Research Interests

TELEMEDICINE, TRIPLE AIM AND TEAM CARE

Telemedicine, Triple Aim and Team Care: Improving Clinical Outcomes in Healthcare Settings

Barbara J. Ritter Ed.DNP and Michael J. Witte MD
1Sonoma State University, Coastal Health Alliance, Point Reyes Station, California, USA
2California Primary Care Association Chief Medical Officer, Coastal Health Alliance Medical Director, Point Reyes Station, California, USA

ABSTRACT

This chapter examines the roles of Telemedicine, Triple Aim and Team Care in Improving Clinical outcomes in Healthcare Settings. Data sources included a review of the literature to identify methodologies, findings and recommendations for utilization and implementation in education and practice.

HEALTH CARE REFORM

The Future of Health Care: Are You Prepared?

Barbara J. Ritter, Ed.DNP
and Donna C. Geiger, MSN, FNP

Throughout the last decade, the Institute of Medicine (IOM), an inter-professional panel of experts in clinical medicine, medical education, the medical and biological sciences, nursing,
dentistry and other health professions, has published a series of reports on quality and safety in healthcare. The reports, with their evidence-based focus, have increasingly been used to guide informed decisions for changes in professional practice that will improve the quality of health care. Currently, implementation plans for the recommendations are beginning to gel with the formation of state-level Regional Action Coalitions (RACs). How best can we use these recommendations to improve our practice and our profession?

**Background**

**Institute of Medicine Reports**
The first report in the series, *To Err is Human: Building a Safer Health System* (1999), provided the groundwork for reform by alerting us all to the estimated 98,000 preventable deaths per year attributable to quality and safety deficits in the health care industry. This report was followed by *Crossing the Quality Chasm: A New Health System for the 21st Century* (2001), which concluded, “care should be safe, effective, patient-centered, timely, efficient and equitable”. A subsequent report, *Health Professions Education: A Bridge to Quality* (2003), operationalized those characteristics by identifying specific competencies that are essential to increasing safety and quality regardless of the health care discipline (Texas Higher Education Coordinating Board, 2008).

**IOM Core Competencies**
The set of core competencies that all health professionals regardless of discipline will demonstrate are: 1) the provision of patient-centered care, 2) working in inter-professional teams, 3) employing evidence-based practice, 4) applying quality improvement approaches, and 5) utilizing informatics (Institute of Medicine Reports, 2003).

These core competencies were further delineated specifically for nurses in the *Quality and Safety Education for Nurses (QSEN)* Report (2007), an ongoing research project funded by the Robert Woods Johnson Foundation. The QSEN competencies are the same as the IOM competencies with the addition of safety. The project integrated the IOM recommendations into nursing curricula and provided a framework to meet nursing practice competencies as well as serving as a national resource for curriculum models and sharing teaching strategies.

**Discussion**

Herein lies the genius of the conceptual frameworks created by the IOM and then refined in the QSEN report—a set of competencies that all health care disciplines can use to guide their practice.

While nursing leaders embraced these quality improvement indicators, concerns about scope of practice remained in the forefront. The *Future of Nursing: Leading Change, Advancing Health* (2011), emphasized that if the system is to capitalize on this opportunity for change, the constraints of outdated policies, regulations, and cultural barriers, including those related to scope of practice, will have to be lifted, most notably for advanced practice nurses (APNs). This “remodeling” would allow for practice to the full extent of education and training achieved,
creating more accessible, high-quality, value-driven services in full partnership with physicians and other health professionals.

However, we miss the point if we only focus on recognizing and removing constraints to our practice. The IOM reports clearly indicate that APNs routinely deliver primary care services on an equal level with their physician partners as do APNs in specialty practices. Multiple studies have proven this long ago.

In relation to our physician colleagues, this newest generation - the primary care physicians, surgeons and the cadre of new specialists - recognize that the paternalistic captain of the ship model is no longer achievable let alone effective. There is recognition that “the pace and commercial nature of health care impede the inculcation of fundamental values of the profession” (Cooke, Irby, & O’Brien, 2010). For nearly a decade, Grunbach & Bodenheimer, (2002) have acknowledged that all these fundamental values are being impeded and the fundamental value (or “core competency” in our new language) that is most affected is patient centered care, necessitating a paradigm shift to collaborative teams. In 2010, The American College of Physicians, a group made up primarily of internists, reinforced this point in their position paper concurring that the future of health care delivery would require multidisciplinary teams of health care professionals.

All the IOM reports point to improved communication, teamwork and collaboration as the best way to improve our health care delivery system. Major medical and nursing societies are embracing this opportunity for real change.

Thus, we can empower ourselves by demonstrating that our care is patient centered, recognizing that we are valued members of an interdisciplinary team, who evaluate the evidence, strive to improve the quality of our care and use technology to achieve all of the core competencies for the improvement of health care.

