THE MOSBY ASSESSMENT AS A PREDICTOR OF SUCCESS ON THE NCLEX-RN AMONG DIPLOMA NURSING GRADUATES

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Tracy Dickel
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THE MOSBY ASSESSTEST AS A PREDICTOR OF SUCCESS ON THE NCLEX-RN AMONG DIPLOMA NURSING GRADUATES

An abstract of a thesis by
Tracy Dickel
June, 1994
Advisor: Marion Hemstrom, D.N.Sc., R.N., C.S.

The Problem. The purpose of this study was to determine what relationship exists between Mosby Assesstest scores and success on the NCLEX-RN in traditional and accelerated diploma nursing graduates and if there was a significant difference between the traditional and accelerated diploma nursing graduates.

Procedure. The convenience sample consisted of the graduate records from the accelerated and traditional diploma nursing programs. The sample consisted of fifty-nine traditional graduates and forty-four accelerated graduates. Mosby Assesstest scores, NCLEX-RN results, and demographic variables were obtained from the records.

Findings. There was a weak positive relationship (point biserial correlation 0.2771) between Mosby Assesstest scores and success on NCLEX-RN of traditional diploma nursing graduates. No statistical significance was found between Mosby Assesstest scores and success on NCLEX-RN of accelerated diploma nursing graduates. There was no statistically significant basis to conclude that there was a difference between the traditional and accelerated diploma nursing graduates.

Conclusions. This study suggests a need for continued study to identify predictors of NCLEX-RN success among diploma nursing graduates.

Recommendations. Recommendations for future research include replication of the study using a different sample. Also, an investigation of the methods utilized in nursing education which identify students at risk for NCLEX-RN failure will provide additional useful information for nurse educators.
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CHAPTER I
INTRODUCTION
Overview of the Problem

Nursing education has a twofold accountability: it must meet the needs of students for a quality education, and society's need for professional nurses capable of delivering nursing care to meet its health needs (Rothman & Rothman, 1977). Schools of nursing are vitally interested in how students perform on the National Council Licensure Examination for Registered Nurses (NCLEX-RN) and what predictive factors can identify students who succeed or fail the licensing examination. Nursing educators have a responsibility to review their curricula in order to identify those components most predictive of students' ultimate success in the profession (Melcolm, Venn, & Bausel, 1981).

One of the primary concerns of nursing education is the acquisition of knowledge so that the nursing student can become a competent, accountable, and effective professional nurse (Woodham & Taube, 1986). The nursing license makes it possible for a nurse to legally practice in the profession. The current cognitive licensing measurement of minimum, safe nursing practice is the NCLEX-RN.
The success of nurse graduates on the NCLEX-RN is of great concern to nurse administrators, faculty, and graduates of nursing programs, as well as to prospective students and their families. A number of potential graduates are lost from the profession or their entry into practice is delayed because of NCLEX-RN failure. This failure comes after a significant investment of time and money on the part of the students, schools of nursing, and employers.

Prior research has identified a variety of predictors of nursing licensing examination success (Jenks, Selekman, Bross & Paquet, 1989; Krupa, Quick, & Whitley, 1988; McKinney, Small, O'Dell & Coonrod, 1988; Payne & Duffy, 1986; Woodham & Taube, 1986; Yang, Glick & McClelland, 1987). Factors most commonly delineated are preadmission predictors including the Scholastic Aptitude Test scores (Dell, 1984; Quick, Krupa & Whitley, 1985; Yang, Glick & McClelland, 1987); pre-nursing grade point average and high school rank (Felts, 1986; Jenks, Selekman, Bross & Paquet, 1989; McKinney, Small, O'Sell & Coonrod, 1988; Payne & Duffy, 1986); predictor variables during matriculation in the nursing program including the Mosby Assesstest, National League for Nursing (NLN) scores, cumulative nursing

Research regarding predictors of NCLEX-RN success, however, has been done primarily with baccalaureate nursing students and associate degree nursing students. Only limited studies exist that have examined predictors of success on NCLEX-RN with diploma nursing students (Crane, Wright, and Michael, 1987; Breyer, 1984; Shelley, Kennamer & Raile, 1976). No studies were found in the literature that used the Mosby Assessment as a single predictor of success on NCLEX-RN with traditional or accelerated diploma nursing graduates.

Despite the amount of research conducted on predictors of success on the licensing examination
(NCLEX-RN), the nursing profession continues to witness failures on the NCLEX. Because all graduating nursing students are required to pass the licensing examination in order to become licensed as registered nurses, it is paramount that each nursing educational program provide as much assistance as possible in aiding students to prepare for the exam and be successful.

Overview of Conceptual Basis

The conceptual basis for this study was derived from Malcolm Knowles's andragogical model of adult learning. The concept of a unified theory of adult learning or andragogy has been used in education to differentiate it from the theory of youth learning or pedagogy. The term (Andragogik) was first used by a German grammar school teacher, Alexander Kapp, in 1833. The andragogical model (Knowles, 1990) is based on several assumptions: the need to know; the learners' self-concept; the role of the learners' experience; readiness to learn; orientation to learning; and motivation.

The andragogical model is a process model that is concerned with providing procedures and resources for helping adult learners acquire information and skills.
The model recognizes that individual differences among people increase with age; therefore, the education of adults must make optimal provision for differences in style, time, place, and pace of learning. Because the subjects of this study were traditional and accelerated diploma nursing students in a adult learning environment, the andragogical model was thought to be pertinent and applicable.

Purpose of the Study

The purpose of this study was to determine what relationship exists between Mosby Assess test scores and success on the NCLEX-RN in traditional and accelerated diploma nursing graduates and if there was a significant difference in the relationship between the two groups.

Research Hypotheses

Three research hypotheses were developed for the study. The first research hypothesis for this study was: there will be a relationship between Mosby Assess test scores and success on NCLEX-RN of traditional diploma nursing graduates. The Null hypothesis was there will be no relationship between Mosby Assess test scores and success on NCLEX-RN of traditional diploma nursing graduates.
The second research hypothesis for this study was: there will be a relationship between Mosby Assesstest scores and success on NCLEX-RN of accelerated diploma nursing graduates. The Null hypothesis was there will be no relationship between Mosby Assesstest scores and success on NCLEX-RN of accelerated diploma nursing graduates.

The third research hypothesis addressed the difference in the relationship between traditional and accelerated diploma nursing graduates. The first relationship was between Mosby Assesstest scores and success on NCLEX-RN of traditional diploma nursing graduates and the second relationship was between Mosby Assesstest scores and success on NCLEX-RN of accelerated diploma nursing graduates. Therefore, the third research hypothesis for this study was: there will be a difference in the relationships. The Null hypothesis is there will be no difference in the relationships.

Definition of Terms

The definition of key terms used in this study were as follows.

Traditional diploma nursing graduates were defined as students who completed the midwest diploma nursing program in thirty months. The students enrolled in the
traditional diploma program took their nursing support classes along with their nursing courses.

Accelerated diploma nursing graduates were defined as students who completed the midwest diploma nursing program in fifteen months. The students enrolled in the accelerated diploma program had to have completed all their nursing support courses before being enrolled in the program.

Mosby Assesstest score was defined as the cumulative score on the four comprehensive tests that compose the Mosby Assesstest.

NCLEX-RN success was defined as a passing score on the National Council Licensure Examination for Registered Nurses.

Significance of Study to Nursing

The data available in the literature involving predictors of success on NCLEX-RN with diploma schools of nursing graduates are very sparse. This study added information to the body of nursing knowledge as well as adult education. This study generated ideas for future research in regard to the adult learner and how nursing educators can identify what predictors would help that type of student be successful on the NCLEX-RN and in practice. It also raised the question of whether a
pencil and paper examination is the best measure of basic, safe, and competent practice for entry into the profession for the graduate who is an adult learner.
CHAPTER II

REVIEW OF LITERATURE

The purpose of this study was to determine if a relationship exists between Mosby Assesstest scores and success on the NCLEX-RN in traditional and accelerated diploma nursing graduates and if there was a significant difference in the relationship between the two groups. In this chapter, the conceptual basis for the study and a review of the current literature is presented. The conceptual framework that formed the basis for the study will be addressed first, followed by an overview of pertinent literature and an examination of the Mosby Assesstest.

