A COMPARISON OF CLINICAL COMPETENCE BETWEEN DIPLOMA AND BACCALAUREATE PREPARED NURSES EMPLOYED IN A HOSPITAL SETTING

by
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A Thesis
Presented to the
University of Manitoba
in partial fulfillment of the
requirements for the degree of
Master of Nursing
in the
Faculty of Nursing

Winnipeg, Manitoba

ISBN 0-315-78027-4

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Abstract

The purpose of this study was to compare the clinical competence of diploma and baccalaureate prepared nurses employed in a large tertiary care hospital in a Midwestern Canadian city.

Social, technological, and developmental changes in the contemporary health care system have resulted in a need for an expanded nursing role. The baccalaureate degree has been proposed by the professional associations as a minimum requirement for entry into practice by the year 2000 because its graduates were expected to provide more competent care than diploma graduates. However, a review of the literature yielded controversial and inconclusive data, and has failed to reveal any differences in the clinical competence of the two groups.

A Model of Clinical Competence was utilized as an organizational framework. The dependent variable of clinical competence was measured through the impact of the independent variables of education, continuing education, and areas of clinical practice. Experience was used as a covariate.

A sample of 330 diploma and baccalaureate graduates and their 46 head nurses or supervisors completed the Staff Nurse and Head Nurse Forms of the Schwirian 6D Scale of Nursing Behaviours. Resulting data of self, and supervisor ratings

were subjected to statistical tests of ANOVA, MANOVA, and MANCOVA, to determine differences between the two groups.

Data analysis failed to reveal any significant differences between diploma and baccalaureate graduates. The main effects of area of practice, continuing education, and the covariate of experience were significant. However, no significant main effect for the variable of education was found. Moreover, when education was paired with the variables of area of practice, continuing education, and experience, no significant interaction effects were obtained. Therefore, findings did not support any differences in clinical competence between hospital employed diploma and baccalaureate graduates.

Results of this study have failed to establish a relationship between clinical competence and nursing education. Individual characteristics such as motivation and satisfaction, were postulated to be the variables responsible for the variance in clinical competence ratings. Consequently, further research guided by a revised version of the Model of Clinical Competence was suggested in order to study the constructs within the variable of individual characteristics.

Acknowledgements

This study would not have been possible without the assistance, support, and guidance of numerous individuals who merit recognition.

Dr. Janet Beaton, my Chairperson, has been a source of inspiration and knowledge. Her professionalism, expertise, and constant support and encouragement were instrumental in the entire course of this study.

Dr. Ina Bramadat, who so generously gave of her time to help gain approval for this study, has also provided major direction in its inception through the article that she co-authored with Dr. Karen Chalmers. Her knowledge and expertise in nursing education are truly admirable.

Dr. Jacqueline Stalker, the external member on my committee, was responsible for introducing me into a minute corner of the world of educational administration. Her knowledge, warmth, and humour added richness to the entire course of my studies, and her recommendation to wed education and nursing into one topic provided the impetus and format for this study.

My thank you is extended to Dr. Jeff Sloan, who helped to develop the statistical portion of this study. The challenge and rigour of this design will long be remembered.

I would like to express my deep appreciation to the administration of the Health Sciences Centre for allowing this

study into its facility. The 330 nurses and their 46 supervisors who completed the questionnaires have earned my deep gratitude, because without their direct participation and support this study would not have been possible.

My friends, colleagues, and faculty who have encouraged me, and supported my efforts throughout the course of my studies as well as during the completion of this investigation, cannot be sufficiently thanked. I would not have been able to continue without their loyal support.

My parents, Mr. and Mrs. Schonberger whose constant encouragement reinforced my need to achieve, merit my deep gratitude.

My children, Lori and Andrew, who had to accommodate my erratic life style during this process, also deserve recognition.

My greatest appreciation is extended to my husband, Dr. George Mason, who was always at my side throughout the course of my education and the process of this research project. Without his persistent and constant support, help, encouragement, and active participation, this study would not have been brought to completion.

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Chapter 1

INTRODUCTION: THE RESEARCH PROBLEM AND PURPOSE

The contemporary health care system can be depicted as chaotic, market-driven, evolving and dynamic (Fralic, 1989). Increases in stress-related illness, an aging population, the expanding cultural diversity, the complexity and intrusiveness of health care technology, and the heightened acuity level in hospitals are only a few factors contributory to an expanded and more complex nursing role (American Association of Colleges of Nursing [AACN], 1986; Partridge, 1978). The health care system is purportedly shifting from a hospital-based, illness and disease focus to a health-oriented, community-based approach (Gillis, 1989; Owen, 1988). Consequently, the nursing role is changing with the evolution of the health care system and must continue to be redefined and/or refined in congruence with the health needs of the public (Bramadat & Chalmers, 1989; Moloney, 1986).

The Canadian Nurses' Association (CNA) and the provincial nursing associations have proposed that the baccalaureate

become mandatory for nursing practice by the year 2000 (Moloney, 1986; Rovers & Bajnok, 1988). The American Nurses' Association (ANA) formally endorsed this stance in 1965 (Moloney, 1986). In general, the trend toward the "academization" (Bergman, 1986, p. 110) of nursing is world-wide (Bergman, 1986). It is predicated on the belief that the survival of nursing depends on the quality of its practice and the competence of its practitioners which, in turn, depend on the quality of its educational underpinnings (Akinsanya, 1990; Salvage, 1981; Warner, Ross & Clark, 1988).

The issue of the mandatory baccalaureate poses a dilemma because it is emotionally laden with political, social, economic, and professional ramifications (Salvage, 1981). Nurses in Canada constitute in excess of 50 percent of health care workers (Dalton, 1990). Of these, approximately 60-80 percent are hospital-employed; 9.5 percent are community-employed; and 6.8 percent work in chronic-care facilities (Dalton, 1990; McCarthy, 1989; Moccia, 1990). Both the baccalaureate and the diploma levels of education prepare graduates as generalists. However, the baccalaureate program, which is grounded in the philosophy of a liberal education, prepares nurses for leadership roles and community-based (professional) practice within a wider scope of responsibility related to the sharing of tasks in the bid to ensure the well-being of individuals, groups, and communities. The diploma program, which has a technical/vocational focus, augmented by

a minor focus on liberal education, prepares nurses for hospital-based (technical) practice within a clearly defined and narrower scope. Both systems share similar beliefs and values (Cantor, 1974; Davis-Martin, 1990; Reimer Janzen, 1990; Woolley, 1986). The 'technical' and 'professional' labels are based on attained education and have contributed to further discord between these two groups (Bramadat & Chalmers, 1989).

Multiple routes to nursing preparation and a lack of educational standardization remain sources of confusion while the search continues for relevant economic avenues to prepare nurses to meet the challenges of the future (Bramadat & Chalmers, 1989; Van Maanen, 1990). To date, considerable literature has been generated on the merits of the baccalaureate preparation (Bramadat & Chalmers, 1989; Hayward, 1982; Johnston, 1982), on the merits of the diploma program (Hogstel, 1977; Warner et al., 1988; Wuthnow, 1986), and on the merits of both programs (Warner et al., 1988; Wuthnow, 1986).

Statement of the Problem

One of the most critical issues facing the nursing profession in Canada is the proposed mandatory baccalaureate for entry into practice. Currently, two levels of education are available for registered nurses in Canada and in the

United States: the two year diploma or associate degree, and the four year baccalaureate degree programs (Bramadat & Chalmers, 1989; Moloney, 1986; Rovers & Bajnok, 1988). However, skill differentiation among the graduates of the various programs is difficult to ascertain (Arms, Chenevey, Karrer & Hawthorne Rumpler, 1985; Moloney, 1986; Wetzel, Berg & Gallagher, 1989). For instance, nursing practice in the hospital setting is patient centred and task oriented. Generally, all aspects of care are provided by registered nurses whose professional functions are rarely differentiated on the basis of educational preparation (baccalaureate or diploma). However, according to Gillis (1989), baccalaureate prepared nurses have been described as unprepared to function effectively and efficiently in the practice setting. This accusation has led to considerable discord among many nurses (Styles & Holzemer, 1986) and has resulted in a desire to further investigate the competencies of diploma and baccalaureate graduates.

The specific research question to be investigated was: Is the baccalaureate prepared nurse (RN/BN) more clinically competent than the diploma prepared nurse (RN) in the five main hospital based practice areas of obstetrics/ gynecology, surgery, medicine, psychiatry, and pediatrics, when the effect of experience is controlled?

Background of the Problem

The diversity of nursing education has resulted in a multi-tiered system within the profession. The call for the baccalaureate as the minimum requirement for entry into nursing practice has been perceived as threatening by many nurses. They interpret this move as the first step in the reconfiguration of the profession and of its practice.

The necessity of preparing baccalaureate graduates as generalists for hospital based service is questionable when institutional demands for specialized technical knowledge continue to outweigh their needs for generalists (Moloney, 1986). Additionally, the educational issue has created disconcordance among nurses who are labelled as 'technical' or 'professional' on the basis of their education (Bramadat & Chalmers, 1989), yet remain undifferentiated in task allocation in the hospital setting (Raymond, 1988). The question of what constitutes professional versus technical education divides nursing, and controversies about what comprises adequate clinical competencies for professional and technical education remain sources of heated debate (Moloney, 1986).

Clinical competence is a broad and ill-defined concept. Perhaps a prime problem is a lack of a clear definition of nursing duties and nursing competencies. Nurses practising within the hospital setting, generally are required to

function in diverse roles and settings, which require a great variety of skills. During evenings, nights, and weekends, when the multi-disciplinary approach to patient-care comes to a halt, the demands placed on nurses become even more encompassing, comprehensive and multifaceted. This is the reality of modern nursing practice because other health care professions, such as physiotherapy and social work, are generally off duty during such times. Consequently, competent nurses are expected to assume the functions of these absent professionals in addition to their own normal work loads. However, definitions of competency are abundant but vague. Competency generally refers to skills acquired through an educational process. It is multifaceted during practice, and does not require excellence. As both diploma and baccalaureate graduates are required to pass the same licensure examination and must adhere to the same standards of practice, the comparison of the graduates on broad competencies appears to be of vital importance.

Summary of the Study Chosen for Partial Replication

This study was a partial replication of an American study by McCloskey (1983a) titled "Nursing Education and Job Effectiveness". McCloskey sought to determine whether nurses with different educational preparation differed in degree of

job effectiveness. She studied four levels of nurses: the licensed practical nurse (LPN), the associate degree and diploma prepared registered nurse (RN), and the baccalaureate prepared registered nurse (RN/BN). She included a model of job effectiveness which encompassed the variables of formal education, continuing education, job skills, job responsibility, and academic aptitude.

McCloskey (1983a) chose job effectiveness as the dependent variable which would be defined by head nurse (HN) ratings of staff nurses by comparing them to each other, to a best nurse, to a competent nurse, and to a worst nurse. The educational preparation of the HNs was not specified. The dependent variable of skill performance was determined by self and head nurse ratings on the Schwirian Six-Dimension Scale of Nursing Behaviour (6D Scale). McCloskey analyzed a total of 36 variables, through the use of the Schwirian scale and through two data collection questionnaires: the staff nurse and head nurse forms. A representative sample of 299 nurses composed of 53 LPNs, 197 RNs, and 49 RN/BNs, which constituted a 75 percent return, was obtained through a stratified random sampling of hospitals. McCloskey analyzed the data by means of a stepwise multiple regression analysis of the identified 36 variables of job effectiveness. She concluded that there is no difference between and among graduates of different nursing programs, and hypothesized that the reason for this lack of difference among hospital employed nurses may be career

motivation. However, alternate causative factors such as intelligence, aptitude, or other intra and/or interpersonal variables may also account for these findings. Overall, she recommended further research in this area and more comparisons of nurses from various educational programs who work in varied hospital settings. She also recommended continued investigation of the relationship between general education and professional education for nurses.

Purpose of the Study

This partial replication study was designed to compare the clinical competence of diploma and baccalaureate prepared nurses employed in the five main clinical practice areas of obstetrics/gynecology, surgery, medicine, psychiatry, and pediatrics, with durations of experience of less than one year, 1-2 years, 3-6 years, and 7 years and more.

Research studies of this nature are timely and necessary in light of current trends in health care and nursing education. Skyrocketing health care costs, a decreasing supply of nurses, increasing educational demands and costs, and declining enrolments in schools of nursing influence the future role of the nurse in Canada and in the United States (Baumgart & Larsen, 1988; Bramadat & Chalmers, 1989; Scheetz, 1989). Consequently, the additional cost factor of the

baccalaureate education coupled with the reality of the later entry into practice of its graduates become significant issues (Primm, 1986). If studies do not demonstrate the clinical superiority of the baccalaureate graduate, then the additional preparation time for hospital-employed nurses may be subject to further scrutiny.

Importance of the Study

The majority of previous research studies comparing graduates of the various nursing programs have been based in the United States and may not be applicable or transferable to the Canadian scene, despite the many commonalities between the two nations. Issues such as the universality of health care and the private ownership of hospital facilities accentuate these differences, while concerns relating to nursing education and nursing competence remain similar in both countries. Because of the paucity of reported Canadian research studies on this topic, further research may be viewed as desirable.

Generally, previous research comparing levels of nursing graduates has been of mixed quality with regard to sampling techniques, sample sizes, and methodologies. Conclusions concerning the clinical superiority of the two educational groups also have been mixed. Additional research is necessary

in order to further clarify the issues, especially in the Canadian setting. Such research may serve to validate and guide contemporary trends in nursing education and practice.

Ideally, the goal of effective modern degree (RN/BN) and vocational (RN) nursing education is to produce competent practitioners capable of providing flexible, responsible, and comprehensive nursing care. These qualified practitioners would ensure the optimum health and well-being of their clients by recognizing dynamic social changes and the need to accommodate these changes. Considering that less than 20 percent of Canadian nurses graduate annually from baccalaureate programs and that only 12 percent hold baccalaureate degrees (Bramadat & Chalmers, 1989; Rovers & Bajnok, 1988), further study comparing the clinical competence of baccalaureate and diploma educated nurses is desirable.

While general agreement exists about the importance of the preparation of future nurses, little consensus exists between practice and education about the methods to ensure clinical competence and about what constitutes such competence. This is illustrated by the diversity, and variety of research activities in the area. While Schwirian (1978b) viewed a broad, sound knowledge base in all areas relevant to health and illness as mandatory for good clinical performance, she found that practice performance grades were more useful predictors of performance than academic grades. She raised the question of what differentiates levels of nursing care.

The issue of research into discreet nursing skills versus the holistic approach to nursing is also pertinent. Future research needs to take a broad, holistic approach to nursing competencies, as the study of isolated skills such as decision-making or problem-solving may not offer sufficient insight into the essence of holistic nursing. A multitude of learned skills, acquired values, and individual motivation are additional requisites for the demonstration of clinical competence, which constitutes the profession of nursing. While this perspective does not negate the validity of, or necessity for, research into specific areas of nursing performance, a broad spectrum approach to clinical competence is viewed as necessary to deal with the question of the benefits or deficiencies of the various levels of nursing education. Consequently, as nursing is perceived as a dynamic, multifaceted and multidimensional profession with a wide array of nursing behaviours, a broad spectrum approach was utilized in this study so that these behaviours might be captured.

Theoretical Framework

A conceptual framework provides organization and direction for research (Bush, 1985) and constitutes a blueprint around which practice may be organized (Aggleton & Chalmers, 1987).

The framework for this research was utilized to investigate whether a difference exists in clinical competence between graduates of diploma and baccalaureate programs. This framework is a modification of a model of job effectiveness presented by McCloskey (1983a).

Clinical competence is at the core of the model and constitutes the dependent variable (DV). Four groups of independent variables (IVs), placed around the core, influence and determine clinical competence.

The first group is composed of nursing education at the two levels, baccalaureate and diploma. It constitutes a one way relationship with clinical competence because, in itself, clinical competence does not increase educational attainment.

Nursing practice or experience is the second group of IVs which directly affect clinical competence. The relationship between skill and experience is well documented (Davis, 1974; McCloskey, 1983a, 1983b; Schwirian, 1979).

Area of practice constitutes the third group of IVs and is generally composed of an individual's working conditions, and expectations of both, self and others. An environment which does not promote self-expression, self-worth, and well being, does not adequately meet an individual's needs and may impinge on clinical competence.

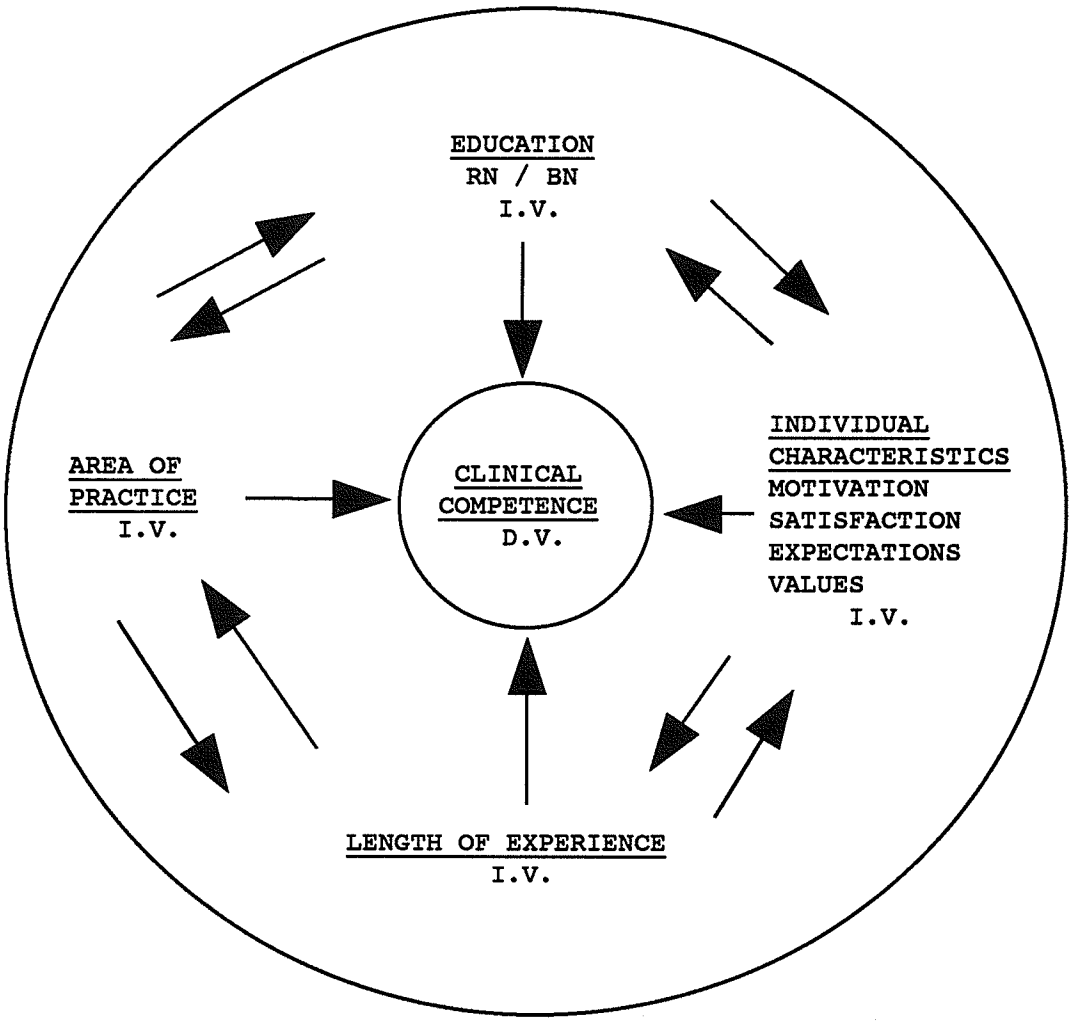
Individual characteristics comprise the fourth group of IVs which affect actual or potential competence in the

clinical setting. Each characteristic is identifiable by its nomenclature, such as benevolence.

This model is useful to highlight some of the difficulties inherent in any research dealing with nursing competence. Educational factors constitute only one variable, at different levels, which impinges on clinical competence and is difficult to isolate from the other three variables in relation to effect on the DV. The extent of influence of each IV on clinical competence may vary with the individual. Additionally, various levels of each IV may differentially affect the DV. For instance, the two levels of education and experience may differentially affect competence.

This dynamic model is interactive in that the IVs may impinge on each other in a reciprocal manner while they exert their individual influence on the DV. Additionally, this model is amenable to change if any of the IVs is altered or modified.

Figure 1. Model of clinical competence



Research Hypotheses

A hypothesis is a prediction of anticipated outcome of one or more relationships between two or more variables. It constitutes the statement which is subject to empirical investigation and data analysis (Polit & Hungler, 1987). It is, therefore, a proposed solution to a research problem and provides guidance and direction for data interpretation.

A comparative design was chosen for this study. The assumption underlying the use of this design is that sufficient knowledge about the variables of interest exist to develop predictive hypotheses which are based on theory and prior research (Brink & Wood, 1989).

The following directional hypotheses predicted the outcomes of the research question according to the theoretical framework used to guide this study:

1. Baccalaureate prepared nurses will demonstrate a higher level of clinical competence than diploma prepared nurses.
2. Nurses with longer durations of experience will demonstrate a higher level of clinical competence than nurses with lesser durations of experience.
3. Diploma and baccalaureate graduates employed in the five designated clinical areas will demonstrate different levels of clinical competence.

4. Baccalaureate prepared nurses will demonstrate a higher level of clinical competence than diploma prepared nurses at comparable levels of experience.

Definition of Terms

The following definitions are presented in order to clarify the terms utilized in this study:

Baccalaureate (Professional) Prepared Nurse (RN/BN): A registered nurse who is a graduate of a university based nursing program (DeBack & Mentkowski, 1986; Kramer, 1981).

Diploma (Technical) Prepared Nurse (RN): A registered nurse who is a graduate of a hospital or community college based nursing program (Kramer, 1981).

General (Liberal) Education: Consists of courses from many fields of knowledge which are assumed to impart understanding of major concepts and principles of the arts and sciences, and provides the foundation and tools for life-long learning (Lamar Johnson, 1982; Porter, Blishen, Evans, Hansen, Harris, Ireland, Jewett, Macdonald, Ross, Trotter & Willis, 1971).

Clinical Competence, Competence, Job Effectiveness: A broad, generic ability which transfers across settings and situations and does not constitute discreet skills. It is developed and acquired during educational preparation, is manifested in the practise of the experienced nurse, and does not require

excellence (DeBack & Mentkowski, 1986; Forni, 1975; McCloskey, 1981; Scheetz, 1989).

Professional Values: Beliefs or ideals reflected in attitudes, personal qualities and consistent patterns of behaviour which emanate from commitment and socialization to a profession (AACN, 1986)

Professionalism: The quality of practice, conduct within a profession, and the manner in which the members integrate their obligations, knowledge, and skills (Glen, 1990).

Professionalization: A process by which an occupation becomes a profession and the concurrent changes in status (Glen, 1990).

Socialization: The process whereby the attitudes, interests, skills, and knowledge, of a profession are internalized and result in integration into that culture (AACN, 1986).

Summary and Organization of The Chapters

The first chapter included the basic aspects of the study. The background of the problem was highlighted, and a statement of the issues was presented in order to clarify the purposes and to explain the importance of the study. The theoretical framework was described and the research hypotheses were presented.

A review of the literature in relation to the areas of concern delineated in the research question is presented in the second chapter. A summary is presented at the end of the chapter in order to relate the literature review to the issues presented in the first chapter. The second section is concluded with a brief explanation of the rationale for the study.

The third chapter includes a thorough presentation of the methodology and the procedures used in the study. The research design is explained and the approaches used for data collection are presented.

The research findings are presented in the fourth chapter. Tables are used to demonstrate and clarify the data.

The fifth and final chapter is utilized for the discussion of the findings and their implications. Suggestions for future research stemming from insights gained during the course of this study conclude the chapter.

Chapter 2

LITERATURE REVIEW

The focus of this study was on the effects of two levels of education, baccalaureate (RN/BN) and diploma (RN), on the clinical competence of nurses employed in five areas of practice in a tertiary care institution. Nurses' educational preparation was viewed as a key variable differentiating these competencies. An extensive literature review was undertaken in order to examine past research and to gain a base of knowledge on the topic, to determine whether sufficient knowledge about the variables of interest was available, and to develop an appropriate theoretical framework. The literature review was divided into the following eight areas:

1. Historical overview of nursing education
2. University based nursing education
3. Community college and hospital based nursing education
4. Baccalaureate and diploma students' profiles
5. The baccalaureate and diploma levels of nursing education

6. Separation between education and practice
7. Clinical competence
8. Differentiation between diploma and baccalaureate students on competency examinations

Historical Overview of Nursing Education

During the late 1800s, Florence Nightingale's nurse was a virtuous woman who was dedicated to the care of the sick. Education was hospital-based, of a high calibre, and excluded students as sources of labour (Baumgart & Kirkwood, 1990; Bramadat & Chalmers, 1989).

The apprenticeship model emerged in American and Canadian hospitals during the 1870s, and student nurses provided free labour in return for training. Nursing education was institution specific and non-standardized (Baumgart & Kirkwood, 1990; Bramadat & Chalmers, 1989).

The first university course for nurses in 1899 signalled the induction of nursing into academe (Diepeveen-Speekenbrink, 1990). Professionalization was sought through university education in order to gain equal status with other health care professionals. Baccalaureate programs emerged, and nursing moved into public health, hospital administration, and a wellness focus (Baumgart & Kirkwood, 1990; Diepenveen-Speekenbrink, 1990). The split between education and practice

and between nursing and medicine was complete, and the alignment of nursing with education was a reality (Bramadat & Chalmers, 1989). Nurses were now able to develop within the scientific disciplines of the university and the clinical environment of the hospital (Baumgart & Kirkwood, 1990; Diepeveen-Speekenbrink, 1990). However, nursing education remained non-standardized within the various universities (Baumgart & Kirkwood, 1990).

The second world war further changed nursing education. New technology, Canadian health insurance, and the construction of many hospitals contributed to the diversification of the nursing role. Nursing education remained hospital and university based, and produced graduates who could assume an infinite range of roles. The only means to achieve professionalization was perceived to be through an emphasis on uniform standards, the formation of professional organizations, and through licensure. In the bid to develop and standardize curricula, nursing education allied itself with general education (Baumgart & Kirkwood, 1990; Bramadat & Chalmers, 1989). The two year diploma program, divorced from the hospital setting, was established in Ontario in 1946 (Bramadat & Chalmers, 1989). The American community college based associate degree program provided the impetus for this move. Gradually, nursing diploma programs became solely community college based in Ontario, Quebec, and Saskatchewan. The other provinces continued to offer diploma programs in

hospital schools and in community colleges. All curricula generally included liberal arts and science courses (Bramadat & Chalmers, 1989; Davis, 1975).