**Conclusion**

The power to change conditions in order to deliver better care does not rest primarily with our profession, regardless of how ably led or educated we are; it also lies with governments, businesses, health care institutions, professional organizations and other health professionals, and the insurance industry.

The IOM future of health care recommendations see APNs as partners practicing to the full extent of their abilities. With this new language we have a foundation for true collaboration. Together, we have the power to transform a broken health care system providing seamless, affordable, high-quality care that is accessible to all, patient centered, and evidence based to improve health outcomes. Thus, the future of nursing – and that of all the health care related disciplines – will likely depend more on how the core competencies are integrated into our educational system and, especially, our practices. Are you prepared for the future of health care?

**References**
EVIDENCED BASED PRACTICE

Why Evidence Based Practice?

Barbara J. Ritter, Ed.DNP

As nurse practitioners, we are regularly confronted with patients in acute condition. Making effective, timely decisions in an uncertain, and often chaotic, environment is our stock in trade. But how do we make decisions and what do we base them on? Most nurse practitioners I know would admit that clinical decisions are often made with relative ignorance of their impact. However, clinical error can be minimized and results optimized, by thinking critically and reasoning well. Evidence-based practice is an approach to care that integrates nursing experience and intuition with valid and current clinical research evidence.
Paradoxically, many aspects of clinical practice have not been adequately tested. Research evidence is lacking for many clinical questions. Attempts to introduce a critically reasoned, evidence-based approach, may not work. In these situations, clinical experience is particularly important. But while experience and good clinical instincts are crucial to effective nursing care, it is, at the same time, essential to recognize the limitations of experience and intuition. You must be cautious in how you interpret information derived from experience, for it may be misleading.

Adoption of an evidence-based practice is sometimes misinterpreted as rejection of intuition and experience. Many practitioners remain skeptical about the premise. Nursing is full of competing demands. The benefits of using evidence-based practice are not always apparent. Economic constraints may interfere with using research evidence to make clinical decisions; the literature may not be readily accessible; and there may not be enough time to carefully review the evidence before dealing with a pressing clinical problem.

However, future trends will include using research-based evidence in clinical practice. Nurses who formerly looked to physicians to resolve patient management issues will need to incorporate evidence-based practice skills. These skills include precisely defining the patient’s problem, efficiently searching and critically appraising the literature, and then deciding how to use this information in practice. Evidence-based practice involves using good judgement in applying research evidence to patient care, and a systematic approach to making decisions when there are no obvious answers. Evidence-based practice involves integrating the best current research with your clinical expertise, intuition, pathophysiological knowledge, and your patients’ preferences to make the most effective decisions about delivery of care. Utilizing evidence-based practice will result in positive patient outcomes. Additionally, evidence-based practice will improve the care process and control costs. An evidence-based practice will keep you up to date with the literature and help you apply quality research to your work.

The importance of research to clinical nursing is multifaceted. Achievement of optimum patient care by setting and maintaining research-based standards is clear. Nurse practitioners who remain abreast of current research will practice with greater confidence. They will have the tools to accept or reject research findings in making clinical decisions. They will know whether research findings are valid, reliable and applicable. Traditional and ritualistic nursing procedures will be scrutinized to test whether they are cost-effective.

Nursing research should be identified, critically read, discussed, and either used or rejected by the knowledgeable nurse. Research findings should be disseminated through as many areas of nursing as possible. Making evidence-based practice a standard may not be easy to achieve, but its benefits cannot be denied.

References


---

**Handheld Computers and Evidence-Based Practice**

**Barbara J. Ritter, Ed.DNP**

As nurse practitioners, we are regularly confronted with patients with acute and chronic conditions. Making effective, timely decisions in an uncertain, and often chaotic, environment is essential. But how do we make decisions and what do we base them on?

How do we optimize our decision making process considering the situation? Clinical error can be minimized and results optimized, by using up-to-date evidenced-based resources to think critically and reason well. Evidence-based practice is an approach to care that integrates experience and intuition with valid and current clinical research evidence. It involves using good judgment in applying research evidence to patient care, and a systematic approach to making decisions when there are no obvious answers. Technology such as handheld computers can facilitate integration of current clinical research and information.

Adoption of an evidence-based practice is sometimes misinterpreted as rejection of intuition and experience. Similarly, incorporation of technology may be shunned for reasons such as limited knowledge, experience with technology or cost. Many practitioners remain skeptical about these premises. Practice is full of competing demands. The benefits of using evidenced-based practice...
and handheld computer technology in practice are not always apparent. Economic constraints may interfere with using such an approach to make clinical decisions. There may not be enough time to learn a new approach with an ever-increasing workload.