Conceptual Basis

The conceptual basis for this study was derived from Malcolm Knowles's andragogical model of adult learning. The andragogical model is a process model that is concerned with providing procedures and resources for helping adult learners acquire information and skills. The andragogical model (Knowles, 1990) is based on several assumptions that will be addressed separately: the need to know; the learners' self-concept; the role of the learners' experience;
readiness to learn; orientation to learning; and motivation.

The first assumption of Knowles' andragogical model of adult learning is the need to know. Tough (1979) found that when the adult learner undertakes to learn something independently considerable energy will be invested in probing into the benefits they will gain from learning it and the negative consequences of not learning it. Nursing students who are adult learners exhibit similar characteristics, in that they have entered the nursing program for the need to know how to become a nurse. In order for the nursing student to understand how to become a nurse, the fields and areas of knowledge about the practical science of nursing must be understood. This area of knowledge is necessary so the student is able to make nursing judgments based on sound rationale.

The second assumption of Knowles' model is the learners' self-concept. The self-concept of the healthy adult is one that reflects responsibility for decisions regarding one's own life. The adult learner must take responsibility and accountability for what they learn and how they learn best. When the learners' self-concept is unhealthy the process of learning will
be hindered and less effective. The students within the diploma nursing program have entered the educational setting with a need to be seen by others and treated by others as being capable of self-direction. Although students' self-concepts vary in relation to their age, maturity, degree of development, and experience, they can all be considered adult learners.

The third assumption of Knowles' model is the role of the learners' experience. The adults entering the diploma nursing programs come into the educational activity with a vast variety of life experiences. Orem (1991) believed that the art of nursing and nursing prudence develop with experience. "The degree to which and the manner in which they develop in individual nurses are associated with nurses' talents, personality characteristics, developed and preferred modes of thinking, stages of personal moral development, abilities to conceptualize complex situations of action and to analyze and synthesize factual information, and the kinds of life experiences they have had, including nursing experiences" (p. 257). The experiences of the traditional and accelerated diploma nursing graduates were varied and had an impact on their learning and the type of nurses they would become.
The fourth assumption of Knowles' model is the readiness to learn. Adult learners will become ready to learn those things they need to know in order to cope effectively with their life situations (Knowles, 1990). The subjects of the study are traditional and accelerated diploma nursing students in a adult learning environment. The students readiness to learn is at various levels because the students come into the educational setting with a variety of backgrounds as well as educational differences. The readiness to learn will affect the students ability in being successful in the nursing program as well as the profession.

The fifth assumption of Knowles' model is the learners' orientation to learning. Adult learners are life-centered, task-centered or problem centered in their orientation to learning (Knowles, 1990). The adult learner learns most effectively in the context of application to real-life situations (Knowles, 1990). Within the diploma nursing programs new knowledge, understanding, skills, values, and attitudes are presented in the context of actual nursing situations. The diploma nursing students come into the educational setting with a vast array of real-life situations in which to draw upon. The students who entered the
diploma programs were motivated to complete the program and become a nurse. Knowles (1990) believed that adults are motivated to devote energy to learn something to the extent that they perceive that it will help them perform tasks or deal with problems that they confront in their life situations.

The sixth assumption of Knowles' model is the learners' motivation to learn. Knowles (1990) believed adults are responsive to some external motivators but the most potent motivators are internal pressures such as the desire for increased job satisfaction, self-esteem, and quality of life. Students in the diploma nursing programs are adults with different levels of motivation as to why they have chosen to enter nursing. Diploma nursing students are at different stages in their life as well as different levels of maturity that also will affect their motivation to learn. These internal pressures do influence learning as well as influence the type of nurse they will become when they enter the profession. The driving motivator to become a nurse, whether it's to care for patients or it is a source of income needs to be determined.

The andragogical model is consistent with the purpose of the study. The subjects of the study are
traditional and accelerated diploma nursing students in a adult learning environment in which the andragogical model would be pertinent and applicable. The diploma nursing students are at various levels at being responsible for their own lives as well as being self-directing.

Review of Pertinent Literature

The literature review will examine nursing educators' concerns about student performance, predictors of success for the NCLEX-RN, and the Mosby Assessstest as a predictor of success on NCLEX-RN.

In examining the educational background of registered nurses, it is important to note their initial preparation. There are three types of nursing programs that can prepare the student to write the NCLEX-RN for licensure. These are the baccalaureate, associate degree program, and the hospital diploma program. A recent development within nursing education has been the evolution of accelerated nursing programs that enable nursing students to complete a specified program at an accelerated pace.

The development of accelerated nursing education programs has occurred in response to the type of student (older and second career) that nursing programs
have been attracting and recruiting. Wu and Connelly (1992) stated:

By building on students' life, educational, and professional experiences, these shortened accelerated programs are an efficient use of nursing program resources and an effective strategy for increasing the supply of nurses by successfully recruiting a heretofore untapped pool of candidates for the profession (p.39).

With the implementation of accelerated nursing programs it is important for nurse educators to examine the effectiveness of this type of nursing program as it compares to traditional nursing programs.

One way to examine the effectiveness of nursing programs is to examine the NCLEX-RN success/failure results among the graduates from the traditional and accelerated programs. According to Kane (1982), success on NCLEX-RN by a large proportion of school's graduating class provides evidence that the school's curriculum contains content essential for entry into nursing practice at a minimally competent level.

Lengacher and Keller (1990) recognized that within nursing education there is a concern about student performance on the NCLEX-RN particularly because the
profession is having difficulty attracting nurses to all levels of nursing education. Attrition within nursing programs is expensive to the program, the health care system and the student. An investigation of predictors of NCLEX-RN success within nursing education is needed in order to diminish attrition.

According to Felts (1986), the assessment of nursing education is essential for many reasons that include: financial; the rights of students as consumers; decreasing enrollment in the traditional age group with an increase in attendance of non-traditional and minority students; faculty responsibility; accountability; career mobility; and the changing role of the health care provider. Included in the assessment of nursing education is the identification of students at risk for failure on the NCLEX-RN and the initiation of interventions that promote success.

Prior research has identified a variety of predictors of NCLEX-RN success. Fowles (1992) identified that "since 1982 when the NCLEX-RN was instituted as the nationally approved licensing examination for registered nurses, several researchers have endeavored to identify common predictors that have the strongest correlation with success on the NCLEX-RN,"
with disappointing results" (p.53). The three categories that have been delineated are preadmission predictors, predictor variables during matriculation within the nursing program, and noncognitive variables (age, aptitude, and achievement orientation).

Several authors have reported preadmission variables that have been predictors of NCLEX-RN success including high school Grade Point Average (GPA); Scholastic Aptitude Test (SAT) verbal, math, and total scores. Quick et al. (1985) studied 182 baccalaureate nursing students and examined the following admission data: SAT-Verbal and Mathematics scores; GPA at the end of the freshmen years; and grades in cognate courses (general chemistry, biochemistry, anatomy and physiology, and college algebra) to predict success on the NCLEX-RN. The Wilks' lambda and its associated chi-square revealed that the predictor variables (GPA at end of freshman year and SAT Verbal) did discriminate between the pass/fail groups \( \lambda = 0.753, \chi^2 = 37.23, p < 0.0001 \). The standardized discriminant function coefficients (0.6752) revealed that GPA at the end of the freshman year and the verbal portion of the SAT (0.5910) make the greatest contribution to the prediction of NCLEX-RN performance.
Dell & Halpin (1984) studied 456 African American baccalaureate nursing students and examined high school GPA senior year cumulative GPA, SAT Verbal and quantitative scores and NLN Pre-Nursing Examination scores to predict success on State Board Examinations (SBE). The five variables significantly differentiated between those who passed the SBE and those who did not with a chi square of ($\chi^2 = 23.76, p < .001$).