An increased awareness among nurses of a subordinate role to medicine escalated the drive for professional status. By 1960, the baccalaureate was viewed as necessary for the provision of sound practice (Akinsanya, 1990; Arms, et al., 1985), and was postulated as a benefit to the health care system, the profession, and its clients (Warner, et al. 1988; Wetzel et al., 1989).

Currently, nursing education continues along the diploma, associate degree, and the baccalaureate routes in Canada and in the United States. The largest pool of Canadian and American nurses is drawn from the community colleges. Diploma and baccalaureate graduates generally begin their careers in similar practice environments; however, baccalaureate nurses may acquire positions in public health, education, or administration, whereas diploma nurses generally remain hospital employed (Arms et al., 1985).

Nursing education in Canada is a component of the post-secondary educational system and is funded by the provincial governments which are cognizant that diploma graduates enter the labour force in one half the time and approximately at one half the cost of the baccalaureate graduate. In reality, progress toward the mandatory baccalaureate on a national basis is minimal (Richardson, 1986). Overall, the present

educational, financial, and political reality mandates that diploma programs remain hospital and community college based and continue to prepare diploma graduates for practice (Arms et al., 1985; Richardson, 1986).

Currently, nursing education in Manitoba is evolving in concert with the trend toward a more liberal education. The collaborative baccalaureate program was implemented in the largest teaching hospital in September 1991 and is scheduled for adoption in September 1992 in the second largest teaching hospital in Winnipeg, in association with the University of Manitoba. The remaining institutions offering nursing education in Manitoba have also explored the possibility of offering the baccalaureate collaborative program. Clearly, the province of Manitoba is exploring the possibility of the baccalaureate as the minimum requirement for future entry into nursing practice.

The analogy of human development is useful in describing the current state of nursing, which is experiencing a maturational crisis. The growing pains are being felt rather distinctly, as nursing is evolving in its quest to serve society in an optimal fashion (Warner et al., 1988).

University Based Nursing Education

The modern university serves the changing and diverse interests of society, and the nursing profession is seeking to serve these needs through a university based education. The duty of the university is to bridge the gap between the political or value laden, and the epistemological or value free approaches to higher education (Brubacher, 1982). As a centre for higher learning, the university links science and culture, and represents a broad symbol of intellect in the pursuit of truth through reason. It is a middle class institution serving middle class needs, with stringent admission policies. It emphasizes teaching and the arts and sciences, and is highly research oriented. Students' standards of performance must meet institutional requirements in an atmosphere of intellectual and social elitism whereby research remains a priority and meritocratic ideals prevail (Oliver, Brownstone, Clarke, Kristianson, Patterson, Sigurjonsson & Shack, 1973).

The university claims autonomy as a centre of teaching and pure and applied research. Its central theme is the development, accumulation, preservation, and dissemination of knowledge (Bowen, 1981; Brubacher, 1982; Ross, 1976). However, the issues of whether its main focus lies in research or in teaching, and where the limits should be drawn between liberal and professional education, prevail. While these activities

fall within the responsibility of the university, they are not exclusive. For instance, libraries are repositories of knowledge, elementary and secondary schools transmit knowledge, and private individuals and research institutions advance knowledge; liberal education is taught in the secondary school, and professional training occurs in non-degree institutions; governments, churches and the press serve as the critics of society, and pure and applied research occurs in private and industry-based laboratories (Porter et al., 1971). Furthermore, it remains questionable whether the concept of pure research is real or illusionary, because knowledge constitutes a negotiable political power, and cues in the natural sciences, as well as value judgements, cannot be eliminated (Brubacher, 1982). Consequently, the uniqueness of the university lies in its traditions, as it has performed these functions for close to 1000 years (Porter et al., 1971) and has been regarded as essential to the well being and advancement of society. It has survived because it meets students' insatiable quest for knowledge, and society's need for advanced knowledge and skilled workers (Ross, 1976).

Vocational and utilitarian programs emerged to meet society's needs (Ross, 1976) within a highly differentiated and multifunctional approach to theory-based arts and science, or liberal education and practice-based technical/vocational studies (Porter et al., 1971). Professions such as law and medicine have achieved their status only through an integral

relationship with the university whereby it legitimized their claims to knowledge (Glen, 1990). Nursing has been seeking the identical route to professionalization and has viewed the university as the only avenue to the achievement of this goal. Raya (1990) stated that the purpose of the university is to cultivate attitudes and to shape the 'educated' mind. Baumgart and Larsen (1988) described the university as the provider of problem-solving and critical-thinking skills. Akinsanya (1990) viewed it as the promoter of an independent learning style founded in research and scholarship in an atmosphere which encourages thinking, reflection, and contemplation.

Higher education is expected to mobilize higher learning skills for application to social problems. The tendency, however, is to find more relevance in theoretical rather than practically-based disciplines (Brubacher, 1982). The singular function of the nursing profession is the improvement of the human condition and its education is premised to require a broad academic orientation (Raya, 1990). The baccalaureate is intended to provide the foundation for professional practice and life-long learning through the development of an intellectual base in the sciences, the liberal arts, and the humanities (AACN, 1986).

While the baccalaureate degree offers a broad based education, its utility is already under criticism. Some nursing leaders view the four year baccalaureate to be insufficient for a truly professional liberal nursing

education, and they advocate a five year nursing program. Other experts believe that two years of liberal education are necessary beyond the four year baccalaureate (Woolley, McLaughlin & Durham, 1990). While the debate continues about the four year baccalaureate, diploma programs continue to be offered in community colleges and hospital settings.

Community College and Hospital Based Nursing Education

The community college in North America evolved out of the need for post secondary education other than the traditional university route, and as a substitute for other post secondary institutions (Oliver et al., 1973; Porter et al., 1971). This institution of learning was generally designed to provide occupational training which required less than a university degree but more than a high school diploma (Karabel, 1972; Seitz, 1981). The chief task of the community college was to provide diverse educational experiences within broad and richly designed programs to a broad spectrum of the population (Davidson & Knopf, 1980; Dennison & Gallagher, 1986; Oliver et al., 1973). It grew out of public demand for egalitarian education and provides expanded access to higher education. It maintains an open door policy through flexible admission standards; however, easier access does not reflect lower expectations for achievement. Standards are generally assumed

to remain uncompromised within a competency or merit-based approach, and high expectations for program completion prevail (Karabel, 1972; Luckenbill & McCabe, 1982; Tucker, 1987).

The community college, founded in a specific social, economic, and political climate, was viewed as a means for meeting the needs of contemporary society rather than as an institution of inherent value, such as the university. The task of the community college was to produce graduates who would satisfy workforce requirements. The community college is not bound by past tradition, is highly reactive to prevailing conditions, and continues to be as dynamic as the society in which it is embedded (Dennison & Gallagher, 1986). The public's perception of the college is often of having inferior curricula and 'less intellectual' courses than university offerings (Neumann & Riesman, 1980). Oliver et al. (1973) concluded that "there is no rigid line between them as some courses in community colleges are at least as intellectual as some university courses" (p. 13). Some 'fuzziness' between the two institutions is apparent and some 'overlapping' may be noted. Community college programs are, however, initiated on the basis of anticipated value and outcome (Seitz, 1981).

The various community colleges are characterized by their differences rather than by their similarities. Uniformity is not possible even within the same occupational courses. A wide array of programs ranging from liberal arts, vocational and technical training to topics of special interest, are offered

within a community orientation (Johnston, 1980; Lamar Johnson, 1982).

Karabel (1972) suggested that the community college is functional in maintaining the social order. It promotes university exclusivity, and usually provides a safety valve to enable the university to pursue its interests without facing an unqualified or unprepared student population. It creates a vocational channel by providing an alternative route to higher education. Consequently, the community college reinforces the 'blue collar image' by virtue of its position at the bottom of the prestigious higher education hierarchy and becomes an alternative to elitism (Karabel, 1972; Johnstone, 1980; Vaughan, 1980).

While the community college is charged with offering specialized training, it must also facilitate growth, broaden the mind, and provide a basis to make choices (Dennison & Gallagher, 1986). The emphasis is on the student and his/her learning needs, and quality and effectiveness are measurable by performance, not by how many students the institution serves. Neither the student nor the curriculum remain static, as diversity of learning is the reality. The community college maintains a special status by virtue of its openness, and by the learning opportunities which it extends (Dennison & Gallagher, 1986). Nursing education in the community college setting enjoys the combination of the college based approach with the philosophy of the nursing profession.

Hospital based nursing education predominates in areas with few community colleges. It stresses the practice elements "as much as, if not more than, the theoretical content..." (Sweeney, Regan, O'Malley & Hedstrom, 1980, p. 37). Its educational focus on manual performance and the application of cognitive skills has become compatible with the general emphasis in the community college setting (Scheetz, 1989; Sweeny et al., 1980).

Educators and humanists have demonstrated concern about the ability of graduates of narrowly focused occupational programs to survive within a rapidly changing world. Consequently, numerous occupational programs have expanded to include liberal education (Dennison & Gallagher, 1986; Grede, 1981) in order to bring the applied spectrum of human knowledge into contemporary focus by recognizing dynamic social changes, and the need to accommodate these changes (Grede, 1981). While nursing practice requires a mastery of motor skills, such competencies as critical thinking, flexibility, and adaptability are also requisite. An effective nursing program is grounded in a theory and a practice base pertinent to the occupation, and diploma programs emphasize such content within a focus of clinical practice (Cleek, 1981; Grabbe, 1988).

The community college based nursing program offers a lesser proportion of liberal arts, and is not as deeply steeped in theory as the baccalaureate program (Davis, 1975;

Woolley et al., 1990). Curricula are carefully constructed to impart the basic skills required for competent practice in an institutional setting (Cantor, 1974; Kramer, 1981).

While Canadian nursing education is provincially governed, the profession is scrutinized by the professional association or licensing body. This regulatory body assures the public of safe and effective nursing care through the education and regulation of its membership. All diploma and baccalaureate graduates must write the same licensing examination, and must adhere to the same standards of practice (Baumgart & Larsen, 1988; Manitoba Association of Registered Nurses [MARN], 1988, 1984). Consequently, the fact of having obtained a baccalaureate degree does not confer different professional licensure expectations on its recipients. At times, this lack of differentiation between the two groups serves as a forum for discord.

Baccalaureate and Diploma Students' Profiles

Students attending a diploma program are of diverse backgrounds, ages, abilities, and goals (Dennison & Gallagher, 1986; Linthicum, 1982). They are generally of a lower or middle-class background and unlikely to attend university (Oliver et al., 1973). Karabel (1972) found that students enroled in community college programs demonstrated less

measured academic ability, although they also exhibited diverse economic abilities. The typical student may be of high academic ability and low social status, or of high social status and low or average ability. Many graduates have high aspirations and pursue education beyond the community college (Karabel, 1972) while others may have poor or incomplete high school records, may lack confidence in their abilities, or may be university drop-outs. Generally, low tuition fees, flexible programs, and open admission policies entice these students to the college (Neumann & Reisman, 1980).

Diploma nursing students are generally female, and nursing continues to be a 97 percent female dominated profession (Kelly, 1985). These students are recent high school graduates or older individuals, and likely express altruistic motives for their choice of profession. The major reasons for program selection are accessibility, program length, the emphasis on clinical practice, and affordability (Woolley, et al., 1990). Because of these reasons, diploma students frequently view the college system as ideal, and generally will resist changes in curricula (Murray & Chambers, 1990).

The character of the student population attending the university is changing as traditional young students appear to be declining in numbers while the average age of full-time and part-time students appears to be on the rise (Gregor, 1990).

Students attending the nursing baccalaureate programs are more selective than diploma students and, generally, demonstrate higher aspirations. They constitute a greater proportion of individuals within the middle or higher socioeconomic ranges (Murray & Chambers, 1990), include a greater number of males, and demonstrate a stronger interest in biology and medicine than their diploma student counterparts (Murray & Chambers, 1990). Overall, the profiles of the students attending diploma and baccalaureate programs differ. Each group's choice of the type of nursing education is based on utility as well as on idealism, and utility as well as idealism are embedded in each type of nursing program.

The Baccalaureate and Diploma Levels Of Nursing Education

Baccalaureate education is predicated on the assumption that professional nursing is based on individual value systems and on clinical and cognitive skills (AACN, 1986). It encompasses the humanities and the physical, biological, and social sciences (Joyce-Nagata, Reeb & Burch, 1989; Woolley, 1986). The objectives of the baccalaureate program are to impart the knowledge and foster the skills for critical-thinking and leadership abilities associated with nursing practice, management, ethics, research, theory, patient advocacy and politics (Boggs, Baker, & Price, 1987). The

baccalaureate provides greater opportunity for a broader scope of practice which includes collaboration with other health-care professionals (Waters, Chater, Vivier, Urrea, & Wilson, 1972). The integration of theory and practice encourages a holistic understanding of all aspects of care (Hayward, 1982; Salvage, 1981) and fosters liberal and intellectual values (Wuthnow, 1986) within a patient-centred, theory-based approach to practice (Baumgart & Larsen, 1988; Clayton, 1989).

The goal of the diploma program is to prepare the registered nurse to focus on sickness and on restorative and curative practice, while rendering care to patients in the hospital setting (Cantor, 1974; Johnston, 1982; Kramer, 1981). The scope of practice rests on the care of the patient with identified health problems who is under the supervision of a physician (Davis-Martin, 1990). The nurse is trained as an expert care-giver who possesses a high order of excellence, comparable, in many ways, to the skills of a surgeon (Hayward, 1982; Kramer, 1981).

The theoretical base of the diploma program is founded on principles rather than on theory, and intervention and clinical skills are exercised within narrow, clearly defined boundaries more likely related to physiological functions (AACN, 1986; Waters et al., 1972). Nursing judgements within circumscribed limits are related to the identification of common problems which are concrete and recurring. These problems are generally of a physiological rather than of a

psychological or social nature (Davis-Martin, 1990). The basic care rendered by the diploma prepared nurse requires a comprehensive knowledge base and must be considered challenging and important work (Wilson & Barnett, 1988).

While the two paths to nursing practice remain separated by the types of nursing education, the practice of nursing remains their common focus. Graduates of both routes to practice have functioned well in their roles, and have contributed substantially to the health care system.

The Separation Between Education and Practice

Historically, nursing education stressed practice more than theory, and psychomotor skills were the mainstay of practice. The baccalaureate program has shifted from this emphasis to a broader application of cognitive skills (Grabbe, 1988; Joyce-Nagata et al., 1989), whereas the diploma program has maintained its focus on basic care-giving functions (Field, Gallman, Nicholson, & Dreher, 1984).

Chamings and Treevan (1979) investigated the expected competencies of diploma and baccalaureate graduates. They surveyed 222 diploma and baccalaureate programs and requested that their deans complete an 80 item questionnaire addressing the competencies which they expected of the graduates. The response rate was 57 percent for baccalaureate programs and 50

percent for diploma programs. Results indicated that expectations of baccalaureate graduates were higher than those of diploma graduates. However, differentiation in actual clinical performance was deemed impossible because of insufficient data. The researchers recommended further studies "to test whether the expectations of educators are in fact translated into different competency levels on the part of the nurse" (p. 18).

Sweeney, Regan, O'Malley and Hedstrom (1980) investigated the psychomotor skills required by baccalaureate graduates. They used a modified Q Sort technique, whereby 291 psychomotor skills, suggested for inclusion in the baccalaureate curriculum, were presented to 15 nursing teachers and 15 head nurses (HNs) to be categorized as essential, bonus, or non-essential. Responses yielded complete agreement on 91 skills. Closer analysis of the tasks designated as essential generally revealed them to be items such as mouth care-tasks commonly performed by auxiliary health-care workers. A larger number of skills were designated as essential by HNs than by teachers. Additionally, significant differences were found in the ratings of the importance of 67 motor skills. Overall, there was a little consensus about what constituted essential psychomotor skills for baccalaureate prepared nurses.

Generally, a lack of congruence between practice and education about the essential skills of baccalaureate graduates is evident. Literature reviews by Field, Gallman,

Nicholson and Dreher, (1984) and by Stull and Katz, (1986) concluded that, generally, baccalaureate graduates lack initial clinical competence and expertise, especially in psychomotor skills; however, O'Brien (1984) predicted their emergence following a period of employment. Partridge (1978) asked "Why are new grads paralysed and unable to invoke the higher processes which they were taught" (p. 358) even after one year of practice? She provided no answers to her question.

Educators, employers, and staff have often experienced surprise upon the realization that education left the baccalaureate prepared nurse unprepared for practice (Bullough & Sparks, 1975). The applied and technical aspects of the nursing role are, often, less valued by the educator, whereas nursing service appears to value and emphasize these precise aspects. Stull and Katz (1986) stated that the values transmitted in the baccalaureate program generally result in a graduate who is not a "finished product" (p. 160). The diploma program trains practitioners who are immediately marketable and readily move into the practice arena with a repertoire of basic skills (Johnston, 1982; Kramer, 1981). Educators claim that the problem is related to the inappropriate utilization of the baccalaureate graduate in the clinical setting. However, the discrepancy may be due to the educators' evaluation based on education rather than on practice (Cantor, 1974; Gillis, 1989). Gillis (1989) suggests

that practice should match the products of education. Clearly, the gap remains between education and practice.

Raymond (1988) surveyed diploma and baccalaureate prepared nurses and found that both groups performed the same tasks in their practice settings. All nurses attached the same level of importance to their tasks. On the other hand, Cicatiello (1974) interviewed 18 directors of nursing (DONs) to determine what they perceived as strengths and weaknesses among diploma graduates. Findings indicated that graduates lacked sufficient organizational skills and clinical experience to translate scientific principles and theory into nursing action. Cicatiello concluded that diploma programs should be improved.

Nursing education has grown complex and confusing, and evidence is inadequate to determine if graduates of different programs actually perform at different levels (Boggs et al., 1987; Chamings & Treevan, 1979; Gibbs & Rush, 1987; Joyce-Nagata et al., 1989). While little evidence exists that differing educational preparation, at the diploma or baccalaureate levels, is linked to differences in clinical competence, the literature demonstrates that nursing administrators place higher expectations on baccalaureate graduates. In actuality, competencies of baccalaureate graduates were demonstrated to be only at the 50th percentile in relation to the expectations placed upon them by their superiors (Joyce-Nagata et al., 1989). Gillis (1989), pointed

out that nursing educators hold the responsibility to provide a better balance between nursing theory and nursing skills, but the practice setting must also exercise its responsibility to supply nurses with support.

Clinical Competence

One argument for the baccalaureate degree as minimum preparation for entry into practice is predicated upon the assumption that baccalaureate prepared nurses provide better quality care than diploma prepared nurses. A number of studies have investigated this assumption, however, general agreement has not been reached.

Nelson (1978) developed the nurse Competency Inventory and asked 429 baccalaureate and diploma graduates to rate themselves on this scale. Administrative, technical, and communication skills were the areas which were investigated. Supervisors were asked to rate these nurses on the same items. Following a return of 77 percent, Nelson found that baccalaureate graduates rated themselves as superior to diploma graduates in communication skills. Diploma prepared nurses rated themselves superior to baccalaureate prepared nurses in overall performance, technical skills, administrative skills, and clinical competence. Additionally, the individuals who supervised both groups of nurses rated the

baccalaureate graduates more highly than the diploma graduates in technical, communication, administrative skills, and overall clinical competence. Nelson neither examined the individual backgrounds of the supervisors, nor were reliability and validity indices established for the Inventory.

McCloskey (1983a) studied whether nurses with different educational preparation differed in job effectiveness. The dependent variable, job effectiveness, was undefined and was determined by asking HNs to complete the head nurse form in order to rate staff on job effectiveness, and to compare them, according to their educational preparation, to the best, most competent, and to the worst nurse. Additionally, nurses were asked to complete the staff nurse form in order to provide a self-rating on professional and technical skills. The sample was randomly drawn from 12 randomly selected hospitals. Overall, HNs reported no difference in job effectiveness between diploma and baccalaureate graduates. Baccalaureate prepared nurses, however, rated themselves more highly than diploma prepared nurses on professional skills. Data analysis was conducted on 49 baccalaureate nurses or 16 percent of the total sample, and on 197 diploma nurses or 66 percent of the total sample. The sample also included 33 licensed practical nurses who comprised 18 percent of the sample. However, the findings obtained from their participation, while

statistically significant, were not of relevance to the comparison of diploma and baccalaureate graduates.

The statistical analysis in McCloskey's (1983) study yielded interesting results: On a 20 point scale, the job effectiveness mean rating for diploma nurses was 14.23 and 14.3 for baccalaureate nurses; standard deviations were not reported. Increasing years of education had a statistically significant but small effect on performance, accounting for 1-2 percent of the variance. Journal subscription was the best indicator of continuing education and accounted for 3 percent of the variance. Effects of nursing education were concluded to influence job performance indirectly. The best predictor of the quality of job performance was competence on specific skills. Interestingly, while HNs found no apparent differences among the educational groups in their overall skills, baccalaureate graduates rated themselves more highly on professional skills than on technical skills. Leadership was rated low among all the nurses. Possibly, this may be the result of a lesser emphasis, or lesser value, placed on these skills, while greater emphasis may have been placed on technical skills among the hospital employed nurses. Baccalaureate graduates who were previously diploma prepared received a mean job effectiveness rating of 16.4, whereas baccalaureate prepared only nurses received a mean of 13.3, and diploma prepared nurses received a mean of 14.6. These results are impressive because the average experience level of

diploma graduates was 4.4 years compared to 6.2 years for baccalaureate graduate. McCloskey concluded that no differences exist in job effectiveness between diploma and baccalaureate nurses and recommended that further research in this area be conducted.

Schwirian (1978b) sought to identify predictors of success in nursing. She reviewed 398 research studies which were conducted between 1965 and 1975. Only 25 studies actually dealt with clinical performance. Schwirian observed that clinical competence was compared among differentiated groups according to some predetermined variables, and the skills of individual nurses were not compared within and between the groups. She felt that the measures of group performance were biased and that actual measures of competence remained untapped. McCloskey and McCain (1988) stated that one way to rate an individual's performance was through the acquisition of a variety of ratings by self and supervisor. McCloskey (1983a; 1983b) and Schwirian (1978b) conducted studies utilizing self and HN ratings and found that correlations between supervisor and self-ratings were significant, although not high. Stull and Katz (1986) compared expectations, rather than performance, of baccalaureate prepared nurses held by both their faculty and supervisors. Results indicated that both groups held higher expectations of the baccalaureate graduates in interpersonal and problem-solving skills, and lower expectations in critical-care and leadership skills.

McCloskey and McCain (1988) were concerned with the methods utilized in the measurement of clinical competence. They stated that in order to identify areas of required improvement in clinical performance, studies must ensure that measures of clinical competence are accurate and that strengths and weaknesses are analyzed carefully. McCloskey and McCain conducted a longitudinal study, with a total sample of 320 nurses, of which 38 percent were diploma prepared, 59 percent were baccalaureate prepared, and 3 percent were masters prepared. The participating nurses were required to complete a self-rating questionnaire. Additionally, 193 head nurses rated participating staff nurses on the same scale. Results indicated general agreement among staff nurses on the ranking of their competencies; however, there was more agreement on the more highly rated nursing skills. Overall, HNs rated staff nurses lower than the nurses' self-ratings; however, HNs agreed with the staff nurses' self-ratings with regard to the best and worst performance skills. Both groups ranked professional development as the highest, and teaching and collaboration as the lowest skills. McCloskey and McCain then compared their study with McCloskey's (1983a) study. They concluded that both studies identified the same competencies as being equally well performed by both groups. Additionally, there was general agreement between the HNs and nurses about these conclusions. Both studies identified the same skills as being 'the best and worst' among nurses i.e. professional

development and teaching/ collaboration. The four groups ranked interpersonal relations/communications as second in standing, while planning/evaluation assumed the fourth position. Leadership skills were rated more highly by the nurses than by the HNs. However, staff nurses rated themselves at a lower level on critical-care skills than did their HNs. The impact of the unit of employment on the ratings was also considered. The results for all the units were similar, with the exception of the cardiac care units, whose HNs and staff ranked critical-care skills in the first place, on the same level as professional development skills.

The comparison of data from the two studies led to several conclusions: Regardless of their educational backgrounds, clinical experience, or area of employment, nurses believed that they shared very similar weaknesses and strengths. The HNs, however, did not agree with the staff nurses. For instance, while staff nurses believed that they were superior in leadership skills, their head nurses reported to the contrary. The authors recommended that further research be conducted to clarify a possible relationship between the age of the HNs and the performance of the staff. Additionally, they suggested that the experience and education of the HNs be added as variables. Both studies by McCloskey and McCain (1988) and by McCloskey (1983a) concluded that HNs who were older, more experienced, and did not possess higher education, provided their staff nurses with higher ratings. McCloskey and

McCain asked whether it may be true that older HNs tended to be more proficient in their work and, consequently, obtained better clinical competence from their staff than the less experienced HNs, or whether their levels of experience and competence were inversely related to their standards of evaluation. Overall, both studies appeared to indicate that baccalaureate graduates were less proficient in critical care and leadership skills, but were more adept in teaching/collaboration, interpersonal skills, and in planning/evaluation skills than their diploma counterparts.

Schwirian (1978a; 1978b; 1979) conducted a nationally funded American study comparing graduates of 151 randomly selected nursing schools on clinical competencies. She compared nurses who were identified by their faculty as superior on the basis of high grade point averages (GPAs) with nurses who did not demonstrate such high achievement. She also obtained performance ratings of these nurses by their supervisors. Schwirian found that supervisors rated the clinical competence of baccalaureate graduates more highly than the clinical competence of diploma graduates in the areas of planning and evaluation, and teaching and collaboration. However, she found no differences between the two groups in leadership, professional development, interpersonal, and critical-care skills. McCloskey (1981) felt that Schwirian's low response rate of 30 percent, and the type of responses which were submitted, may have been due to fear of their

supervisors; staff nurses were required to supply the names and addresses of their supervisors when completing the evaluation forms. Consequently, nurses may have felt compelled to furnish more favourable responses on their questionnaires (McCloskey, 1981). Overall, the ratings of supervisors appeared to correspond more closely with the self-ratings of the baccalaureate graduates than with the self-ratings of the diploma graduates (Schwirian, 1981).

DeBack and Mentkowski (1986) were interested in how the differentiating variable of levels of education influenced practice in relation to years of experience. They investigated this interest and concluded that baccalaureate prepared nurses possessed more clinical competencies than diploma prepared nurses. They also suggested that education leads to the possession of a wider range of abilities than does experience: the more experienced and more educated nurse engaged in more active critical thinking, and possessed a greater ability to consider the total context of the situation. The authors suggested that if baccalaureate prepared nurses were provided with the opportunity to acquire experience they would become more effective in job performance than diploma graduates. However, DeBack and Mentkowski failed to include technical skills in their study and only considered higher order skills such as critical thinking, independence, and problem solving. Consequently, the study failed to evaluate the broad scope of clinical competence.

