

1996

Determinants of prerequisite criteria for associate degree nursing programs

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DOI: <https://doi.org/10.31979/etd.bs3m-y6hq>
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DETERMINANTS OF PREREQUISITE CRITERIA FOR ASSOCIATE DEGREE
NURSING PROGRAMS

A Thesis

Presented to

The Faculty of the School of Nursing

San Jose State University

In Partial Fulfillment

of the Requirements for the Degree

Master of Science

By

Wendy L. Ogden

December, 1996

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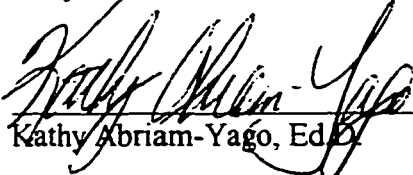
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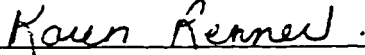
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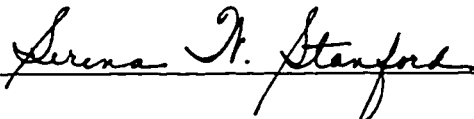


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ABSTRACT

DETERMINANTS OF PREREQUISITE CRITERIA FOR ASSOCIATE DEGREE NURSING PROGRAMS

by Wendy L. Ogden

This study examined phenomena surrounding the selection of prerequisite criteria for associate degree nursing programs in the state of California. The qualitative study was carried out by written survey of the 72 associate degree nursing (ADN) program directors in the state of California. Responses were grouped and categorized as themes emerged.

Responses suggest that ADN program prerequisite criteria are influenced greatly by state regulation from the California Chancellor's office. Most directors believe that grades are indicative of success in the nursing programs. There is no clear agreement, however, as to grades in which courses are predictive of successful completion of the associate degree nursing programs.

State regulations, academic factors, and factors such as equal access to education all emerged from this study. It is suggested that there is no consistency in the method by which associate degree nursing programs select prerequisite criteria for their students.

ACKNOWLEDGMENTS

I thank my son, Kevin McIntosh, and my husband, Edward Ogden, for their ongoing patience, love, and support during my years of graduate school. I thank all my friends and family for their encouragement during this process.

I also thank my readers, Dr. Mary Reeve, Dr. Kathy Abriam-Yago, and Karen Renner for their expertise, advice, and patience as I worked toward the achievement of my professional goals.

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Chapter 1

INTRODUCTION

Nursing education is the process by which a student can develop the knowledge and skills necessary to practice professional nursing. It extends beyond the dissemination of didactic information and the development of technical skills. Woodham and Taube (1986) state that "...the primary concern of nursing education is the implementation of knowledge in such a manner that the nursing student can become a competent, accountable, and effective professional in nursing practice" (p. 112).

Nursing education has been formalized since the late 19th century, when Florence Nightingale developed educational philosophies still in use today (Mitchell & Grippando, 1993). Her selection criteria were strict, with only 15 applicants selected from over 1000. Nightingale felt that nursing students should be educated in schools, rather than used to staff hospitals during their training. Nightingale's philosophies carried over into early United States nursing education as well.

The American Society of Superintendents of Training Schools for Nurses was developed in 1895 to address educational and admission standards for schools of nursing. In 1917, this organization, which was now known as the National League of Nursing Education, published a Standard Curriculum for Schools of Nursing, a three year training program. However, the war produced a severe nursing shortage, and many schools of nursing waived their admission criteria and varied their standards in an effort to alleviate this shortage (Mitchell & Grippando, 1993). There were also the philosophical

differences of opinion as to whether nurses required a college education or technical training.

After World War I, the United States was left with varied standards of nursing education. As a response to this, the Winslow-Goldmark report was published in 1923, and recommended that nursing schools be affiliated with colleges and universities in order to raise entrance requirements and to enhance the educational preparation of nurses (Mitchell & Grippando, 1993). After World War II, the 1948 Brown Report recommended that "...two-year college programs (associate degree) be developed to prepare nurses to relieve the nursing shortage" (Mitchell & Grippando). At that time, 90% of all nursing programs were diploma programs without "...the influence of a truly collegiate form of nursing education" (Montag, 1980). The first associate degree (AD) programs were started in 1952, in response to the recommendation for college-based nursing education to be achieved in a two-year period. In the ensuing years, AD programs have largely replaced hospital-based diploma programs. By 1991, there were nearly 800 state-approved associate degree nursing programs in the United States (Mitchell & Grippando).