The college GPA possessed the highest discriminating weight ($F = 18.03, p < .001$), followed by the NLN Pre-Nursing Examination ($F = 13.70, p < .001$) and then the SAT-verbal ($F = 12.93, p < .001$).

Yang et al. (1987) studied 210 baccalaureate nursing students to investigate the relationship between admission selection variables (high school rank, American College Testing (ACT) subtest and composite scores, cumulative GPA for chemistry, biological sciences, social sciences, and all prenursing courses) and performance on the NCLEX-RN. The correlation coefficients with the highest predictor value for successful achievement on the NCLEX-RN was the ACT social science subscore ($r = .48, p < .01$), followed by the ACT composite score ($r = .42, p < .01$), and all prenursing courses GPA ($r = .40, p < .01$).
Fowles (1992) studied 192 baccalaureate nursing graduates to identify predictors of success on NCLEX-RN within the nursing curriculum. The predictor variables for this study were ACT scores, lower division GPA-after required courses, GPA in science courses, GPA in liberal arts courses, GPA at end of nursing curriculum Level I and Level II: grades in Anatomy and Physiology I and II; and Mosby Assessstest percentile correct/percentile. The correlation coefficients were statistically significant (p = 0.05) for the following variables to predict NCLEX-RN success: percent/percentile score on Mosby Assessstest (0.7660 and 0.7947); GPA at the end of level I in the nursing sequence (0.7388); GPA at the end of Level II (0.6998); GPA at the end of Level III (0.6758); and ACT composite and social science subscale scores (0.5259 and 0.5547).

Foti & DeYoung (1991) studied 298 baccalaureate nursing graduates to determine variables that predict success on the NCLEX-RN. The variables studied were overall GPA, GPA in the major, GPA in science, SAT Verbal/Quantitative scores, NLN Achievement Test scores, and Mosby Assessstest. Multiple regression analysis indicated that the most useful combination of predictors was the Mosby Assessstest, SAT Verbal and
overall GPA \((R = .46, F 55.99, p < .0001;\) Mosby Assess-test and SAT Verbal \((R = .46, F 41.39, p < .0001).\) Pearson correlations \((p = .0001)\) yielded significant relationships between selected predictor variables and the NCLEX: the Mosby Assess-test \((p = .66);\) overall GPA and GPA in the major \((p = .59);\) and NLN test \((p = .51).\)

Horns et al. (1991) studied 408 baccalaureate nursing students and the use of progressive indicators as predictors of NCLEX-RN success. Preadmission variables were sex, age, race, and admission GPA. Year two variables were numerical grades for the first two clinical nursing courses. Year three variables were numerical grades for clinical courses in mental health, adult health, and maternal child nursing. Year four variables were numerical grades in two senior clinical courses, percentile rank on NLN comprehensive exams and graduate GPA. Forward regression analysis predicting NCLEX-RN success revealed that preadmission GPA \((t = 7.65, p < .0001)\) and race \((t = 5.16, p < .0001)\) were significant predictors which accounted for 33% of the variance on NCLEX-RN. Admission GPA, race, second level clinical course \((\text{Nursing 246}),\) the third year course entitled Adult Health, the fourth year nursing course
(Nursing 457) and NLN scores accounted for 67% of the variance on NCLEX-RN ($R = .67$, $p < .0001$).

Lengacher & Keller (1990) studied 146 associate degree nursing graduates to examine the relationship between selected admission variables (GPA upon admission into the nursing program; ACT subtest scores in English, mathematics, and ACT composite scores; age; perception of role strain; achievement on NLN examinations; exit GPA; nursing theory/clinical grades and performance on NCLEX-RN. The best predictor for performance on the NCLEX-RN was the grade achieved in two theory courses during the second year ($R = .77$ and $R = .79$, $p = .01$), ACT composite scores ($R = .75$, $p = .01$), exit GPA ($R = .71$, $p = .01$), NLN Psychiatric Nursing Examination ($R = .70$, $p = .01$) and the NLN Basic Two Examination ($R = .66$, $p = .01$).

Jenks et al. (1989) studied 407 baccalaureate nursing graduates to identify predictors of success on the NCLEX-RN and determine the optimal point in time for identifying students at risk. Prematriculation variables including total lower division GPA, science GPA, type of lower division college, age, and sex; junior year variables that were three nursing theory course grades; and pre-graduation variables composed of three senior
nursing theory course grades and the raw score on Mosby Assessstest were analyzed for predictive value. Nursing theory courses grades at junior level \((r = .610, \ p < .0001)\) and senior level \((r = .616, \ p < .0001)\) and Mosby Assessstest \((r = .730, \ p < .0001)\) strongly correlated with success on the NCLEX-RN.

Feldt & Donahue (1989) studied 155 baccalaureate nursing graduates to identify the best linear combinations of variables to predict nursing GPA and success on NCLEX-RN. The variables included high school percentile rank, ACT scores, and grades for individual college courses. The best set of predictors that provided a statistically significant prediction of NCLEX-RN success (using a multiple-regression analysis) was nursing GPA \((t = 6.15, \ p < .001)\), ACT composite score \((t = 2.61, \ p < .01)\), first semester chemistry grade \((t = 2.27, \ p < .05)\), and high school percentile rank \((t = -2.76, \ p < .01)\). Discriminant analysis was employed to discriminate the pass/fail groups. The best variable which discriminated the two groups was nursing GPA \((R = .34; \ F = 19.8, \ p < .01)\).

Krupa et al. (1988) studied 384 baccalaureate nursing graduates to determine whether grades in nursing
courses could predict performance on the NCLEX-RN. The structure coefficients revealed that student grades in the introductory nursing course during the sophomore year \((r = .76)\) made the greatest contribution to the prediction of NCLEX-RN performance. The classification of student performance on the NCLEX-RN using grades in nursing courses reveals that 74.9% of the graduates were correctly classified.

McKinney et al. (1988) studied 136 baccalaureate nursing graduates to identify predictors of success for the NCLEX-RN and to identify students at risk for NCLEX failure. The relationships among pre-entrance test scores (SAT-Total, Math and Verbal), GPA (cumulative, prenursing, nursing theory, and clinical), Mosby Assesstest scores, NCLEX-RN scores, age, sex, courses repeated, and Type A behavior were determined. The correlation's revealed that the Mosby Assesstest scores \((r = 0.701)\), the SAT Verbal \((r = 0.610)\), SAT Total \((r = 0.577)\), the GPA-cumulative \((r = 0.585)\), the Nursing theory GPA \((r = 0.547)\), the cumulative nursing GPA \((r = 0.429)\) and the pre-nursing GPA \((r = 0.387)\) each were significant predictors of NCLEX-RN scores at \(p < .001\). A simple regression analysis showed that the SAT (Math, Verbal, and Total), pre-nursing GPA, nursing theory GPA,
cumulative nursing GPA, GPA, repeat courses, and Mosby Assess test were each linearly related to NCLEX-RN at p < 0.01.

Payne & Duffy (1986) studied 283 baccalaureate nursing graduates to determine the usefulness of academic predictors of NCLEX-RN scores. The academic predictors used in the study were SAT (Math, Verbal, and Total) and nursing GPA (junior/senior nursing courses and for all required courses). Nursing GPA's and SAT Verbal scores \( r = .732, p < .0001 \) had the highest correlation's with NCLEX scores both at the end of the junior year GPA where \( r = .722, (p < .0001) \); and at the end of the senior year GPA where \( r = .694, (p < .0001) \).