The area of satisfaction with educational preparation and perceived clinical competence was investigated by Hogstel (1977). She mailed an 80 item questionnaire to 109 diploma and 236 baccalaureate graduates, who were randomly selected graduates of the last two years. They were asked to provide their perception of preparation and performance in 80 activities within six categories of function, i.e. physical care, technical skills, interpersonal relationships, leadership, decision making, and community health care). A similar questionnaire was sent to 100 randomly selected directors of nursing (DONs) who were requested to report on the readiness and comparability of baccalaureate and diploma on the same functions, within the same categories. Results indicated that while more diploma than baccalaureate prepared nurses were employed in smaller institutions and in smaller communities, more baccalaureate than diploma graduates were employed in a greater variety of work settings. Baccalaureate and diploma graduates demonstrated no significant differences in their perception of preparation and competence in all areas except in community health care, in which baccalaureate nurses clearly were perceived by both groups as superior. The DONs reported the baccalaureate graduates as better prepared than the diploma graduates in all professional functions except physical care and technical skills. However, 63 (80 percent) of the DONs did not differentiate in hiring practices, promotions, and nursing assignments between the two categories

of nurses. Additionally, they made no provisions to utilize baccalaureate prepared nurses any differently than diploma prepared nurses. Styles and Holzemer (1986) studied the same issue and concluded that staffing policies must tap into the differential skills of the practitioners and provide them with appropriate tasks.

Davis (1974) compared competencies of diploma and baccalaureate graduates in order to determine whether a qualitative or quantitative differentiation in the provision of care existed, and whether these differences were affected by experience. She used data from her 1972 study, in which she compared 20 masters prepared clinical nurse specialists (CNSs) to 20 baccalaureate graduates, with data from her 1973 study, in which she compared 20 CNSs to 27 diploma graduates. She included diploma prepared nurses as a third educational group in the 1973 study because she felt that the diploma prepared nurses possessed substantial clinical experience. Davis combined the data from her two studies (1972 & 1973) and published the results in 1974. She presented the nurses participating in both studies with a film depicting five common patient care situations. Fifty five observations were possible, and were to elicit recommendations for actions and rationale for the actions. Results obtained from the sample of the 20 baccalaureate nurses from the first study, and the 27 diploma nurses from the second study, yielded statistically significant differences. Davis concluded that the quantity and

quality of patient care provided by baccalaureate graduates was superior to that provided by diploma graduates. However, she also postulated that the quality and quantity of care rendered by all practitioners declined with increasing years of experience in the absence of continuing education. Davis further concluded that education, not experience, was the determining factor in the quality and quantity of patient care, because a negative correlation between years of experience and response level was evident. Separate correlations for each group revealed a consistent level of decline in all competencies tested. A difference in the level of performance between diploma and baccalaureate prepared nurses also was surmised. Increased years of experience did not help the diploma graduates to list the variables, whereas baccalaureate graduates made significantly more observations and took significantly more actions. Davis concluded that CNSs rendered better patient care than baccalaureate nurses who, in turn, rendered better patient care than diploma graduates. However, this relationship was stated not to be valid in the absence of continuing education because the quality and quantity of care consistently declined across the three levels of nurses with increasing years of experience. This was found to be particularly true when the nurses worked for a few years without the benefit of continuing education.

While Davis (1974) demonstrated that nurses lose knowledge when they do not maintain currency, she failed to

demonstrate that continuing education was essential for good patient care. The author inferred that continuing education, not experience, should be the requirement for employment. As this was a study of hypothetical situations, no actual nursing actions were required. Consequently, the results may not be generalizable to the work setting. This criticism constitutes a major flaw in this study. Moreover, Davis' assumption that the number of responses provided by the nurses was indicative of the quality of care may be flawed. Although it must be accepted that Davis demonstrated a positive relationship between continuing education and prudent nursing practice, she failed to validate that the competencies she measured truly constituted prudent patient care. Furthermore, she accepted the reliability and validity of her instrument without question, and assumed that the quality of nursing care was directly and proportionally related to the number of responses or observations, actions, and reasons for the actions. Consequently, caution must be exercised in the consideration and acceptance of Davis' conclusions.

Primm (1986) also studied the competencies of diploma and baccalaureate prepared nurses. She launched a three year study to investigate differences in the skills displayed by these nurses. She detected differences in the areas of scope of care, structure, independence, and leadership. Primm concluded that the clinical competencies of both groups were vital in order to render holistic and comprehensive nursing care.

However, she believed that the public would receive exemplary nursing service only when the clinical competencies of both groups of nurses were fully recognized, utilized, and supported.

Nursing education and clinical competence were also investigated by Dincher and Flaherty (1988). They surveyed 112 diploma graduates for the purpose of evaluating their nursing programs. Of the 75 responses, the "vast majority" (p. 7) felt well prepared in technical job skills, knowledge and communication skills, but least prepared for managerial skills, although 30 percent worked as supervisors. Three quarters of the respondents were hospital employed while one quarter worked in extended care facilities.

A literature review by Ziv, Ehrenfeld, Kurtzman and Ever Hadani (1990) yielded contradictory findings. Some studies demonstrated that baccalaureate graduates exhibited greater knowledge, leadership, and supervisory skills than diploma graduates. Other studies failed to differentiate among the two levels. DONs reported that baccalaureate prepared nurses functioned optimally in large institutions; however, diploma prepared nurses reportedly performed equally well in small and in large institutions. Diploma graduates also were rated to have superior technical skills. No explanations were offered by the investigators for these findings.

Clinical competence was investigated by Bullough and Sparks (1975). They sought to identify the care-cure

orientation empirically, and to investigate any linkage to the type of nursing educational program. The care orientation was viewed as a holistic patient-centred approach to nursing, while the cure orientation was viewed as a more technical, discrete-skills approach, utilizing a less personalized patient focus. Bullough and Sparks conducted a questionnaire survey utilizing 201 diploma and 192 baccalaureate randomly selected students. An 11 point forced-choice scale of task preferences was used to determine the presence of a care or cure orientation. Findings yielded statistically significant differences in the orientations of students in the two programs. The majority of baccalaureate students were care oriented while the diploma students tended toward the cure orientation. Data suggested the socialization process as causative. Most students indicated a similar care-cure orientation as supported by their faculty, the curriculum, or both. The authors hypothesized that the cure orientation of the diploma nurses may be instrumental in preventing vocational upward mobility, as many nursing professionals disapprove of the cure orientation because of its illness and disease focus, which is deemed to belong to the domain of medicine. The care orientation, however, is perceived to be more unique to nursing because it focuses on the holistic care of patients.

Overall, evaluative studies have concluded that while the curricula of the two programs aim to produce different kinds

of practitioners (DeBack & Mentkowski, 1986), evidence is inconclusive and mixed as to whether baccalaureate graduates actually demonstrate superior, different, or more diverse skills than diploma graduates (Bircumshaw, 1989; DeBack & Mentkowski, 1986; Gibbs & Rush, 1987; Schwirian, 1984) The problem, however, may be related to the lack of appropriate methodology and adequate criteria to measure clinical performance. Additionally, some research may be based more on subjective impressions than on sound empirical evidence (McMillan, 1985). Bircumshaw (1989) identified methodological imperfections as the source of imprecise and problematic research. She faulted United States based researchers for their practice of drawing sweeping generalizations from research studies which employed small sample sizes. She noted that such studies failed to account for extraneous variables which may have provided alternative explanations for observed phenomena. Bircumshaw did not believe that any detected or observed differences in job effectiveness were directly attributable to the specific educational preparation (diploma or baccalaureate). To illustrate her point, she cited a literature review by Waters et al. (1972), in which differences in performance between baccalaureate and diploma prepared nurses were investigated. They found that no consensus was reached about performance levels in the practice situation between the two groups. Bircumshaw observed that a problem with reviewing the literature is that, generally,

reports provide only brief details of methodology and, therefore, are difficult to assess. Most significantly, studies generally are limited because there is no universally agreed upon definition or criteria of what constitutes a good nurse (Bircumshaw, 1989; McCloskey, 1983a).

The literature clearly demonstrates a great deal of role confusion in nursing, and a lack of fit between education and work assignments. Often, diploma graduates are expected to perform beyond their educational and experiential levels while baccalaureate graduates are under utilized (Johnston, 1982; Styles & Holzemer, 1986). Graduates of the two levels of nursing frequently function in the same roles, as staffing and patient assignment plans do not differentiate between them (Gillis, 1989; Styles & Holzemer, 1986).

Waters et al. (1972) sought to differentiate 'technical' and 'professional' practice and to ascertain how HNs and DONs rated this practice. They interviewed 12 DONs and 22 HNs from 12 hospitals and observed and interviewed 24 diploma and 24 baccalaureate prepared nurses who worked in the same hospitals. They observed the nurses at work for a period of 30 minutes to 2 hours, or until an incident requiring a nursing action occurred. Subsequently, each nurse was interviewed on two separate occasions to discuss the decision making processes utilized during the observed incident as well as during an unobserved incident. Findings suggested that the actions of diploma graduates were consistent with their

training. These actions dealt with nursing problems and interventions which were primarily physiological and physical in nature and had predictable outcomes. However, only six baccalaureate graduates demonstrated nursing actions consistent with their preparation of providing a more holistic, less disease centred orientation towards decision making. Overall, the DONs acknowledged differences between the two groups whereas the HNs did not. The HNs provided inconclusive and conflicting answers, and stated that hospital nursing was technical. These findings are questionable and not generalizable because of numerous flaws in the study. The authors generalized from two specific incidents (one observed and one unobserved) to their subjects' entire practice, without validation. The sample size was small, and the HNs readily demonstrated a bias in favour of baccalaureate nurses and provided conflicting and confusing feedback. The HNs believed that "BN grads know more, see more, and problem-solve more but the value system of the HNs did not necessarily include such qualities as being important for the real work of nursing" (p. 129).

Waters et al. (1972) believed that hospitals would be able to discern the differences between the graduates if they would utilize them differently. However, Waters et al. questioned the possibility of differential usage when educators had not defined the differences. Gillis (1989) claimed that nursing administrators accused nursing educators

of losing sight of the core of nursing, its practice. In reality, several studies which attempted to investigate the clinical performance of nurses within the various institutional settings, failed to demonstrate a congruence between skills taught in schools and skills expected in the practice setting. For instance, Chamings and Treevan (1979) provided 200 deans of nursing schools with an 80 item ratings questionnaire. The educators of baccalaureate programs held higher expectations of their graduates than educators of diploma programs. However, these expectations were not clearly defined. Additionally, the study did not investigate whether the graduates actually performed differently. The authors suggested that further research be conducted to "test whether the expectations of educators are in fact translated into different competency levels on the part of the nurse" (p. 18). Benner (1984) contended that nursing is relational and cannot be described by quantitative research methodologies because these approaches utilize fragmented strategies which exclude function, content, and context. Instead, a qualitative approach to nursing research would capture the substance and the essence of the phenomenon of interest (Bircumshaw, 1989). McCloskey (1983a) observed that DONs placed more emphasis than educators on the quantity of nursing skills. Additionally, educational preparation did not correlate with HNs ratings in the Waters et al. (1972) study, possibly reflecting the biases of the HNs.

Clinical competence continued to be the topic of interest when Hogstel (1977) administered a ratings scale to DONs and to staff nurses in order to measure overall job effectiveness. She found that independent evaluation of the various areas was difficult because results yielded opinions by DONs which were group, and not individually based. When Nelson (1978) investigated perceived competence among nurses and their supervisors, results indicated that as a group, newly graduated baccalaureate and diploma nurses perceived their own competencies differently than their supervisors.

Joyce-Nagata et al. (1989) were also investigating clinical competency when they asked 142 DONs whether the competencies which they expected from their nursing staff were manifested in the practice setting. The DONs replies indicated that in excess of one half of competencies expected from baccalaureate graduates were not evident in practice. Content validation from the perspectives of educators and administrators provided strong credence for the identified competencies. Deficits were predominantly in the areas of psychomotor skills.

Grabbe (1988) compared educators' and DONs expectations of baccalaureate prepared nurses by analyzing the contents of clinical evaluation tools. Ten university hospitals were paired, and evaluation criteria were related to the baccalaureate graduate as investigator, manager, care-giver and teacher. Findings revealed the greatest similarity (50

percent) in the care-giver role and in the professional role (40.8 percent). A mean similarity of 30 percent was obtained over all other role categories. These results support previous findings (Sweeney, et al., 1980) and reflect some measure of shared emphasis by DONs and educators of the care-giver role, which constitutes the most essential and fundamental characteristic of the profession. To some extent, educators and administrators expect similar behaviours.

Interestingly, no researcher consulted a colleague to rate or describe nursing performance and/or competence, and no study required that patients be consulted about their care to measure nursing performance and effectiveness (Bircumshaw, 1989).

Overall, the review of the research provides the impression that the key to effective nursing education is to produce nurses who are able to provide more flexible, responsible (Sills, 1988), and comprehensive care (Moccia, 1990). Styles and Holzemer (1986) urged administrators to develop staffing plans which facilitate the differentiation between the two levels of nursing, and a practice climate and reward system which is conducive to professional practice.

Differentiation Between Diploma and Baccalaureate Students on Competency Examinations

Prior to commencing professional nursing practice, a minimum level of competence must be demonstrated by all prospective practitioners. This competence is measured on the same competency exams which are written by all nursing graduates, regardless of their type of nursing education. Although a variety of social, economic, and political reasons for raising the educational level for nurses is available (Baumgart & Larsen, 1988) data supporting the opposite view, also are available (Raymond, 1988). Raymond noted that baccalaureate graduates who wrote the licensure examination (NCLEX-RN) obtained lower scores than their non-baccalaureate counterparts. Raymond sought to provide empirical evidence about the performance of the two groups on nationally administered American tests. The purpose of the research was to address the relationship between education and practice-related knowledge. Raymond obtained data from 6379 diploma and 4130 baccalaureate prepared nurses in 12 examinations. A positive relationship was found between educational level and test performance on national American certifying examinations administered by the ANA. The data do not necessarily indicate a cause and effect relationship between advanced education and superior test performance. It may be postulated that the more intelligent and more highly motivated nurses acquire higher education, or that the superior test performance of the more

highly educated nurses is a function of intelligence and motivation, not education. However, if these were valid hypotheses, then the more educated nurses would also score more highly than diploma graduates on other examinations including the NCLEX-RN. As this is clearly not the case, an explanation might be that licensure and certification examinations do not tap the same knowledge. Licensure is concerned with minimal competence at entry into the profession, whereas certification is concerned with recognition of knowledge and skills required for advanced practice. Therefore, differences in examination performance may be attributable to educational factors, personal enduring characteristics, or to both (Raymond, 1988).

Reimer Janzen (1990) conducted an exploratory descriptive study of the similarities and differences exhibited by baccalaureate and diploma prepared nurses in the province of Ontario on licensure examinations. A sample of 787 baccalaureate and diploma graduates wrote the licensure examination. Baccalaureate graduates obtained statistically higher scores than the diploma graduates on the critical thinking portion of the examination. As critical thinking is a main attribute of the competent nurse, this study captured an area of superior performance among baccalaureate nurses.

Another comparison of diploma and baccalaureate prepared nurses was conducted by McMillan (1985). She suggested that baccalaureate and diploma students were equally matched in

terms of their psychological profiles at the time of entry into their respective nursing schools. However, educational preparation was expected to create a difference in nursing competence between the two groups. McMillan administered the Professional Performance Examination (PPE) to 86 diploma and 83 baccalaureate nursing students nearing program completion. The PPE is used to assess educational levels of students nearing baccalaureate completion and compares them to a pre-determined standard of competence. Findings indicated that only the research sub test differentiated the two groups. It is interesting to note that the study of research is only included in the baccalaureate program. Surprisingly, the baccalaureate-diploma mean critical element scores were 49.4 percent and 42.7 percent respectively. The remaining sub tests did not substantially differentiate between the two groups. Consequently, not only was the test unable to differentiate most of the skills in the two groups, but both groups performed equally in the practice arena. Possible explanations for the lack of differentiation may be that the test is not a valid measure of group differences, the criteria used in the study to establish validity may be poor, and the differences between the groups may not be as great in the four areas studied (McMillan, 1985).

Summary

The proposal by the nursing regulatory bodies for the mandatory baccalaureate by the year 2000 has raised considerable discord among North American nurses and has polarized the nursing community. The main argument posited for the proposed educational change is that baccalaureate prepared nurses provide better quality care than diploma prepared nurses.

The review of the literature has yielded contradictory evidence on the superior competence of the baccalaureate nurse in the clinical setting. Some research studies have concluded that baccalaureate graduates do, in fact, provide better nursing care than diploma graduates in the hospital setting, while other studies concluded that diploma graduates provide better quality care than baccalaureate graduates, in the same settings. Numerous other researchers have captured little or no differences in nursing care between the two groups.

While the literature is replete with evaluative studies comparing the clinical competence of diploma and baccalaureate prepared nurses, conclusions drawn by their authors should be interpreted with caution. Several investigators were dependent upon the perceptions of educators and supervisors rather than on actual individual nursing performance, and other studies demonstrated methodological imperfections which rendered the results open to question. In general, small sample sizes,

inappropriate sampling techniques, and poor instrumentation flawed some of these investigations.

An additional point of consideration is that the vast majority of studies conducted in the area of nursing clinical competence originate in the United States. While Canadian and American societies bear some common elements, marked differences exist in the health care delivery systems of the two nations. Therefore, the generalization of findings from the United States studies may be inappropriate to the Canadian setting. Consequently, Canadian replication is desirable.

In reality, the true effects of education on clinical competence remain poorly understood. The goal of nursing is to provide optimal nursing care to patients. However, the profession of nursing must grow and evolve with the needs of society. Any change, whether in education or in practice, should be based on sound long-term planning, which should be grounded in empirically based evidence, attesting to its utility.

The aim of this study was to further the knowledge about the relationship between the education and the clinical competence of diploma and baccalaureate prepared nurses in Canada. This study could be a desirable step toward the accumulation of Canadian based research data.

Chapter 3

RESEARCH METHODS AND PROCEDURES

Research Design

This study was designed to compare a sample of two groups of nurses, baccalaureate and diploma educated (RN/BNs and RNs) on the dependent variable of clinical competence. The comparative design was selected, as it allows for the prediction of a cause and effect relationship between the variables of interest (Brink & Wood, 1989).

Clinical competence was identified as the dependent variable (DV) which was further divided into the six sub-scales which comprised the Schwirian 6D Scale of Nursing Behaviour. Emphasis was placed on how subjects differed with respect to the independent variables (IVs) of education, area of clinical practice, and duration of clinical experience which also was used as a covariate. Additionally, the use of multiple durations of practice was an important adaptation, especially in the presence of sufficient reason to believe

that the phenomenon of interest, clinical competence, was affected by the duration of the clinical experience.

The random assignment of subjects to groups was impossible because the variability in the IVs had already occurred within the existing educational groups, the practice areas, and the durations of practice. Therefore, this study cannot be classified as having a true experimental design. Shelley (1984) believed that the simple classification of subjects into groups, which will then be used as IVs, constitutes a form of experimental manipulation, and permits the study to be classified as a quasi-experimental design. Therefore, as some sample manipulation of intact groups (diploma, baccalaureate) was utilized in this research, according to Shelley's criteria, it may be classified as quasi-experimental, and ex post facto (Shelley, 1984).

The purpose of this study was to compare the clinical competence (DV) of baccalaureate and diploma prepared nurses. Although a definition of clinical competence was presented in Chapter 1, a more precise and focused operational definition was based on the performance of nurses on the Schwirian 6D scale (Schwirian, 1978a). The items included in the scale have been identified as generic skills possessed by any competent nurse and are most necessary for practise in any clinical setting (McCloskey, 1983b; Schwirian, 1978a). Therefore, for the purposes of this study, it may be stated that clinical

competence was synonymous with the scores obtained on the Schwirian 6D scale.

The IVs of interest were:

1. The 2 levels of education of the nurses: baccalaureate and diploma. These represent 2 levels of the first IV.
2. The areas of clinical practice: obstetrics and gynecology, surgery, medicine, psychiatry, and pediatrics. These represent 5 levels of the second IV.

The DVs consisted of the clinical competence scores of diploma and baccalaureate nurses. These scores were obtained through nurse self-ratings, and HN ratings of the same nurse, resulting in two scores for each nurse. Each set of scores was analyzed separately, and a discrepancy score between the two ratings was calculated. A total score combining the two ratings was then used. Four sets of scores resulted: self-ratings, HN ratings of the same staff nurse, discrepancy scores, and total scores.

The analyses of data were conducted through the use of analysis of variance procedures. The DV of clinical competence as a total score obtained on the 6D Scale, and the IVs of education and area of clinical practice yielded a 2 X 5 factorial design. Additionally, the effects of the length of experience variable was neutralized from the DV through the

MANCOVA (Multiple Analysis of Covariance) procedures, where experience became the covariate.

Further analysis of the DV of clinical competence was conducted by partitioning the DV into six sub-scale scores, each of which was treated as a separate DV. The effect of the IVs on the DV was calculated through the use of the MANOVA (Multiple Analysis of Variance) and MANCOVA procedure.

Six discrepancy scores were calculated from the difference scores between nurse self-ratings and HN ratings of the same nurse. These scores were then rank-ordered and tested for significance through the use of the Friedman Test.

The null hypotheses tested during the statistical analyses were as follows:

1. There is no difference between baccalaureate prepared nurses and diploma prepared nurses in clinical competence.
2. There is no difference in clinical competence between nurses with varying lengths of clinical experience.
3. There is no difference in the level of clinical competence between diploma and baccalaureate prepared nurses who work within the various clinical areas.
4. There is no difference in clinical competence between baccalaureate and diploma prepared nurses at comparable levels of clinical experience.

When the null hypotheses were rejected, the research hypotheses were supported. However, when the null hypotheses were accepted, the research hypotheses were not supported.

Subjects or Data Sources

Sampling is a vital part of the research procedure and facilitates the acquisition of information about the phenomenon of interest in such a way that it is representative of the population (Woods & Catanzaro, 1988).

The sample consisted of diploma and baccalaureate prepared nurses employed at a large tertiary health care centre in the Canadian Midwest. They constituted a convenience sample which was heterogeneous in nature because the nurses were drawn from the five separate clinical areas, and each area yielded as broad a range of nursing experience as was possible with a voluntary sample. Such a heterogeneous grouping was highly desirable in order to maximize external validity.

The sample size needed to be sufficiently large in order to ensure representativeness of the population. Therefore, all diploma and baccalaureate prepared nurses who chose to participate in the study were included. A sufficiently large sample size was also desired to provide adequate numbers of observations on each variable. Statistically, by rule of

thumb, 13 observations were required per cell, which would have resulted in a minimum sample size of 130. The final sample size was determined through practical considerations such as cooperation from management and staff, feasibility of the research process, and time constraints. Fortunately, a total of 330 nurses volunteered to participate from the five clinical areas of obstetrics and gynecology, surgery, medicine, psychiatry, and pediatrics.

Internal validity constituted an inherent problem in this design. The inability to manipulate the IVs because of the ex post facto nature of the study, and the non-random assignment of subjects to particular groups because the groups were already set, posed specific threats. Consequently, cause and effect relationships can not be directly assessed, as the random assignment of subjects to groups was impossible. However, the theoretical framework utilized in this study provided the bases for the inference of cause and effect.

Instrumentation

Numerous criteria exist for the assessment of the quality of an instrument of measurement and few, if any, are infallible. Consequently, a stringent assessment procedure must be undertaken to ensure that the tool is appropriate for usage. The choice of a suitable instrument usually involves a

rigorous process of selection with consideration given to the operational definition and the quantification of the variables to be measured (Shelley, 1984). While high measures of reliability and validity are essential, other characteristics must be present such as sensitivity, non-bias or objectivity, relevance, reactivity, unidimensionality, and comprehensiveness (Polit & Hungler, 1987).

The instrument chosen for this study was developed by Schwirian and was utilized by both Schwirian (1978a) and by McCloskey (1983a) in their respective studies. It is called the Schwirian Six Dimension (6D) Scale of Nursing Behaviours (Appendix I for staff nurses & Appendix J for head nurses). Permission to use the scale was requested (Appendix G), and was received from Dr. Schwirian (Appendix H). The 6D Scale consists of 52 items which are grouped into 6 sub-scales, namely: leadership, critical care, teaching and collaboration, planning and evaluation, interpersonal relations and communications, and professional development. This scale consists of generic items which tap observable nursing behaviours and allow the comparison of all types of nurses, be they recent graduates or experienced nurses, within the various work settings.

Reliability of the 6D Scale was established through various methods. Test-retest reliability for staff nurses was rated at .77 for the entire scale with sub-scale ratings ranging from .75 to .82. Test-retest reliability for HNs was

.97 for the entire scale with sub-scales ranging from .85 to .98. Inter-rater reliability for HNs was .89 for the entire scale with a range of .72-.94 (Schwirian, 1978a, 1978b; McCloskey, 1983b).

Content and construct validity were established by Schwirian through the procedures utilized during the development of the scale and through item content. Content validity for the scale was ascertained through the correlation of job effectiveness ratings with head nurse ratings. A correlation coefficient of .74 was obtained. Schwirian, based on the results of the 6D Scale classified three groups of nurses as 'best nurse', 'competent nurse', and 'worst nurse'. Head Nurse ratings classifying nurses into the same three groups produced Pearson Product Moment Correlations of .34 for the 'best nurse', .27 for the 'competent nurse', and .43 for the 'worst nurse'. These correlations were all found to be significant at the .05 level (Schwirian, 1978a).

The original scale consisted of 76 items which were later reduced to 52 items through the use of factor analysis. These items were deemed to represent the attributes most necessary for the practice of nursing (Schwirian, 1978a). Criterion related validity was obtained during the course of the development studies for the instrument. The scales were shown to differentiate significantly between the nursing competence of graduates who were rated by faculty and administrators as the most promising for success, and those who were not rated

as promising for success (McCloskey, 1983b; Schwirian, 1978a; 1978b).

The Six D Scales demonstrate several advantages which made them highly desirable for use in this study. The format of the questions was easy to interpret, as nurses were simply required to rate their competencies on fairly typical types of nursing behaviours. They were then required to enter these ratings by writing a score from 0-4 opposite each question. The legend for the ratings is supplied on the questionnaires. Each questionnaire required from 5-15 minutes to complete, depending on the speed of the individual raters. Head nurses completed an identical form in the same fashion as did the staff nurses. A copy of these scales is provided in Appendices I and J.

