Journal of Applied Medical Sciences, vol. 2, no. 1, 2013, 61-73
ISSN: 2241-2328 (print version), 2241-2336 (online)
Scienpress Ltd, 2013

Amalgamethodology: A Research Methodology Unique to Nursing Fostering Critical Thinking Implications for Education and Practice

Darlene Sredl, Ph.D., R.N.[1]

Abstract

The basic sciences have relied upon quantitative research methods since the scientific method surfaced in the 17th century. Reverend Bayes posited what we now know as Bayes' Theorem to provide the underpinnings for the scientific evidence-based process.

Nursing is a relative newcomer on the scientific discipline chart, but an important one none-the-less. In the roughly 160 years since its inception, nursing has striven to build a knowledge base unique to its composite meta-paradigm (person, health, nursing & environment).

Within the last half-century, qualitative research methods have evolved, among them: phenomenology, feminist & gender studies, ethnography, and grounded theory methods. A need has been identified for the science of nursing to utilize its' own methodology for research. Amalgamethodology is the research design proposed as unique to the science of nursing.

---

[1] University of Missouri and St. Louis, Department of Nursing,
e-mail: sredld@umsl.edu

Article Info: *Received* : January 4, 2013. *Revised* : February 27, 2013
Published online : March 30, 2013

This article defines Amalgamethodology, discusses its core components, identifies the importance of graphic representation within the design, and suggests research utilization scenarios to build the evidence-base for this research design unique to the science of nursing. Implications for the future of nursing research, education, and practice are discussed.

Keywords: Amalgamethodology, Quantitative Methodology, Qualitative Methodology, Mixed Method Research Methodology, Nursing Research Theory.

1 Introduction

The paradigm is shifting! By now most nurses have at least a fleeting understanding of the *Evidence-Based Process (EBP)*, EBP's heavy reliance on research (mostly quantitative), and the need to assimilate recent procedural EBP positive outcomes into their own practice. They may have an even deeper understanding of *critical thinking* since most schools of nursing have long adopted that mantra and applied it to content in most nursing courses. *Clinical reasoning* is an outgrowth of the *critical thinking* mantra as more emphasis on practice is applied to the theory undergirding the education.

The profession of nursing has made great strides since it's humble beginnings developed by Florence Nightingale over 160 years ago. But… nursing's status as a profession has been, and continues to be, under attack. Although nursing has added many nursing theories and theorists under it's professional umbrella, to date nursing research continues to lag behind other professional disciplines.

Qualitative Research Methodologies Emerge

The 1980s brought a wealth of new research methodologies together under the 'qualitative' umbrella. These methods strove to determine the depth and

essence of people's needs and emotional feelings. They were not concerned with only the 'quantitative' number-counting and statistical analysis. No, phenomenology, for instance, was concerned with how a patient felt about himself, his condition, his worldview on a given topic. Other methods, such as ethnography, explored customs, traditions, and patterns of behavior within specific ethnic groups. These methodologies stemmed from other scientific disciplines: for example, ethnography from anthropology; while grounded theory sought to build nursing theory from research data [1].

Unique Nursing Research Methodology Absent Until Now

Nursing had no research methodology to call it's own. Somehow the existing methods just did not seem relevant enough, thorough enough, valid enough for a nursing researcher to use. In quantitative analysis, the mere counting of a pulse rate, for example, only yields a number. It can be coupled with demographic data including gender, but it still remains just a number perhaps telling the reader that, of 200 men in the Midwest between the ages of 25-40 yrs., the mean heart rate is 74.

Utilizing qualitative inquiry, however, we can further analyze the heart rate and obtain findings on the pulse rate, it's regularity, it's strength-is it thready or bounding, are pauses between beats present, and so on? Analyzing even further, qualitative inquiry can establish regularity of heart pattern via EKG in which every complex has it's own meaning and that meaning can be interpreted according to valid criteria.. Qualitatively, we can also determine how a patient feels about having premature ventricular contractions (PVCs) or other erratic pulsations that can be felt directly by the patient without aid of a cardiac monitor or other electro-cardiac screening device. Does it make him anxious? Does it increase his respiratory rate? Is he afraid to sleep because of the palpitations?