Nursing educational programs in community colleges are influenced by state community college requirements, by the State Board of Nursing standards, and by the individual nursing program's requirements. In addition, some Associate Degree Nursing programs choose to be accredited by outside bodies such as the National League for Nursing. In order to achieve licensure, all registered nurse candidates must pass the

National Council Licensing Examination for registered nurses (NCLEX-RN). Nursing programs must develop criteria so their graduates will be successful in this examination.

Problem Statement

Applicants to associate degree programs of nursing education exceed available spaces despite recent trends toward fewer entry-level positions for registered nurses. Once students are admitted to a program of study, they begin a process of successive courses toward completion of their nursing education. Each course in the two-year program builds on the previous course. If a student is not successful and must vacate a "space" in the program, another candidate cannot step in to fill that place. Over a two-year period, this attrition reduces the number of students who complete the program. For example, at one local community college a nursing class started with 36 students, and graduated 25, creating an attrition rate of 31%.

It is in the community college's best interest to retain the students who enter a nursing program of study. First, community college students work extremely hard toward achievement of a specific goal of successful completion of nursing education. Educators have a duty to assist their students to achieve their optimal performance. Second, educators can gauge their success by the success of their students. Again, it is in the educator's best interest to retain students. And third, colleges receive revenue for each student enrolled, creating a financial incentive to ensure retention.

Students withdraw from a program of study for a variety of reasons. Academic difficulty is one reason, but there are many other possible extenuating circumstances. A student may have a family crisis, may begin nursing education only to find that nursing is

not a desirable career option, or may withdraw because of the rigor of the classes and clinical practicum. Because of confounding variables, withdrawal from the program does not mean that the student would not have been successful, and in fact, many students who withdraw may at a later time come back to complete the program. Therefore, withdrawal from the nursing program is not a reliable indicator of non-success in nursing education.

The most common criterion for success in nursing education by the graduate is measured by the passing of the NCLEX-RN licensing examination. The NCLEX-RN is designed to measure if the student meets the criteria to be a registered nurse. Because this is the focus of the AD nursing program, passing the NCLEX-RN becomes a natural measurement of success of the educational program.

Nursing educators have established methods to increase the probability of success of the majority of their students. Establishing prerequisite requirements has been one method of ensuring this. Prerequisite requirements set the minimum criteria that the student must meet in order to enter the nursing program. Prerequisite courses, minimum grade point averages, and selection systems which consider multiple variables are among the criteria associate degree programs currently use. Some programs admit students on a waiting list or lottery basis, and others select the "most qualified" applicants each year.

In 1993, the state of California revised Title 5, the regulatory statute governing community colleges. Title 5 states that prerequisites "...may be established only on the basis of data collected using sound research practices" and must be done on a "...course-by-course or program-by-program basis" (California Code of Regulations, §55201[b][1],

p. 346). A college must demonstrate that without the prerequisite, the student will be "...highly unlikely to receive a satisfactory grade in the course for which the prerequisite is being established" (§55201[c][3], p. 346).

Because of these regulations, prerequisites set without statistical support and point systems for admission into nursing programs can no longer be used in associate degree programs. Colleges which have established selection criteria must now change their practice to incorporate prerequisites which can be statistically substantiated as necessary.

Certain courses are mandated by the California Board of Registered Nursing (California Code of Regulations, Title 16, §1426[c][3], 1994). These include social, biological, and natural sciences. Because these are mandated by another governing agency, Title 5 does not require statistical validation of their use as prerequisites (§55201[d][3]). Other prerequisites such as math for dose calculations, nutrition, pharmacology, and even computer skills have been traditionally determined by educators and program directors when planning curricula. Experience has suggested that students are better prepared for nursing courses after certain general education courses have been completed, and educators are entrusted to use judgment in the determination of these prerequisites.

Research Questions

Associate degree nursing programs in California are governed by state regulations (Title 5), the Board of Registered Nursing requirements, and the professional judgment

of the directors and faculty. It is possible that many associate degree programs will have to modify selection criteria because of Title 5 changes.

This research is designed to explore how nursing student selection is currently being done in associate degree nursing programs in California, and to identify phenomena associated with prerequisite criteria for community college nursing students.

Research questions asked are:

1. What are the criteria by which nursing students are selected in Associate Degree programs in California?
2. How do directors of Associate Degree nursing programs view selection criteria, prerequisites, and other influences on their decision making?
3. What factors influence decision making when determining prerequisite criteria?

Definition of Terms

Several terms must be defined for the purpose of this study:

1. Selection criterion is any requirement that the student must meet before admission to the program. Selection criteria may include completion of prerequisite courses, achievement of a specific grade point average, or possession of any other criterion without which the student would be highly unlikely to succeed in the program. They also include the method by which a limited number of students are admitted to the program.