In order to obtain data which were used as IVs in this study, a demographic questionnaire, for both staff and head nurses was included. This questionnaire simply asked each nurse to supply information pertaining to experience, education, and area of clinical practice by circling the appropriate answer and adding appropriate information as required. The duration of time required to complete the demographic questionnaire was between 1-2 minutes. A copy of this questionnaire is included in Appendix F.

Research Procedure

The research protocol required by the Ethics Committee of the Faculty of Nursing, was completed, submitted, and approved by the Committee (Appendix A). Similarly, the research protocol required by the hospital for research involving human subjects, was completed and submitted to the Office of the Director of Research. Approval for the study (Appendix B), and voluntary participation of HNs and staff nurses was received. Each HN was forwarded a small package which accompanied the agenda for the next HNs' meeting. Such meetings are usually held on a monthly basis and are intended to discuss and review any individual, ward, or institutional concerns; all HNs are obliged to attend these meetings barring unforseen circumstances. The package contained a letter about the proposed study (Appendix C), a description of the study and the invitation to participate (Appendix D).

Personal contact with these HNs was gained during a head nurses' meeting at which time the study was briefly presented, and all questions were answered. Any head nurse that was not present was contacted in person and provided with the same information. Each HN was asked for permission to post the description of the study and invitation to participate in a conspicuous place on the ward and in the conference room. Those postings were intended to raise the interest of the nurses so that they would volunteer to participate. Head

nurses were cautioned that they were not, at any time, to exert any influence over the nurses to elicit their participation. This precaution was taken in order to avoid any possibility of coercion of staff nurses. Each ward was supplied with an appropriate number of packages containing a description of the study, a letter to each participant (Appendix E), a demographic questionnaire (Appendix F), and the Schwirian 6D Scale-Staff Nurse Form (Appendix I). The packages were left in a box in the conference room of each ward for easy access. The nurses were able to choose whether or not to participate in the study, as the removal of the package from the box was completely unmonitored, and its completion remained optional. This assurance was provided in print in the packages.

The telephone number and name of the investigator were clearly displayed in each package and inquiries were encouraged in the event of a serious problem with the completion of the study. Personal appointments could also be arranged upon the request of any participant.

Participant anonymity was maintained to the greatest extent possible, given the nature of the study. Participation of each nurse was known to the HN of the same unit, because the HN rated the nurse on the Schwirian 6D Scale-Head Nurse Form (Appendix J). This aspect of the study was made known to each nurse. However, it was also made extremely clear to each participant that neither the content of the completed Scale

nor the self-rating scores obtained on the Scale, were to be disclosed to anyone. Therefore, while the participants were not guaranteed full anonymity, confidentiality was maintained.

The precise mechanism utilized in the course of data collection was as follows: Each participating staff nurse was requested to write his or her name on the inside flap of the envelope containing the package left in the conference room. Each participant returned the completed forms into the envelope, and deposited the envelope into a sealed and secured box left in the conference room on each ward. All envelopes were collected from the sealed boxes on each ward within a two week period. The completed demographic questionnaires and the 6D Scales were removed, and each participant was assigned a code. The HN form of the 6D scale (Appendix J) was also coded for each participant, and was placed in the same envelope which the participant used to return his or her completed package. As the participant's name was already written on the inside flap of the envelope by the participant, further identification was not required. Additionally, each HN received one demographic questionnaire (Appendix F) and a set of instructions (Appendix K). Head nurses completed the 6D Scale for each staff nurse whose name appeared on the inside flap of the envelope. The coded, completed forms and the empty envelope bearing the participant's name were placed back into the secured box in the conference room. At no time was

the HN privy to any additional information beyond the names of the staff nurses whom she or he rated.

All the forms completed by the HNs were collected within a two week period. All completed forms, both staff nurse and HN, were stored in a locked filing cabinet until they were scored. They were then destroyed. Regular contact with the wards was maintained on an informal basis, as regular trips were required in order to collect the completed forms. Inquiries or questions were possible by phone contact.

Following data collection, all data were coded and statistically analyzed. The results of the analysis will be made available to each ward in the form of a final abstract. Additionally, a request for a summary of the study (Appendix L) will be posted on each ward to enable staff nurses to request a copy of the abstract, which will then be forwarded.

Ethical Considerations

Approval was received from the Ethics Committee of the University of Manitoba, Faculty of Nursing (Appendix A), and by the Research Department of the Health Sciences Centre (Appendix B). All participants were provided with a full description and explanation of the study. Even though the participants comprised a voluntary sample, they were informed

of their right to refuse participation and to withdraw from the study at any time.

Confidentiality of information was guaranteed to all participants. Data collected for analysis were stored in a locked filing cabinet and only the investigator had access to this cabinet. The data were destroyed consequent to the completion of the study.

Participant anonymity was maintained to the greatest extent possible, given the nature of the research design. Each staff nurse was notified in writing that voluntary participation authorized the release of his or her name to the HN who then completed a similar evaluation of this same staff nurse. The HN, however, was not provided with any information supplied by the staff nurse. Following the HN evaluation, the names of all participants were destroyed and only coded information was retained until the completion of the study.

As all staff nurses were informed, prior to their participation, that the HN was going to rate them on the HN version of the 6D Scale, disclosure of the participants' identity to the HN was done with the knowledge of the participants. Voluntary participation, therefore, constituted informed consent. Participation in the study posed no risk of physical or psychological harm. Additionally, full disclosure of the nature of the study was provided to all participants, and no deception of any kind was exercised.

Data Analysis

The completed Schwirian 6D Forms were collected from the participants and scored with the use of the formula offered by Schwirian (1978a), in order to compensate for questions within the test which were not applicable to some practice settings. The actual formula is $\frac{\Sigma X_1 \ldots X_n}{n - m}$, whereby $X_1 \ldots X_n$ constitutes the rating for each behaviour completed on the sub-scale; n constitutes the sum of all items within each sub-scale; m constitutes the behaviour for which no response was necessary (Schwirian, 1978a). The scores were then amenable to direct comparison between the sub-scales and between the areas of clinical specialties. The 6D Scale was assessed for reliability by a linear consistency measure, Cronbach's Alpha. The measures obtained were then compared to the ratings reported in the literature.

Two categorical IVs, were used: Education at 2 levels i.e. diploma and baccalaureate, and clinical areas at 5 levels, i.e. obstetrics and gynecology, surgery, medicine, psychiatry, and pediatrics. Clinical experience was initially used as a covariate. Upon evidence that clinical experience was a useful covariate, further investigation was conducted into whether the five areas of clinical practice affected clinical competence. These types of data were amenable to analyses through the use of analysis of variance techniques involving a 2 X 5 factorial design with a covariate.

The factorial design was employed when the investigator simultaneously manipulated two IVs and compared different combinations of the IVs. Consequently, each level of each IV was represented by one cell in the table. This design permitted the simultaneous analysis of two variables and provided information on whether the factors interacted with one another. Additionally, it allowed the determination of whether the interaction effect between the IVs produced an effect which was different from the sum of the individual additive effects of each of the factors (Shelley, 1984; Woods & Catanzaro, 1988).

The methods of inferential statistical analyses for this study included the ANOVA, MANOVA, MANCOVA, and Friedman's non-parametric ANOVA on Ranks. The analyses yielded data for simple main effects, for example, whether a baccalaureate prepared nurse employed on a pediatric ward demonstrated more clinical competence than a diploma prepared nurse employed on a surgical ward. Moreover, this design also allowed for interaction effects to be evaluated. The 0.05 level was used in this study in order to demonstrate significance.

The DV of clinical competence was reported as six sub-scale scores which comprised the total measure of the DV. Each of the sub-scales was used as a DV and was amenable to independent analyses utilizing the same IVs. The MANOVA procedure was used in order to conduct this analysis.

As the effect of experience remained a potential problem, its effect was neutralized through the use of the MANCOVA procedure. This procedure is similar to the MANOVA but for the presence of the covariate.

As the variable of experience is common to both diploma and baccalaureate graduates, the statistical analysis became more powerful when the effect of experience was taken into consideration. This was accomplished through the use of the MANCOVA procedure whereby the variable of experience became the covariate.

The DV of clinical competence was reported on the Schwirian 6D Scale as six sub-scale scores which were combined to form a total score. In order to perform a complete analysis of the data, both the total score and each of the six sub-scale scores were treated as DVs. The total score was amenable to analysis with respect to the IVs through the use of univariate techniques such as the ANOVA. The six sub-scale scores were analyzed within one procedure which treated each of the sub-scale scores as a DV. These techniques constitute the MANOVA and the MANCOVA.

The DV of clinical competence was measured through the use of two rating scales: One scale was a staff nurse self-report scale, and the second scale was the HNs version of the same scale which was used to evaluate the same nurse. In order to obtain a complete profile, each of these scales was treated as a DV and was subjected to the analysis of variance

procedures which were previously mentioned. Additionally, the ratings on the two forms were subtracted, one from the other, and a difference score was obtained which was then analyzed for significance.

The choice of a post hoc test is not bound by stringent rules. The Scheffé's 'S' test was chosen because it is appropriate for all simple pair-wise and complex multiple comparisons and would serve to maintain the designated alpha level which was set at the .05 level. Additionally, it had the advantage of using the same F table as the ANOVA and protected against a type 1 error, while maintaining the Alpha level designated for the ANOVA (Shelley, 1984).

Assumptions

This study was based on the following assumptions in order to render it feasible:

1. The convenience sample was representative of the population of nurses within the province of Manitoba, or at least, within the tertiary care facility where the study was conducted.
2. Contemporary knowledge about the variables of interest was sufficiently well grounded in theory and research to enable the production of predictive hypotheses required in a comparative research design. The IVs of education and

area of practice, as well as the covariate of experience, were the variables that exerted a major influence on the DV of clinical competence.

3. The measurement instrument utilized for this study was sufficiently valid and reliable to yield an accurate quantification of the DV.
4. The extraneous variables which affected the DV were randomly distributed within the entire sample and did not create a biasing effect. A few examples of these variables are motivation, temperament, and intelligence.
5. The participants lent their full cooperation and support to the study.

Limitations

No single study can hope to account for the multitude of variables which affect nursing clinical competence. Moreover, exerting control over all variables or factors which are part of, or impinge on, a study is difficult or impossible. Therefore, it is the obligation of the researcher to clearly define the limits of the study.

A major limitation of this study was in relation to the composition and size of the sample. A large sample was desired and, optimally, it should have included nurses from several hospitals in the province. Time, financial constraints, and

travel restrictions made that kind of undertaking impossible. Also, large and diverse samples are difficult to obtain, as cooperation with any study is not automatic and requires approval by various organizational authorities, as well as full consent by a large number of participants.

As participation was voluntary, the sample may have been biased in favour of more competent nurses, as less competent nurses may have been more hesitant to participate. This factor may have jeopardized external validity. Additionally, as the study was conducted within one hospital and utilized a convenience sample, external validity may have been further threatened and generalizability to other health care facilities should be approached with caution. Furthermore, as the composition of the sample was pre set, random assignment of subjects was impossible. The ex post facto nature of the study also did not allow for a true experimental design and, consequently, may have jeopardized internal validity.

The conceptual framework specifies additional extraneous variables which cannot be included in a study of this magnitude. Therefore, the amount of variance within the DV may not be solely attributable to the independent variables selected for the study. Future studies should, perhaps, include other variables such as motivation and intelligence.

Evaluation anxiety, or the presence of anxiety during the process of evaluation which results in reduced performance, may have impinged on behaviour. This factor may have created

a differential effect on the various groups, and may have differentially influenced the outcome. Evaluation anxiety may be lower among baccalaureate graduates, as they have experienced two more years of evaluation which may have served to desensitize them to a greater degree than the diploma graduates. This may have constituted a disadvantage for diploma nurses.

The IV of education at the two levels may have affected performance simply because nurses with longer terms of education may have had more exposure to the various situations requiring nursing actions. This limitation must be given careful consideration.

Chapter 4

RESEARCH FINDINGS

The results of data analysis are provided in this chapter according to the procedures discussed in Chapter 3. Data analysis was conducted in three separate stages, but is presented in a manner that lends itself to ease of interpretation:

1. A brief description of the process of data collection and the characteristics of the sample are presented in the first section.
2. The distribution of ratings obtained from staff nurse, head nurse, and combined staff nurse and head nurse scores are presented in the second section. These scores are then totalled and compared for consistency of findings.
3. The assumptions required for the analysis of inferential statistics are discussed in the third section.

4. The null hypotheses presented in chapter 3 are tested in the fourth section.
5. Additional findings related to the variables of interest are presented in the fifth section.
6. Reliability data and the distribution of scores obtained from the instrumentation are presented in the sixth section.
7. A summary of the findings is provided in the seventh section.

Appropriate descriptive statistics are also presented in relation to the data analyses. Tables depicting the data accompany the analyses in order to enhance clarity to aid in the interpretation of the findings.

Process of Data Collection

The appropriate forms and questionnaires were placed in the conference rooms of the four clinical areas of obstetrics and gynecology, surgery, medicine, and psychiatry. The envelopes bearing the completed staff nurse forms were collected on a regular basis and were coded. Staff nurse participation was completed by January 4, 1992. Head nurse forms were then coded and given to the appropriate head nurses along with the instructions as outlined in Chapter 3. All head nurse forms were completed and returned. This portion of data

collection was concluded by January 15, 1992. Access to pediatrics was obtained on January 8, 1992, and the packages containing the staff nurse forms were immediately placed on all the wards. All forms were collected and coded by January 13, 1992, and coded head nurse forms were then supplied to the appropriate head nurses. All forms were returned by January 20, 1992 and the data collection phase was completed.

All individual scores were entered onto a spread sheet, following the completion of data collection. Additionally, coded staff nurse and head nurse data were included on the spread sheet. Data from the spread sheet were subsequently imported into the SPSS/PC+ Statistical Package for the Social Sciences (Norusis, 1988). Descriptive, as well as inferential statistics, were calculated in order to obtain a thorough description of the sample characteristics, and of the response patterns of head nurses and staff nurses.

Description of the Sample

As illustrated in Table 1, the sample was composed of a total of 330 participants of which 241 or 73 percent were diploma prepared, and 89 or 27 percent were baccalaureate prepared. Of the 89 baccalaureate prepared nurses, 32 received their degrees subsequent to diploma level preparation. As further analysis did not differentiate between the clinical

competence of baccalaureate prepared nurses and diploma prepared nurses with subsequent baccalaureate preparation, the distinction between the two groups was eliminated and the two groups were combined into the baccalaureate prepared group.

Table 1

Sample Distribution by Education

Education	Frequency	Percent
Diploma	241	73.0
Baccalaureate	57	17.3
Diploma/Baccalaureate	32	9.7
Total	330	100.0

The sample was obtained from the five clinical practice areas of obstetrics and gynecology, surgery, medicine, psychiatry, and pediatrics. Table 2 represents the distribution of the nurses by clinical areas.

Table 2

Sample Distribution by Clinical Area

Clinical Area	Number of Subjects	Percent
Obstetrics & Gynecology	62	18.8
Surgery	79	23.9
Medicine	82	24.9
Psychiatry	37	11.2
Pediatrics	70	21.2
Total	330	100

The largest number of respondents was from the areas of medicine and surgery with 82 and 79 participants respectively. Psychiatry yielded the smallest response rate of 37. However, this area of practice also comprises the smallest clinical group of nurses within the hospital.

The sample size of diploma graduates exceeded the sample size of the baccalaureate graduates in each of the five areas. The total distribution of nurses in these clinical areas, by education, is illustrated in Table 3.

Table 3

Sample Distribution by Education and by Area

	RNs		RN/BNs		Total
Clinical Area	Frequency	Percent	Frequency	Percent	Frequency
Obstetrics & Gynecology	45	73	17	27	62
Surgery	55	70	24	30	79
Medicine	64	78	18	22	82
Psychiatry	25	68	122	32	37
Pediatrics	52	74	18	26	70
Total	241		89		330

The ratio of diploma to baccalaureate prepared nurses was uneven across the five clinical areas. Diploma prepared nurses outnumbered baccalaureate graduates by an approximate 3 to 1 ratio in the areas of obstetrics and gynecology and pediatrics. A ratio of 2 to 1 was evident in psychiatry and surgery, while a 4 to 1 ratio was the case for the practice

area of medicine. The unequal sample size of diploma and baccalaureate nurse participants was taken into consideration and required statistical adjustment in the subsequent data analyses.

The sample of 330 nurses was then sub-divided by length of practice and by education. A total of 20 nurses had less than 1 year of experience. Of these 20 nurses, 13 were diploma prepared nurses and 7 were baccalaureate prepared. A total of 36 nurses was employed for the period of 1-2 years. Of these nurses, 24 were diploma and 12 were baccalaureate prepared. A total of 104 nurses had practised for the periods of 3-6 years. Of these nurses, 69 were diploma and 35 were baccalaureate graduates. The largest group, composed of 170 nurses, had 7 or more years of experience. Of these nurses, 135 were diploma and 35 were baccalaureate nurses. These data are presented in Table 4.

Table 4

Sample Distribution by Experience and Education

Years of Experience	RNs		RN/BNs		
	Frequency	Percent	Frequency	Percent	Total
<1 year	13	65	7	35	20
1-2 years	24	67	12	33	36
3-6 years	69	66	35	34	104
7 + years	135	79	35	21	170
Total	241		89		330

The examination of the distribution of participants according to the four levels of experience revealed that the baccalaureate to diploma ratio increased with recency of experience. The fourth group, representing experience of 7 and more years, held the lowest baccalaureate to diploma ratio of all four categories.

Mean Scores and Response Patterns

Schwirian 6D Scale, Staff Nurse Self-Rating Scores

The initial portion of data analysis consisted of an examination of self reports which were provided by participating nurses on the Staff Nurse Form of the Schwirian 6D Scale. The total scores for the six sub-scales were also computed. All the scores obtained on the sub-scales were treated as dependent variables. The possible range of scores on each scale item was 0-4, where the 0 represented the lowest rating for clinical competence and 4 represented the highest possible rating. Between the scores of 0 and 4, only whole intervals of 1 were possible, and responses which deviated from this requisite were rounded to the next higher number. The middle score of 2 represented a "satisfactory" level of performance.

The first sub-scale of Leadership (L) yielded the fourth highest score of the sub-scales and the highest

standard deviation (SD). This SD indicated the widest dispersion between high and low scores of any of the sub-scales. The second sub-scale of Critical Care (CC) produced the second lowest mean score and the second highest standard deviation. Consequently, while the scores were generally low, they were widely dispersed within the low range. The third sub-scale of Teaching/Collaboration (T/C) yielded the lowest mean score and the third highest standard deviation. The fourth sub-scale of Planning/Evaluation (P/E) yielded the third highest mean score and the fourth highest standard deviation. While nurses rated themselves fairly highly on this scale, dispersion in the scores continued to demonstrate a wide range of ratings. The fifth sub-scale of Interpersonal Relations/Communication (IPR) produced the second highest mean score and the second lowest standard deviation. Evidently, the participants rated themselves highly and were in close agreement, as there was a low dispersion of scores about the mean. The last sub-scale of Professional Development (PD) yielded the highest mean score and the lowest standard deviation. This finding demonstrated a high level of agreement among the nurses about the constructs of this sub-scale, as well as a high level of performance which was indicated by the consistently high scores. The total mean for all staff nurse scores was 3.21, out of a possible score of 4, with a standard deviation of 0.47. Overall, total scores obtained on the sub-scales were in the upper range of scores, between 3 and the

maximum score of 4, with a fairly wide dispersion of scores about those means.

The data in Table 5 represent mean scores which were rank ordered from highest to lowest, and demonstrate performance at the level defined above the "well" range. The data in Table 5 also demonstrate a trend that the highest mean scores were accompanied by the lowest standard deviations. This trend illustrated a tendency, the higher the mean scores, the closer the clustering of scores around the mean.

Table 5

Ranking of the Sub-Scales on Staff Nurse Forms

Sub-Scale	Mean	SD
1. Professional Development	3.37	.40
2. IPR	3.30	.44
3. Planning/Evaluation	3.23	.47
4. Leadership	3.17	.52
5. Critical Care	3.17	.51
6. Teaching/Collaboration	3.06	.48

Scores on the Staff Nurse Forms yielded a skewed distribution with observations ranging between 2.13 and 4.0. The main concentration of scores was near the centre of this range, about the score of 3.0 approximately. This negatively skewed distribution contained most scores in the higher ranges, with no scores below a mean of 2.13. This lowest value, while above the mean for the scale, illustrated that

nurses with the lowest scoring demonstrated clinical competence above the designated satisfactory level of 2.0. The close clustering of scores in the high end of the scale represented little numeric deviation, and comprised a spread of only 1.87 from highest to lowest mean scores. Therefore, only small differences between scores were available for the testing of statistical differences.

Schwirian 6D Scale, Head Nurse-Rating Scores

The Head Nurse Form of the 6D Scale was used to obtain a second rating of clinical competence for each staff nurse who participated in the study. These forms were completed by the head nurse or supervisor of each staff nurse. The areas measured on this questionnaire were identical to the areas assessed on the self-ratings of staff nurses. The scoring was also identical to the scoring on the Staff Nurse Form, ranging from a low 0 to a maximum of 4. A score of 2.0 represented the mean of the scale and was designated as "satisfactory" performance.

Analysis of the scores on the Head Nurse Forms, which were completed by the 46 participating head nurses within the five clinical specialty areas, produced the following ratings: The first sub-scale of Leadership yielded the lowest mean score and the highest standard deviation. This finding indicated little agreement among the head nurses about nurse competencies on this sub-scale. A wide dispersion of generally

low scores constituted the profile of this sub-scale. The second sub-scale of Critical Care produced the fourth highest score and the second highest standard deviation. While head nurses generally rated staff nurses highly on the constructs which comprise this sub-scale, the wide dispersion of scores illustrated a low level of agreement between the head nurses about these scores. The third sub-scale of Teaching/ Collaboration produced the second lowest score and the third highest standard deviation. Planning/Evaluation, the fourth sub-scale, produced the second highest mean score and a standard deviation which was the same as obtained on the previous sub-scale. The fifth sub-scale of IPR/Communication produced the third highest mean with a standard deviation which was also the same as was obtained on the previous two scales. The sixth sub-scale of Professional Development yielded the highest mean and the lowest standard deviation. Overall, the head nurses rated staff nurses highly on Professional Development competencies and achieved a high level of consensus on the ratings, as demonstrated by the low dispersion of scores. The total mean for head nurse scores was 3.29 with a SD of 0.58. The head nurses rated the staff nurses highly in the "well" to "very well" categories. However, the level of agreement was low, as indicated by the large standard deviation. A similar trend was observed for staff nurse scores, as was evident for head nurse scores; higher mean scores corresponded with smaller standard deviations. The

interpretation of this trend is identical to the interpretation which was described in the corresponding section for staff nurses. A rank ordering from the highest mean to the lowest mean of the sub-scales for the Head Nurse Forms is presented in Table 6.

Table 6

Ranking of the Sub-Scales on Head Nurse Forms

Sub-Scale	Mean	SD
1. Professional Development	3.49	.50
2. Planning/Evaluation	3.33	.57
3. IPR	3.31	.57
4. Critical Care	3.31	.59
5. Teaching/Collaboration	3.16	.57
6. Leadership	3.15	.68

The pattern of scores on the Head Nurse Scale was asymmetrical, with a negative skew similar to the distribution of scores on the Staff Nurse Scale. The range of mean scores on the Head Nurse Scale was between 1.54 and 4.0. This finding illustrates that head nurses allocated lower scores to staff nurses than staff nurses allocated to themselves. Head nurses also assigned staff nurses a greater number of higher scores, between the 3.5 and 4.0 ranges, than staff nurses assigned to themselves. The emphasis on high scores resulted in a stronger trend toward the assignment of highest scores for most nurses. Similarly, head nurses assigned staff nurses more scores at the lower end of the scale than staff nurses assigned

themselves, with several scores falling below the satisfactory level of 2.0. The spread of scores resulting from head nurse ratings, therefore, was greater than the spread of scores resulting from staff nurse self ratings. Consequently, the wider range of ratings implied that head nurses viewed some staff nurses' competence as less than "satisfactory", but viewed the majority of nurses' competence as much more than "satisfactory". This finding contrasts with the self-ratings of staff nurses. In other words, staff nurses rated their performance in the above "satisfactory" range, but not in the extremely high range. Head nurses tended to rate staff nurses frequently in the high end of the range, and fewer nurses in the lower end of the range. No mean scores provided by head nurses were below the 1.54 value. This finding indicates that head nurses did not view their staff nurses as demonstrating very poor clinical competence.

Schwirian 6D Scale, Combined Staff and Head Nurse Scores

The correlations between staff nurse and head nurse sub-scale scores were obtained through the use of the Pearson Product Moment Correlation Coefficient. This procedure was employed in order to determine the degree of association between the self ratings and the head nurse ratings of the same staff nurses. McCloskey (1983a, 1983b) reported a low, but statistically significant, correlation between staff nurse and head nurse ratings. The correlations obtained in this

study were similarly low, but statistically significant. These correlations are presented in Table 7.

Table 7

Correlations Between Staff and Head Nurse Sub-Scales

Sub-Scale	r	p
1. Leadership	.25	.001
2. Critical Care	.23	.001
3. Teaching / Collaboration	.16	.01
4. Planning / Evaluation	.22	.001
5. IPR	.15	.01
6. Professional Development	.14	.01
7. Total Scales	.21	.01

The scores obtained on each of the six sub-scales on the Staff Nurse and Head Nurse Forms were combined in order to yield a total score. This total score was intended for use as an unbiased indicator of nursing performance in order to moderate the effects of extreme ratings which may have been assigned by staff nurses or head nurses. The calculated combined means and SDs were as follows: The first sub-scale of Leadership yielded the second lowest mean score, and the highest SD. These findings indicate a wide dispersion in the allocation of scores, which generally tended to be low. The second sub-scale of Critical Care produced the fourth highest mean and the second highest SD. Raters provided relatively moderate scores on this sub-scale with a low level of rater consensus demonstrated by the wide dispersion of scores about

the mean. The third sub-scale of Teaching/Collaboration yielded the lowest mean score and the third lowest standard deviation. The relatively low scores on this sub-test were assigned fairly consistently among the raters. This was demonstrated by the low level of dispersion of scores about the mean. The fourth sub-scale of Planning/Evaluation produced the third highest mean score and the third highest SD. The fifth sub-scale of IPR/Communication produced the second highest mean score and the second lowest standard deviation. The sixth and final sub-scale of Professional Development yielded the highest mean score and the lowest SD. Clinical competence in relation to Professional Development not only achieved the highest combined ratings, but also the highest level of consensus about these scores and the competencies which they represent. The total mean for the combined scores was 3.25 and a SD of .37. A rank ordering of the combined scores is presented in Table 8.