My purpose in writing this article is to introduce a new research methodology coined, AMALGAMETHODOLOGY. Amalgamethodology is a *blend* of quantitative and qualitative research methods intended to augment

research findings with greater reliability and validity than use of one method alone would bring about. Amalgamate means “to unite or, to merge into a single body” according to Merriam Webster’s Online Dictionary. Synonyms include: to blend, consolidate, fuse, join together, merge, or incorporate. A welder knows that a steel rod once broken will be stronger at the place in which that welder applies a steel patch with heat. Chemists/pharmacists amalgamate compounds we later call ‘medications’.

> When a nurse researcher decides to research any topic, why not combine (or, amalgamate) quantitative with qualitative methods for a richer outcome? This has been called many names such as‘mixed method,’ ‘triangulation’, &/or ‘crystalization’ research in the past, but *I am proposing that when nurse researchers use combination methods, it be called Amalgamethodology to further distinguish it as nursing’s own unique research methodology.*

Amalgamethodology is so well-suited to nursing research because of the unique activities that nursing productivity requires. Nurses collect quantitative data on every shift. They may take vital signs-hence quantitative numbers; but also note qualitative data by recognizing the quality of that heart beat, type and depth of respirations, oxygen saturation level, and if any breathing difficulty were apparent that might have altered that number.

Nurses collect stool specimens while also noting the amount, color, odor, consistency, and if visible or (upon testing) if occult blood is present. All of this is qualitative data.

2 Preliminary Notes

The ensuing text will demonstrate how quantitative and qualitative research methods can be utilized by nurse researchers; how the two methods can be combined sequentially or simultaneously in one study; how both nursing and

non-nursing theory blend within Amalgamethodology to reinforce the reliability and validity of findings; and. how use of the Amalgamethodological method strives for data integration in nursing's quest for acquiring new (or confirming existing) knowledge.

3 Main Results

Evidence Based Nursing: The Challenge of Change in Nursing Paradigms

As much as physicians would have you believe to the contrary, medicine is an inexact science. Medicine, as a discipline, borrows heavily from all the other sciences (chemistry, mathematics, physics, psychology) *as does nursing*…but… nursing is criticized for that borrowing and charged with allegations that there is no "true" body of knowledge that constitutes the science of nursing.

The medical model is over-extended [2]. The medical model incorporates social and psychological parameters in utilizing predominately Western medical theory to treat a vast number of issues that, in themselves, may not be pathogenic. Children's aberrant behavior is medicalized. Addictive patterns are medicalized. Emotional restraint is medicalized.

The medical model has adopted the theory that randomized clinical trials (RCTs) are the 'gold standard' of medicine. If conclusions from an RCT support the sustaining hypothesis, it is considered 'evidence' of the correctness of the hypothesis and pounced upon as authoritative. The new semantic incorporating this phenomenon is Evidence-Based Medicine (EBM). EBM has led to Evidence-Based Practice (EBP).

Impact on the profession of nursing

Nursing, has embraced this philosophy and christened it, Evidence-Based Nursing (EBN). Problems, however, exist with some of the assumptions upon which the EBM and EBN paradigms rest. Evidence-Based Medicine yielding to

Evidence-Based Nursing is a phenomenon that has appeared, albeit slightly transfigured, before. Consider, medical model diagnosis: then came nursing diagnosis. Medical model outcomes came first; then came nursing clinical pathways.

So what makes EBM different from EBN? Is it just another attempt to take the reality of 'what is' in the medical world and identify it with nursing? Maybe, but here's the paradox. Evidence-Based Nursing and Evidence-Based Practice in nursing really works for nursing, but Evidence-Based Medicine (structured as it is upon the dominance of RCTs) does *not* work for medicine. Here is why.

From an historical perspective paradigms, or sets of theories, emanated from philosophic inquiry that led to scientific inquiry, ultimately differentiating unique scientific bases such as afore-mentioned chemistry, physics, mathematics, even astronomy. Unobservable entities represented by theoretical ideas also exist in reality. Nursing is a profession concerned with criteria of knowing: what can be known, who can know it, and against which truth can be measured [3]. Nursing is concerned with emancipating nursing knowledge by the identification of the origins of nursing knowledge, examining methods of acquiring knowledge, structuring that knowledge and establishing the criteria for evaluating and validating this knowledge [4, 5].