Felts (1986) studied 297 associate degree nursing graduates to determine which selected cognitive variables most effectively predicted successful performance in nursing courses and on NCLEX-RN. The cognitive variables used were high school GPA, ACT scores, grades in support and nursing courses and cumulative GPA. The variable that yielded significant discrimination between the pass/fail groups on the NCLEX-RN was the cumulative GPA \( f = 77.109, p < .001 \). The discriminating function of the cumulative GPA
correctly classified the 297 subjects in the group to which they most likely belonged 77.44% of the time.

Woodham & Taube (1986) studied 104 associate science in nursing (ASN) degree graduates to determine the relationship of selected admission criteria and performance in nursing didactic courses to success on the NCLEX-RN. Data examined in this study included age at graduation from the nursing program, high school class rank percentile, SAT Verbal/Math scores, percentage scores for each of the seven ASN nursing courses, and NCLEX-RN scores. All course grades for seven ASN nursing courses and the SAT Verbal score correlated positively using a Pearson Correlation with NCLEX-RN (p < .001) in all cases.

Aldag & Rose (1983) studied 787 associate degree nursing graduates to see if there was a relationship among age and ACT scores and college GPA and State Board Examination (SBE) scores. Prior to January 1988, the comprehensive minimum score for the exam was set at 1600. The exam consisted of five sections: medical, surgical, obstetric, pediatric, and psychiatric each of which had a numeric score. Since that date, the reported grade is only pass/fail. The proportion of the 30-39 age group who initially passed SBE is higher
than the proportion of the 17-29 year olds. Students who were age 40 and over had a 94.9% passing rate on SBE, age 30-39 had 97.3% passing rate on SBE, age 20-29 had 89.3% passing rate on SBE, and age 17-19 had a 82.1% passing rate on SBE. With the exception of mathematics all of the ACT score correlation's were positively related (p < .01) to the SBE scores.

Shelley et al. (1976) studied 117 diploma nursing students to determine if there was a correlation among NLN Achievement Test scores and SBE scores. The comprehensive NLN Achievement Test had a significant correlation with the three SBE test in medical nursing (r = .52, p < .001), surgical nursing (r = .54, p < .001), and obstetric nursing (r = .51, p < .001). The NLN Pharmacology in Clinical Nursing also showed a significant correlation with the three SBE test in medical nursing (r = .66, p < .001), surgical nursing (r = .68, p < .001), and obstetric nursing (r = .63, p < .001).

Breyer (1984) investigated the use of the National League for Nursing (NLN) Comprehensive Nursing Achievement Test (1982) to assess its ability to predict NCLEX-RN scores in 1,094 diploma and 1,402 associate
degree nurses. A strong positive relationship between success on the NLN Test and success on NCLEX-RN was found ($r = .71$).

The research involving predictors of success on NCLEX-RN with diploma schools of nursing is very limited. Crane et al. (1987) investigated twelve variables (age, high school GPA (HS-GPA), Anatomy GPA, Physiology GPA, Psychology GPA, cumulative GPA of support courses, cumulative GPA in required courses taken in a school of nursing (SN-GPA), California Achievement Tests (CAT) reading comprehension, reading total, mathematics computation, mathematics total) as predictors of achievement on the NCLEX-RN. SN-GPA ($r = .74$) was a valid predictor of NCLEX-RN success with 418 diploma nursing graduates. For Caucasian and Hispanic American subgroups, coefficients of correlation of SN-GPA with NCLEX-RN was $r = .75$ and $r = .74$ respectively. In the African American and Asian American subgroups, SN-GPA was only a modestly valid predictor of NCLEX-RN with $r = .54$ and $r = .57$ respectively.

Major predictors of success on NCLEX-RN identified by all studies were prenursing factors and performance within the nursing curriculum. The most frequently
identified predictors of success for BSN and associate degree nurses on NCLEX-RN were cumulative nursing GPA in individual nursing theory courses, overall GPA of support courses, and Mosby AssessTest. Among diploma nursing students the NLN Achievement Test scores and SN-GPA were found to predict NCLEX-RN success.

Investigations of noncognitive variables such as age, aptitude, psychological measures, personality traits and achievement orientation to predict academic success are limited as well as inconclusive. Hayes (1981) studied 290 baccalaureate nursing students to determine the validity of selected cognitive and noncognitive variables. The cognitive variables included SAT Verbal and Quantitative scores, GPA for two freshman semesters, grades in two chemistry courses, mathematics, psychology, and philosophy. The noncognitive variables were personality factors measured by the California Psychological Inventory (CPI) and the Survey of Interpersonal Values (SIV). The cognitive variables were the most powerful predictors of academic success as demonstrated by the F ratios (Psychology 17.622, mathematics 8.946, GPA for the two freshman semesters 5.829 and 5.683, p < .05). The F ratios for the noncognitive variables were not reported in the
study but were said to be non-contributory to the predictability of academic success.

Yess (1980) studied 75 associate degree nursing graduates to determine predictors of success in community college nursing education programs. The dependent variable was the cumulative quality point average (Q.P.A.) of the sample. The independent variables were gender, age, number of semesters college student discontinued enrollment before returning, four-year college transcripts, marital status, number of dependents, SAT, Verbal/Math scores, highest mathematics level achieved in high school, number of high school English courses, and average of grades earned in high school English courses. The findings of this study indicate that SAT-Math scores ($R = .159$, $p < .05$) were the single most important predictor of nursing education community college success. The marital status ($R = .217$, $p < .05$) variable is next in importance as a predictor. This was followed by the predictor of number of community college transcripts ($R = .303$, $p < .05$) sent to senior colleges.

Hutcheson et al. (1979) studied 261 baccalaureate degree nursing students to identify the impact of attitudinal orientations on attrition while controlling
for demographic characteristics and measures of previous academic performance. Traditional measures of scholastic aptitude were not found to be good indicators. The higher the father's educational attainment the more likely attrition was to occur. The higher the mother's occupational status, the less likely attrition was to occur. First year GPA was systematically related to attrition in that the higher the GPA the lower the attrition. Attitudinal measures used in the study had little impact on attrition.

Lunneborg et al. (1974) studied 153 undergraduates over the age of thirty-five to explore the predictability of college performance using traditional aptitude measures as well as selected background variables. The background variables of high school GPA, high school activities, years since full-time student, advanced degree goal, estimated years to Bachelor of Arts degree, all were more important in the prediction of college success than test performance. The multiple correlation scores ranged from $R = .48$ to $R = .70$ for women, and from $R = .52$ to $R = .91$ for men. Among women natural science GPA ($R = .70$) was the most useful criterion for predicting college performance. The most useful criterion for predicting college performance
among men was the humanities GPA (R = .91). No alpha level was given for the multiple correlation in this study.

The research investigating noncognitive variables to predict academic success is both limited and inconclusive. Hayes (1981) reported that cognitive variables rather than noncognitive variables were the most powerful predictors of academic success. No studies were found that used only non-cognitive variables to predict NCLEX-RN success. In addition, no studies were found that used diploma nursing students exclusively.

The Mosby Assesstest has been used in nursing schools as a tool to predict NCLEX-RN performance. It is comprised of four content-integrated tests that evaluate students' ability to apply essential nursing knowledge in various clinical situations. The Mosby Assesstest consists of 375 questions administered in four 90-minute periods that is consistent in format with the NCLEX-RN.

The Assesstest is organized in a nursing process framework. The questions are multiple choice and offer four possible answers to each question. Students receive score reports that include the total test score,
and subscores for five clinical areas (medical, surgical, obstetrical, psychiatric, and pediatric nursing); nursing behavior (assessing, analyzing, planning, implementing, and evaluating); cognitive level (knowledge, comprehension, application, and analysis); and client needs (physiological/anatomical equilibrium, safe/therapeutic environment, education/health promotion, and psychosocial/emotional equilibrium).