Table 8

Ranking of the Combined Sub-Scales
for Staff and Head Nurse Forms

Sub-Scale	Mean	SD
1. Professional Development	3.43	.34
2. IPR	3.30	.38
3. Planning/Evaluation	3.28	.41
4. Critical Care	3.24	.43
5. Leadership	3.16	.48
6. Teaching/Collaboration	3.11	.40

The trends observed on the staff and head nurse forms were similar to those observed on the combined forms. This finding was expected, because combined scores simply serve to moderate staff nurse and head nurse performance ratings. The interpretations of these data are similar to the interpretations presented for the staff and head nurse scores.

The total averaged scores on the Staff Nurse and Head Nurse Forms are presented in Table 9. These scores were utilized in the subsequent data analysis because each total scale was used as a dependent variable.

Table 9

Total Scores for Staff and Head Nurse Forms

Value Label	Mean	SD
Total Staff Nurse	3.21	.47
Total Head Nurse	3.29	.58
Combined Total	3.25	.37

Combined head nurse and staff nurse scores produced a more normally shaped distribution which was centred around the 3.0 to 3.5 range. No combined scores below 2.2 were observed. Evidently, lower scores were not frequently allocated by either staff, or by head nurses.

Scores obtained on head nurse sub-scales were then subtracted from scores obtained on corresponding staff nurse

sub-scales. These difference scores demonstrated the disparity between nurses' self ratings and head nurse ratings. The differences in scores are depicted in Table 10. A positive score indicated a higher staff nurse self rating, whereas, a negative score indicated a higher rating by head nurses.

Table 10

Difference Scores Between Staff Nurse and Head Nurse Forms

Sub-Scale	Mean of Difference	SD
1. Leadership	.02	.75
2. Critical Care	-.15	.68
3. Teaching/Collaboration	-.10	.68
4. Planning/Evaluation	-.10	.66
5. IPR	-.01	.66
6. Professional Development	-.12	.59
7. Difference Between Total Scale Scores	-.07	.61

The differences in ratings between the two scales were rank ordered and analyzed through the use of the Friedman Two-Way Analysis of Variance (ANOVA) in order to determine if these differences were statistically significant. The Friedman's ANOVA was used to determine significant differences when discontinuous data are rank ordered. Results were significant at the $p = <.00005$ level and indicated that head nurses rated staff nurse competencies more highly than staff nurses rated their own competencies. The results of this ANOVA are presented in Table 11.

Table 11

Friedman's ANOVA on Mean of Difference Scores

Sub-Scale	Mean Rank		
1. Leadership	4.01		
2. Critical Care	3.04		
3. Teaching / Collaboration	3.41		
4. Planning / Evaluation	3.36		
5. IPR	3.88		
6. Professional Development	3.30		
	Chi-Square	D.F.	Significance
	62.9330	5	.0000

Statistical Assumptions

An assumption of the correlation of the DVs underlies the use of Multiple Analysis of Variance (MANOVA), and of Multiple Analysis of Covariance (MANCOVA) procedures (Neter, Wasserman & Kutner, 1990). The Pearson Product Moment Correlations ranged between .51 and .84 on the six staff nurse sub-scales. Correlations on the head nurse scales ranged between .73 and .91. Therefore, the assumption of relatedness was satisfied on both head nurse and staff nurse scales.

Statistical analysis which utilizes a covariate relies on the assumption that the covariate correlates with the DVs at least at the .30 level. If this degree of correlation is lacking then little is gained from the usage of the covariate, and one degree of freedom is lost in the statistical analysis as a consequence (Waltz & Barker Bausell, 1981). Pearson

Product Moment Correlations were obtained for all sub-scales and for total scores in order to determine if the covariate reached this level of significance. The correlations between the covariate of experience and staff nurse sub-scale scores ranged from a low of $\underline{r}$=.01 for sub-scale 6, Professional Development, to a high of $\underline{r}$=.27 for sub-scale 1, Leadership. The total correlation for the entire scale was $\underline{r}$=.21. As the correlations on all the scales were below the .30 level, the covariate of experience was not used for the further analysis of the staff nurse scale.

Correlations between experience and head nurse sub-scale scores ranged between $\underline{r}$=.14 for Professional Development to $\underline{r}$=.35 for Critical Care. Two other sub-scales failed to reach the $\underline{r}$=.30 level. They were Interpersonal Relations/ Communication with an $\underline{r}$=.21, and Leadership with an $\underline{r}$=.29. However, as three sub-scales surpassed the .30 level and as the total score approached the level of significance of $\underline{r}$=.29, the decision was made to use the covariate for further analysis of the head nurse scale. This decision was based on the fact that sub-scale 6, with $\underline{r}$ = .14, correlated at a low level with other sub-scales of the 6D Scale and prevented the total score from reaching the .30 level.

Correlations between experience and combined head nurse and staff nurse sub-scale scores ranged from $\underline{r}$=.10 for Professional Development, to $\underline{r}$=.37 for Critical Care. Interpersonal Relations/Communication with $\underline{r}$=.22 was the only

other sub-scale that failed to reach the critical level. The correlation for the entire scale was r=.33.

Correlations for the five sub-scales and the total scale scores surpassed the r=.30 level and were significant at the p=.001 level. The Professional Development sub-scale with r=.10 did not produce a significant correlation coefficient at the p=.05 level. Therefore, the relationship between experience and clinical competence, as measured by the 6D Scale, was found to be highly significant, but not to a large magnitude.

The appropriate use of the MANOVA and MANCOVA procedures requires the presence of homogeneity of variances (Neter et al., 1990). Two univariate tests of homogeneity were utilized in this study: The Cochrans C Test and the Bartlett-Box F Test. These tests assume the presence of equal variances. In order to reject the hypothesis of equal variances, the obtained levels of significance had to reach the .05 level or less (the assumption of homogeneity is met when the p exceeds the .05 level). The results of the Cochrans C and Bartlett-Box F Tests are presented in Table 12.

Table 12

Tests of Homogeneity of Variances

Value Label	Cochrans C	Bartlett-Box F
Staff Nurse		
1. Leadership	.08	.18
2. Critical Care	.053	.02
3. Teaching / Collaboration	.18	.44
4. Planning / Evaluation	.11	.36
5. IPR	.26	.36
6. Professional Development	1.00	.93
7. Total	.19	.16
Head Nurse		
1. Leadership	.91	.98
2. Critical Care	.004	.06
3. Teaching / Collaboration	1.00	.76
4. Planning / Evaluation	.55	.21
5. IPR	.12	.47
6. Professional Development	.57	.19
7. Total	.68	.81
Combined Head & Staff Nurse		
1. Leadership	1.00	1.00
2. Critical Care	.49	.06
3. Teaching / Collaboration	1.00	.87
4. Planning / Evaluation	.55	.25
5. IPR	.65	.75
6. Professional Development	.47	.36
7. Combined Total	.44	.48

As homogeneity of variances was evident in all the sub-scales except in sub-scale 2, the scores were transformed using Blom's Normalizing Rank Scores. Consequent to this procedure, the Bartlett-Box F and Cochrans C Tests were re-run to detect the presence of any gains, especially in sub-scale 2, for both scales. The Cochrans C value on Blom's conversion on sub-scale 2 of the Staff Nurse Forms was .03. The Bartlett-Box F value was .01. The converted Blom's values for Cochrans C and Bartlett-Box F on sub-scale 2 of the Head Nurse Forms

were .03 and .01 respectively. These converted values represented an actual loss of homogeneity, and this trend was evident on most of the sub-scales on both forms. Consequently, the decision was made to retain the actual scores.

Hypotheses Testing

The purpose of this study was to answer the research questions posited in Chapter 1. These questions, in the negative form, constituted the null hypotheses to be tested statistically.

The null hypotheses tested during statistical analyses were as follows:

1. There is no difference between baccalaureate prepared nurses and diploma prepared nurses in clinical competence.
2. There is no difference in clinical competence between nurses with varying lengths of clinical experience.
3. There is no difference in the level of clinical competence between diploma and baccalaureate prepared nurses who work within the various clinical areas.
4. There is no difference in clinical competence between baccalaureate and diploma prepared nurses at comparable levels of clinical experience.

These null hypotheses were tested with respect to staff nurse, head nurse, and combined staff nurse head nurse scores.

Null Hypothesis 1

As the assumption of the covariate's significant correlation with the DVs at the minimum .30 level was not met, the covariate of experience was eliminated from further analysis with regard to staff nurse scores.

A MANOVA was conducted on staff nurse data. The purpose of the MANOVA is to test the significance of multiple dependent variables (DVs) and multiple independent variables (IVs). Six DVs comprising the six sub-scales, and two IVs of education and area of practice, were used in this analysis. Main effects as well as interaction effects were obtained.

Results indicated that the MANOVA was not significant for the main effect of education. The results of this analysis are presented in Tables 13a and 13b.

Table 13a

MANOVA Demonstrating Main Effect of Education on Staff Nurse Clinical Competence on Schwirian's 6D Scale

Test Name	Value	Approx.F	Hypoth.DF	Error DF	Sig.F
Pillais	.0281	1.5123	6.00	314.00	.173
Hotellings	.0289	1.5123	6.00	314.00	.173
Wilks	.9719	1.5123	6.00	314.00	.173
Roys	.0281				

Table 13b

Univariate F-Tests with (1,319) D. F.

S-S	Hypoth.SS	Error SS	Hypoth.MS	Error MS	F	Sig.F
1.L	.3908	82.5446	.3908	.2587	1.5102	.220
2.CC	.0144	78.0957	.0144	.2448	.0590	.808
3.T/C	.5819	69.9984	.5819	.2194	2.6518	.104
4.P/E	.2760	69.4448	.2760	.2177	1.2678	.261
5.IPR	.0564	60.2012	.0564	.1887	.2988	.585
6.PD	.1339	49.6648	.1339	.1557	.8602	.354

Legend

S-S = Sub-Scale
1.L = Leadership
2.CC = Critical Care
3.T/C = Teaching/Collaboration
4.P/E = Planning/Evaluation
5.IPR = Interpersonal Relations/Communication
6.PD = Professional Development

The main effect for type of education (diploma, baccalaureate) on the six sub-scales of clinical competence was found to be not significant on any of the staff nurse sub-scale scores with p values ranging between .104 on sub-scale 3, to a p value of .808 on sub-scale 2.

The main effect of education on head nurse scores was obtained through the use of the MANCOVA. The MANCOVA was used to test significance as multiple dependent variables and multiple independent variables were tested. The effects of the covariate are neutralized by the elimination of the size of its effect on the dependent variables.

Six DVs comprising the six sub-scale scores, the covariate of experience, the two IVs of education, and area of

practice, were analyzed. Results of the MANCOVA for the main effect of education were not significant on all sub-scales. The findings are depicted in Tables 14a and 14b.

Table 14a

MANCOVA Demonstrating Main Effect of Education on Head Nurse Forms of Schwirian's 6D Scale

Test Name	Value	Approx.F	Hypoth. DF	Error DF	Sig.F
Pillais	.0163	.8473	6.00	307.00	.534
Hotellings	.0166	.8473	6.00	307.00	.534
Wilks	.9837	.8473	6.00	307.00	.534
Roys	.0163				

Table 14b

Univariate F-Tests with (1,312) D. F.

S-S	Hypoth.SS	Error SS	Hypoth.MS	Error MS	F	Sig.F
1.L	.3491	130.9669	.3491	.4198	.8318	.362
2.CC	.1401	94.7989	.1401	.3038	.4610	.498
3.T/C	.0024	93.3422	.0024	.2992	.0081	.928
4.P/E	.0221	91.3201	.0221	.2927	.0756	.783
5.IPR	.2933	96.2215	.2933	.3084	.9509	.330
6.PD	.1053	75.7164	.1053	.2427	.4339	.511

Legend

S-S = Sub-Scale
1.L = Leadership
2.CC = Critical Care
3.T/C = Teaching/Collaboration
4.P/E = Planning/Evaluation
5.IPR = Interpersonal Relations/Communication
6.PD = Professional Development

The information presented in Table 14a illustrates that the combined effects of the six sub-scales were not significant at the p=.534 level. The individual sub-scales were also found to be not significant, with a p value ranging from .330 on sub-scale 5, to p value of .928 on sub-scale 3.

Additionally, a MANCOVA also was conducted in order to evaluate the effects of the combined staff nurse head nurse scores. The main effect of education in the multivariate and the univariate tests for the six sub-scales, was found to be not significant. The results of the MANCOVA are demonstrated in Tables 15a and 15b.

Table 15a

MANCOVA of Combined Staff and Head Nurse Scores
For the Main Effect of Education

Test Name	Value	Approx.F	Hypoth.DF	Error DF	Sig.F
Pillais	.0330	1.7392	6.00	306.00	.112
Hotellings	.0341	1.7392	6.00	306.00	.112
Wilks	.9670	1.7392	6.00	306.00	.112
Roys	.0330				

Table 15b

Univariate F-Tests with (1,311) D. F.

S-S	Hypoth.SS	Error SS	Hypoth.MS	Error MS	F	Sig.F
1.L	.0255	60.7083	.0255	.1952	.1306	.718
2.CC	.0005	48.0235	.0005	.1544	.0033	.954
3.T/C	.1720	43.0312	.1720	.1384	1.2433	.266
4.P/E	.0675	44.7738	.0675	.1440	.4692	.494
5.IPR	.0116	43.2542	.0116	.1391	.0831	.773
6.PD	.0009	35.1171	.0009	.1129	.0084	.927

Legend

S-S = Sub-Scale
1.L = Leadership
2.CC = Critical Care
3.T/C = Teaching/Collaboration
4.P/E = Planning/Evaluation
5.IPR = Interpersonal Relations/Communication
6.PD = Professional Development

The combined effects of the sub-scale scores were not significant at the p=.112 level. All the univariate tests were also found not significant with p values ranging from .266 on sub-scale 3, to .954 on sub-scale 2.

As the main effect of education was non significant on head nurse scores, on staff nurse scores, and on combined head nurse and staff nurse scores, null hypothesis 1 could not be rejected. Therefore, the first hypothesis in which it was stated that baccalaureate prepared nurses will demonstrate a higher level of clinical competence than diploma prepared nurses was not supported.

Null Hypothesis 2

The second null hypothesis posited that there was no difference in clinical competence between nurses with varying lengths of experience. Experience was used as the covariate, and the MANCOVA procedure was employed to parcel out the effects of this variable. However, the covariate was not used in the calculation of staff nurse data because the correlations between experience and the six sub-scales were below the r=.30 level. Therefore, six separate one-way ANOVAs were conducted in order to test for significance on each sub-scale. The ANOVA was used to test for significant differences between independent variables, or levels of independent variables, in the presence of a single dependent variable. The assumptions for the normality of data also had to be met.

The Leadership sub-scale obtained an F ratio of 10.0235 and yielded a p of <.00005. The F ratio for the Critical Care sub-scale was 5.8838 with a p of .0006. The sub-scale of Teaching/Collaboration yielded an F ratio of 5.4247 and a p of .0012. The fourth sub-scale of Planning/Evaluation had an F ratio of 5.4582 and a p of .0011. The fifth sub-scale of Interpersonal Relations/Communications had an F ratio of 2.3587 and a p of .0717. The last sub-scale of Professional Development yielded an F ratio of .7283 and a p of .5357. The values obtained on the first four sub-scales were all significant. However, the last two sub-scales were not significant. Experience exerted a significant effect on

clinical competence as measured by the first four sub-scales, but did not demonstrate this effect as measured by the last two sub-scales. The magnitude of the effect of experience was measured through the use of the Eta Squared statistic. This statistic supplied the percentage of variance accounted for by the independent variable. The four significant sub-scales obtained Eta Squares which accounted for 5-9 percent of the variances. The two non-significant sub-scales produced Eta Squares of one half percent to 2 percent of the variance.

The effect of experience on head nurse scores was obtained through the MANCOVA procedure. Experience was significant on the first four sub-scales at $p<.0005$ level. Sub-scale five of Planning/Evaluation yielded a significant effect at $p=.002$. Sub-scale six of Professional Development yielded a non-significant p at the .08 level. The first four sub-scales demonstrated a significant effect due to the variable of experience on both the staff and head nurse scores, while the fifth sub-scale was only significant on head nurse ratings. Sub-scale 6 was significant for neither head nurse nor staff nurse scores. As some sub-scales were not significant, an evaluation of the total head nurse and staff nurse scores was in order to determine if total scale scores were significant. Tables 16a and 16b illustrate these data.

Table 16a

Effect of Experience on Total Staff and Head Nurse Scores

Test Name	Value	Approx.F	Hypoth. DF	Error DF	Sig. F
Pillais	.0909	15.5043	2.00	310.00	.000
Hotellings	.1000	15.5043	2.00	310.00	.000
Wilks	.9091	15.5043	2.00	310.00	.000
Roys	.0909				

Table 16b
Univariate F-tests with (1,311) D. F.

Scale	Sq. Mul.R	Mul.R	Adj. R-sq.	Hypoth. MS	Error MS	F	Sig. F
Staff Nurse	.0357	.1888	.0326	1.8459	.1605	11.4984	.001
Head Nurse	.0713	.2669	.0683	6.3925	.2680	23.8572	.000

The covariate of experience was significant at the $p=.001$ level for the total staff nurse scale, and significant at the $p<.0005$ level for the total head nurse scale. The covariate affected the total staff nurse scale by raising the mean by .09 for each level of experience. Similarly, the covariate increased the mean of the total head nurse score by .17 for each level of experience. The findings of significance for the covariate were similar for staff nurse and head nurse sub-scales as well as for the combined staff nurse head nurse scales. Experience exerted a small but significant effect on the dependent variables of clinical competence. Therefore,

null hypothesis 2 was rejected and the second research hypothesis, in which it was stated that nurses with longer durations of experience will demonstrate a higher level of clinical competence than nurses with lesser durations of experience, was supported. It should, however, be noted that this effect neither applied to the sub-scale of Professional Development in general, nor to the sub-scale of Interpersonal Relations/Communications for staff nurse scores.

Null Hypothesis 3

The statement made in the third hypothesis was that there was no difference in the level of clinical competence between diploma and baccalaureate nurses employed in various clinical settings. This hypothesis was tested by evaluating the interaction effect between education and area of clinical practice. The MANOVA procedure was utilized to test the significance of the interaction on staff nurse scores. No significant multivariate or univariate effects were noted. Tables 17a and 17b illustrate these data.

Table 17a
MANOVA of Interaction Effects of Education and Area of Practice of Staff Nurses

Test Name	Value	Approx.F	Hypoth.DF	Error DF	Sig.F
Pillais	.0671	.9013	24.00	1268.00	.601
Hotellings	.0689	.8970	24.00	1250.00	.607
Wilks	.9343	.8992	24.00	1096.63	.604
Roys	.0300				

Table 17b

Univariate F-Tests with (4,319) D. F.

S-S	Hypoth.SS	Error SS	Hypoth.MS	Error MS	F	Sig.F
1.L	.2364	82.5446	.0591	.2588	.2284	.922
2.CC	.4165	78.0957	.1041	.2448	.4254	.790
3.T/C	.1388	69.9984	.0347	.2194	.1581	.959
4.P/E	.2587	69.4448	.0647	.2177	.2971	.880
5.IPR	.1391	60.2012	.0348	.1887	.1843	.946
6.PD	.1714	49.6648	.0429	.1557	.2752	.894

Legend

S-S = Sub-Scale
1.L = Leadership
2.CC = Critical Care
3.T/C = Teaching/Collaboration
4.P/E = Planning/Evaluation
5.IPR = Interpersonal Relations/Communication
6.PD = Professional Development

The results of the MANOVA were not significant with regard to the interaction effect between education and area of practice. This was the case for all six dependent variables. Consequently, the interaction between education and area of practice was not significant for staff nurse scores.

The interaction between education and area of practice for head nurse scores was investigated through the use of the MANCOVA procedure. The multivariate test for the combined effect of the sub-scales on the interaction of education and area of practice was not significant. Similarly, the six univariate tests were not significant on all six sub-scales. The lack of interaction effect between education and area of

practice was consistent throughout the statistical analyses. Tables 18a and 18b present these data.

Table 18a

MANCOVA Demonstrating the Interaction Effect of Education and Area of Practice on Schwirian's 6D Head Nurse Forms

Test Name	Value	Approx.F	Hypoth.DF	Error DF	Sig.F
Pillais	.0872	1.1517	24.00	1240.00	.278
Hotellings	.0905	1.1520	24.00	1222.00	.278
Wilks	.9150	1.1523	24.00	1072.21	.278
Roys	.0449				

Table 18b

Univariate F-Tests with (4,312) D. F.

S-S	Hypoth.SS	Error SS	Hypoth.MS	Error MS	F	Sig. F
1.L	2.7346	130.9670	.6837	.4198	1.6287	.167
2.CC	1.4735	94.7989	.3684	.3038	1.2124	.305
3.T/C	1.3206	93.3422	.3301	.2992	1.1035	.355
4.P/E	.8223	91.3201	.2056	.2927	.7024	.591
5.IPR	.8995	96.2215	.2249	.3084	.7292	.573
6.PD	.8587	75.7164	.2147	.2427	.8846	.473

Legend

S-S = Sub-Scale
1.L = Leadership
2.CC = Critical Care
3.T/C = Teaching/Collaboration
4.P/E = Planning/Evaluation
5.IPR = Interpersonal Relations/Communication
6.PD = Professional Development

A MANCOVA was conducted on the combined head nurse staff nurse scores in order to verify that combined scores did not

demonstrate a significant interaction effect. This interaction effect was theoretically possible, because the combined scores had the effect of doubling the sample size, and a smaller effect was required to achieve significance. The multivariate tests were not significant at a p of .590. The univariate tests were also not significant with p values ranging between .471 and .795. As significance was not demonstrated for the interaction effect of education and area of practice for staff nurse, head nurse, and combined staff nurse head nurse scores, null hypothesis 3 could not be rejected. Conversely, research hypothesis 3, in which it was stated that diploma and baccalaureate prepared nurses employed in the five designated clinical areas will demonstrate different levels of clinical competence, was not supported.

Null Hypothesis 4

The fourth null hypothesis was formulated to postulate a lack of difference between baccalaureate and diploma prepared nurses at comparable levels of clinical experience. Evaluation of this hypothesis was accomplished by the examination of the interaction effect between the independent variables of experience and education, through the use of the ANOVA procedure. Two levels of nursing education and four levels of experience were combined to yield eight possible combinations of experience and education.

These eight combinations were:

1. Diploma graduates with <1 year experience
2. Baccalaureate graduates with <1 year experience
3. Diploma graduates with 1-2 years experience
4. Baccalaureate graduates with 1-2 years experience
5. Diploma graduates with 3-6 years experience
6. Baccalaureate graduates with 3-6 years experience
7. Diploma graduates with 7 and more years of experience
8. Baccalaureate graduates with 7 and more years of experience

The interaction effect for staff nurse scores was significant at the $p=.0028$ level, as a significant relationship between at least two of the possible combinations was demonstrated. Table 19 illustrates these findings.

Table 19

ANOVA of Interaction Between Education and Experience On Staff Nurse Scale

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	7	3.6159	.5166	3.1949	.0028
Within Groups	321	51.8995	.1617		
Total	328	55.5154			

Tests for Homogeneity of Variances:
Cochrans C = .1787, P = .225
Bartlett-Box F = .891 , P = .512

The Scheffé's S test, a post hoc technique, was used to identify which variables, or levels of variables, differed significantly. This test was used consequent to the general finding of significance, because multiple variables or multiple levels of a variable, required examination. The

Scheffé's S test was used to compare the possible combinations of experience and education. No significant combinations were detected at the $p=.05$ level of significance. This finding may be attributed to the fact that the Scheffé's Test is a conservative measure of significance.

An analysis of the interaction of education and experience on head nurse scores yielded a finding of significance at the $p < .00005$ level. This finding demonstrated a significant interaction between experience and education at a minimum of one interaction for the possible combinations. Table 20 illustrates the results of the ANOVA which was utilized to demonstrate the interaction between education and experience.

Table 20

ANOVA of Interaction Between Education and Experience On Head Nurse Scale

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	7	9.3700	1.3386	4.9726	.0000
Within Groups	315	84.7951	.2692		
Total	322	94.1651			

Tests for Homogeneity of Variances:
Cochrans C = .2204, P = .007
Bartlett-Box F = 1.388 , P = .205

A consequent Scheffé's S Test demonstrated that group 1, (Diploma nurses with <1 year experience) obtained

significantly lower scores than group 7, (Diploma nurses with 7 or more years of experience). While this finding was not remarkable, its corollary was: No group of diploma or baccalaureate graduates, at comparable levels of experience, surpassed each other. This finding demonstrated that the interaction of education and experience had little or no effect on the dependent variable of clinical competence for head nurse scale scores.

Combined head and staff nurse scores were then subjected to the ANOVA procedure to detect any significant interaction between experience and education. Significant results demonstrated such interaction at the $p<.00005$ level. Table 21 is presented to depict these findings.

Table 21

ANOVA of Interaction of Education and Experience on Combined Staff and Head Nurse Scales

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	7	5.2718	.7531	5.9894	.0000
Within Groups	314	39.4829	.1257		
Total	321	44.7548			

Tests for Homogeneity of Variances:
Cochrans C = .1560, P = .989
Bartlett-Box F = .702 , P = .670

The Scheffé's S Test was used again in order to identify any of the eight groups which differed at the .05 level. Results of this post hoc procedure illustrated that group 1, (Diploma graduates with <1 year experience) obtained significantly lower scores than either group 7 (Diploma graduates with 7 or more years of experience) or group 8 (Baccalaureate graduates with 7 or more years of experience). The relationship demonstrated between education and experience may be explained by the extremes of experience, and not by educational preparation.

The finding of tenuous relationships between education and experience were evident on staff nurse, head nurse, and combined staff nurse head nurse scores. As the statement in null hypothesis 4 was that there was no difference in clinical competence between diploma and baccalaureate prepared nurses at comparable levels of experience, null hypothesis 4 could not be rejected. Similarly, the statement in the research hypothesis, that baccalaureate prepared nurses will demonstrate a higher level of clinical competence than diploma prepared nurses at comparable levels of experience, could not be supported.

Additional Related Findings

Area of Clinical Practice

While the testing of the fourth null hypothesis precipitated the evaluation of the interaction effects between education and area of clinical practice, the main effect of area alone was not initially considered.

A MANOVA for the main effect of area was conducted for staff nurse scores and was found to be significant at the p= .001 level. Univariate tests demonstrated that sub-scales 1-5 were all significant, but sub-scale 6 was found not significant. Tables 22a and 22b display these data.