2. Prerequisite is defined by California Title 5, section 55200(a) as "...a condition of enrollment that a student is required to meet in order to demonstrate current readiness for enrollment in a course or educational program" (p. 346).

3. Success in a nursing program is defined as successful completion of the program and passing of the National Council Licensure Examination for registered nurses (NCLEX-RN).

Design

This study is designed to identify what prerequisite criteria are currently used in associate degree nursing programs and to explore phenomena surrounding the determination of these prerequisites. It is a combined quantitative and qualitative study, utilizing a survey of directors of associate degree nursing programs in the state of California. The survey questionnaire was designed by the researcher, after experience suggested that there were many variations in prerequisite criteria among associate degree nursing programs. The survey includes demographic data, identification of prerequisite and selection criteria, and brief, open-ended questions designed to explore how these prerequisite criteria are determined.

Chapter 2

CONCEPTUAL FRAMEWORK AND REVIEW OF LITERATURE

Conceptual Framework

Learning is associated with "actual or potential changes in behavior as a result of experience" (Lefrancois, 1991). Learning the concepts, skills, and subskills of nursing is necessary for the student to be successful. Educators have a responsibility to students to provide reasonable methods to enhance chances of success. In order to prepare students with a foundation of knowledge on which to build nursing knowledge, educators determine prerequisite criteria which will enhance the student's chance of success.

The concept of prerequisite criteria to enhance student success fits into a blend of two theoretical frameworks. First, cognitive learning theory states that new knowledge builds upon previously learned knowledge (Lefrancois, 1991). This explains the concept of prescribing the learning of natural and social sciences before learning nursing, which builds on these sciences. Second, Bandura's (1986) theory of self-efficacy explains how student success is enhanced when he knows that he has the knowledge and skills to be successful.

Cognitive Theory

Cognitive learning theory includes the concept of "...acquiring, processing, storing, and retrieving information" (Lefrancois, 1991, p. 58). Processing information is done when new information is cognitively linked with information that is already known.

When this information is cognitively linked, or encoded, it becomes part of long-term memory. The goal of acquiring knowledge is to have information placed in a memory capacity so that it can be retrieved as needed.

Nursing knowledge builds on knowledge of other sciences. For example, nurses must understand human physiology in order to understand disease processes that they treat in collaboration with the physician, and they must understand concepts of mathematics in order to correctly calculate medication dosages.

Self-efficacy Theory

Albert Bandura addresses the interrelationship between knowledge and action. He states that "...knowledge, transformational operations, and constituent skills are necessary but insufficient for accomplished performances." (Bandura, 1986, p. 390). Bandura's self-efficacy theory defines perceived self-efficacy as "...a judgment of one's capability to accomplish a certain level of performance" (Bandura, p. 391). He suggests that as performance of newly learned skills is enhanced, the person believes himself to be efficacious, because "...self-referent thought mediates the relationship between knowledge and action" (Bandura, p. 390).

Success in nursing means that the nurse has acquired the knowledge and skills necessary to function as a registered nurse. Bandura states that learners will function better if they believe themselves to be capable and worthy. He states that "...the stronger their perceived self-efficacy, the more vigorous and persistent are their efforts" (Bandura, 1986, p. 394). Prior successes enhance the learner's perception of self-efficacy,

therefore success in development of prerequisite knowledge can enhance a learner's ability to add to that knowledge and judgment.

To enhance self-efficacy, then, is to enhance chances of success. If nursing students have acquired sufficient skills and knowledge in the subjects related to nursing, they are confident and perceive themselves to be self-efficacious. This self-efficacy increases the students' ability to build on those skills and learn the more complex concepts of nursing. It may be deduced that an educational program which is designed to increase self-efficacy by requiring sufficient prerequisite skills will have a higher rate of success.

Determining appropriate prerequisite criteria will ensure that the foundation of knowledge is built for cognitively linking to new nursing knowledge. Successful acquisition of prerequisite knowledge will enhance self-concept of efficacy, and in turn help the learners to be more successful toward their goals of acquisition of nursing knowledge and skills.

Related Literature

Predictors of successful completion of nursing education has been the topic of many studies. Pre-admission grade point averages were studied by Horns, O'Sullivan, and Goodman (1991); Jenks, Selekman, Bross, and Paquet (1989); Mills, Sampel, Pohlman, and Becker (1992); Payne and Duffey (1986); Whitley and Chadwick (1986); and Yang, Glick, and McClelland (1987). Pre-admission grades in specific courses were studied by Fowles (1992), Jenks et al. (1989), Mills et al. (1992), Whitley and Chadwick, and Yang

et al. (1987). Studies by Fowles, Mills et al, Whitley and Chadwick, Payne and Duffey, and Woodham and Taube (1986) addressed various entrance examination scores.