However, future trends will include using evidenced-based practice and handheld computers in clinical practice. Nurse practitioners will need to incorporate these approaches into practice to enhance patient care. The benefits of using technology and evidence-based resources in practice are that they can keep you up-to-date with the latest evidenced-based literature. The clinician then decides how to use this information in practice. The functionality of handheld computers offers the opportunity to enhance efficiency by instant access to many evidenced-based programs such as pharmacopoeias, clinical practice guidelines, and research reviews. Using such an approach to make decisions can minimize errors, improve care, facilitate positive patient outcomes and control costs.

The importance of incorporating evidenced-based research and technology into clinical practice is multifaceted. Achievement of optimum patient care by setting and maintaining research-based standards is clear. Nurse practitioners who remain abreast of current research will practice with greater confidence. Using the internet can provide us with the means to gather the latest information on-line and access it via the handheld computer at the point of care. For example, expert panel reports on conditions such as asthma, community acquired pneumonia, and diabetes can be accessed, downloaded and installed to the handheld computer and used as evidence that strengthens our standards of practice to assists us in providing the best possible care and patient outcomes. Traditional and ritualistic procedures can be reviewed to determine whether they are efficient and cost-effective. Incorporating evidence-based practice and handheld computer technology into practice may not be easy to achieve, but its benefits cannot be denied.

References


Barbara Ritter is Research Director of the Marin Nurse Practitioner Association. She also practices as an FNP in private practice.
Critical Thinking

Educational Reform to Meet Changing Health Care Environments

Barbara J. Ritter, Ed.DNP

Universities have a mandate to respond to community and nursing service needs. Therefore, university faculty are engaged in revising entire undergraduate and graduate educational programs to respond to changing health care demands and the National League of Nursing (NLN) and Western Association of Schools and Colleges (WASC) mandates to prepare new graduates to think critically. These revisions mentioned above are cutting edge material and are important for educators, administrators and clinicians to understand and incorporate into practice. The national mandates lay the foundation for competencies of future nurses in general and advanced nursing practice. The revisions are an important venture that we all need to consider.

Statement of Purpose:

The purpose of this session is to share new graduate nursing expectations for general and advanced practice that address critical thinking abilities needed for a changing health care environment. A unique aspect of the new programs includes the development of nurses who can utilize critical thinking abilities to adapt care to culturally diverse and high risk populations in a cost effective manner.

Brief Description:

Major NLN and WASC mandates necessitate the development of critical thinking abilities in order to prepare new types of undergraduate and graduate nurses for general and advanced nursing practice. In order to better address the importance of critical thinking abilities for new graduates, the major findings of a literature review from a comprehensive search of the databases for Medline, ERIC, and PsychLit from the years 1990-1996 for critical thinking and nursing are presented.

The major findings of the literature review address these key areas:

A consensus definition of critical thinking exists.

Recommendations have been made to integrate critical thinking into competencies for practice, both new graduate and undergraduate nurses, by the NLN and WASC.

Nursing is a discipline which requires critical thinking abilities of both cognitive skill
and an affective disposition in order to make good judgments in the context of uncertainty.

General and advanced nursing practice requires the integration of diagnostic, therapeutic and ethical reasoning.

Critical thinking abilities increase with level of education.

Correlations exist between critical thinking and decision making ability.

Correlations exist between critical thinking and ethical reasoning.

Critical thinking is embedded in the practice of nursing.

Critical thinking is exemplified in nurse experts.

---

**Critical Thinking and Nursing**

**Barbara J. Ritter, Ed.DNP**

**Introduction**

Critical thinking is increasingly being recognized as an integral component of professional practice in a variety of disciplines. In 1990, the results of the Delphi Research Project sponsored by the American Philosophical Association (APA) were published. The Delphi Project mandated that national educational outcomes demonstrate significant improvement in critical thinking in all the nation's colleges. Additionally, the National League for Nursing (NLN) Council of Baccalaureate and Higher Degree Programs required program outcomes which included assessment of critical thinking for all graduates. However, controversy exists regarding appropriate methods to facilitate and measure critical thinking due to the abstractness of the concept.

**Problem**
Faculty of Universities have endeavored to increase the critical thinking abilities of students and to meet the NLN accreditation outcomes for critical thinking. Problems identified in meeting the critical thinking outcome include (a) the educational goals of critical thinking lack application specific to the domain of nursing; (b) the critical thinking outcomes are not clearly identified or measurable; and (c) the outcomes are not specific for critical thinking within the discipline of nursing. In order to lay a foundation for correcting the deficiencies, a review of the literature on critical thinking and nursing has been done.

**Significance**

Nursing is a profession wherein the need to make effective practice decisions utilizing good judgment in the context of uncertainty is critical. Thus, the ability to think critically is essential. Ineffective critical thinking based on insufficient knowledge or expertise can trigger a cascade of inappropriate responses resulting in poor clinical nursing judgment. Moreover, incomplete critical thinking processing may result in inappropriate actions resulting in poor outcomes in a setting where consequences involve high stakes.