Table 22a

MANOVA Demonstrating Main Effect of Area of Practice on Staff Nurse Clinical Competence on Schwirian's 6D Scale

Test Name	Value	Approx.F	Hypoth.DF	Error DF	Sig.F
Pillais	.2407	3.3821	24.00	1268.00	.000
Hotellings	.2720	3.5420	24.00	1250.00	.000
Wilks	.7745	3.4731	24.00	1096.63	.000
Roys	.1498				

Table 22b

Univariate F-tests with (4,319) D. F.

S-S	Hypoth.SS	Error SS	Hypoth.MS	Error MS	F	Sig.F
1.L	5.1302	82.5446	1.2826	.2588	4.9565	.001
2.CC	5.4512	78.0957	1.3628	.2448	5.5666	.000
3.T/C	3.2483	69.9984	.8121	.2194	3.7009	.000
4.P/E	2.6198	69.4448	.6550	.2177	3.0086	.019
5.IPR	1.9276	60.2012	.4819	.1887	2.5536	.039
6.PD	.7174	49.6648	.1794	.1557	1.1520	.332

Legend

S-S = Sub-Scale
1.L = Leadership
2.CC = Critical Care
3.T/C = Teaching/Collaboration
4.P/E = Planning/Evaluation
5.IPR = Interpersonal Relations/Communication
6.PD = Professional Development

These findings indicated that area of practice had an effect on staff nurse scores on all sub-scales except the sixth sub-scale of Professional Development.

Head nurse scores were also examined for the main effect of area of practice through the MANCOVA procedure. Multivariate findings, which measured the combined effects of the six sub-scales, were significant at the $p<.0005$ level. However, univariate tests yielded no significance on any of the six sub-scales, with p values ranging between .122 and .403. These results demonstrated that individual sub-scales did not possess sufficient strength to reach significance. Tables 23a and 23b illustrate these findings.

Table 23a

MANCOVA Demonstrating Main Effect of Area of Practice on Head Nurse Forms of Schwirian's 6D Scale

Test Name	Value	Approx.F	Hypoth.DF	Error DF	Sig.F
Pillais	.2037	2.7718	24.00	1240.00	.000
Hotellings	.2203	2.8047	24.00	1222.00	.000
Wilks	.8092	2.7954	24.00	1072.21	.000
Roys	.1074				

Table 23b

Univariate F-Tests with (4,312) D. F.

S-S	Hypoth.SS	Error SS	Hypoth.MS	Error MS	F	Sig.F
1.L	2.7715	130.9667	.6929	.4198	1.6506	.161
2.CC	1.2269	94.7989	.3067	.3038	1.0095	.403
3.T/C	1.9221	93.3422	.4805	.2992	1.6062	.173
4.P/E	1.7449	91.3201	.4362	.2927	1.4903	.205
5.IPR	2.2617	96.2215	.5654	.3084	1.8334	.122
6.PD	1.4474	75.7164	.3619	.2427	1.4910	.205

Legend

S-S = Sub-Scale
1.L = Leadership
2.CC = Critical Care
3.T/C = Teaching/Collaboration
4.P/E = Planning/Evaluation
5.IPR = Interpersonal Relations/Communication
6.PD = Professional Development

The combined staff nurse head nurse scores were evaluated for significance for the main effect of area through the MANCOVA procedure. Multivariate tests, measuring the combined effects of the sub-scales, were significant at the $p<.0005$ level. Univariate tests yielded sub-scales two, three, four,

and five as significant, but sub-scales one, and six continued to be non-significant.

Table 24a

MANCOVA on Combined Staff and Head Nurse Scales
For Main Effect of Area of Practice

Test Name	Value	Approx.F	Hypoth.DF	Error DF	Sig.F
Pillais	.2683	3.7022	24.00	1236.00	.000
Hotellings	.3092	3.9226	24.00	1218.00	.000
Wilks	.7501	3.8255	24.00	1068.72	.000
Roys	.1736				

Table 24b

Univariate F-Tests with (4,311) D. F.

S-S	Hypoth.SS	Error SS	Hypoth.MS	Error MS	F	Sig.F
1.L	1.8363	60.7083	.4591	.1952	2.3518	.054
2.CC	2.2243	48.0235	.5561	.1544	3.6012	.007
3.T/C	1.4184	43.0312	.3546	.1384	2.5628	.038
4.P/E	1.4635	44.7738	.3659	.1440	2.5414	.040
5.IPR	1.4447	43.2542	.3612	.1391	2.5969	.036
6.PD	.8608	35.1171	.2152	.1129	1.9058	.109

Legend

S-S = Sub-Scale
1.L = Leadership
2.CC = Critical Care
3.T/C = Teaching/Collaboration
4.P/E = Planning/Evaluation
5.IPR = Interpersonal Relations/Communication
6.PD = Professional Development

The effect of the area of practice on clinical competence was further explored with the ANOVA procedure. Table 25 illustrates these findings.

Table 25

ANOVA of Combined Staff and Head Nurse Scales For Area of Practice

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	2.5385	.6346	4.7653	.0010
Within Groups	317	42.2163	.1332		
Total	321	44.7548			

Tests for Homogeneity of Variances:

Cochrans C = .2500, P = .320
Bartlett-Box F = 1.026 , P = .393

The Scheffé's S Test was used to identify significant differences between the various clinical areas in clinical competence. Area two, surgery, attained significantly lower scores in clinical competence than area five, pediatrics. Eta Squared was calculated: The value of Eta Squared was .0567 which signifies that 5.67 percent of the variance in the dependent variable was attributed to clinical area of practice.

Education and Continuing Education

A final attempt was undertaken to demonstrate an effect of education on clinical competence by introducing a variable which was obtained from the demographic questionnaire. The variable of continuing education was added to the analysis to determine whether a significant interaction might become evident. Of the total sample of nurses who participated in the

study, 92 engaged in activities of continuing education during the course of practice. This distribution is demonstrated in table 26.

Table 26

Distribution of Nurses With and Without Continuing Education

Continuing Education	Frequency	Percent
Yes	92	27.9
No	238	72.1
Total	330	100.0

A MANOVA was conducted in order to evaluate the two independent variables of continuing education and nursing education (diploma, baccalaureate) on the dependent variables of total head nurse and staff nurse scale scores. The interaction was neither significant on the multivariate nor on the univariate tests. Therefore, the interaction of education and continuing education did not exert a significant effect on the combined staff nurse head nurse scores, nor on the staff or head nurse scores individually. Results of this MANOVA are presented in Tables 27a and 27b.

Table 27a

MANOVA of Head Nurse and Staff Nurse Scales
For the Effects of Education
And Continuing Education

Test Name	Value	Approx.F	Hypoth.DF	Error DF	Sig.F
Pillais	.0007	.1047	2.00	317.00	.901
Hotellings	.0007	.1047	2.00	317.00	.901
Wilks	.9993	.1047	2.00	317.00	.901
Roys	.0007				

Table 27b

Univariate F-Tests with (1,318) D. F.

Value	Hypoth.SS	Error SS	Hypoth.MS	Error MS	F	Sig.F
Staff Nurse	.0318	52.1907	.0318	.1641	.1937	.660
Head Nurse	.0123	90.8953	.0123	.2858	.0431	.836

The MANOVA for the main effect of education was non-significant. However, the MANOVA for the main effect of continuing education was significant on the multivariate tests at the p=.001 level. The univariate F test for staff nurses was significant at the p=.001, and for head nurses at the p=.009 level. Consequently, continuing education was found to be significant as it exerted an effect on the dependent variables of clinical competence. These data are presented in tables 28a and 28b.

Table 28a

MANOVA for Main Effect of Continuing Education On Staff and Head Nurse Scales

Test Name	Value	Approx.F	Hypoth.DF	Error DF	Sig.F
Pillais	.0463	7.6964	2.00	317.00	.001
Hotellings	.0486	7.6964	2.00	317.00	.001
Wilks	.9537	7.6964	2.00	317.00	.001
Roys	.0463				

Table 28b

Univariate F-Tests with (1,318) D. F.

Value	Hypoth.SS	Error SS	Hypoth.MS	Error MS	F	Sig.F
Staff Nurse	1.8572	52.1907	1.8572	.1641	11.3157	.001
Head Nurse	1.9665	90.8953	1.9665	.2858	6.8798	.009

Continuing education was found to have a significant effect on clinical competence, while no effect on clinical competence was detected as a result of educational training.

Reliability of 6D Scales

The internal reliability of the 6D Scales for the sample used in this study was established through the use of Coefficient Alpha. The staff nurse and head nurse sub-scales yielded reliability coefficients which are presented in Table

29. The reliability coefficients reported by Schwirian (1978a) are also presented in the same table.

Table 29

Reliability of 6D Scales

Sub-Scales	Alpha Current Study	Alpha Schwirian's Values
Staff Nurse Scale		
1. Leadership	.79	.90
2. Critical Care	.80	.92
3. Teaching/Collaboration	.87	.93
4. Planning/Evaluation	.77	.94
5. IPR	.86	.96
6. Professional Development	.86	.98
7. Total Scale	.94	
Head Nurse Scale		
1. Leadership	.90	.84
2. Critical Care	.80	.86
3. Teaching/Collaboration	.91	.90
4. Planning/Evaluation	.76	.90
5. IPR	.87	.91
6. Professional Development	.96	.89
7. Total Scale	.97	

Alpha Correlations for the current study, presented in Table 29, were sufficiently high to warrant the use of the Schwirian 6D Scales. While Schwirian obtained higher Alpha Coefficients on all staff nurse sub-scales, values obtained in the current study were quite high, with the lowest Alpha value of .77 and the highest value of .86. Head nurse scores in the current study demonstrated Alpha values which were generally higher than corresponding staff nurse values. These Alpha values ranged from a low of .76 to a high of .96, with the

only Alpha value below the .80 level for the Planning/ Evaluation sub-scale. Sub-scale scores for the current study were, generally, at par or slightly higher than scores obtained by Schwirian. Therefore, the reliability ratings on measures of internal consistency for the scales used in this study were sufficiently high to warrant confidence in their usage.

Summary

The four null hypotheses were tested with the use of the ANOVA, MANOVA, and MANCOVA procedures. When appropriate, post hoc tests were applied in order to distinguish between variables of significance. The first null hypothesis was not rejected because no differences were evident between diploma and baccalaureate prepared nurses with respect to clinical competence. The second null hypothesis was rejected because experience exerted a small, but significant effect on clinical competence. The third null hypothesis was not rejected because no difference was demonstrated between baccalaureate and diploma prepared graduates who worked in the five designated clinical areas. The fourth and last null hypothesis was also not rejected because no difference was found between baccalaureate and diploma graduates at comparable levels of clinical experience.

Additional findings demonstrated that, as a main effect, area of practice exerted an influence on clinical competence: Surgery obtained significantly lower scores than pediatrics. The main effect of continuing education also was found to exert a significant influence on clinical competence. However, when continuing education was combined with education to demonstrate an interaction effect, no such effect was discernable. Therefore, the small main effect exerted by continuing education on clinical competence was insufficient to demonstrate an interaction effect, when combined with nursing education.

The Schwirian 6D scales were subjected to reliability ratings in order to determine their applicability with confidence to the participants in this study. Measures of internal consistency demonstrated that these scales were reliable for usage.

Chapter 5

CONCLUSIONS, DISCUSSION, AND SUGGESTIONS FOR FUTURE RESEARCH

The fifth and final chapter contains a discussion of the research findings in relationship to the literature review and the theoretical framework. Conclusions drawn from the data are addressed, and implications for practice, research, education, and the nursing profession, are delineated.

Overview of the Study

The primary purpose of this study was to compare the clinical competence of two groups of nurses employed in a large tertiary health care setting. One group of nurses was educated at the diploma level and the other at the baccalaureate degree level. The nurses' years of experience, areas of clinical practice, and participation in continuing education activities were also taken into consideration.

A convenience sample of 330 nurses employed at the Health Sciences Centre in Winnipeg, Manitoba completed the self-

rating questionnaire of the Schwirian 6D Scale, Staff Nurse Form, in order to evaluate nursing competence. A demographic questionnaire also was completed by the participants to provide further information on the variables of interest. The appropriate head nurses then rated participating staff nurses who were employed on their units, on the 6D Scale, Head Nurse Form. Consequently, two separate sets of scores were obtained for each subject. As the 6D Scales were composed of six sub-scales, each sub-scale lent itself for use as a dependent variable and as a measure of clinical competence. Education and area of practice were independent variables, and experience constituted a covariate.

Following the completion of the data collection phase, all data which were previously coded were entered onto a spread sheet. Following the completion of the entry of coded data, all values were transferred into the SPSS computer program for statistical analysis. Statistical procedures of ANOVA, MANOVA and MANCOVA were applied in order to test the null hypotheses presented in Chapter 3.

Data analyses failed to demonstrate any differences in the clinical competence ratings of diploma and baccalaureate prepared nurses. The variable of area of practice, and the covariate of experience, exerted a significant main effect on clinical competence. However, when these variables were combined with the independent variable of education in order to the attempt to elicit an interaction effect, no effect was

evident at the appropriate level of significance. Continuing education was then introduced as an independent variable and demonstrated a significant main effect. However, no interaction effect was observed when continuing education was combined with educational preparation (diploma, baccalaureate).

Discussion

The purpose of this study was to compare the clinical competence of diploma and baccalaureate prepared nurses, however, the findings of this study did not support any differences in clinical competence ratings between the two groups. The level of nursing education did not exert a significant effect on any of the six dependent variables on staff nurse and on head nurse forms, and when scores were combined to yield 660 completed 6D Scales, the finding of no significant effect persisted. Consequently, nursing education could not be shown to exert a statistically significant effect on staff nurse, head nurse, or combined staff nurse and head nurse scores. Research hypothesis 1, which postulated that baccalaureate prepared nurses would demonstrate higher clinical competency ratings when compared to diploma graduates, was not supported. Hypotheses 3 and 4 expanded the

focus of the effect of educational preparation on clinical competence: They constituted an attempt to elaborate on the content of hypothesis 1, in order to isolate the conditions under which educational preparation could have demonstrated an interaction effect. The results of the statistical analyses were most interesting. When the variables of experience and area of practice were tested individually, a main effect was demonstrated. However, when these variables were combined with the variable of educational preparation, no interaction effects were obtained. These findings also held true when the variable of continuing education was introduced. Therefore, research hypothesis 4, which held that baccalaureate graduates would demonstrate higher clinical competency ratings than diploma graduates at comparable levels of experience, was not supported. Similarly, hypothesis 3 was not supported because area of practice only exerted a main effect on clinical competence ratings. However, the interaction effect of education and area of practice failed to yield significant results. The model of clinical competence illustrated in Chapter 1 depicted the variables of education, experience, and area of practice. These variables were postulated to exert individual, interactive, and collective influences on the dependent variable of clinical competence. Hence, the model directed the research hypotheses which were tested.

The independent variable of the two levels of nursing education occupied a pivotal role in the study. However, findings failed to demonstrate a difference in clinical competence ratings between diploma and baccalaureate graduates. Both groups of nurses were found to function equally well in the same roles, and held identical responsibilities in the clinical setting. Yet, baccalaureate graduates are educated to adopt a theory based approach to holistic practice (Baumgart & Larsen, 1988; Hayward, 1982), and diploma graduates are educated to render basic care to sick patients in a supervised hospital setting (Davis-Martin, 1990; Kramer, 1981). Hence, the finding of no difference was difficult to reconcile, especially in light of the differential educational preparation. A possible explanation for this finding may be that nurses are required to adapt rapidly to the workplace, and to conform to its expectations. This assumption is supported by the finding that diploma and baccalaureate prepared nurses with less than one year of experience demonstrated similar clinical competencies as nurses employed for longer periods. However, this finding is contrary to previous findings that baccalaureate graduates were at a clinical disadvantage during their initial socialization into hospital based practice (Stull & Katz, 1986; Partridge, 1978). This finding is also contrary to views expressed by Benner (1984). She described progressive increments in the provision of nursing care from a novice to

an expert stage as a direct result of experience and education.

The theme of clinical disadvantage among recent baccalaureate graduates was also demonstrated in the literature. O'Brien (1984) predicted that their clinical competence will emerge following a period of employment. Bullough and Sparks (1975) claimed that education had left the baccalaureate graduate unprepared for practice. Joyce-Nagata et al. (1989) stated that the competencies of baccalaureate graduates ranked at the fiftieth percentile of supervisors' expectations. These statements directly contradict the results obtained in this study: Baccalaureate prepared nurses did not demonstrate any lag in competencies at any level of experience or area of practice. Head nurses rated baccalaureate nurses as highly as they rated diploma prepared nurses on the 6D Scale, and all ratings were generally distributed at the high end of the rating scale. Furthermore, analysis of ratings by education and experience of head nurses, revealed that their backgrounds did not effect their ratings. Head nurses rated their staff nurses similarly, without apparent regard for their own education and experience. These results represent a high degree of approval by head nurses of diploma and of baccalaureate graduates at all levels of experience.

The finding of no differentiation in the clinical competence of diploma and baccalaureate graduates may be related to the Model of Clinical Competence and the

independent variable of individual characteristics. When high expectations in the work setting (Styles & Holzemer, 1986) are coupled with adequate positive feedback, higher levels of performance are generally elicited. Diploma and baccalaureate prepared nurses are challenged equally in the work setting and are charged with a wide range of responsibilities. These tasks and responsibilities provide for the overlap between discrete skills and holistic practice, regardless of the focus of education (Cantor, 1974; Gillis, 1989; Raymond, 1989). In this study, individual characteristics such as intrinsic motivation and intelligence may have accounted for the large variance in clinical competence among participating nurses. Additionally, higher performance levels were reflected in this study by the skewed distributions as a consequence of the preponderance of high scores on the 6D Scales. While the high scores were indicative of exemplary clinical competence, the validity of these scores requires scrutiny in order to delineate whether these indicators of superior competence were truly translated into the work setting, whether these scores merely represented participants' unwillingness to assign low ratings, or whether the questionnaire was insensitive to the differentiation of levels of competencies. An alternate explanation may be that high levels of clinical competence, as demonstrated by scores on the 6D Scales, were attained at a minimal level of nursing education, while higher levels of nursing education found no means of expression on this scale. Either the 6D Scale was not

sufficiently sensitive to discern the effects of the educational differences on clinical competence, or raters were unwilling or unable to reflect the differences through their scores.

The finding of no difference between diploma and baccalaureate graduates in clinical competence requires further study. Hospital based practice utilizes a focused, task oriented approach to nursing and rarely provides the opportunity to express a wider range of individuality, creativity, or initiative. Consequently, competence gained in the baccalaureate program may have limited opportunity for expression. The findings of this study lend credence to Primm's (1986) suggestion that the public would receive exemplary health care service if the competencies of diploma and baccalaureate graduates were fully recognized, utilized, and supported. As no differences in clinical competence were discernable between the two groups, other variables which may exert a greater effect require examination. The independent variable of experience was tested in relation to hypothesis 2, which postulated a higher level of clinical competence among nurses with longer durations of experience than nurses with shorter durations of experience. However, statistical analyses revealed that the effect of experience on clinical competence on staff nurse scores was small. On the other hand, head nurses rated nurses with longer durations of experience more highly. As the overall effect of experience on clinical

competence was small but statistically significant, hypothesis 2 was supported. Clinically, however, this finding is of little value because nurses with more than seven years of experience obviously possess higher competencies than nurses with less than one year of experience.

Davis (1974) sought to determine whether clinical competence was affected by experience. She concluded that competence declined with increased years of experience in the absence of continuing education. Results obtained in this study refute Davis' findings because clinical competence did not decline with experience. However, Davis' finding that clinical competence was enhanced by continuing education is corroborated in this study because continuing education exerted a significant main effect on clinical competence. Overall, experience exerted a definite influence on clinical competence. However, when education and experience were combined, only a small effect was detected. The resultant finding was almost inconsequential because it solely demonstrated that diploma graduates with <1 year of experience displayed lower clinical competence than diploma or baccalaureate nurses with 7 or greater years of experience. The findings that diploma and baccalaureate prepared nurses at comparable levels of experience demonstrated no difference in scores, is of significance and directly contradicts research hypothesis 4. The combined effect of education and experience

was of such small magnitude that its expression may have been, in large part, a consequence of the large sample size.

In summary, findings in this study generally revealed little difference in the clinical competence between diploma and baccalaureate graduates. Overall, both groups of nurses were highly rated on the 6D Scale. However, while the variable of education did not exert a significant effect on clinical competence, the variables of area of practice, the covariate of experience, and the independent variable of continuing education exerted small but significant effects on clinical competence.

Discussion of the Sub-Scales

When the findings of this study were compared with findings by McCloskey (1983a), a large degree of concordance was evident. Consequently, a comparison of competencies was desirable. The current study was a replication of McCloskey's study, whereby six clinical competencies, which were identified as the dependent variables comprising the 6D Scale, were rated by staff nurses and their respective head nurses. Teaching/collaboration skills attained the lowest ratings by staff and head nurses in McCloskey's study. Head nurses rated staff nurses more positively than staff nurses rated themselves on the competency of teaching/collaboration in this current study. However, it was evident that this variable was not positively viewed by staff or head nurses in either study.

McCloskey (1983a) and McCloskey & McCain (1988) reported that teaching/collaboration received the lowest scores of all the competencies by both staff and head nurses. This finding may be attributable to the reality of the work place, as the competencies evaluated may be of little perceived value in the hospital setting. Additionally, these nurses may have little opportunity to maintain such competencies within their repertoire of skills. However, hospital employed nurses are required to teach patients and their families a variety of skills. Perhaps the expectation by the institution and by peers is that nurses perform these competencies as part of their routine functions. Consequently, these skills may not be viewed, in the formal sense, as teaching. The sub-scale label of teaching and collaboration may be viewed separately from the job and, therefore, be evaluated on a different plane. An analysis of the statements within the sub-scale revealed that the constructs may not, necessarily, typify teaching as it is experienced in the hospital setting. Overall, it may be concluded that nursing educational programs should seek to improve their content with regard to the teaching process. Hospitals may also wish to provide their staff with more opportunity to utilize and practise these competencies. Globally, it may be beneficial to recommend that staff nurses and their head nurses define the role and tasks of teaching and collaboration in the work setting.

The sub-scale of Professional Development yielded the highest means of 3.37 and 3.49 respectively on the Staff and Head Nurse Forms. However, only a small (r=.14) but significant (p=.01) correlation was noted between the scores of the two groups. Even though staff and head nurses rated this competency highly, head nurses rated staff nurses more highly than staff nurses rated themselves. Therefore, head nurses viewed their staff nurses as possessing higher levels of professional development than staff nurses thought they possessed. The lowest correlations were noted when professional development was influenced by experience. Experience may have exerted a positive influence on head nurse ratings of nurses' on professional development. This finding may also be attributed to the effects of maturation because more mature individuals likely demonstrated behaviours which accounted for this competency. An alternate explanation may be that more mature head nurses rated their mature staff nurses more highly regardless of their level of nursing education. Interestingly, McCloskey (1983a) found that older head nurses provided higher overall ratings to all nurses. Schwirian (1978a) stated that the items which comprise this competency "are conceptually different" (p. 349) from other nurse behaviours. An examination of the constructs which comprise Professional Development revealed subjective concepts such as self-confidence, self-directiveness, acceptance of positive criticism, familiarity with ethical principles, and perceived

high standards of performance. The response pattern to these constructs by staff and head nurses may have been influenced by the respondents' self-esteem, position on the hierarchy of employment, personal attributes, and immediate mood tone. Additionally, the nature of nursing, the type and quality of peer contact, and institutional constraints may have been conducive to the performance of activities that required the acceptance of responsibility. As a consequence, a positive perception of professional development competencies may have resulted. Feedback from others may have also greatly impacted on the pattern of responses to the constructs within this sub-scale, and responses may have been a de facto measure of the feedback rather than a measure of the variable. Professional Development obtained the highest means of the six dependent variables in McCloskey's (1983a) study. Similarly, McCloskey and McCain (1988) found that Professional Development occupied the highest rank of the six variables on the 6D Scales.

The constructs underlying Professional Development are subsumed within the category of individual characteristics in the Model of Clinical Competence. Therefore, this variable, which obtained the highest ratings in this study on staff and head nurse scales, may be less related to nursing education than to individual differences among nurses. This portion of the model may require more emphasis for future research into nursing competence, because individual characteristics appear to be the major influences behind clinical competence.

The variable of Leadership held fourth position and a mean of 3.17 on the staff nurse form, and sixth or last position and a mean of 3.15 on the head nurse form. While the correlation between these two groups was significant at the $p=.001$ level, it was rather small at $r=.25$. The total variance of this dependent variable was 7 percent and 13 percent for head nurses and staff nurses respectively. One possible explanation may be that head nurses either did not agree on the meaning of leadership or the meaning of the statements on the sub-scale in relation to clinical competence. While staff nurses rated their leadership abilities more highly than the head nurses rated them, the nurses may have displayed over-confidence in their competencies, or their head nurses may have underrated these competencies. McCloskey (1983a) obtained similar results, and questioned if these skills were actually poorly performed or if hospital employed nurses had fewer opportunities to perform them. This finding is somewhat of concern because the baccalaureate program is purported to prepare its graduates for leadership roles, yet their scores did not demonstrate mastery of this role.

The most perplexing scores were obtained in the area of Critical Care. This variable ranked fourth on Head Nurse Forms with a mean of 3.31, and fifth with a mean of 3.17 on Staff Nurse Forms. Clearly, and in accord with McCloskey's (1983a) and McCloskey and McCain's (1988) findings, nurses who worked in critical care areas rated themselves lower than their head

nurses rated them. Agreement between the two groups was at r=.23 and was significant at the p=.001 level.

An inspection of the completed Head Nurse and Staff Nurse Forms revealed that, while many experienced nurses awarded themselves low scores, fairly new inexperienced nurses rated themselves highly in comparison to the more experienced nurses. As a result, there was little spread between the scores. Perhaps this narrow spread may have reflected a shortcoming in the Critical Care variable and may have precluded the detection of small differences among nurses. However, results indicated that while critical care nurses lacked confidence in their competencies as measured on the 6D Scale, their head nurses rated them as more competent than they rated themselves. It may be postulated that critical care nurses who work in high stress, highly technological settings, face the complexities of illness and technology on a continual basis. Confidence in their clinical competence may be rooted in the dynamics of the workplace whereby the ever-changing technology and the need to remain abreast of the changes necessitate continual learning, adjustment, adaptation, and feedback. Generic nursing education is not designed to meet such clinical competencies and these competencies must be developed after the completion of a nursing program. Therefore, continuing education and institutional inservice programs play paramount roles in the introduction of nurses to critical care competencies. McCloskey and McCain (1988)

concluded that experience was the critical variable in the determination of clinical competence. In this study, experience was the fourth category in the Model of Clinical Competence and exerted a stronger influence than the variable of education.