Grades in nursing courses were studied by Fowles (1992), Krupa, Quick, and Whitley (1988), Mills et al. (1992), Payne and Duffey (1986), and Whitley and Chadwick (1986). Demographic factors such as age, gender, and race were studied by Horns et al. (1991), Jenks et al. (1989), Mills et al., and Woodham and Taube (1986).

Educators utilize predictive factors to select students who are most likely to succeed in their course of study. Factors such as age and race were studied by Horns et al.,(1991), Jenks et al. (1989), Mills et al. (1992), and Woodham and Taube (1986); but because of the possibility of discrimination, are not helpful in selection of students. Determination of factors which will enhance chances of student success can help educators determine which prerequisite criteria must be met.

Academic Factors

Several studies have addressed grade point average as a predictor of success. Horns et al. (1991) and Yang et al. (1987) found pre-nursing grade point averages to be strong predictors of success. Felts (1986) found specific pre-nursing courses (biological sciences, social sciences, and humanities) to be predictive. In 1986, Payne and Duffey found pre-nursing grade point averages to be fair predictors of success on the licensing examination.

Other researchers, however, have found pre-nursing variables to be poor predictors of success. Jenks et al. (1989) found pre-nursing course grades to be weak predictors. Only 63% of the students who failed the NCLEX-RN examination in their

study had been accurately predicted to fail. Mills et al. (1992) found overall weak predictability of high school grade point averages and most college entrance examination scores.

Whitley and Chadwick found in their 1986 study that lower scores on the Scholastic Aptitude Test and low cumulative and science grade point averages were associated with risk for failure of the NCLEX-RN examination. The researchers suggest that more stringent admission criteria based on these factors may account for improved success on the licensing examination.

Fowles (1992), Yang et al. (1987), and Woodham and Taube (1986) all found that college entrance examination scores were good predictors of success. Abdur-Rahman, Fema, and Gaines (1994) found positive correlation between success on the Nurse Entrance Test and successful completion of the first year of nursing school. The Nurse Entrance Test is a pre-nursing evaluation tool developed in 1991 which addresses academic skills, study skills, and a social profile (Abdur-Rahman et al., 1994). Payne and Duffey (1986) found varied predictability in college entrance examination scores. It is interesting to note that only the Woodham and Taube study was specific to associate degree programs.

Although there are several studies which show pre-nursing variable such as grades and scores on entrance tests to be predictors of success on the NCLEX-RN, these results have not been substantiated by subsequent research. Results are varied and inconclusive.

Learner Characteristics

Several researchers suggest that findings of significant predictors should influence admission decisions (Whitley & Chadwick, 1986; Woodham & Taube, 1986; and Yang et al., 1987). Payne and Duffey (1986) state that "...demographics were better studied for decisions about admission" (p. 332), while Horns et al. (1991) suggest that demographic data are helpful for designing interventions after admission has occurred.

Though a great deal of literature directed at predictors of success in nursing programs was found, research concerning selection criteria for nursing students was far more limited. Using both Medline and Eric databases, no studies could be found which studied selection criteria and how they were established to enhance student nurse success.

Summary

Prerequisite criteria have been developed to improve the success rate of nursing students in programs of nursing education. Factors which influence the determination of selection and prerequisite criteria include academic degree requirements, State Board of Nursing requirements, individual nursing school policies and practices, and outside accreditation bodies such as the National League for Nursing. Although research has been conducted to determine which prerequisite criteria are predictors of success, results are inconclusive. Phenomena which surround the determination of prerequisite criteria are still unknown.

The practice of nursing requires that the nurse develop knowledge, skills, and nursing judgment. Nursing learners build their knowledge cognitively on the basis of

prerequisite courses. They also develop successful practice skills by enhancing self-efficacy, which is influenced by prior success. Nursing programs must work within the limits of time and numbers of spaces for learners. By developing prerequisite criteria which will enhance the chances of success for students, nursing programs can utilize resources to ensure optimal numbers of successful graduates.

Chapter 3

METHOD

Research Design

This study consisted of a qualitative and quantitative survey of all of the directors of associate degree nursing (ADN) programs in California. Quantitative data included number of students enrolled in the programs, prerequisite courses, and prerequisite criteria. The qualitative portion of the survey asked directors open-ended questions about their opinions regarding the influences on prerequisite criteria determination, and their opinions on how prerequisite criteria affected their students. Because this study was non-experimental and non-correlational, only simple percentages were calculated to determine what ADN programs are using for prerequisite criteria. The qualitative portion of this study was to explore phenomena surrounding the process of determining prerequisite criteria, and to identify trends in responses. Because there was no correlational component to the study, there were no variables defined.