Critical thinking involves two components: cognitive skill and affective disposition (APA, 1990). These components are embodied in the practice of nursing and involve nursing knowledge and expertise (Facione & Facione, 1994). The expert nurse, in the course of the nursing process, uses these two aspects of critical thinking to solve problems derived from good judgment and appropriate diagnostic, therapeutic, and ethical actions (Gordon, Murphy, Candee, & Hiltunen, 1994). As appropriate treatments and outcomes vary with the contextual setting, accurate critical thinking is crucial for appropriate and quality care.

**Definitions of Critical Thinking**

Historically, the roots of critical thinking can be traced back to the time of Aristotle and Socrates. Since that time, various authors have constructed definitions of critical thinking related to their specific discipline, such as philosophy, education, or psychology. In 1990, the APA composed a consensus statement defining critical thinking as a nonlinear process which integrates consideration of the contexts, criteria, and evidence that are relevant to a given problem as well as organization of new information and reorganization of previously learned material into forms leading to new responses which can be generalized to new situations. In this way, reasoned responses and actions are formulated for anticipated and unanticipated situations. This consensus definition aligns the conceptual definition of critical thinking to nursing as the definition incorporates descriptions of nursing practice wherein nurses need to make effective practice decisions utilizing good judgment in the context of uncertainty. Additionally, the authors conceptualized critical thinking as a simultaneous meta cognitive self appraisal of one's thinking process and, therefore, self monitoring in nature.

**Theories of Critical Thinking**

The APA consensus panel (1990) recognized that divergent conceptualizations of critical thinking have hindered curriculum and research efforts. The expert panel worked toward development of a clear conceptualization of the critical thinking as well as other critical factors
that have an influence on critical thinking such as expertise. A key result of the project was the conceptualization of critical thinking in two dimensions: cognitive skills and affective dispositions. The experts were virtually unanimous on including analyses, evaluation, and inference as central to critical thinking cognitive skills. Secondly, the panel indicated that one must have the affective dispositions to think critically about issues. Affective dispositions that characterize good critical thinkers include inquisitiveness, self confidence in one's ability to reason, open mindedness regarding divergent world views, flexibility, honesty, diligence, and reasonableness, among others. Therefore, conceptualization of critical thinking as both a cognitive skill and an affective disposition has implications for curriculum and instruction, since this conceptualization supports the development of a theoretical framework of critical thinking as a complex construct that is broad and not easily operationalized. Additional implications are that the conceptualization of critical thinking incorporate an epistemology that is reflective of the discipline of nursing.

Gordon et al. (1994) realized the complexities of operationalizing a broad concept such as critical thinking and proposed a nursing model where nursing judgment is the outcome of critical thinking. The model integrated the epistemology of nursing into a broad theoretical framework which integrates the concept of critical thinking with measurable constructs and sub elements that are appropriate to and reflective of the nursing process. This model, as well as the APA consensus panel, focus on critical thinking as a process of purposeful judgment with emphasis on decision making and can be placed in the context of the nursing process as an identified problem, goal, and desired outcome. This allows for conceptualization of the process of critical thinking which is aligned with the conceptualization of the process of nursing clinical judgment (APA, 1990).

Overview

Having laid a foundation regarding critical thinking definitions and frameworks, a search of the literature ensued to determine the existing research on critical thinking, specifically in nursing. The literature from ERIC and PsychLit for the years 1966-1996 produced nine articles addressing critical thinking and nursing. Medline databases from 1990-1996 produced 122 articles. In addition, a manual search was done of reference lists from identified articles. The majority of articles were found to be elaborated think pieces. Eight research articles and one think piece were considered for actual literature review inclusion.

Results

Review of Literature

Frederickson and Mayer (1977) studied the level of critical thinking achieved by baccalaureate and associate degree student nurses as these education programs are intended to produce two levels of nursing expertise. A general test was utilized to measure general critical thinking. Problem solving ability was assessed utilizing a silent film entitled "Nursing Judgment Series" which depicted five typical patient problems. Findings were that baccalaureate nurses scored significantly higher than associate nurses on critical thinking. Most students used three of four steps in problem solving. Evaluation was the least frequently used step. Overall, both groups'
scores were lower than expected. No significant difference in the process of problem solving was found between the baccalaureate degree and associate degree nurses. However, baccalaureate degree nurses tended to score higher on problem solving than associate degree student nurses.

