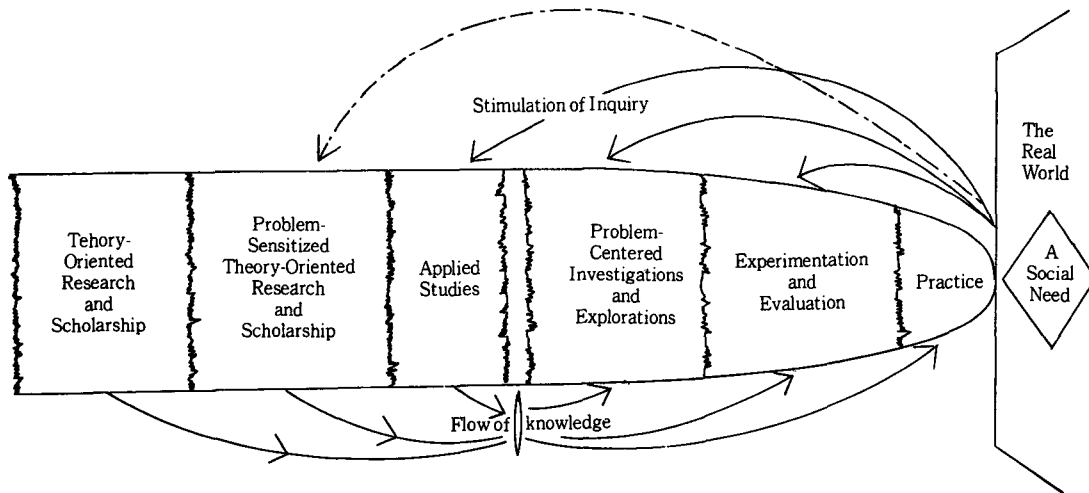
examples of these from recent nursing literature include the work of Watson on human caring, critical theory, feminist theory, among others.

Knowledge Transformation

Scientists/researchers have often been accused of studying problems that are trivial, and those that interest them rather than those that are of importance to society. Further, the criticism has been leveled that scientists report their findings in such a way that practitioners cannot understand these, and do not know how to use them; that, in effect, scientists write and talk to other scientists rather than to practitioners or the public.

Such criticisms have a degree of validity, but need to be examined with care. While there are

occasions where trivial problems are selected for investigation, one must be careful in evaluating the value of studies. Most research findings are not immediately ready for application. Rather, they need to undergo gradual transformation and become sensitized to practice needs before they are ready for application. This continuum is represented by Figure 2, proposed by Mauksch. Basic, theory-oriented research, which appear at the far left of figure 2, are only the beginning of practice innovations. In our eagerness to seek practice-related research we must be cautious that we not discourage or fail to support the conduct of basic scientific research. The annals of science are full of examples where a scientific finding was put to the most unexpected and valuable uses, and in some cases, many years later.



<Figure 2> A Schematic Drawing of the Continuum Between Theory-Oriented Science and Target-Centered Professional Practice. Source : Mauksch, H.(1969).

Currently, the rewards and value systems in the scientific community are such that these encourage scientists to communicate with one another. Yet, it is also the case that science does not occur in a vacuum and scientists do need a community of scholars to dialogue with, to stimulate and nurture each

other's thinking, to teach and mentor novice scientists.

It is the case however, that if we develop a wider appreciation for the transformations that needs to occur before a scientific finding is applied to practice settings, scientists can be helpful in guiding and

participating in the transformation process as depicted in figure 2. This process is referred to as technology transfer in some circles. A good example relates to the development and testing of drugs. This endeavor begins with basic research on the underlying physiology and body mechanisms. Pharmaceutical companies engage investigators to isolate the drug from natural or artificial sources, engage in animal experiments, then controlled human experimentation, and clinical experiments, before a drug reaches the market for general use. It has been estimated that the cost of producing a drug by the time it comes on the market is over \$200 million.

Health care institutions and industry have an important role to play in enabling the process of translating research into practice innovations through a variety of means, including funding studies that focus on practice innovations, and which translate and transform theory-oriented research to practice applications. In the mid-seventies I called for the creation of new roles within nursing to make this possible. The evolution of the role of clinical nurse scholars and directors of nursing research have in part served this purpose, and a number of institutions are employing individuals in these roles.

Larson reports on a study soliciting the views of leaders in industry on these matters. Seventeen corporate leaders were interviewed; these leaders believed that universities should focus on what they do best, which is conduct basic research, educate, and foster creativity, rather than focusing on product discovery, and that industry should continue linking scientific discoveries with innovation.

Research Utilization

Over ten years ago, a group of investigators at the University of Michigan engaged in a major project with the Michigan Nurses Association and a few

hospitals to systematically translate selected research findings to practice applications. Their work has been a classic in this area. Out of their effort they have identified a number of phases of the research utilization process, which are: identifying practice problems, evaluating relevance of the research knowledge, designing a practice innovation addressing the clinical problem, evaluating the innovation, making the decision to adopt or reject it, and developing strategies to extend it to other settings. This process can be carried out if collaboration exists between practitioners and researchers.

Before research can be utilized into practice it must be communicated and understood, then it must be evaluated, the validity of the findings determined, and then replication should be undertaken in various settings. Utilizing research findings into practice means implementing change within an organization. Much has been written about ways in which change can be facilitated, and its discussion is beyond the scope of this paper.

Concluding Remarks

There are many challenges we face in assuring that research and scientific findings are brought to bear to improve nursing practice. These, as well as many health problems are shared challenges by many countries. Yet, much of nursing research is carried out with a local or national perspective, with little communication or collaboration across our national boundaries. Within the United States there is a growing awareness that nursing research needs to become internationalized, so that we are all working together to promote the health of all people.

Our perspective needs to change to one that is more global and collaborative rather than parochial. Such collaboration needs to be thought of in its broadest sense, involving nurses and other scientists across our nations.

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- 초 록 -

간호학에 있어서 연구, 실무와 이론과의 교량

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이 논문은 건강관리와 간호에 있어서 현재 발전하고 있는 경향과 맥락내에서 연구, 실무 및 이론 사이의 상관관계에 관하여 논하였다.

연구-실무-이론의 삼위일체의 연결고리를 위한 접근의 다양성에 대하여 기술하였다.

교육, 협력활동, 파트너십, 협동임명과 교수임상근무, 실무에 있어서 이론 적용의 문제점 또한 언급하였다. 이론과 연구를 풍부하게 하기 위한 방법과 연구에 기초한 지식을 실무에 적용하기 전 실무환경에 적절하게 사용될 수 있게 부가된 검증이 필요하다. 또한 실무 환경에 지식을 적용, 평가, 반복함으로써 체계적이고 계획된 변화노력이 이루어져야 한다.

세계화와 국제화의 시각 및 모든 사람에게 국경을 초월하여 건강관리를 증진시키기 위하여 협력적인 연구활동이 특별히 요청된다.

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