Data Collection

Approval for this study was granted on October 9, 1995, by the Human Subjects Institutional Review Board at San Jose State University. The questionnaire was designed by the researcher. Specific prerequisite courses were suggested by the Yang et al. study (1987). Based on the researcher's five years experience as an associate degree educator, and based on topics of discussions at the Northern California Associate Degree Faculty Annual Workshop in January, 1995, queries about influences on prerequisite criteria

determination were developed. Open-ended questions were designed to elicit as much response as volunteered by the participants. Because the literature was inconclusive in the determination of predictors of academic success, and because it was very limited regarding associate degree nursing programs, the open-ended questions were formulated to explore influences on the determination of prerequisite criteria. The two-page survey was mailed to all of the directors of ADN programs in California from a list obtained from the Board of Registered Nursing. A total of 72 surveys were sent. One was returned with the comment that their program did not include Associate Degree in Nursing. Of the remaining surveys, 50 were completed and returned, for a response rate of 70%.

Consent to participate in the study was included in a cover page which was signed and returned with the study. Confidentiality of all responses was maintained by keeping all surveys in a locked cabinet in the researcher's home. Anonymity was maintained by identifying the survey by number, and not by name of the institution or of the director. Only the researcher had access to the surveys, and all typing and filing was conducted by the researcher.

Analysis of the Data

Demographic data of the nursing schools whose directors responded to the survey were analyzed using simple percentages. Average number of students accepted each year, what method of student selection was used, and which courses were required as prerequisites were tabulated. A list of 12 possible prerequisite courses was suggested on the survey, from commonly required courses in nursing programs. Space for respondents to write in additional courses required was provided.

Open-ended questions were asked regarding criteria other than courses which were required, what factors influence the decisions in selecting prerequisites, and opinions regarding the significance of these factors. Space was left for lengthy responses, and participants were asked to include any comments they had regarding prerequisite criteria, their determination, and their value.

Surveys were then reviewed by the researcher. Responses to each question were typed and identified by number. The data were then studied and encoded using a color-coding system. Preliminary categories emerged, then were modified using inductive and deductive reasoning. Responses were analyzed for similarities and trends which emerged. According to DePoy and Gitlin (1994), the researcher in qualitative analysis begins to group responses into categories, then analyzes again for additional groupings.

The major categories of factors which influence the determination of prerequisite criteria were academic factors, external regulating factors, and learner characteristics. Academic factors and learner characteristics were supported by the literature review.

Chapter 4

ANALYSIS AND INTERPRETATION OF THE DATA

The data collected were categorized and analyzed according to themes and phenomena. Criteria used prerequisite to associate degree nursing programs of study were identified for the State of California. Themes which emerged from the data were academic factors, external regulating factors, and learner characteristics.

Description of the Sample

Surveys were mailed to directors of the 72 associate degree nursing programs in California, from a list generated by the California Board of Registered Nursing. One survey was returned stating that their program was not an associate degree of nursing, so did not qualify. Three surveys were returned unopened to the sender. Of the 68 which remained, 50 surveys were answered and returned (73.5%). California Associate Degree Nursing Programs are divided into a northern and a southern chapter. Of the completed surveys, 26 (52%) were from the southern division and 24 (48%) were from the northern division.

Directors were asked how many students they admitted each year. If they reported a range, the average of that number was used. Programs reported admitting from 20 to 120 students per year. The median of the responses was 57.5, with a mean of 62.1. The numbers of students were added, and it was determined that the surveys reflected phenomena affecting 3106 ADN students per year.

Selection Criteria

The survey asked directors how they selected students for their program. Respondents could select one of the commonly used selection methods suggested, or write in their own methodology.

Of the 50 responses, 17 (34%) reported using a multi-criteria point system; 21 (42%) reported using GPA, 17 (34%) stated they used waiting list, and 19 (38%) reported using random selection or lottery. Fifteen marked more than one choice. Five schools used two kinds of criteria: For example, one school selects 66% of their students using a point system, and 33% using random selection. One director states that they select 80% of the students with 2.5 and above GPA, and 20% of the students with a 2.0 to 2.49 GPA as part of a "...longitudinal study of effects of GPA on student success" (confidential communication, 1995).

Another factor which emerged in selection criteria is completion of pre-nursing courses prior to admission to the program. Three schools give priority to those who have completed general education courses, and three additional directors commented on the value of completion of general education courses. One respondent stated, "Faculty felt students have better success with sciences and some general ed [sic] completed," (confidential communication, 1995), though this school did not use that as part of the selection process.