The highest scores awarded by head nurses were in the area of Professional Development, while the lowest scores were awarded in Leadership. Nurses ranked themselves highest in Professional Development and lowest in Teaching/Collaboration. Overall, staff nurse scores followed a fairly normal distribution, indicating that nurses viewed their clinical competencies favourably. Their responses clustered in the range designated "well" on the 6D Staff Nurse Form. Head nurse scores followed a left skewed distribution, and the majority of responses were clustered around the high ratings with several outliers toward the low end of the range. Head nurses also awarded more scores in the two extremes of the scale. The differences in rating patterns between staff and head nurses may be explained by the tendency of staff nurses to avoid extreme ratings, because high self-ratings may have been construed as boasting while low self-ratings may have interfered with self-concept. These restrictions would not be applicable to head nurse ratings of staff nurses because head nurses probably viewed accurate ratings as a reflection of their personal supervisory competence. Therefore, response bias may have been minimized among head nurses. Consequently,

the profile of the clinically competent nurse differed according to staff and head nurse responses.

Discussion of the Sample

An examination of the distribution of participants according to the four levels of experience, revealed that the ratio of baccalaureate to diploma graduates increased with recency of experience. This may have been a reflection of the greater number and greater ratio of baccalaureate graduates which has become available for employment in the hospital setting. The proportion of diploma to baccalaureate prepared nurses within the sample was of concern initially because a great disproportion of diploma to baccalaureate graduates was anticipated within the hospital setting. The population of registered nurses within the Province of Manitoba is reported as 1312 baccalaureate registrants and 8357 diploma registrants approximately (J. Tkachuk, Manitoba Association of Registered Nurses [MARN], personal communication, Sept. 3, 1991). These figures represent a ratio of 6.37 diploma to 1 baccalaureate prepared nurse. This ratio was also reported for the city of Winnipeg, with 1137 baccalaureate registrants and 7934 diploma registrants approximately (J. Tkachuk [MARN], personal communication, Sept. 3, 1991). The Winnipeg based figures represent a ratio of 6.98 diploma to 1 baccalaureate. Interestingly, the Canada-wide diploma to baccalaureate ratio is approximately 6.31 to 1 (J. Tkachuk [MARN] personal

communication, Sept. 3, 1991). Consequently, the skewed distribution of nurses in favour of diploma nurses is evident and a similar ratio was anticipated in the study as the sample was assumed to be representative of the city and the province. However, within the sample of 330 participants the actual diploma to baccalaureate ratio was 2.71 to 1. This small ratio indicates that baccalaureate prepared nurses volunteered to participate in this study at a higher rate than diploma prepared nurses. The great rate of participation may be attributable to educational preparation, whereby four years of university may have resulted in lesser test anxiety and a more favourable view of the process of evaluation and research. The high rate of participation may also demonstrate that baccalaureate prepared nurses may have been more confident in their abilities to complete a ratings scale such as the 6D Scale, because this type of paper and pencil exercise is highly congruent to other types of academic activities which are pursued in university. Diploma prepared graduates may have been more reluctant to participate because of lesser exposure to such a scale. Therefore, the larger ratio of baccalaureate to diploma graduates likely enhanced the quality of the study because a sufficient number of baccalaureate prepared nurses was needed in order to accommodate minimum cell sizes, and to render the results more generalizable to the population.

Discussion of the Model

The Model of Clinical Competence served as the catalyst in this study. It provided a framework which explained the relationships between the independent variables which occupied the outer circle of the model, and the dependent variable which occupied the core, or centre of the circle. Because of its dynamic and interactive nature, an element of hardiness resulted, and its utility may be further enhanced by the results of this study.

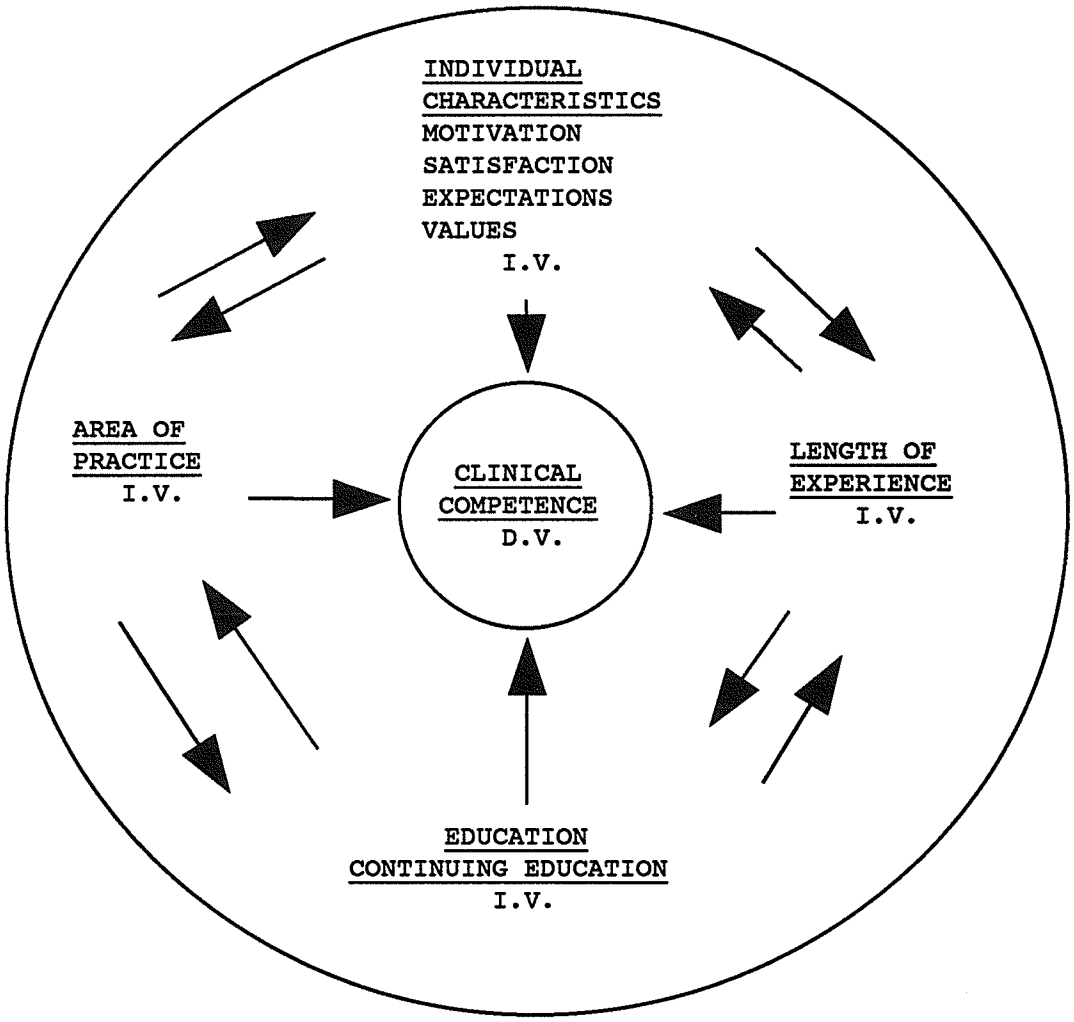
The independent variable of education was placed in the upper position in the circle, in order to convey its relative importance in relation to the other independent variables. However, as the independent variable of education exerted the least effect of all the independent variables on the dependent variable, its position would be shifted to the lower end of the model. In addition, continuing education will be added to render the independent variable of education more complex. This addition will make the variable of education more holistic and in tune with the contemporary view that learning is a life-long activity. The content and process of nursing education programs will also become a component of this variable to provide more direction and guidance for future research.

The independent variable of area of practice and length of experience also were found in the outer portion of the model. While both variables were found to exert a significant

effect on clinical competence, the utility of these variables for future research must be questioned because of the small magnitude of their effect on the dependent variable.

The last variable of individual characteristics is multidimensional in nature and was not directly assessed in this study. However, several constructs within this variable were highlighted and assessed through the sub-scale of Professional Development. Indeed, this sub-scale obtained the highest ratings on both staff and head nurse scales, and it may be postulated that the individual characteristics variable accounts for most of the variance in the dependent variable of clinical competence. Clearly, the variable of individual characteristics must occupy a prominent position at the top of the model. Therefore, an altered version of the Model of Clinical Competence is presented in order to reflect the new weighting of the variables.

Figure 2. Model of clinical competence Revised



Implications for Research

The results of this study demonstrate a need for further research in order to determine the critical variables which affect clinical competence. A vital area for future investigation lies in the relationship between professional education and liberal education, and the impact of the variables of motivation and experience on clinical competence. McCloskey (1983a) concluded that career motivation may be the variable of interest, as well as the variable responsible for the lack of differentiation between diploma and baccalaureate prepared nurses in the clinical setting.

This study has failed to establish a relationship between clinical competence and nursing education. It is quite possible that a multitude of variables, especially intrapersonal characteristics, account for clinical competence. However, each individual who enters the nursing profession is a unique composite of personal characteristics, and personality variables may have a strong bearing on all competencies, including clinical competencies. The Model of Clinical Competence depicted in Chapter 1 delineates the variable of individual characteristics which impinges on clinical competence. The revised Model of Clinical Competence shows the variable in the upper portion in order to emphasize the emphasis placed on it. Further research may be guided by

this revised version in order to study the effects of the constructs within the variable of individual characteristics on the clinical competence of diploma and baccalaureate prepared nurses.

Additional investigation into the characteristics of the hospital employed nurse from the perspective of the employer is also suggested. Studies have, generally, focused on nurse characteristics. An important variable in any work situation is the opportunity for self-expression and a feeling of well-being. Hospital employed nurses allocate a large portion of their time to the employing institution. A fast paced, rapidly changing environment usually comprises their day, and the large variety of clinical situations test their clinical competence on an ongoing basis. The varied scores obtained in this study from the same pool of nurses employed in the five clinical areas, require further scrutiny. Why do nurses who practise in one area obtain higher scores than nurses practising in other areas within the same institution? Results of this study indicate that nurses employed in pediatrics obtained significantly higher scores than nurses employed in surgery. A variety of explanations may exist to attempt to rationalize this finding: Children represent a precious commodity in the North American Society, and they elicit high levels of effort and caring behaviours from adults, especially in times of illness. Consequently, pediatric nurses may attempt to acquire exemplary competencies and may demonstrate

ideal behaviours when caring for their patients. Another explanation may be that pediatric nurses receive more positive feedback and work in an environment which promotes self-expression and instils high levels of well-being. Higher levels of satisfaction in the workplace may influence clinical competencies and may have been reflected in the scores obtained on the 6D Scale. The area of surgery may have produced lower scores as a consequence of the profile of the acute surgical patient, the level of satisfaction of the nurses, and the demands of the workplace. Nurses working in the surgical setting are faced with a hurried, high stress working environment which does not have the same emotional components as a pediatric unit. Further studies of the characteristics of the hospital employed nurse may serve to explain these discrepancies. Additionally, a broader based replication study of the various hospitals in the province of Manitoba would allow for random sampling.

Future research should also be conducted into the clinical competence of nurses employed in various settings such as public health and clinics. Such investigation may isolate and bring to light requisite clinical skills of nurses, and facilitate the compilation of a realistic profile of the competent nurse.

The ratio of diploma to baccalaureate graduates who participated in this study was 2.71 to 1. This ratio may demonstrate that baccalaureate prepared nurses were less

hesitant to participate in nursing research than diploma prepared nurses. A question of interest regarding this participation is whether the participation was a unique effect of this study, or whether baccalaureate graduates generally participate more readily in research of this nature. Could the differential educational preparation of these two groups have accounted for this willingness to participate in research?

The use of staff nurse self-ratings and head nurse ratings of the same staff nurse, was a critical part of this study. Head nurses provided a wider range of ratings and assigned more scores in the extreme ranges. However, differences between these scoring patterns raise some questions of inter-rater reliability. A study examining the accuracy or validity of self-ratings versus supervisors' ratings of the same nurses would be useful.

Implications for Practice

The results of this study do not concur with the observation cited by Gillis (1989) that baccalaureate prepared nurses have been described as unprepared to function effectively in the practice setting. Findings demonstrated that diploma and baccalaureate graduates function equally well in the hospital setting at comparable levels of experience.

Little congruence was evident in self and head nurse ratings of clinical competence. This finding may be a reflection of the workplace. While nurses continue to work in the practice setting, they may receive little feedback from their superiors, unless a mistake has been made. Such an event involves negative feedback. It may be postulated that a reason for the lack of congruence between scores is a lack of communication, or miscommunication, between the nurses and their head nurses. Such lack of communication, or the fact of miscommunication, may have negatively influenced clinical competence as a result of decreased self-esteem and confidence among the nurses. Therefore, the implications of the findings are that head nurses should communicate with staff nurses and provide them with ongoing feedback about their clinical performance. Gentle constructive criticism may result in attempts to correct and eliminate weaknesses. Such feedback would likely be received in a positive manner by nurses who may feel that their supervisor is concerned about their performance and is providing them with the opportunity to grow. Additionally, positive feedback by supervisors as well as by peers, leads to the strengthening of the desirable behaviour which results in further positive reinforcement of the behaviour. Consequently,communication and ongoing feedback may result in greater job satisfaction by a happier nurse who strives to achieve optimum clinical competence.

Implications for Education

Numerous variables affect clinical competence. McCloskey (1983a) tested 36 variables and concluded that years of education had a small but significant effect on clinical competence. This small effect accounted for 1-2 percent of the variance. She concluded that the effects of nursing education on clinical competence were only indirect. However, nursing education was viewed as a means to enter the profession, and as the vehicle to qualify for higher education, in order to acquire both exemplary skills and a knowledge base. Consequently, she recommended that greater emphasis be placed on continuing education, whether formal or informal.

An implication for education is extrapolated from the Schwirian 6D Scale despite the flaws in the scale. The scores reveal areas of relative weakness in clinical competence. These findings are corroborated by McCloskey's (1983a) findings. Consequently, nursing educators should review their teaching strategies and place more emphasis on the categories of leadership and teaching and collaboration, in order to prepare their students more effectively for clinical practice. Hospitals also may wish to undertake inservice programs to instil such competencies in their nursing staff, or to encourage their expression among the staff. Additionally, all forms of education should provide nurses with the opportunity to practise such competencies.

Implications for Nursing

One factor which motivated this study was the move toward the mandatory baccalaureate by the year 2000. Numerous colleagues voiced apprehension about this educational change because they believed that there were little, if any, differences in the clinical skills between diploma and baccalaureate graduates. Therefore, the added costs of the increased educational requirement were not perceived to be justified.

A careful literature review on the effects, or impact, of the two levels of nursing education on the clinical competencies of their graduates revealed controversial and inconclusive data. Therefore, this study was conducted.

Results revealed no differences in the clinical competence of diploma and baccalaureate prepared nurses. In fact, findings in this study concurred with findings by McCloskey (1983a) that baccalaureate and diploma nurses at comparable levels of experience, function equally well in the hospital setting. The move into the mandatory baccalaureate may serve to legitimize nursing as a profession and may provide its graduates with a wider base of knowledge, as the product is a more well rounded and a better educated person. However, little evidence is available that a baccalaureate preparation produces a more clinically competent nurse.

The main focus of nursing practice, education, and research, must remain its 'raison d'être', the maintenance of impeccable clinical competence within an evolving health care system. In reality, nursing education is tied to the contemporary social, economic, and political climates. Currently, the focus of health care is on a shift from the institutional setting to community based care, where a more personal approach is hypothesized as linking increased efficiency with a decrease in costs. Therefore, it behooves nursing educators and nursing leaders to focus not only on their vision of nursing education and nursing competence, but also on the product of the two levels of education. If the future is envisioned as requiring professional credentials from institutions of higher learning, then a mandatory baccalaureate may be the only avenue to nursing education. However, if the needs of nursing and of society may be met with programs of shorter duration, which prepare nurses in a more limited manner, then the two year program may be an appropriate avenue to nursing education.

The benefits of the mandatory baccalaureate have not been supported by the findings obtained in this study. Clearly, both avenues to nursing education result in a comparably clinically competent nurse. A new program in the form of the baccalaureate for diploma graduates has been implemented. This approach courts the 'technically' prepared diploma graduate who wishes to pursue continuing education on a formal basis.

Consequently, while the two avenues to enter the nursing profession are in existence, a third avenue allows one segment of the profession to obtain a baccalaureate during the course of nursing practice.

While this study is not without shortcomings and limitations, it lends itself to the conclusion that the case for the mandatory baccalaureate is not clear-cut because little difference is apparent in the final product of both educational programs. This finding concurs with findings by McCloskey (1983) and by Schwirian (1977, 1979). At the present time, nursing education constitutes a critical issue within the profession. The future of nursing education remains dependent upon the demands of contemporary society, as well as on the quality of its leaders and its practitioners.

Summary

The results of this study demonstrate that differences in performance between baccalaureate and diploma graduates are not distinguishable in the hospital setting on the basis of educational preparation. Consequently, there is no difference in the clinical competence of diploma and baccalaureate prepared nurses in the hospital setting as measured by the 6D Scale. More useful predictors of clinical competence were area of practice, length of experience, and continuing education

activities. However, the amount of variance accounted for, as a function of these variables, was not sufficiently large to explain the differences in clinical competence. These findings invite a re-evaluation of educational priorities to enable the profession to meet contemporary and future needs within a united membership.

REFERENCES

Aggleton, P. & Chalmers, H. (1987). Models of nursing, nursing practice and nurse education. Journal of Advanced Nursing, 12, 573-581.

Akinsanya, J. A. (1990). Nursing links with higher education: A prescription for change in the 21st Century. Journal of Advanced Nursing, 15, 744-754.

American Association of Colleges of Nursing. (1986). Essentials of college and university education for professional nursing. Journal of Professional Nursing, 2(1), 54-69.

Arms, D., Chenevey, B., Karrer, C. & Hawthorne Rumpler, C. (1985). A baccalaureate degree program in nursing for adult students. In M. S. Knowles (Ed.), Andragogy in action: Applying modern principles to adult learning (pp.273-284). San Francisco: Jossey-Bass.

Baumgart, A. J. & Kirkwood, R. (1990). Social reform versus education reform: University nursing education in Canada 1919-1960. Journal of Advanced Nursing, 15, 510-516.

Baumgart, A. & Larsen, J. (1988). Overview: nursing practice in Canada. In A. J. Baumgart & J. Larsen (Eds.). Canadian Nursing Faces the Future (pp. 77-89). Toronto: C. V. Mosby.

Benner, P. (1984). From novice to expert: Excellence and power in clinical nursing practice. California: Addison-Welsley.

Bergman, R. (1986). Nursing in a changing world. International Nursing Review, 33(4), 110-116.

Bircumshaw, D. (1989). How can we compare graduate and non-graduate nurses? A review of the literature. Journal of Advanced Nursing, 14, 438-443.

Boggs, D., Baker, B. & Price, G. (1987). Determining two levels of nursing competence. Nursing Outlook, 35(1), 34-37.

Bowen, H. R. (1981). The cost of higher education: How much do colleges and universities spend per student and how much should they spend? San Francisco: Jossey-Bass.

Bramadat, I. & Chalmers, K. I. (1989). Nursing education in Canada: Historical 'progress'- contemporary issues. Journal of Advanced Nursing, 14, 719-725.

Brink, P. J. & Wood, M. J. (1989). Advanced Design in Nursing Research. Newbury Park: Sage Publications.

Brubacher, J. S. (1982). On the philosophy of higher education. San Francisco: Jossey-Bass.

Bullough, B. & Sparks, C. (1975). Baccalaureate vs. associate degree nurses: The care-cure dichotomy. Nursing Outlook, 23(11), 688-692.

Bush, C. T. (1985). Nursing Research. Reston, Virginia: Prentice-Hall Company.

Cantor, M. M. (1974). Associate Degree: Education for What? The Journal of Nursing Education, 13(2), 26-31.

Chamings, P. A. & Treevan, J. (1979). Comparison of expected competencies of baccalaureate and associate degree graduates in nursing. Image, 11(1), 16-21.

Cicatiello, J. (1974). Expectations of the associate-degree graduate: A director of nursing's point of view. The Journal of Nursing Education, 13(4), 22-25.

Clayton, G. M. (1989). Curriculum revolution: Defining the components. Journal of Professional Nursing, 5(1), pp. 6, 55.

Cleek, J. E. (1981). Survival in a different future: Occupational education today. In K. F. Arns (Ed.), New directions in community colleges (pp. 67-77). San Francisco: Jossey-Bass.

Dalton, C. (1990). The sleeping giant awakes. The Canadian Nurse, 86(9), 16-18.

Davidson, L. & Knopf, L. (1980). The community college and associate degree nursing 1952-1980. New York: National League of Nursing.

Davis, B. G. (1975). Relation of university preparation to nursing practice. New York: National League for Nursing.

Davis, B. G. (1974). Effect of levels of nursing education on patient care: A replication. Nursing Research, 23(2), 150-155.

Davis-Martin, S. (1990). Research on the differences between baccalaureate and associate degree nurses. In G. M. Clayton & P. A. Baj (Eds.), Review of research in nursing education (Vol. 3), (pp.109-145). New York: National League for Nursing Publication # 15-2339.

DeBack, V. & Mentkowski, M. (1986). Does the baccalaureate make a difference?: Differentiating nurse performance by education and experience. Journal of Nursing Education, 25(7), 275-285.

Dennison, J. D. & Gallagher, P. (1986). Canada's community colleges: A critical analysis. Vancouver: University of British Columbia Press.

Diepeveen-Speekenbrink, J. (1990). Creative international networking towards academic nursing education and research in the Netherlands. Journal of Advanced Nursing, 15, 738-743.

Dincher, J. & Flaherty, A. (1988). Follow-up study of 1986 nursing graduates. Maryland Community Colleges 1987 Program Evaluations. (ERIC Document Reproduction Services No ED 295723)

Field, W. E., Gallman, L. G., Nicholson, R. & Dreher, M. (1984). Clinical competencies of baccalaureate students. Journal of Nursing Education, 23(7), 284-293.

Forni, P. R. (1975). Continuing education versus continuing competence. Journal of Nursing Administration, 5(9), 34-38.

Fralic, M. F. (1989). Issues sorrounding RN/BSN education: A view from nursing service. Journal of Professional Nursing, 5(2), 64-65.

Gibbs, I. & Rush, B. (1987). Higher education: The coping stone of nursing education? Journal of Advanced Nursing, 12, 659-669.

Gillis, A. J. (1989). Beyond the rhetoric: Benefits of a baccalaureate education for nursing. Canadian Journal of Nursing Administration, 2(4), 5-7.

Glen, S. (1990). Power for nursing education. Journal of Advanced Nursing, 15, 1335-1340.

Grabbe, L. L. (1988). A comparison of clinical evaluation tools in hospitals and baccalaureate nursing programs. Journal of Nursing Education, 27(9), 394-398.

Grede, J. F. (1981). Changing form and focus of occupational education. In K. F. Arns (Ed.), New directions for community colleges: Occupational education today, (pp. 7-11). San Francisco: Jossey-Bass.

Gregor, A. D. (1990). The universities of Canada. Commonwealth University Yearbook.

Hayward, J. (1982). Universities and nursing education. Journal of Advanced Nursing, 7, 371-377.

Hogstel, M. O. (1977). Associate degree and baccalaureate graduates: Do they function differently? American Journal of Nursing, 77(10), 1598-1600.

Johnston, J. R. (1980). Community colleges: Alternatives to elitism in higher education. In G. B. Vaughan (Ed.), New directions for community colleges: Questioning the community college's role (Vol. 32), (pp.43-52). San Francisco: Jossey-Bass.

Johnston, S. C. (1982). The use of the Rines Model in differentiating professional and technical nursing practice. Nursing and Health Care, 3, 374-379.

Joyce-Nagata, B., Reeb, R. & Burch, S. (1989). Comparison of expected and evidenced baccalaureate degree competencies. Journal of Nursing Education, 28(7), 314-321.

Karabel, J. (1972). Community colleges and social stratification. Harvard Educational Review, 42(4).

Kelly, L. Y. (1985). Dimensions of professional nursing (5th Ed.). New York: MacMillan.

Kramer, M. (1981). Philosophical foundations of baccalaureate nursing education. Nursing Outlook, 29(4), 224-228.

Lamar Johnson, B. (1982). General education in action: Revisited after 30 years. In B. Lamar Johnson (Ed.), New directions for community colleges: General education in 2 year college (pp. 1-11). San Francisco: Jossey-Bass.

Linthicum, D. S. (1982). Does community college education produce in-students? In R. L. Alfred (Ed.), New directions in community colleges: Institutions impacts on campus community and business constituencies, (pp. 7-21). San Francisco: Jossey-Bass.

Luckenbill, J. D. & McCabe, R. H. (1982). Getting started: Straight forward advice. In B. Lamar Johnson (Ed.), New directions for community colleges: General education in 2 years, (pp. 83-99). San Francisco: Jossey-Bass.

Manitoba Association of Registered Nurses. (1988). Entry to practice position paper.Manitoba: Author.

Manitoba Association of Registered Nurses. (1984). Entry to practice report. Manitoba: Author.

McCarthy, S. M. (1989). The future of nursing practice and implications for nursing education. Journal of Professional Nursing, 5(3), pp. 121, 168.

McCloskey, J. C. & McCain, B. (1988). Nurse performance: Strengths and weaknesses. Nursing Research, 37(5), 308-313.

McCloskey, J. C. (1983a). Nursing education and job effectiveness. Nursing Research, 32(1), 53-58.

McCloskey, J. C. (1983b). Toward an educational model of nursing effectiveness. Ann Arbor, Michigan: U. M. I. Research Press.

McCloskey, J. C. (1981). The effects of nursing education on job effectiveness: An overview of the literature. Research in Nursing Health, 4, 355-373.

McMillan, S. C. (1985). A comparison of professional performance examination scores of graduating associate and baccalaureate degree nursing students. Research in Nursing and Health, 8, 167-172.

Moccia, P. (1990). Toward the future: How could 2 million registered nurses not be enough? Nursing Clinics of North America, 25(3), 605-613.

Moloney, M. (1986). Professionalization of nursing: Current issues and trends. Philadelphia: L. B. Lippincott.

Murray, M. & Chambers M. (1990). Characteristics of students entering different forms of nurse training. Journal of Advanced Nursing, 6(4), 1099-1105.

Nelson, L. F. (1978). Competencies of nursing graduates in technical communicative and administrative skills. Nursing Research, 27(2), 121-125.