The Mosby Assesstest has been field tested with 2,205 baccalaureate, diploma, and associate degree nursing students. The reliability estimates were computed by the Kuder-Richardson formula. The Kuder-Richardson reliability coefficient is a measure of content sampling variation and content homogeneity; reliability measures of at least 0.70 are considered acceptable. The Mosby Assesstest field test had a Kuder Richardson Internal Consistency Reliability of 0.89 (Educational Testing Service, 1993). The Mosby Assesstest is a comprehensive, standardized measure of nursing education achievement. It also has been identified as a strong predictor of success on the NCLEX-RN (Henderson & Orr, 1989; Jenks, et al., 1989; Mckinney, et al., 1988; Wisenbaker & Lee, 1985).
Henderson & Orr (1989) studied 155 baccalaureate nursing students and found that although preadmission test scores were valuable predictors early in the nursing program, the Mosby Assessstest was the best predictor in the senior year. The highest single correlation in this study was between the Assessstest and State Board Examination ($r = .68$).

Jenks et al. (1989) found in a convenience sample of 407 graduates from a baccalaureate nursing program that nursing theory course grades at the junior and senior year and the Mosby Assessstest strongly correlated ($r = 0.730, p < .0001$) with NCLEX performance.

McKinney et al. (1988) studied 136 baccalaureate nursing graduates and found that there was a significant correlation ($p < .001$) between cumulative GPA; Mosby Assessstest ($r = 0.701$); preentrance test scores; prenursing, nursing theory, and clinical GPA; and NCLEX-RN performance.

Wisenbaker and Lee (1985) studied 172 nursing students in their last semester of an associate degree nursing program and found that there was a strong correlation between the Mosby Assessstest scores and scores on NCLEX-RN ($r = .67, p < .001$). They concluded that the Mosby Assessstest scores can be used to
successfully aid nursing students in preparing for state boards.

The relationship of the Mosby Assesstest and NCLEX-RN has been clearly identified. No studies were found in the literature that used the Mosby Assesstest as a single predictor of success on NCLEX-RN with traditional or accelerated diploma nursing graduates. The use of the Mosby Assesstest as a single predictor of success on the NCLEX-RN with accelerated and traditional diploma nursing students should be examined to provide nursing educators and their students the tools needed to ensure success within nursing education and on NCLEX-RN.

Summary of Literature Review

The conceptual basis for this study was derived from Knowles (1990) andragogical theory of adult learning. This theory was deemed useful for the study sample of traditional and accelerated diploma nursing students, in an adult learning environment. It is important for nursing educators to examine the effectiveness of accelerated nursing programs as they compare to traditional nursing programs. One way to examine the effectiveness of the nursing program is to look at NCLEX-RN success/failure and predictors of success among the graduates.
Yang et al. (1987) recommended that "research comparing scores from comprehensive standardized nursing test (e.g., Assesstest) with NCLEX-RN scores be done to provide a basis for identifying individual students at risk for failure on NCLEX-RN. Once identified, students at risk can be assisted to correct deficiencies and prepare for the licensure examination in a systematic way" (p.305).

Categories of predictors of NCLEX-RN success were identified in the nursing literature: preadmission predictors; predictor variables during matriculation in the nursing program; and noncognitive variables. The strongest predictors of NCLEX-RN success were: GPA (nursing and cumulative); Mosby Assesstest; SAT-Verbal; NLN Examination scores; nursing course grades; and ACT scores. (Appendix A). Research involving predictors of success on NCLEX-RN with diploma schools of nursing was limited. This study was designed to fill that gap by examining the usefulness of the Mosby Assesstest as a predictor of NCLEX-RN success for traditional and accelerated diploma nursing students.
CHAPTER III

METHODOLOGY

The purpose of this study was to determine if a relationship exists between Mosby Assesstest scores and success on the NCLEX-RN in traditional and accelerated diploma nursing graduates and if there is a significant difference in the relationships between the two.

Research Design

A correlational design was used. Polit and Hungler (1991) defined a correlation coefficient as an index of the extent to which two variables are interrelated. The correlation between Mosby Assesstest scores and success on the NCLEX-RN in traditional and accelerated diploma nursing graduates and the difference in the relationships between the two groups were studied.

Protection of Human Subjects

Permission to conduct the study was obtained from the Human Subjects Review Committee at Drake University (Appendix C), Iowa Methodist Research and Innovation Committee (Appendix D), and the Director of the Division of Nursing from a medium-sized diploma nursing program in the midwest (Appendix D) where the study was conducted. Access to student records by faculty is permissible and identified in the School of Nursing
catalog. Informed consent is provided by students at program entry (Appendix E).

Subjects and Sampling Method

Subjects were diploma nursing graduates from traditional (May, August, and December of 1993) and accelerated (November of 1992 and December of 1993) programs. The setting for the study was a medium-sized diploma nursing program in the Midwest. The graduates of the program were granted a Diploma in Nursing and were allowed to take the NCLEX-RN. The convenience sample consisted of the graduate records from the accelerated and traditional diploma nursing programs. The traditional program graduate records numbered fifty-nine and the accelerated program records numbered forty-four. Out of the 105 graduates from the traditional and accelerated diploma programs, two (one from each of the sample groups) had to be excluded from the study because of insufficient data.

The data-producing sample consisted of 103 Caucasian subjects. The demographic data from the sample varied from the schools norm as well as the national norm. The demographic data from the midwest diploma nursing school (91.8% female, 8.2% male, and 96% Caucasian) were similar to the demographic data of the
enrollment population of diploma schools in the nation. National League of Nursing Datasource 1990 reported that enrollment to diploma programs as being made up 92.2% female, 7.8% male, and 86% Caucasian. The range of nursing GPA's at graduation was 2.57 to 3.84 for the accelerated diploma nursing graduates and 2.15 to 3.96 for the traditional diploma nursing graduates.

The sample contained 85% female graduates and 15% male graduates. In the accelerated programs there were 80% female and 20% male graduates. The traditional program sample had 90% female and 10% male graduates. Table 1 depicts the distribution of gender.

Table 1
Distribution of gender between accelerated and traditional nursing groups (n=103)

<table>
<thead>
<tr>
<th>Total Sample n=103</th>
<th>Traditional n=59</th>
<th>Accelerated n=44</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>#</td>
<td>%</td>
</tr>
<tr>
<td>Female</td>
<td>88</td>
<td>85%</td>
</tr>
<tr>
<td>Male</td>
<td>15</td>
<td>15%</td>
</tr>
<tr>
<td>Total</td>
<td>103</td>
<td>100%</td>
</tr>
</tbody>
</table>

Seventy of the subjects were in the age range of 20-30 years old. In the traditional group sample 86%
were in the age range of 20-30 years old and in the accelerated group 43% were in the 20-30 years age group.
The 18 to 24 year old category is declining in the United States, this age group only made up 10.3% of our population in 1990 and it is estimated it will only make up 9.3% of the population in the year 2000 (U.S. Bureau of the Census). Table 2 depicts the distribution of age.

Table 2
Distribution of Age Range for the accelerated and traditional group (n=103)

<table>
<thead>
<tr>
<th>Age groups</th>
<th>Total Sample (n=103)</th>
<th>Traditional (n=59)</th>
<th>Accelerated (n=44)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20-30</td>
<td>n=70, 68%</td>
<td>n=51, 86%</td>
<td>n=19, 43%</td>
</tr>
<tr>
<td>31-40</td>
<td>n=25, 24%</td>
<td>n=5, 9%</td>
<td>n=20, 45%</td>
</tr>
<tr>
<td>41-50</td>
<td>n=5, 5%</td>
<td>n=2, 3%</td>
<td>n=3, 7%</td>
</tr>
<tr>
<td>51-60</td>
<td>n=3, 3%</td>
<td>n=1, 2%</td>
<td>n=2, 5%</td>
</tr>
</tbody>
</table>
In the total sample 37% were married and 58% were single. Within the accelerated programs sample 48% were married and 50% were single and the traditional programs sample 29% were married and 64% were single. The distribution of marital status of the sample is depicted in Table 3.