Prerequisite Courses

Prerequisite courses were first categorized according to curriculum requirements by the California Board of Registered Nursing (BRN). The BRN requires 16 semester

units or 24 quarter units in "...related natural, behavioral, and social sciences" (California Code of Regulations §1443.5[c][3]), and 6 semester units or 9 quarter units in communication skills, including principles of "...verbal, written and group communication" (§1426[c][2]). The BRN requires that these courses are included in the curriculum, but does not specify that they must be prerequisite to the program. Mathematics skills also emerged as a category of prerequisite criteria, though this is not specified by the BRN.

Natural , Behavioral, and Social Sciences

The BRN specifies that natural sciences be included in the curricula. The majority of respondents reported natural sciences as prerequisite to the nursing courses. As one responded stated, "I don't think they can pass nursing courses, esp. without A&P [sic] " (confidential communication, 1995). Another director stated, "Students understand foundations of science to build nursing content on" (confidential communication, 1995).

Anatomy was the science most frequently mentioned, with 49 out of 50 (98%) stating that they either required anatomy, eligibility for anatomy, or a combined anatomy and physiology course as prerequisite. Physiology was mentioned by 47 respondents (95%), as either required, eligibility for, or combined course with anatomy. Microbiology was listed as a prerequisite for 34 of the 50, with one requiring either microbiology or chemistry, for a total of 70% of the programs mentioning microbiology. Chemistry was required for 19 of the programs, and one requiring either microbiology or chemistry, for a total of 40%. Nutrition was required by 9 of the 50 (18%).

Psychology was listed as a prerequisite for 18 of the 50 programs (36%), with 3 programs (6%) listing human development in addition. Sociology was specified by 9 of the respondents (18%), and anthropology was listed by 4 of the respondents (8%).

Communication Skills

Communication skills were listed as prerequisite for 36 of the 50 programs responding to the survey (74%). Responses included in this category were specific courses in English, eligibility for a specific course in English, English or reading placement tests, or minimum reading levels. Seven of the programs (14%) required speech in addition to English.

Minimum reading levels were specified by 6 of the programs (12%). Levels specified were 12th grade (3), 12.5 grade (1), 13th grade (1), and "college level" (1). As one respondent stated, "Reading requirement is the greatest predictor of success. Our students couldn't remediate reading and take nursing" (confidential communication, 1995).

Mathematics

Sixty-six percent of the programs, or 33 out of 50, identified some type of mathematics as prerequisite to their nursing programs. The responses ranged from algebra, pre-algebra, special math for medications, mathematics eligibility, and success in math placement tests. One respondent stated, "We need to teach nursing - not math and science" (confidential communication, 1995).

Academic Factors

Grade Point Average

Grades or grade point average (GPA) was mentioned by 38 of the 50 respondents (76%) as being part of prerequisite criteria for their programs. Of the 17 who identified specific minimum GPAs, the range was from 2.0 to 3.0, with a mean of 2.33 and a median of 2.3. One director stated, "...the only factors research indicated had bearing on retention (our criteria for success) was GPA" (confidential communication, 1995).

While GPA was a factor in selecting students, 11 schools of the 36 who reported a minimum GPA as prerequisite to their program (30%) narrowed it down to grades in prerequisites or sciences. One director stated, "We have done studies on students that have gotten a C in one or more of the sciences or W/F. They were more likely to fail in the program" (confidential communication, 1995). Another responded said, "Success in sciences = success in nursing courses" (confidential communication, 1995).

While the majority of nursing schools responding to the survey utilized GPA in some way as a prerequisite criterion, there were some responders who stated that GPA was not useful as a prerequisite. One respondent stated, "We could not validate GPA higher than 2.0" (confidential communication, 1995); another stated that they "...no longer look at GPA" (confidential communication, 1995). Two respondents stated grades may not be accurate predictors, because "...it depends on grading curve of instructors who taught them" (confidential communication, 1995), and due to the "...variation [sic] in grading" (confidential communication, 1995).

The literature generally supports the differences in the directors' views by demonstrating that the ability of grade point average to predict success in nursing programs is also varied. Though Horns et al. (1991) and Yang et al. (1987) found GPAs to be strong predictors of success; Jenks, Selekman, Bross, and Paquet (1989) found pre-nursing GPAs to be weak predictors of success in the nursing program.