As such, if nursing succumbs to this pseudo-philosophy, then it accepts as factual that nursing is only an applied science. As long as nursing remains a copy-cat profession, spinning off nursing models as orbiters of the medical model satellite, nursing will never enjoy or reap the rewards of being recognized as a true profession.

At this point in time, however, nursing has a unique opportunity to break the bonds that formerly held it hostage, and move forward as never before possible utilizing Amalgamethodology as it's unique research methodology to develop content for education and, wholistic, positive outcomes for practice.

Multiple Intelligence Theory and Nursing

Long before Barbara Carper's (1975) classic dissertation, *Fundamental Patterns of Knowing in Nursing,* and subsequent publication in the freshly launched issue of *Advances in Nursing Science*, a nineteenth century American philosopher, Charles Peirce wrote *Four Ways of Knowing.* Peirce identified tenacity (or the unquestioned, traditional approach); intuition (or the common sense approach); authority (or the expert approach); and, science (or the controversial and inquisitive approach). In contrast, Carper's ways of knowing included: empirics, esthetics, ethics, and personal (intuitive) knowledge in nursing. While Peirce and Carper limited themselves to only four ways of knowing, Gardner in 1983 expanded four to ten ways of knowing by asserting that a human being has "*multiple* intelligences". Gardner originally identified seven manifestations of human intelligence: logical-mathematical, linguistic, musical, spatial, bodily-kinesthetic, interpersonal, and interpersonal [6]. His theory now has evolved to include naturalist intelligence, spiritual intelligence, and existential intelligence [6].

The ensuing text will demonstrate how quantitative and qualitative research methods can be utilized by nurse researchers; how the 2 methods can be combined sequentially or simultaneously in one study; how nursing theory and non-nursing theory blend within Amalgamethodology to reinforce the reliability and validity of findings; and. how use of the Amalgamethodological method strives for data integration in nursing's quest for acquiring new (or confirming existing) knowledge [7].

Impact on Research Threats to Statistical Validity

Statistical validity is concerned with findings or relationships made through statistical analyses. False conclusions about the presence or absence of a relationship are threats to statistical validity. Statistical validity examines two primary areas of concern: conclusions about the statistical analysis, and whether the relationships or differences drawn from the statistical analysis are an accurate

reflection of the real world [8]. The second area of concern is involved with the identification of differences between groups [8].

Internal Threats to Validity

A study is said to have internal validity if the results of the study can ultimately be attributed to the independent variables studied and not to some confounding variable. The first internal threat to validity, is concerned with subject selection bias [8]. Selection bias can occur when study subjects are not randomly selected from a population for a study. Random selection is considered the 'gold standard' in quantitative research; but purposive samples are often what's needed for qualitative research. Exploring phenomenological information, for example among women with breast cancer, would have no validity if the sample were comprised from a random selection who may not have had breast cancer. Researchers can only study how a woman feels about having breast cancer if she has breast cancer.

Instrumentation Issues and Related Construct Validity

The second internal threat to validity that may affect a study involves instrumentation issues. Instruments appropriate to the valid assessment of the mediating and outcome variable must be chosen. All the study subjects will take the same battery of tests. Instruments chosen for study should have a high Cronbach's alpha.

The third threat to validity involves ambiguity about the direction of influence. Variables may be measured simultaneously or consecutively.

Chi-square goodness of fit, Normed Fit Index (NFI), and Parsimonious Fit Index (PFI) are recommended. Chi-square goodness of fit corresponds to the model fit. Chi Square Goodness of Fit can be used for an absolute goodness of fit because it identifies two kinds of inappropriate models: one that capitalizes on chance, and one that does not fit the observed data. Sequential chi-square difference tests (SCDTs) will be performed with higher values signifying poorer fit. The Normed Fit Index corresponds to the model comparison. The Normed Fit Index (NFI) rescales the chi-square into a"0"(no fit), to "1.0" (perfect fit). The

Parsimonious Fit Index (PFI) tests each model according to parsimony fit indices. The Parsimonious Fit Index (PFI) will also be used to test for brevity and model coherence [8].