Table 3

<table>
<thead>
<tr>
<th>Marital Status</th>
<th>Total Sample (n=103)</th>
<th>Traditional (n=59)</th>
<th>Accelerated (n=44)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
</tr>
<tr>
<td>Married</td>
<td>38</td>
<td>37%</td>
<td>17</td>
</tr>
<tr>
<td>Single</td>
<td>60</td>
<td>58%</td>
<td>38</td>
</tr>
<tr>
<td>Divorced</td>
<td>5</td>
<td>5%</td>
<td>4</td>
</tr>
<tr>
<td>Totals</td>
<td>103</td>
<td></td>
<td>59</td>
</tr>
</tbody>
</table>

Prior education characteristics of the sample indicated that 54% of students had 1-3 years of college. In the accelerated program 45% had 1-3 years of college, while 61% of subjects in the traditional program had 1-3
years college. Only 3% of the total sample had a college degree prior to entering the diploma nursing programs. In the accelerated group 5% had a college degree, while 2% of subjects in the traditional group had a college degree. Within the accelerated group 39% had over four years college without a degree and 12% of the traditional group had over four years college without a degree. The distribution of prior education is depicted in Table 4.
### Table 4

**Distribution of Prior Education (n=103)**

<table>
<thead>
<tr>
<th>Education</th>
<th>Total Sample (n=103)</th>
<th>Traditional (n=59)</th>
<th>Accelerated (n=44)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
</tr>
<tr>
<td>High School Diploma/equiv.</td>
<td>14</td>
<td>14%</td>
<td>13</td>
</tr>
<tr>
<td>1-3 years college</td>
<td>56</td>
<td>54%</td>
<td>36</td>
</tr>
<tr>
<td>4 years college-degree</td>
<td>3</td>
<td>3%</td>
<td>1</td>
</tr>
<tr>
<td>over 4 years of college</td>
<td>24</td>
<td>23%</td>
<td>7</td>
</tr>
<tr>
<td>Other</td>
<td>6</td>
<td>6%</td>
<td>2</td>
</tr>
</tbody>
</table>
Data-Collection Tools and Procedures

The records of accelerated (November of 1992 and December of 1993) and traditional (May, August, and December of 1993) diploma graduates were obtained from the school registrar. The researcher coded the data according to the following format. The accelerated graduates had a identifying number starting with "A" followed by a number from one to forty-four and the traditional graduates had a identifying number starting with "T" followed by a number from one to fifty-nine. The sociodemographic data, Mosby Assessstest cumulative score and results from NCLEX-RN were copied on to a data collection tool designed by the researcher (Appendix B).
CHAPTER IV

ANALYSIS OF DATA

The purpose of this study was to determine if a relationship existed between Mosby Assesstest scores and success on the NCLEX-RN in traditional and accelerated diploma nursing graduates located in the Midwest and if there was a significant difference in the relationship between the two groups. The Apple Macintosh Microsoft Excel Analysis ToolPak (version 4.0) was used for the data analysis.

The sociodemographic data were analyzed using descriptive statistics. The Apple Macintosh Microsoft Excel Analysis ToolPak version 4.0 was used for analysis. The mean, median, and mode for the variable of age was determined (Table 5). The mode and percentage was determined for the nominal measurements of gender, race, marital status, and previous education.
The first research hypothesis was: there will be a relationship between Mosby Assessment scores and success on NCLEX-RN of traditional diploma nursing graduates. It was tested using a point biserial correlation coefficient. The mean scores and the standard deviation for the Mosby Assessment were computed.

The second research hypothesis was: there will be a relationship between Mosby Assessment scores and success on NCLEX-RN of accelerated diploma nursing graduates was also tested using a point biserial correlation coefficient. The mean scores and the standard deviation for the Mosby Assessment were computed. The t-test was
used to test the difference in the group means of the Mosby Assessment between the accelerated and traditional nursing graduates. The results were analyzed at an alpha level of .05.

The third hypothesis addressed the difference in the relationship between traditional and accelerated diploma nursing graduates. A Fisher's Z transformation was used to test the difference between the point biserial correlation coefficients of the traditional and accelerated nursing graduates. The results were analyzed using an alpha level of .05.

The mean scores and the standard deviation for the Mosby Assessment were computed and appear in Table 6. The mean score for the traditional student was 249 with a standard deviation of 23.0. The Mosby Assessment mean scores for the accelerated group was 250 with a standard deviation of 21.03.
### Table 6

**Mosby Assessstest Scores of students in the accelerated and traditional diploma nursing programs**

<table>
<thead>
<tr>
<th>STUDENTS</th>
<th>ACCELERATED PROGRAM</th>
<th>TRADITIONAL PROGRAM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>250</td>
<td>249</td>
</tr>
<tr>
<td>Median</td>
<td>249</td>
<td>249</td>
</tr>
<tr>
<td>Mode</td>
<td>255</td>
<td>249</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>21.03</td>
<td>23.0</td>
</tr>
<tr>
<td>Minimum</td>
<td>205</td>
<td>210</td>
</tr>
<tr>
<td>Maximum</td>
<td>300</td>
<td>296</td>
</tr>
</tbody>
</table>

The differences in group means (Mosby Assessstest) between accelerated and traditional nursing graduates was tested using an independent t-test \((t = -0.2509, df = 101, p = .802)\). The assumptions for the independent t-test were met. The data did not provide sufficient evidence to conclude that a difference exists between the group means. Findings are presented in Table 7.
Table 7

Differences in Mosby Assesstest (scores) group means between the traditional and accelerated students

<table>
<thead>
<tr>
<th>Program</th>
<th>Mean score</th>
<th>t</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accelerated</td>
<td>250.3</td>
<td>-0.2509</td>
<td>101</td>
<td>.802</td>
</tr>
<tr>
<td>Traditional</td>
<td>249.2</td>
<td>1</td>
<td>101</td>
<td></td>
</tr>
</tbody>
</table>

The first research hypothesis, there will be a relationship between Mosby Assesstest scores and success on NCLEX-RN of traditional diploma nursing graduates, was tested using a point biserial correlation coefficient and analyzed at a alpha level of .05 (Table 8). The findings for the traditional diploma program was 0.2771 which showed the ability of the Mosby Assesstest to predict success on NCLEX-RN was weak and positive. The success rate of the traditional group on the NCLEX-RN was 97% (57 passed and 2 failed).
Table 8

Point Biserial Correlation Coefficient for the traditional program

<table>
<thead>
<tr>
<th>Traditional Program</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0.2771</td>
<td></td>
</tr>
<tr>
<td>(alpha level of .05)</td>
<td></td>
</tr>
</tbody>
</table>

The second research hypothesis, there will be a relationship between Mosby Assessstest scores and success on NCLEX-RN of accelerated diploma nursing graduates was tested using a point biserial correlation coefficient and analyzed at a alpha level of .05. The findings for the accelerated diploma group was 0.2451 (Table 9) and shows a weak positive correlation between Mosby Assessstest scores and their ability to predict NCLEX-RN success. The success rate for the accelerated group on the NCLEX-RN was 96% (42 passed and 2 failed).
Table 9

Point Biserial Correlation Coefficient for the accelerated program

<table>
<thead>
<tr>
<th>Accelerated program</th>
<th>0.2451</th>
</tr>
</thead>
<tbody>
<tr>
<td>(alpha level of .05)</td>
<td></td>
</tr>
</tbody>
</table>

To test the significance of the point biserial correlation scores from zero for the accelerated and traditional diploma programs a two-tailed t-test was computed. The assumptions (homogeneity of variance, random sample, and normality) for the t-test were met. The traditional programs results regarding the ability of the Mosby Assess test to predict success on NCLEX-RN were statistically significant while the accelerated program results were not statistically significant. Results presented in Table 10.
Table 10