Neter, J., Wasserman, W. & Kutner, M. H. (1990). Applied linear statistical models (3rd ed.). Homewood, Illinois: Irwin Inc.

Neumann, W. & Riesman, D. (1980). The community college elite. In M. A. Rahnke (Ed.), New directions for community colleges: Questioning the community college role (pp. 53-72). San Francisco: Jossey-Bass.

Norusis, M. J. (1988). SPSS/PC+ V3.0. Chicago: SPSS Inc.

O'Brien, D. (1984). Evaluation of an undergraduate nursing course. Journal of Advanced Nursing, 9, 401-406.

Oliver, M., Brownstone, M., Clarke, W., Kristianson, A. M., Patterson, H., Sigurjonsson, K. & Shack, S. (1973). Report of the task force on post-secondary education in Manitoba. Government of Manitoba Documents.

Owen, G. M. (1988). For better, for worse: Nursing in higher education. Journal of Advanced Nursing, 13, 3-13.

Partridge, K. B. (1978). Nursing values in a changing society. Nursing Outlook, 26, 356-360.

Polit, D. F. & Hungler, B. P. (1987). Nursing Research: Principles and Methods (3rd ed.). Philadelphia: J. P. Lippincott.

Porter, J., Blishen, B., Evans, J. R., Hansen, B. L., Harris, R. S., Ireland, F., Jewett, P., MacDonald, J. B., Ross, R., Trotter, B. & Willis, R. B. (1971). Towards 2000: The future of post- secondary education in Ontario. Toronto: McClelland and Stewart Ltd.

Primm, P. L. (1986). Entry into practice: Competence statements for BSNs and ADNs. Nursing Outlook, 34(3), 135-137.

Raya, A. (1990). Can knowledge be promoted and values ignored? Implications for nursing education. Journal of Advanced Nursing, 15, 504-509.

Raymond, M. R. (1988). The relationship between educational preparation and performance on nursing certification examinations. Journal of Nursing Education, 27(1), 6-9.

Reimer Janzen, K. (1990). A comparison of some aspects of baccalaureate and diploma nursing education in Ontario. Unpublished master's thesis, University of Toronto, Toronto, Ont.

Richardson, S. (1986). Articulation and baccalaureate entry to practice: The Canadian context. Nursing Papers, Perspectives on Nursing, 18(3), 47-59.

Ross, M. A. (1976). The university. The anatomy of academe. Toronto: McGraw-Hill.

Rovers, R. & Bajnok, I. (1988). Educational preparation for entry into the practice of nursing. In A. J. Baumgart & J. Larsen (Eds.), Canadian nursing faces the future: Development and change (pp. 323-335). Ontario: Mosby Company.

Salvage, J. (1981). Nursing degrees: The best of both worlds or neither? Nursing Times, 77, 1912-1913.

Scheetz, L. J. (1989). Baccalaureate nursing student preceptorship programs and the development of clinical competence. Journal of Nursing Education, 28(1), 29-35.

Schwirian, P. M. (1984). Research on nursing students. In H. H. Werley & J. J. Patrick (Eds.), Annual review of nursing research (Vol. 2), (pp. 211-262). New York: Springer Publication.

Schwirian, P. M. (1981). Toward an explanatory model of nursing performance. Nursing Research, 30(4), 247-253.

Schwirian, P. M. (1979). Prediction of successful nursing performance: Part 3 & 4 (DHEW Publication No. HRA 79-15). Washington, DC: U. S. Government Printing Office.

Schwirian, P. M. (1978a). Evaluating the performance of nurses: A multidimentional approach. Nursing Research, 27(6), 347-351.

Schwirian, P. M. (1978b). Prediction of successful nursing performance: Part 1 & 2 (DHEW Publication No. HRA 79-15). Washington, DC: U. S. Government Printing Office.

Seitz, J. E. (1981). Program reassessment, reduction and redirection. In K. F. Arns (Ed.), New directions for community colleges: changing form and focus of occupational education, occupational education today (pp. 59-69). San Francisco: Jossey-Bass.

Shelley, S. I. (1984). Research methods in nursing and health. Boston: Little, Brown and Company.

Sills, P. (1988). Services for elderly people by the year 2000: Education and training issues. Journal of Advanced Nursing, 13, 416-418.

Stull, M. K. & Katz, B. M. (1986). Service and education: Similar perspectives of the performance of the new baccalaureate graduate. Journal of Professional Nursing, 2(3), 160-163.

Styles, M. M. & Holzemer, W. L. (1986). Educational remapping for a responsible future. Journal of Professional Nursing, 2, 64-68.

Sweeney, M. A., Regan, P., O'Malley, M. & Hedstrom, B. (1980). Essential skills for baccalaureate graduates: Perspectives of education and service. The Journal of Nursing Administration, 10(10), 37-44.

Tucker, M. S. (1987). The college market. In M. A. Rahnke (Ed.), New directions in higher education: Creating career programs in a liberal arts context. San Francisco: Jossey-Bass.

Van Maanen, H. M. (1990). Nursing in transition: An analysis of the state of the art in relation to conditions of practice and society's expectations. Journal of Advanced Nursing, 15, 914-924.

Vaughan, G. B. (1980). Critics of the community college: An overview. In G. B. Vaughan (Ed.), New directions for community colleges: Questioning the community college role (pp. 1-14). San Francisco: Jossey-Bass.

Waltz, C. & Barker Bausell, R. (1981). Nursing research: Designed statistics and computer analysis. Philadelphia: F. A. Davis Company.

Warner, S. L., Ross, M. C. & Clark, L. (1988). An analysis of entry into practice arguments. Image: Journal of Nursing Scholarship, 20(4), 212-215.

Waters, V. H., Chater, S. S., Vivier, M. L., Urrea, J. H. & Wilson, H. S. (1972). Technical and professional nursing: An exploratory study. Nursing Research, 21(2), 124-131.

Wetzel, K., Berg, S. & Gallagher, D. (1989). Nursing education and organizational commitment: Degree versus diploma programs. Canadian Journal of Nursing Administration, 2(4), 9-14.

Wilson-Barnett, J. (1988). Nursing values: Exploring the cliches. Journal of Advanced Nursing, 13, 790-796.

Woods, N. F., & Catanzaro, M. (1988). Nursing research: Theory and practice. St. Louis: Mosby Company.

Woolley, A. S., McLaughlin, J. & Durham, J. D. (1990). Linking diploma and bachelor's degree nursing education: An illness experiment. Journal of Professional Nursing, 6(4), 206-212.

Woolley, A. S. (1986). Defining the product of baccalaureate education. Nursing and Health Care, 7(4), 199-201.

Wuthnow, S. W. (1986). Shifting world views among nurses. Nursing Outlook, 34(1), 6-7.

Ziv, L., Ehrenfeld, M., Kurtzman, C. & Ever Hadani, P. (1990). Follow-up of Hadassah nursing schools first seven graduate classes. Journal of Professional Nursing, 6(14), 229-234.

BIBLIOGRAPHY

Khazanie, R. (1986). Elementary statistics: In a world of applications (2nd ed.). Glenview, Illinois: Scott, Foresman and Company.

Shontz, F. C. (1986). Fundamentals of research in the behavioral sciences: Principles and practice. Washington, D. C.: American Psychiatric Press.

Shott, S. (1990). Statistics for health professionals. Philadelphia: W. B. Saunders Company.

APPENDIX A

UNIVERSITY OF MANITOBA

ETHICAL APPROVAL

The University of Manitoba

SCHOOL OF NURSING
ETHICAL REVIEW COMMITTEE

APPROVAL FORM

Proposal Number N#91/23

Proposal Title: "A Comparison of Clinical Competence/Job Effectiveness Between Diploma and Baccalaureate Prepared Nurses Employed in a Hospital Setting."

Name and Title of Researcher(s): Rachel Mason
Graduate Student, Master of Nursing Program
University of Manitoba

Date of Review: December 02, 1991

APPROVED BY THE COMMITTEE: December 16, 1991.

Comments:

Date: Dec. 16 1991

Erna J. Schilder, RN, DNS — Chairperson
Associate Professor
University of Manitoba School of Nursing

Position

NOTE:
Any significant changes in the proposal should be reported to the Chairperson for the Ethical Review Committee's consideration, in advance of implementation of such changes.

Revised: 91/01/11/se

APPENDIX B

HEALTH SCIENCES CENTRE

APPROVAL FOR RESEARCH

HEALTH SCIENCES CENTRE

DATE: DECEMBER 17, 1991

FROM: Dr. D. Harper, Director of Research, H.S.C.

TO: MS. RACHEL MASON

SUBJECT: Research Protocol Approval

ETHICS #: N#91/23 (NURSING)

TITLE: A COMPARISON OF CLINICAL COMPETENCE/JOB EFFECTIVENESS BETWEEN DIPLOMA AND BACCALAUREATE PREPARED NURSES IN THE HOSPITAL SETTING.

The above study has been reviewed by the appropriate H.S.C. Research Committee and has been approved.

COMMENTS:

Dr. D. Harper, Director of Research, H.S.C.

Dec 17, 1991
Date

cc: Dr. K. Hall
Revised: 13/08/91

APPENDIX C

LETTER TO THE HEAD NURSE

Dear Head Nurse:

I will be meeting with you during the next regularly scheduled head nurse's meeting; however, I thought that I would provide you with this information for your early perusal.

Enclosed is a copy of the description of a study that I wish to conduct as part of the requirements for the Master of Nursing degree. Additionally, this enclosure constitutes an invitation to the staff nurses to participate in this study.

I am requesting your help and participation in this research study. If you agree to participate, I will ask that you complete a job effectiveness questionnaire for each member of your staff who will volunteer for the study. This questionnaire is composed of 52 simple ratings and no long answers are required. It is anticipated that each form will require approximately 5-15 minutes to complete. Additionally, a brief demographic questionnaire will be provided to you for your completion.

As I am quite certain that you will have questions concerning this study, I would like to discuss them with you at the meeting, or in private at your convenience. Should you wish to discuss the study in further detail, do not hesitate to contact me directly. My telephone number is

Thank you in advance for your anticipated cooperation.

Sincerely yours,

Rachel Mason

APPENDIX D

DESCRIPTION OF THE STUDY AND INVITATION TO PARTICIPATE

DESCRIPTION OF THE STUDY AND INVITATION TO PARTICIPATE

Hello, my name is Rachel Mason. I am a Registered Nurse and a Master of Nursing student at the University of Manitoba. At the present time, as a part of my thesis process, I am conducting research into the clinical competence of RNs and BNs. As you are probably aware, the entry into nursing practice is in the process of change and will likely result in a minimal requirement of a baccalaureate degree in nursing. Currently, insufficient Canadian data exist to compare actual job effectiveness ratings between RNs and BNs. This study will attempt to distinguish between the two groups of nurses, while taking into consideration lengths of nursing experience and clinical areas of employment.

I would greatly appreciate your participation by completing the two short questionnaires which are provided. All your replies will be held in strict confidence.

Your head nurse will be provided with a similar ratings scale which he/she will complete on your behalf. The results of your answers and the answers of your HN, in relation to your clinical performance, will be analyzed and become part of the study. This means that your head nurse will be made aware of your participation in this study. Therefore, by agreeing to participate, you will be granting permission to be rated by him/her. However, he/she will not be privy to any information beyond the fact of your participation. This activity may cause you some anxiety, however, let me assure you that your participation or non-participation will have no effect on your job in any way.

It is hoped that the information gained from this study will benefit the profession of nursing. If you wish to receive a summary of the study, please indicate so by placing your name on the form which will be posted in your conference room following full completion of the study. The summary will be made available to all nurses upon request, regardless of participation or non-participation in the study.

If you choose to participate, please take one of the packages (envelopes) which you will find in a box in the conference room located on your ward. Each of these packages contains the forms which will require 5-15 minutes to complete.

I thank you for considering participation in this study. Please do not hesitate to contact me by telephone (837-8022) in the event of any questions or concerns.

Thank you again for your anticipated cooperation.

APPENDIX E

LETTER TO EACH PARTICIPANT

Dear Participant:

Thank you for agreeing to participate in my study entitled "A Comparison of Clinical Competence Between Diploma and Baccalaureate Prepared Nurses Employed in a Hospital Setting".

You are being requested to complete a short demographic questionnaire and a questionnaire on the Performance of Nursing Behaviours. Your replies to all the questions will be greatly appreciated; however, if you find that some of the questions are irrelevant to your practice, then feel free to omit them.

Completion of the questionnaire will require approximately 5-15 minutes of your time. I am requesting that you do not write your name directly on the questionnaires but print your name on the inside flap of the envelope. When you have completed the questionnaires, please replace them in the same envelope and place the flap on the inside. Then please drop the package into the secured box placed in your conference room. The envelope will be collected by me, and your completed questionnaires will be coded and placed in a locked filing cabinet until they are scored. The empty envelope bearing your name (on the inside flap) will be used to identify you to your head nurse, because it will be returned to him/her containing the coded, blank, head nurse ratings scale, which will be completed on your behalf.

Your voluntary participation in this study constitutes your consent to participate. In agreeing to participate, you will be granting permission to be rated by your head nurse. This activity may cause you some anxiety, however, I wish to assure you that your participation, or non-participation, will not affect your job in any way, and you may withdraw from participation in this study at any time. Your anonymity cannot be totally assured because your head nurse will be aware of your participation. However, your identity will not be associated with any of your replies. Furthermore, your confidentiality is strictly guaranteed because the data from the demographic form will be grouped and, in this way, your identity will be further protected. Only the statistician, the committee chairperson, and I, will have access to the raw data which will not, in any way, permit the detection of individual identities.

A summary of this study will be made available to you upon request by placing your name on the form which will be posted in your conference room when the study is finalized. This summary will be available to any nurse upon request, whether a participant or non-participant.

Although you may personally not benefit from the findings of this study, it is hoped and anticipated that the nursing profession, as a whole, will be the beneficiary.

This study has been approved by the University of Manitoba Ethics Committee. The chairperson for the thesis committee is Dr. J. Beaton, telephone number .

Should you have any questions regarding this study, please feel free to contact me at your convenience at

Again, thank you for your help and cooperation.

Sincerely

Rachel Mason

APPENDIX F

DEMOGRAPHIC QUESTIONNAIRE

DEMOGRAPHIC QUESTIONNAIRE

Please circle the appropriate letter. If the question is incomplete, please provide the information in brief.

POSITION:

1A. Length of time in present position.
a. less than 1 year
b. 1 to 2 years
c. 3 to 6 years
d. 7 years or more

1B. State if present position is full-time, part-time or casual and percentage of employment (e.g.30%, 50%)_____

2A. Length of time in nursing employment.
a. Less than 1 year
b. 1 to 2 years
c. 3 to 6 years
d. 7 years or more

2B. State if nursing was full - time, part - time, or casual. State percentage of employment._____

3. Educational background.
a. Diploma graduate
b. Baccalaureate graduate
c. Baccalaureate graduate subsequent to diploma
d. Other (please specify)_____

4. What is your clinical area of practice / specialty?
a. Obstetrics / Gynecology
b. Surgery
c. Medicine
d. Psychiatry
e. Pediatrics
f. Other (please specify)_____

APPENDIX G

LETTER TO DR. SCHWIRIAN

Rachel Mason

Winnipeg, Manitoba
R
( )

June 4, 1991

Dr. P.M. Schwirian
Ohio State University
School of Nursing
Columbus, Ohio

Dear Dr. Schwirian:

I am a graduate student in the Master of Nursing Program at the University of Manitoba in Winnipeg, Manitoba, Canada, and I am preparing to work on my thesis.

My area of interest lies in nursing education and nursing competence. During the search of the literature I encountered several of your articles along with parts one and two of your 1976 publication on the Prediction of Successful Nursing Performance. Unfortunately, neither the 1978 edition nor parts three and four are available in Canada.

I am interested in conducting a partial replication of a 1983 study by McCloskey (published in Nursing Research, January/February issue, Vol. 32 No. 1, entitled Nursing Education and Job Effectiveness) in which she utilized your Six Dimension (6D) Scale of Nursing Performance. After a considerable search, I have been unable to obtain a copy of this instrument.

I would be most grateful for your assistance in obtaining this tool. I am also unaware of the status of the 6D instrument as to copyright and availability for use. I am most interested in using this tool for my research and am requesting your permission to do so. Additionally, any of your insights into this area would be most appreciated.

Yours sincerely,

RACHEL MASON

APPENDIX H

PERMISSION TO USE THE 6D SCALE

College of Nursing
Department of Family
& Community

1585 Neil Avenue
Columbus, OH 43210-1289
Phone 614-292-4800

June 25, 1991

Rachel Mason

Winnipeg, Manitoba
R

Dear Ms. Mason,

Thank you for your inquiry regarding the Six Dimension Scale of Nursing Performance (6-D Scale). I am pleased that it will you think it will meet your research needs.

In accordance with your request, I have enclosed a copy of the 1978 NURSING RESEARCH article which contains all the information you need to set up, administer and score the 6-D. It was meant to be a do-it-yourself article, and most people have found that it has sufficient information. I request only that you include the proper citation of the source on the instrument you put together.

If you have any questions or problems, please write or call me. Phones: (office); (home); (home with answering machine). Good luck on your thesis.

Sincerely,

Patricia M. Schwirian, Ph.D.,R.N.
Professor

APPENDIX I

THE SCHWIRIAN 6 DIMENSION SCALE

OF NURSING BEHAVIOURS

STAFF NURSE FORM

Code No._____

Performance of Nursing Behaviours

Instructions: The following is a list of activities in which nurses engage with varying degrees of frequency and skill. Please indicate how you perform (or could perform if required to) each activity by using numbers from the following key:

0 - Not at all
1 - Not very well
2 - Satisfactorily
3 - Well
4 - Very well

Remember that all answers are completely confidential.

_____Teach a patient's family members about the patient's needs.
_____Coordinate the plan of nursing care with the medical plan of care.
_____Give praise and recognition for achievement to those under your direction.
_____Identify and use community resources in developing a plan of care for a patient and a family.
_____Identify and include in nursing care plans anticipated changes in patient's condition.
_____Evaluate results of nursing care.
_____Promote the inclusion of the patient's decision and desires concerning his care.
_____Develop a plan of nursing care for a patient.
_____Initiate planning and evaluation of nursing care with others.
_____Perform technical procedures: e.g., oral suctioning, tracheostomy care, intravenous therapy, catheter care, dressing changes, etc.
_____Adapt teaching methods and materials to the understanding of the particular audience: e.g., age of patient, educational background, and sensory deprivations.
_____Teach preventive health measures to patients and their families.
_____Identify and include immediate patient needs in the plan of nursing care.
_____Develop innovative methods and materials for teaching patients.
_____Communicate a feeling of acceptance of each patient and a concern for the patient's welfare.
_____Seek assistance when necessary.
_____Help a patient communicate with others.
_____Use mechanical devices: e.g., suction machines, Gomco, cardiac monitor, respirator, etc.
_____Give emotional support to family of dying patient.
_____Verbally communicate facts, ideas, and feelings to other health team members.

Performance of Nursing Behaviours - Continued

Please indicate how you perform (or could perform) each activity by using numbers from the following key:

0 - Not at all
1 - Not very well
2 - Satisfactorily
3 - Well
4 - Very well

_____Promote the patient's right to privacy.
_____Contribute to an atmosphere of mutual trust, acceptance, and respect among other health team members.
_____Delegate responsibility for care based on assessment of priorities of nursing care needs and the abilities and limitations of available health care personnel.
_____Explain nursing procedures to a patient prior to performing them.
_____Guide other health team members in planning for nursing care.
_____Accept responsibility for the level of care provided by those under your direction.
_____Perform appropriate measures in emergency situations.
_____Use teaching aids and resource materials in teaching patients and their families.
_____Perform nursing care required by critically ill patients.
_____Encourage the family to participate in the care of the patient.
_____Identify and use resources within your health care agency in developing a plan of care for a patient and his family.
_____Use nursing procedures as opportunities for interaction with patients.
_____Contribute to productive working relationships with other health team members.
_____Recognize and meet the emotional needs of a dying patient.
_____Communicate facts, ideas, and professional opinions in writing to patients and their families.
_____Plan for the integration of patient needs with family needs.
_____Function calmly and completely in emergency situations.
_____Remain open to the suggestions of those under your direction and uses them when appropriate.
_____Use opportunities for patient teaching when they arise.
_____Promote the use of interdisciplinary persons.
_____Help a patient meet his emotional needs.
_____Contribute to the plan of nursing care for the patient.

Instructions: Using the following key, please indicate on the line at the left of each item the number that best describes the frequency with which you engage in the following behaviours:

0 - Never
1 - Seldom
2 - Occasionally
3 - Frequently
4 - Consistently

_____Use learning opportunities for on-going personal and professional growth

_____Display self-direction

_____Accept responsibility for own actions

_____Assume new responsibilities within the limits of capabilities

_____Maintain high standards of self-performance

_____Demonstrate self-confidence

_____Display a generally positive attitude

_____Demonstrate knowledge of the legal boundaries of nursing

_____Demonstrate knowledge of the ethics of nursing

_____Accept and use constructive criticism

Thank you very much for your help in this study. Be assured that all your comments are completely confidential

APPENDIX J

THE SCHWIRIAN 6 DIMENSION SCALE

OF NURSING BEHAVIOURS

HEAD NURSE FORM

Code No._____

Performance of Nursing Behaviours

Instructions: The following is a list of activities in which nurses engage with varying degrees of frequency and skill. Please indicate how the above mentioned nurse performs (or could perform if required to) each activity by using numbers from the following key:

0 - Not at all
1 - Not very well
2 - Satisfactorily
3 - Well
4 - Very well

Remember that all answers are completely confidential.
If you are unable to estimate the nurse's performance on an activity, leave the line before it blank.

_____Teaches a patient's family members about the patient's needs.
_____Coordinates the plan of nursing care with the medical plan of care.
_____Gives praise and recognition for achievement to those under your direction.
_____Identifies and uses community resources in developing plan of care for a patient and a family.
_____Identifies and includes in nursing care plans anticipated changes in patient's condition.
_____Evaluates results of nursing care.
_____Promotes the inclusion of the patient's decision and desires concerning his care.
_____Develops a plan of nursing care for a patient.
_____Initiates planning and evaluation of nursing care with others.
_____Performs technical procedures: e.g., oral suctioning, tracheostomy care, intravenous therapy, catheter care, dressing changes, etc.
_____Adapts teaching methods and materials to the understanding of the particular audience: e.g., age of patient, educational background, and sensory deprivations.
_____Teaches preventive health measures to patients and their families.
_____Identifies and includes immediate patient needs in the plan of nursing care.
_____Develops innovative methods and materials for teaching patients.
_____Communicates a feeling of acceptance of each patient and a concern for the patient's welfare.
_____Seeks assistance when necessary.
_____Helps a patient communicate with others.
_____Uses mechanical devices: e.g., suction machines, Gomco, cardiac monitor, respirator, etc.
_____Gives emotional support to family of dying patient.
_____Verbally communicates facts, ideas, and feelings to other health team members.

Performance of Nursing Behaviours - Continued

Please indicate how the nurse performs (or could perform) each activity by using numbers from the following key:

0 - Not at all
1 - Not very well
2 - Satisfactorily
3 - Well
4 - Very well

_____Promotes the patient's right to privacy.
_____Contributes to an atmosphere of mutual trust, acceptance, and respect among other health team members.
_____Delegates responsibility for care based on assessment of priorities of nursing care needs and the abilities and limitations of available health care personnel.
_____Explains nursing procedures to a patient prior to performing them.
_____Guides other health team members in planning for nursing care.
_____Accepts responsibility for the level of care provided by those under your direction.
_____Performs appropriate measures in emergency situations.
_____Uses teaching aids and resource materials in teaching patients and their families.
_____Performs nursing care required by critically ill patients.
_____Encourages the family to participate in the care of the patient.
_____Identifies and uses resources within your health care agency in developing a plan of care for a patient and his family.
_____Uses nursing procedures as opportunities for interaction with patients.
_____Contributes to productive working relationships with other health team members.
_____Recognizes and meets the emotional needs of a dying patient.
_____Communicates facts, ideas, and professional opinions in writing to patients and their families.
_____Plans for the integration of patient needs with family needs.
_____Functions calmly and competently in emergency situations.
_____Remains open to suggestions of those under your direction and uses them when appropriate.
_____Uses opportunities for patient teaching when they arise.
_____Promotes the use of interdisciplinary persons.
_____Helps a patient meet his emotional needs.
_____Contributes to the plan of nursing care for the patient.

Instructions: Using the following key, please indicate on the line at the left of each item the number that best describes the frequency with which the nurse engages in the following behaviours:

0 - Never
1 - Seldom
2 - Occasionally
3 - Frequently
4 - Consistently

_____Uses learning opportunities for on-going personal and professional growth

_____Displays self-direction

_____Accepts responsibility for own actions

_____Assumes new responsibilities within the limits of capabilities

_____Maintains high standards of self-performance

_____Demonstrates self-confidence

_____Displays a generally positive attitude

_____Demonstrates knowledge of the legal boundaries of nursing

_____Demonstrates knowledge of the ethics of nursing

_____Accepts and uses constructive criticism

Thank you very much for your help in this study. Be assured that all your comments are completely confidential.

APPENDIX K

INSTRUCTIONS TO THE HEAD NURSE

Dear Head Nurse:

Thank you for your help and cooperation in this study.

I am sending you one short questionnaire requesting your general work-related demographic information. Additionally, I am enclosing the envelopes which contain (on each inside flap) the names of staff nurses who have already completed similar questionnaires. Each envelope also contains the coded Performance of Nursing Behaviours Scale, which I am asking you to complete in order to rate the nurse whose name appears on the inside flap of the envelope. When you have completed the scale, kindly deposit the completed forms in the sealed box in the conference room. Additionally, please deposit the empty envelope bearing each participant's name into the same sealed box so that the identifying flap can be destroyed by me when the box is unsealed and emptied.

All the information which you will provide will remain confidential. Only the raw data will be available to myself, the statistician, and the committee chairperson. Your individual participation is very important to the overall study, however, individual responses will not be reported and the data will not, in any way, allow or provide access to the identity of any participant. Therefore, I am requesting that you not discuss this study with any of the staff.

Upon the completion of the study, I will, with your permission, post a form in your conference room which will enable you and your staff to request a summary of the study. This summary will be forwarded upon request regardless of participation or non-participation in the study.

I greatly appreciate your assistance.

Should you have any further questions, please contact me at any time at

Yours sincerely,

Rachel Mason

APPENDIX L

REQUEST FOR SUMMARY OF STUDY

WARD_____

I would like to receive a summary of the study titled "A Comparison of Clinical Competence Between Diploma and Baccalaureate Prepared Nurses Employed in a Hospital Setting".

NAMES: **NAMES:**

For further information please call Rachel Mason at