Construct Validity

Construct validity examines the fit between theoretical, or conceptual definitions, and operational definitions. Construct validity also explores instrumentation issues, such as whether the instrument actually measures the theoretical construct it claims to measure [8]. Threats to construct validity involve not only previous instrument development, but also measurement techniques utilized within the present study methodology [8]. The threats to validity from statistical, internal, instrumentation and external sources have been explored with relevance to the particular threats of concern to any study. Some threats must be accepted as limitations because difficult methodological decisions often must be made in clinical studies with clinical subjects. The ultimate purpose of Amalgamethodological research is to gather the most valid data with the least threat to the subjects.

Impact on Education

The impact of Amalgamethodology on nursing education may be best explained using data from a partially completed study after terrorist attacks were leveled on American soil. These terrorist attacks on America (9/11/01) demonstrated educational and practice need deficits for physicians, nurses, and other health care providers heretofore unrealized. A literature search of five databases; Medline, Cinahl, Current Contents, Hapi, and Lancet searched at that time yielded 1127 citations on the general topic of terrorism, but only 11 citations combined nursing and terrorism [9].

The net effect of these acts of terrorism changed healthcare dramatically. Emergency and ICU departments were maximally challenged. Epidemiological systems were reconsidered. Inoculations began to be stockpiled. Blood was needed. Psychological care needs were everywhere. Questions emerged as to how

these events might change the very core of nursing. Should the traditional broad nursing teaching be scraped in favor of more emergency-oriented care? Would new specialties emerge in nursing as a result of new terror-imposed needs? How would nurses react in the aftermath of these terror attacks? How will nurses react to the potential of future terrorist attacks?

These, and many other, questions were qualitative in nature. Had qualitative studies been undertaken, nursing content for the proposed emergency-oriented care would have been richer.

The effects of terrorism on 9/11/01 in the United States will have an effect on the future of nursing according to 45% of respondents this author sampled in a limited Delphi study. All of the respondents felt personally affected by the events of 9/11/01. One of the strengths of this study was the opportunity to conduct the study in one of the terrorist attacked cities within two months of the attack. Another strength was the multinational population in attendance at the two conferences from which part of the sample was drawn. Two sample sites also are a strength. Global issues that still need to be addressed by nursing education in the future, according to the combined opinions of nurse experts on the Delphi panel include: HIV/Aids, bio-terrorism information, female genital mutilation, infant mortality, child abuse, environmental pollution, and internal (unspecified) nursing issues. Ironically, there was no consensus on these issues. Limitations of this study included a small sample size. Conclusions drawn from a limited sample may not be generalizable to the nursing population, but this qualitative data combined with quantitative frequency distributions yielded richer data [9].

Impact on Practice

Critical thinking/clinical reasoning is the concept that interweaves and locks concepts together. Challenge yourself. Do you see any patterns emerging from among the previously discussed topics? Do nurses use data from subjective kinesthetic intelligence (such as might be obtained from taking vital signs) combined with objective data (such as might be garnered from laboratory tests) in

critically thinking through their clinical reasoning? They are amalgamating their data. What does this mean for us as nurses? It means we are unique whole entities, not just pieces or body parts; it means we have a unique physical, psychological, emotional, and spiritual aspect to our being, and it means that we learn in a variety of ways.

3.1 Advantages

Qualitative data combined with quantitative frequency distributions yields richer data.

3.1.1 Cost

No substantive increase in study costs expected. Study costs depend upon content explored and number of participants.