Academic Rigor

Several of the respondents cited the academic rigor of the nursing program as a factor in the determination of selection and prerequisite criteria. Terms such as "academic rigor," "high grades," and "our programs are intense" appeared in several responses. One director posed the question, "Can we afford a 'minimum criteria' mindset in a maximum requirement healthcare environment?" (confidential communication, 1995).

Foundation Building

Another theme which appeared in the responses was that of utilizing prerequisite courses on which to build a foundation for nursing knowledge. As one director stated, "We feel a student coming to us with a sound knowledge base in the sciences (physical and behavioral) will have a strong foundation for the nursing courses" (confidential communication, 1995). Of the 50 responses, 43 (86%) reported they believed prerequisites had a positive influence on student success. One respondent stated, "From day #1 in program students must be able to retrieve prereq [sic] knowledge and apply it to new nursing content." (confidential communication, 1995). Another respondent stated the influence of prerequisites was "...high with regard to the ability to comprehend, write

papers & effectively do basic math" (confidential communication, 1995). One director stated the influence prerequisites have on student success was "...laying the foundation for science principles & critical thinking which students need by first fundamentals course" (confidential communication, 1995). Yet another respondent said, "Students understand foundations of science to build nursing content on" (confidential communication, 1995).

Regulating Factors

The survey revealed that 80% of the respondents identified they had instituted a change in prerequisite criteria in recent years. In 1993, California passed Assembly Bill AB1725, which mandated changes in Title V, the code for community colleges. This bill prohibits practices by community colleges which may be considered discriminatory.

Of the survey respondents, 28 (56%) reported a change to less selective prerequisite criteria in recent years. Of the 50 respondents, 13 (26%) report they have moved away from a point system in selecting students. One respondent stated, "Until this year, we have used a multi-criteria point system. However, the law mandated validation of this system, & after studying the criteria, the only factors research indicated had bearing on retention (our criteria for success) was GPA" (confidential communication, 1995). Another respondent stated, "The 'point' system...was cumbersome & discriminatory in it's [sic] own way" (confidential communication, 1995).

Directors repeatedly stated that state law directly influenced any changes they made in the program. Twenty directors (40%) answered the question, "What factors have influenced changes in prerequisites for your program?" with either "Title 5," "state law,"

or "chancellor's office." One director stated, "Title 5 regulations required that we move away from point system; also it provided guidelines as to what is acceptable vs. not acceptable" (confidential communication, 1995).

Of the programs citing changes in prerequisite criteria, 11 of the 50 (22%) identified creating more stringent criteria. One school "...changed from a 'first come - first served" to multi-criteria point system; have also changed point system to include non-academic factors." Another school eliminated point system but added prerequisite courses. One school reported increasing minimal GPA from 2.0 to 2.5. The latter program director states that they have "...↑ need for well-prepared students due to ↑ complexity of clients" (confidential communication, 1995).

Research

Research methodology was cited by 5 of the 50 respondents (10%) as an influence in determining selection criteria. Each of the 5 cited conducting their own studies. Though Title 5 mandates research be conducted to justify courses in "communication or computation skills" (§55201[e]), it specifies for other prerequisites that "...a student who has not met the prerequisite is highly unlikely to receive a satisfactory grade in the course for which the prerequisite is being established" [§55201(b)(1)]. One way for a program to determine "highly unlikely" is by conducting a statistical review.

Learner Characteristics

Retention

The concepts of attrition or retention were mentioned by many of the directors as driving forces in determination of prerequisite criteria. One director stated, "Hopefully, the higher the prerequisite requirements, the more qualified and likely to succeed students will be admitted & lower the attrition rate" (confidential communication, 1995). Another respondent stated the influence of prerequisite criteria was "...students are more successfull [sic] - high retention rate" (confidential communication, 1995). Another respondent stated retention was "...our criteria for success" (confidential communication, 1995).

Several respondents cited that attrition rate was related to prerequisite criteria. One director stated, "Attrition is high when people are admitted by chronology rather than merit" (confidential communication, 1995). Another respondent stated that before increasing their minimum entrance examination scores, "...students had ↑ attrition in first course and had difficulty understanding text" (confidential communication, 1995). One director was dissatisfied with the new, less-selective criteria they had established. She stated, "The system we are currently using is certainly non-discriminatory, but it also increases the attrition rate significantly" (confidential communication, 1995). Not all directors stated reduced attrition rate was related to prerequisites, however. One director stated, "We admit anyone who meets our criteria - not necessarily the 'top' students. Retention and success on NCLEX compare favorably to other programs" (confidential

communication, 1995). In all, 12 of the 50 directors (24%) mentioned attrition or retention as a factor.