Berger (1984) studied undergraduate baccalaureate nursing students to evaluate their critical thinking ability. Students' critical thinking scores were analyzed for the purpose of determining if critical thinking abilities increased from sophomore to senior year. The Watson and Glaser test (WGCTA) was selected for the assessment of critical thinking. The test was utilized because it requires application of important critical thinking abilities utilized in nursing, such as inference, recognition of assumptions, deductions, interpretation, and evaluation of arguments. The test had been established as being a reliable and valid measure of critical thinking and had been used previously to measure critical thinking ability of nursing students. Two areas of questioning were addressed. One involving neutral topics and the other controversial matters about which many subjects have strong feelings or prejudices. The test was administered in the sophomore year and again in the senior year for the purpose of determining if the students' thinking ability increased over the course of their education. The findings were that the initial pretest scores ranged from 50-96 with a mean score of 74. Final scores ranged from 55-95 and mean scores indicated a statistically significant increase (t = 3.98) in critical thinking ability during the students' program, suggesting that critical thinking increased over their course of study.

Sullivan (1987) studied registered nurses (RNs) acquiring a baccalaureate to determine if critical thinking improved during program enrollment. All subjects were licensed to practice and were graduates of either associate or diploma degree programs. The WGCTA was administered to the students in the first four weeks of the first semester in the BS program, and again in the last four weeks of the students' final semester in the program. Data were analyzed to compare mean scores on all measures at entry and at exit. Findings were that critical thinking scores showed no difference between entry and two years later at graduation.

Although Sullivan had anticipated that subjects' scores on the WGCTA would be higher following completion of the baccalaureate program, that was not the case. Sullivan's findings were surprising due to the inclusion of course work in the baccalaureate which suggested that critical thinking skills would be developed. Other pertinent findings were that more experienced nurses scored higher on critical thinking at entry to the program than nurses with less experience. However, by graduation few differences existed, suggesting that the curriculum did have some impact on improving critical thinking ability for a portion of the RNs studied, although no data were given.

Pardue (1987) addressed whether there were differences in decision making skills and critical thinking ability among associate degree, diploma, baccalaureate, and masters prepared nurses. Pardue proposed that the advanced degree nurse would have greater cognitive abilities, specifically the ability to process information and to make inferences and decisions. This was based on the length and focus of their educational programs.

Critical thinking ability was measured by the WGCTA. Decision making ability was assessed by a decision making questionnaire which was developed for the purpose of the study. Benner's domains of nursing were used to construct the questionnaire. After data collection, the number of
years of nursing experience was cross tabulated with frequency in making decisions and no significant difference (chi square = 3.12, p = .53) was found. The number of years nursing experience was cross tabulated with difficulty in making decisions and was not found to be significant (chi square = 5.02, p = .29). Therefore, the number of years of clinical experience was not a discriminating variable related to decision making among the four groups.

Pardue found that there was a significant difference in critical thinking ability among associate degree, diploma, baccalaureate, and masters prepared nurses. Results revealed that baccalaureate and master's degree nurses did have significantly higher critical thinking scores than associate degree or diploma nurses at the p = .05 level. No significant difference in the overall self reported frequency of making decisions or perceived difficulty making decisions among the four groups was found. The data analysis revealed that there was no significant difference among the four groups in the reported factors which influence the decision making among the four groups. Findings were that experience and knowledge were rated as the most important factors influencing decision making ability.

In summary, Pardue offered the following findings. There was a significant difference in critical thinking ability among associate degree, diploma, baccalaureate, and master's prepared nurses. Baccalaureate degree and master's prepared nurses had significantly higher mean scores in critical thinking. This provided support for the position that graduates from different educational levels have different cognitive abilities. The findings are congruent with Fredrickson and Mayer (1977) which found that baccalaureate degree students scored higher on critical thinking than associate degree students.

The study provides important comparative research for the four groups of nurses. The significant difference in critical thinking between the two groups, (a) baccalaureate and master's prepared nurses and (b) diploma and associate degree nurses, was an important and expected finding. However, the finding that no difference in decision making ability existed remains puzzling. The finding that experience and knowledge were ranked highest by all groups suggest there might be a correlation between these variables and decision making. It should be noted that the study looked at perceived difficulty in making decisions, and not actual observations.

Brooks and Sheppard (1990) sought to establish what qualities the baccalaureate prepared nurse brings to professional practice. Since only weak correlations had been shown between critical thinking and clinical decision making, Brooks and Sheppard investigated what other factors might impact this relationship. The WGCTA was used to determine critical thinking ability. Few tools existed to measure decision making specific to nursing, therefore, the Nursing Performance Simulation Instrument (NPSI) was utilized. The NPSI contains four clinical simulations in which decisions need to be made regarding patient care, establishing priorities, formulating alternative actions, and making referrals.

Findings showed that critical thinking ability increased significantly (effect size > 1) for baccalaureate and RN to BS nurses compared to diploma and associate degree nurses. This supports the premise that higher levels of education are associated with critical thinking. The findings show that RN to BS nurses scored significantly higher (effect size > 1) on clinical decision making ability compared to all other groups. RN to BS scores were significantly
different from the other groups \((p = .05)\). The relationship between critical thinking and clinical decision in all groups yielded a weak \((r = .249)\), though significant, positive relationship.