The significance of the point biserial correlation (rpb) for the accelerated and traditional diploma program

<table>
<thead>
<tr>
<th>Program</th>
<th>rpb</th>
<th>t</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accelerated</td>
<td>.245</td>
<td>1.673</td>
<td>42</td>
<td>p &gt; .05</td>
</tr>
<tr>
<td>Traditional</td>
<td>.277</td>
<td>2.202</td>
<td>57</td>
<td>p &lt; .05</td>
</tr>
</tbody>
</table>

The third hypothesis addressed the difference in the relationship between Mosby Assessment scores and NCLEX-RN success between traditional and accelerated diploma nursing graduates. A Fisher's Z transformation was used to test the difference between the point biserial correlation coefficients of the traditional and accelerated nursing graduates. The results were analyzed at an alpha level of .05 and were not statistically significant (see Table 11). There was insufficient evidence to conclude that there was a difference between the point biserial coefficients of the traditional and accelerated nursing graduates.
Table 11

**Difference in Point Biserial Correlations between programs**

<table>
<thead>
<tr>
<th>Diploma Program</th>
<th>Point Biserial</th>
<th>Fisher's $Z_r$</th>
<th>$Z$</th>
<th>Critical Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accelerated</td>
<td>0.2451</td>
<td>.250</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>.155</td>
<td>1.96</td>
</tr>
<tr>
<td>Traditional</td>
<td>0.2771</td>
<td>.282</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Finally, the difference between the proportion of graduates passing NCLEX-RN from the accelerated and traditional diploma programs was determined. The difference between the proportions was not statistically significant. Therefore there was not sufficient evidence to conclude that there was a difference between the proportions. Findings are presented in Table 12.
Table 12

**Difference between proportion of sample passing NCLEX-RN**

<table>
<thead>
<tr>
<th>Diploma Program</th>
<th>Proportion</th>
<th>Standard Error</th>
<th>Z Value</th>
<th>Critical Value Proportion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accelerated</td>
<td>.95</td>
<td></td>
<td>.0389</td>
<td>.51413</td>
</tr>
<tr>
<td>Traditional</td>
<td>.97</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A comparison of the NCLEX-RN failures from the traditional and accelerated programs are presented in Table 13. It is interesting to note that the youngest and the oldest in the study did not pass the NCLEX-RN. The oldest subject, age 55, among the accelerated group achieved a score of 205 on the Mosby Assessment and failed the NCLEX-RN. In contrast the youngest subject, age 21, among the traditional group achieved a score of 204 on the Mosby Assessment and failed the NCLEX-RN. The G.P.A.'s of the individuals who did not pass the NCLEX-RN were very similar.
Table 13

Comparison of NCLEX-RN failures from the traditional and accelerated groups

<table>
<thead>
<tr>
<th></th>
<th>Traditional</th>
<th>Accelerated</th>
</tr>
</thead>
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CHAPTER V
DISCUSSION, RECOMMENDATIONS AND IMPLICATIONS

The purpose of this study was to determine if a relationship exists between Mosby Assesstest scores and success on the NCLEX-RN in traditional and accelerated diploma nursing graduates and if there was a significant difference in that relationship between the two groups. In this chapter discussion of findings are presented, limitations of the study are identified, and recommendations for future research and implications for nursing are suggested. The chapter concludes with a summary of the study.

The researcher rejected the first null hypotheses and failed to reject the second and third null hypothesis at .05 level of probability. There was a weak positive relationship between Mosby Assesstest scores and success on NCLEX-RN of traditional diploma nursing graduates but no relationship was found between Mosby Assesstest scores and success on NCLEX-RN of accelerated diploma nursing graduates. The third hypothesis addressed the difference in the relationship between traditional and accelerated diploma nursing graduates. The first relationship examined was between Mosby Assesstest scores and success on NCLEX-RN of
traditional diploma nursing graduates. The second relationship examined was between Mosby Assesstest scores and success on NCLEX-RN of accelerated diploma nursing graduates. Finally, no differences were found between Mosby Assesstest scores and success on NCLEX-RN of traditional diploma nursing graduates and between Mosby Assesstest scores and success on NCLEX-RN of accelerated diploma nursing graduates identified in the third hypothesis.

Discussion of Findings

The results of this study were not consistent with previous research studies using the Mosby Assesstest and the NCLEX-RN success. For traditional diploma nursing graduates there was a weak positive relationship between the Mosby Assesstest scores and success on NCLEX-RN. Among the accelerated diploma nursing graduates no significant relationship between Mosby Assesstest scores and success on NCLEX-RN was found. The traditional group could have been a more homogenous sample than the accelerated group and this could account for the difference that was found.

Wisenbaker and Lee (1985) found that there was a strong correlation between the Mosby Assesstest scores
and scores on NCLEX-RN ($r = .67, p < .001$) of associate degree graduates. In 1985 actual NCLEX-RN scores were still being reported to graduates and schools of nursing. Since January 1988 graduates only receive pass or fail notification about the NCLEX-RN and do not receive actual scores. In this study the relationship between Mosby Assessstest scores was compared to a dichotomous variable (pass/fail) and this could account for the difference that was found. The type of nursing program also varied and this could account for the difference found.

The following studies found a significant correlation between Mosby Assessstest scores and NCLEX-RN performance among baccalaureate nursing program graduates: Mckinney et al. (1988) $r = 0.701, p < .001$; Jenks et al. (1989) $r = 0.730, p < 0.0001$; Henderson and Orr (1989) $r = 0.68$; Foti and DeYoung (1991) $p = 0.66$; and Fowles (1992) $r = 0.7947, p = 0.05$. The sample sizes for these studies ranged from 136-407. In this study a sample of 103 diploma graduates was used. The possibility exists that the type of nursing program may have influenced the findings. The type of students that enroll in baccalaureate nursing programs maybe different than those that enter a diploma nursing program. The
typical diploma nursing program may have more clinical
time early in their curricula than the typical
baccalaureate nursing program.

The andragogical model of adult learning was
thought to be pertinent and applicable because the
subjects of this study were traditional and accelerated
diploma nursing students in a adult learning
environment. Characteristics of the sample of nursing
graduates in both the traditional and accelerated
programs such as age, marital status, prior education,
grade point averages, learners' self-concept, maturity,
degree of development, knowledge, readiness to learn,
the need to know, motivation, orientation to learning,
environmental conditions, and life experiences were
unique to each individual graduate. These adult
learners entered the diploma programs with individual
learning styles. Even though there was insufficient
evidence to conclude that a difference existed between
the traditional and accelerated diploma graduates, it is
important to look at how the adult learner can be
successful on the NCLEX-RN and to determine what factors
influence their success.
Limitations of Study

Several limitations of the study were evident. The first limitation was that the researcher was not able to assess the degree to which the addition of confounding variables such as age, gender, marital status, previous education, previous life experiences, and stages of development affected the outcome on the Mosby Assessment and performance on NCLEX-RN. This was due in part to the small sample size; in a larger sample groups could be matched according to their confounding variables, thus decreasing this threat to validity. These confounding variables could have affected the findings of the study because they could not be controlled. If the variables could have been controlled the findings of the study may have been different.

The second limitation was that the sample may not have been representative of the general population. There may not have been any difference in the accelerated and traditional groups initially and therefore no difference was found. Also, the sample was obtained from three different classes from the traditional diploma group and two different classes from the accelerated diploma group which may have further confounded the results.
The third limitation of the study was that the researcher might have committed a Type-II error. The researcher might have accepted the null hypotheses when in reality they were not true. Smaller samples tend to produce a less accurate representation of the population, whereas a larger sample tends to increase the accuracy of findings.

The final limitation may have been a result of the data collection method from student files. Two student files were incomplete, one student from the traditional program and one from the accelerated program. These students were excluded from the study and may have caused the results to be skewed. If all the students who were excluded because of incomplete records were included in the study, the results may have been different.