4 Labels of figures and tables

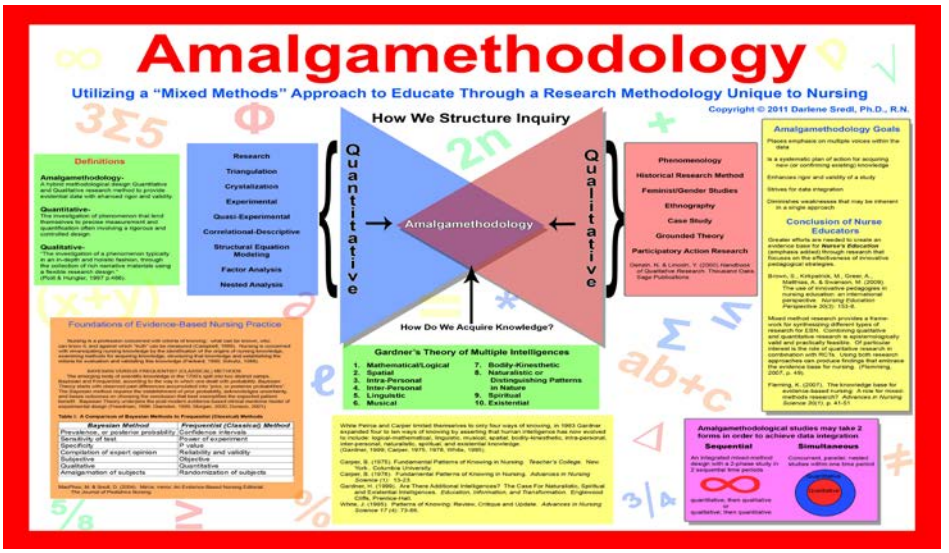

Figure 1: Amalgamethodology

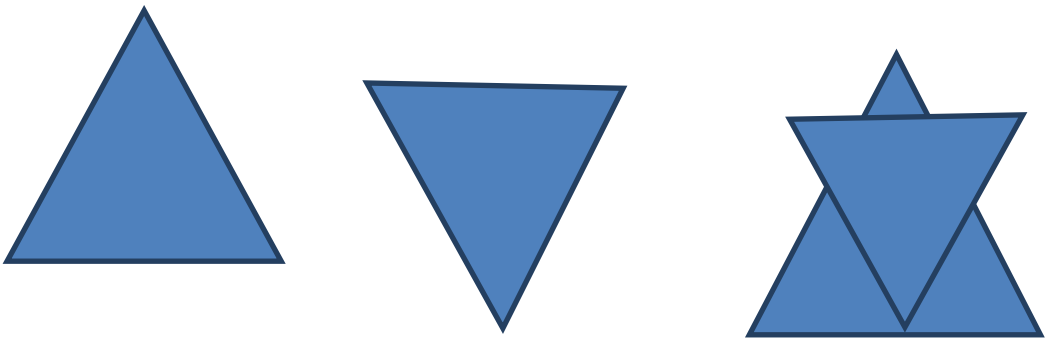

Figure 2: Combining Quantitative with Quakitative Methodology to Equal Amalgamethodology

5 Conclusion

Use of the research methodology of Amalgamethodology will advance nursing research, nursing education, and nursing practice. The paradigm is gaining momentum in its shift.

Acknowledgements. I wish to thank my mother and father, Bernice and Joseph Majka for instilling within me the drive to explore new frontiers, and to my husband, Fred, who let me.

References

[1] D. Sredl, *Evidence-Based Leadership Success Strategies for Nurse Administrators, Advance Practice Nurses (APN), and Doctors of Nursing Practice (DNP)*, New York, Nova Science Publishers, Inc, 2012.

[2] R. Daines, Commentary: The medical model is unhelpful, *British Medical Journal,* **314**(7083), (1997), 815-816.

[3] J. Campbell and S. Bunting, *Voices and paradigms: Perspectives on critical and feminist theory in nursing*, in Welch EPM, ed. *Perspectives on Philosophy of Science in Nursing,* Philsdelphia, Lippincott, pp. 411-422, 1999.

[4] S. Packard and E. Polifroni, *The dilemma of nursing science: Current quandries and lack of direction*, in E. Polifroni MW, ed. *Perspectives on Philosophy of Science in Nursing*, Philadelphia, Lippincott, pp. 498-506, 1999.

[5] P. Schultz, Nursing epistemology: Traditions, insights, questions. *Image: Journal of Nursing Scholarship*, **20**, (1988), 217-221.

[6] H. Gardner, *Intelligence Reframed: Multiple Intelligences for the 21st Century*, New York, Basic Books, 1999.

[7] D. Sredl, Words of mass persuasion: A literature review of cognitive behavioral therapy (CBT) and message-based persuasion system (MBPS) use in adolescent transplant depression, *Transplant Nurses Journal*, **14**(1), (2005), 8-16.

[8] N. Burns and S. Grove, *The Practice of Nursing Research Conduct Critique & Utilization.* Philadelphia, Saunders, 1993.

[9] D. Sredl, *Terrorist Attacks: A Delphi Study*, Washington DC, 2011, (unpublished).