In summary, findings revealed that RN to BS students had greater clinical decision making abilities than the other students. In addition, RN to BS critical thinking ability was higher than associate or diploma students and the same as generic baccalaureate nursing students. A weak, though significant, relationship between critical thinking and clinical decision making was found for all with the highest being the RN to BS students. Although the critical thinking scores of generic students were higher than associate or diploma students, the clinical decision making skills were not. This is a concern as it does not appear that higher levels of critical thinking transfer to the more specific decision making skills in nursing in this instance. It raises concern regarding the existence of nursing education and practice environments which should foster the development and utilization of higher levels of reasoning so students have greater opportunities to make nursing decisions consistent with higher levels of diagnostic, therapeutic, and moral reasoning.

The study is significant for findings regarding higher critical thinking skills in baccalaureate prepared nurses and for showing a weak correlation between critical thinking and decision making ability in all groups, as well as raising the question as to why decision making skills were not higher for generic baccalaureate nursing students in view of the higher critical thinking abilities in this group. Consideration should be given to other variables that might have an effect on transference of critical thinking and decision making for all groups, such as whether faculty maintain current expertise in clinical practice, and whether the educational training environments support development of these abilities as well as preexisting abilities of the students in view of the RN to BS higher scores in both critical thinking and decision making.

Jones and Brown (1991) investigated the characteristics of critical thinking as it is currently interpreted in nursing educational programs. The authors' objectives were to determine currently held definitions and concepts of critical thinking, characteristics of critical thinking activities, components of critical thinking skills, faculty preparation for teaching critical thinking, and strategies employed to teach critical thinking. Respondents were asked to select terms representative of critical thinking as well as terms associated with the critical thinking processes. Additionally, they were asked to list strategies consistent with teaching critical thinking as well as how faculty learned to think critically and to promote critical thinking among students.

Terms selected as conceptualizing critical thinking were often contradictory. Findings regarding terms, identified as characterizing critical thinking, indicated that 61% thought there was no standard model for critical thinking. Critical thinking was primarily characterized as a process of logical reasoning (81%), either deductive (69%) and/or inductive (66%). In summary, the majority believed that critical thinking was a narrowly defined logical, reductionistic, rule driven, decision making process, similar in character to the nursing process. Generally, graduate education was assumed to be preparation to think critically. Teaching strategies used to integrate critical thinking into learning activities were discussion groups (85%), term papers (77%), and case studies (82%). Role playing, simulations, and critique were used by 60p%. Multiple choice tests were used by 65%.
Implications are vast because decision making in clinical nursing practice is more often composed of contextually defined value judgments. The problems of everyday nursing practice are rarely settled in a rational, linear manner. If critical thinking is perceived as application of the rational linear process, then the student accepts the reality of reasoning driven by rules and procedures. These rules and procedures become clearly defined criteria and are incorporated into structured linear activities. On the other hand, if critical thinking is perceived as analysis of complex meanings, critiquing solutions, exploring alternatives, and making contingency related value judgments, then critical thinking becomes a process of reflecting on new possibilities and explanations. It allows for skillful application of knowledge and experience in making discriminating judgments and evaluations. Practice is more often a negotiation between alternative contradictions and the situation, as well as the sharing of varying perspectives and different kinds of truths, which is aligned with the broader philosophical concept of critical thinking. Additionally, implications are that nurse educators, who are unskilled in their own critical thinking, are less able to share these skills with students. The Jones and Brown study brings to the surface the prevailing concepts of critical thinking that are embedded in the culture of nursing educators.

Miller’s (1992) study examined the impact of a baccalaureate program on the critical thinking ability of RNs completing a baccalaureate program. The WGCTA was used to assess critical thinking ability. The purpose of the study was to determine (a) if differences existed between the admission (pretest) and completion (posttest) total critical thinking scores, (b) if differences existed between the pretest and posttest scores on each of the five subscores of the WGCTA, (c) if a relationship existed between the posttest total score on the WGCTA and GPA, and (d) if a difference existed between the increase in posttest WGCTA scores by type of RN program, either associate degree or diploma, from which the student graduated.

The findings regarding differences between admission and completion WGCTA scores were significant (p< 0.05). Findings regarding differences between the pretest and posttest scores on each of the five subtests of the WGCTA were, without exception, higher than pretest scores. Order of the subtests by percentage of items answered correctly was identical for both the pretest and posttest. From the highest to the lowest, the order was interpretation (79.56%, 81.29%), recognition of assumptions (74.50%, 78.31%), deduction (72.28%, 75.48%), evaluation of arguments (65.33%, 66.07%), and inference (55.90%, 58.35%). Only recognition of assumptions and deduction produced mean significant differences beyond the 0.05 level of significance. The data provided some support for the expectation that critical thinking skills improved during the educational experience. The total score on WGCTA correlated to the nursing course GPA produced a significant difference at the p < .05, a variance of 4% attributable to the baccalaureate nursing courses. The correlation coefficient of the WGCTA total score correlated with GPA in all other courses was not significant.