Recommendations for Further Study

Further study would include a replication of this study with a different diploma nursing program. Further investigation into the methods utilized in nursing education that identify the student at risk for NCLEX-RN failure would also be a recommendation. This study revealed a need for continued investigation of the influence of noncognitive variables and cognitive
variables as predictors of NCLEX-RN success among adult diploma nursing students.

Another recommendation would be to do a replication of this study on a larger scale to investigate the threats to internal and external validity. Additionally, the researcher could utilize probability sampling such as stratified random sampling and obtain a list of diploma schools that give the Mosby Assess test in the senior year and match selected demographic variables that may affect the results of the study.

Implications for Nursing

The aim of research is to reveal relationships and increase understanding of phenomena to improve the human condition (Polit & Hungler, 1991). According to Chinn and Jacobs (1983), research is conducted for two purposes: the testing of theoretical relationships and the construction of theory (p. 147). Fawcett (1987) acknowledged that research in nursing is reciprocal to practice because the knowledge generated from research supports nursing practice and practice generates ideas for research (p. 57).

Research in nursing education is necessary to ensure quality programs that are assisting the graduates to be successful on NCLEX-RN as well as in nursing
practice. It is important for nursing educators to examine those predictors that can influence success on the NCLEX-RN. Even though the characteristics of the diploma, associate, and baccalaureate degree graduates are different, all graduates of these programs initially are measured for success on the basis of the same licensure examination. As long as this one examination exists as the entry level measure for the profession, it is essential that nurse educators continuously investigate the variables pertaining to NCLEX-RN success.

This study contributed to the body of nursing knowledge by exploring the relationship between Mosby Assesstest scores and success on NCLEX-RN among two types of students of one diploma program. The results of this study showed that among the traditional diploma graduates there was a relationship between Mosby Assesstest scores and NCLEX-RN success but not among the accelerated diploma graduates. It may be necessary for nursing educators to identify variables that aid the adult learner into being successful. It may be necessary to re-evaluate entry into nursing practice to include other measurements of success instead of just taking one examination (NCLEX-RN). How could caring be
measured or moral and ethical behavior? Does passing the NCLEX-RN measure the qualities that should be manifested in a professional nurse to practice nursing?

The success of nursing school graduates on the NCLEX-RN is of great concern to administrators as well as educators and graduates of nursing programs. NCLEX-RN failure comes after a significant investment of time and money on the part of the graduates, school of nursing, and employers. Also, a number of potential graduates are lost from the profession, or their entry is delayed, because of NCLEX-RN failure.

The study also added to the limited research that is being done in diploma nursing education. The study showed there was no difference in the relationship between the traditional and accelerated diploma graduates. The diploma graduates were adult learners that came into the program influenced by different personalities and life situations that have an impact on how they learn and succeed. Nursing educators have a responsibility to focus on individual learning styles and need to develop the knowledge base that is needed for the graduate to be successful in the nursing profession. As the age of nursing students increases (32% of the total sample was over 30 years old) nurse
educators must adapt their teaching styles to the adult learners style of learning which is life-centered in their orientation to learning (Knowles, 1990). This may require nursing educators to change and adapt their curriculum to meet the needs of the adult learner.
REFERENCES


APPENDICES
Appendix A

Predictors of NCLEX-RN success

<table>
<thead>
<tr>
<th>STUDY</th>
<th>CATEGORY</th>
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<tr>
<td>1. Quick et.al. (1986)</td>
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<tr>
<td>2. Wisenbaker &amp; Lee (1985)</td>
<td>M*</td>
</tr>
<tr>
<td>5. Yang et.al. (1987)</td>
<td>P/M</td>
</tr>
<tr>
<td>6. Fowles (1992)</td>
<td>P/M*</td>
</tr>
<tr>
<td>7. Forti &amp; De Young, (1991)</td>
<td>P/M*</td>
</tr>
<tr>
<td>10. Jenks et.al. (1989)</td>
<td>M*</td>
</tr>
<tr>
<td>11. Feldt &amp; Donahue (1989)</td>
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<tr>
<td>13. McKinney et.al. (1988)</td>
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<td>15. Felts (1986)</td>
<td>M</td>
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<tr>
<td>17. Shelley et.al. (1976)</td>
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<tr>
<td>19. Crane et. al. (1987)</td>
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**CATEGORY:**
P (preadmission predictors)
M (cognitive predictor variables during matriculation)
N (noncognitive predictor variables)

*(Mosby Assessstest as a predictor)*
## Appendix B

### Data Collection Tool

<table>
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<tr>
<th>ID #</th>
<th>AGE</th>
<th>RACE</th>
<th>GENDER</th>
<th>MAR. STATUS</th>
<th>PRIOR EDUCA.</th>
<th>MOSBY</th>
<th>NCLEX</th>
</tr>
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</table>

**Key**

**AGE**
1. 20–30 year old
2. 31–40 year old
3. 41–50 year old
4. 51–60 year old

**Race**
1. Caucasian
2. African American
3. Asian American
4. Hispanic American
5. Other

**Marital Status**
1. Married
2. Single
3. Divorced

**Gender**
1. Female
2. Male

**Prior Education**
1. High School
2. 1–3 years college
3. 4 years college with a degree
4. Over 4 years of college
5. Other

**Mosby Assessment Cumulative Score**
Actual raw score ( )

**NCLEX-RN Results**
1. Pass
2. Fail
Appendix C

Human Subjects Review Committee at Drake University
Proposal Title: The Mosby Assessment as a Predictor of Success on the NCLEX-RN Among Diploma Graduates

Investigator: Tracy Dickel

Faculty research advisor (for student research): Dr. Marian Hemstrom

To be completed by the Investigator:

Date Submitted: August 17, 1993

Decision:

Approval, no risk

Approval, minimal risk

Approval, subjects at risk, but benefits outweigh risks

No approval. Subjects at risk or proposal does not adequately address risks, benefits and procedures.

Reasons for Disapproval:

Suggested Changes:

To be completed by the Human Subjects Research Review Committee Chairperson:

Date Received: 9-15-93

Reasons for Disapproval:

Suggested Changes:

Human Subjects Review Committee Chair:

Date: 9-15-93

Final Notification Form
Appendix D

Iowa Methodist Research and Innovation Committee
July 6, 1993

Ms. Tracy Dickel  
1105 Boone Street  
Pella IA 50219

Dear Ms. Dickel:

This letter is to verify that you may have access to IMSN student records and NCLEX results for educational/research purposes.

I will look forward to seeing your results and wish you well.

Sincerely,

Pamela E. Bradley, RN, MS  
Director, Nursing Education

PEB:bjh
September 14, 1993

Tracy Dickel
1105 Boone St.
Pella IA 50219

Dear Tracy,

I had an opportunity today to present your proposal to the Research and Innovation Committee. The committee discussed your proposal briefly and decided that it was not necessary for there to be any action taken on your research.

However, I want to officially notify you that Iowa Methodist School of Nursing does completely support your research and use of the data necessary for your study.

If I can be of any further assistance, do not hesitate to contact me.

Sincerely,

Pamela E. Bradley
Director, Nursing Education

PEB:bjh
cc: Dr. Marion Hemstrom
    Dr. Sandra Sellers
    Dr. Keith McRoberts
Appendix E

Consent Form

The midwest diploma school catalog (1992/1993 and 1993/1994) for the students contained the following under education and privacy rights, "Personally identifiable information contained in the student record will be furnished to the following authorized persons; school officials, faculty and Medical Center officials who have a legitimate educational interest " (p. 46).

At admission to the program and at the beginning of each school year the student receives a handbook which contains policies and procedures concerning records. After reading the handbook, students are required to sign a form confirming that they have read and understood the handbook and then this signed statement is placed in the student's file.