Findings regarding difference between the increases in scores on the WGCTA by type of RN program completed showed graduates from diploma schools of nursing made a significantly greater gain (p < .01) in overall critical thinking skills than did graduates from associate degree nursing programs. No significant difference was found between the pretest and posttest total scores of the associate degree group. Interestingly, graduates from associate degree nursing programs had a slight drop in posttest performance over pretest performance.
Miller reasoned that associate degree RNs had been exposed to two years of higher education prior to entering the baccalaureate program, resulting in no significant gains in scores. However, diploma nurses had little exposure to higher education and, therefore, greater score gains. Additionally, as Miller points out, statistical data of the program effect obscure the impact of the individual. Some students made large gains and others small gains. The study points out that nursing curriculum does positively affect the critical thinking abilities of students in this instance.

Howenstein, Bilodeau, Brogna, and Good (1996) sought to determine critical thinking ability and factors associated with critical thinking ability in a group of practicing nurses. The WGCTA was used to assess critical thinking. Findings were that participants ranged in age from 25 to 57 years with a mean of 35 years and a SD of 8.17 years. The educational backgrounds consisted of 18 (12%) diploma, 5 (3%) AD, 70 (46%) BS, 58 (38%) MS, and 1 (1%) PhD. The average years of experience was 13 years with the range from 1 to 16+ years; the majority of nurses participating in the study had 16 or more years of experience. The majority, 64 (43%), were staff nurses practicing in inpatient settings. Sixty six (44%) were nurses in education or administrative positions.

The average critical thinking score of the sample was 61.3 (SD 9.5). Higher levels of education were associated with higher critical thinking scores. Significant differences were found for master's prepared nurses as well as baccalaureate prepared nurses compared to both associate degree and diploma nurses. Level of education was found to make a significant difference in WGCTA scores ($F_{[3,157]} = 6.57$, $p < .001$). Diploma and associate prepared nurses scored lower than baccalaureate and master's prepared nurses. Effect size was large $> 1.0$ in favor of the MS and BS degree nurses compared to associate degree and diploma nurses. Effect size for MS compared to BS degree nurses was small (.30) in favor of the MS degree nurses. No significant relationship was found between practice area and WGCTA scores ($F_{[3,158]} = 0.7757$, $p > .05$). Effect size was zero for comparison of all the groups and, therefore, not significant. Age was found to be significantly negatively correlated with WGCTA scores ($r_{[158]} = -.25$), as well as years of experience ($r_{[158]} = -.24$).

In summary, higher levels of education were found to be associated with higher levels of critical thinking and suggests that education itself may enhance critical thinking. Therefore, higher education should be supported for nursing practice. Older nurses with a large number of years of experience tested lower on critical thinking. This may suggest that nurses in this group should be encouraged to pursue higher education. Alliances with higher education could be strengthened to facilitate this process.

Facione and Facione (1996) point to the 1990 APA consensus report in regard to cognitive skills and dispositional attributes of critical thinking (CT) to further direct research, education, and practice. The purpose of the article was to demonstrate where critical thinking is embedded in nursing education and practice. Additionally, the essay put forth guidelines on how to translate the APA consensus report definition into effective strategies to teach critical thinking and to nurture dispositional attributes of critical thinking, as well as to develop criteria to measure critical thinking in nursing settings. This was done as a result of the growing focus on critical thinking as an important component for knowledge and professional judgment. The Faciones
contend that the description of the APA ideal critical thinker resembles the descriptions of a nurse with expert clinical judgment. In the clinical context, the expert nurse adept at CT draws judiciously on developed nursing knowledge in forming, evaluating, or reevaluating a purposeful clinical judgment. An expert nurse researcher uses an organized and exhaustive approach to reflectively analyze, interpret, evaluate, infer, and explain evidence and hypotheses. Therefore, CT is particularly relevant in practice disciplines such as nursing.

The Faciones point out that the APA Consensus definition of CT requires both cognitive skills and dispositional attributes, is consistent with descriptions of development of a nursing knowledge base which includes carefully examining and delineating key concepts, constructing meaning, categorizing phenomena, identifying assumptions, testing relationships, hypotheses and theories, as well as formulating alternatives for justifying procedures and stating findings. All are manifestations of CT skills needed for clinical decision making in situations that are often high stake and time limited. Additionally, the expectation that nursing knowledge development involves a search for the best knowledge in a given context is central to nursing practice. Furthermore, nursing practice demands fair mindedness to new evidence and a willingness to reconsider clinical judgments. Nursing practice values a focused and diligent approach to ill structured patient problems, and requires tolerance of multiple perspectives and interpretations that can be supported by reasons and evidence. All of these characteristics are identified as descriptors of the ideal CT disposition. The article is important for incorporating the APA consensus definition of critical thinking into nursing practice in a variety of milieu such as education, service, and research. It is notable for bringing to light the ways that CT is embedded in nursing practice.

**Conclusion**

What knowledge can be taken from 20 years of research on critical thinking and nursing? Do the articles reviewed here share any commonalities? An important common finding was that critical thinking ability increased with level of education. The studies tended to take the perspective that critical thinking is an important component of general education as well as nursing education. Additionally, the studies emphasized that critical thinking is a necessity for the future due to the rapidly changing environments, complexities, and uncertainties of health care. Students and practitioners will need to be equipped with higher order thinking skills.

Questions that remain unanswered include: what are the domain specific critical thinking outcomes for nursing; and what are the criterion that should be operationalized for the outcomes of critical thinking in general and specific to nursing? Additionally, what methods can be utilized to teach critical thinking to enhance the transfer of critical thinking ability to the practice setting? Other areas for further exploration include how do experts in nursing exhibit critical thinking? How is critical thinking embedded in practice? How do expert nurses exhibit critical thinking in practice? Further direction may be needed from an expert nursing panel on critical thinking as was done for the APA consensus definition.

In summary, critical thinking has been shown to increase with level of education. Further consensus and research is called for in development of an integrated theoretical framework and model for practice which remains broad, yet specific to nursing. Further consensus and research
is needed regarding criteria and outcomes that are reflective of two aspects of CT and that are specific to nursing. Finally, it is important to examine how critical thinking is transferred to the practice and how expert nurses utilize critical thinking in practice. Another area to be investigated is how critical thinking ability of advanced practice nurses differs from baccalaureate prepared nurses. Consideration needs to be given to the rules, beliefs, and values that are appropriate in context of nursing. Therefore, a closer look at how critical thinking is embedded in reasoning in clinical situations remains to be done. Good judgment necessitates utilization of both the cognitive skill and disposition attributes of critical thinking in order to formulate reasoning and to guide appropriate actions. This is a nursing imperative, and a necessity for the preservation of quality nursing.

References


Critical Thinking and Problem Based Learning (PBL)

Teaching Strategies: Developing Critical Thinking Skills For the Nurse Practitioner

Barbara J. Ritter, Ed.DNP

Nurse practitioners must be able to effectively apply and integrate knowledge in their clinical practice. This poster session will focus on the development of critical thinking in the nurse practitioner curriculum. It will focus on instructional design and teaching strategies to promote critical thinking. Examples and research of methods which promote effective clinical problem solving will be discussed.

Critical thinking(CT) is increasingly being recognized as the hallmark of higher education.

In 1991, the NLN & Higher Degree Programs adapted an outcome oriented approach for accreditation which required program outcomes to include assessment of critical thinking for all graduates.

Controversy exists regarding appropriate methods to facilitate critical thinking.

Tamblyn, Barrows & others suggest that methods such as PBL are more effective in promoting CT.

CT skills are of particular significance for APNs as well honed problem solving skills are essential for good clinical judgment.
An Analysis of Expert Nurse Practitioners Diagnostic Reasoning

Barbara J. Ritter, Ed.DNP

Abstract

This research study was intended to provide a more comprehensive understanding of expert nurse practitioners’ diagnostic reasoning to determine whether the information processing or the hermeneutical model or a combination of the two models best describe their diagnostic reasoning. A content analysis of think-aloud verbalizations, elicited while diagnosing a patient via simulated cases, was used to describe the diagnostic reasoning behaviors of expert nurse practitioners. Post-session interviews were designed to further answer the research questions formulated for this study. Diagnostic reasoning behaviors were analyzed to identify the integral diagnostic reasoning behaviors in the NPs’ practice.

Subjects’ case study problem solving sessions and post-session interviews related to their diagnostic reasoning processes were coded into ten categories. The unit of analysis for coding into categories was the theme. The four major categories with the highest percentages of themes coded for the group of subjects were: gathering facts (32%), generating the hypothesis (11%), gathering data to confirm the hypothesis (10%), and skilled know how (25%). This group of categories includes three components of the information processing model and one component of the hermeneutical model. It appears that the subjects used both models in diagnostic reasoning.

Nurse practitioners in this study used the information processing model 55% of the time and the hermeneutical model 45% of the time. The finding that nurse practitioners used a combination of both models is the most significant and powerful finding of this study. Expert nurse practitioners’ diagnostic reasoning behaviors do not strictly exemplify individual components of the models but an overlap and blending of each.