The Learners

Several of the respondents cited demographics as factors in the success of students. There was a theme of access to the programs of study. One director said, "Access is very important for all students but one would like to give students best opportunity for success" (confidential communication, 1995), and another stated, "Many students who are qualified, never are able to enter a nsg. pgm [sic] using the point system" (confidential communication, 1995). One director cited factors such as "...single parent...many students need to work full or part-time" (confidential communication, 1995), while another felt that prerequisites "...test the students' study habits and commitment" (confidential communication, 1995). One respondent stated, "Laying the foundation...builds self-confidence - as a practical point, it also leaves the student more time in the day to study nursing courses" (confidential communication, 1995).

A few respondents mentioned special learner needs as difficulties in nursing programs. Two directors cited difficulties when the learner's second language was English. One respondent generalized by saying, "Even when students have completed some college courses their basic skills are still poor" (confidential communication, 1995). Another stated that "...another major variable is cultural - (some) students do well in pre-requisites, but may have difficulty in nsg [sic] courses, especially Psych Nsg [sic]" (confidential communication, 1995). Another respondent mentioned particular needs of

single parents in their programs: "Unable to take heavy loads, many students also need to work full or part-time" (confidential communication, 1995).

Demographic characteristics are best determined to identify students at risk early in the program and to channel them into remediation. One director stated prerequisites were useful as "...early identification of students who need additional supportive services" (confidential communication, 1995). Another director stated they are studying variables such as "...work experience and other related course work" (confidential communication, 1995) as predictors of success, and another program reported giving points toward selection for work experience in the field. As an additional respondent stated, "Having all students have access to nursing programs without pre-reqs [sic] is a great concept in theory - but does not work in reality. There will be more students who struggle, quit, and fail - this is not a good thing to do to people" (confidential communication, 1995).

Chapter 5

CONCLUSIONS AND RECOMMENDATIONS

Directors of associate degree nursing programs in California were surveyed regarding prerequisite criteria for their programs and the phenomena surrounding the determination of these criteria. Fifty of the 72 associate degree nursing (ADN) programs (70%) responded to the survey, representing approximately 3100 ADN students per year. Based on the responses, themes regarding selection criteria, prerequisite criteria, and influences on the determination of these criteria were evident.

Discussion of Results

A variety of methods are employed to select students for ADN programs. Multi-criteria point systems typically assign points to a number of criteria, then points are tallied and candidates selected according to the number of points received. Of the 50 respondents, 17 (34%) reported using such a system to select students. An additional 13 (26%) stated they had moved away from point systems of selection, many citing changes in California Community College regulations (Title 5) as the deciding factor. Prior to this Title 5 change, it seems that point systems were the most common method of selecting ADN students. One director whose program changed from a point system to selection based on minimum grade point average only stated, "The system we are currently using is certainly non-discriminatory, but it also increases the attrition rate significantly" (confidential communication, 1995). Others, though, stated that point systems were no

longer acceptable under state law. This method of selection of students is declining in use.

Grade point average was addressed by a vast majority of the respondents as a factor in the selection of students for their programs. Though only 42% cited grade point average (GPA) as their selection criteria, 76% of them mentioned GPA as important to their nursing programs. It was a common theme that high grades were important for nursing students, and that high grades in prerequisite courses lead to high grades in nursing courses. Terms such as "academic success," "merit," and "rigor" appeared in many responses.

The influence of the California Chancellor's office and its administration of the California Code of Regulations Title 5 was a strong thread in this study. Of the 50 respondents, 40% cited state regulation (Title 5) as the influence in their prerequisite decisions. Because California Community Colleges are intended to provide educational opportunity to all members of the communities, practices are closely regulated to prevent any chances of discrimination. Although nursing directors show a theme of wanting academic excellence in their graduates, they are responsible to give equal opportunity to all. This presents a philosophical dilemma to educators if underserved populations are also not the strongest academically. A few directors responded to the survey with statements regarding this difficulty, especially with students for whom English is their second language. Educating these people to provide health care in a fast-moving, English-speaking environment is a challenge. Some of the directors are responding to the complexity in health care by increasing their pre-admission standards by adding

prerequisite courses or increasing minimum grade point averages for admission, in spite of recent changes in government regulation.

There is still little agreement on what factors enhance success in nursing programs of study. As Abdur-Rahman, Femea, and Gaines summarized when reviewing predictors of success in the literature, "...predictor variables are not consistently stable and vary from institution to institution" (1994). This study demonstrated that nursing program directors generally agreed that prerequisites were necessary, but no consistent theme as to which prerequisite criteria was evident.

Scope and Limitations

This study was conducted on associate degree nursing programs in one state only. California supports a state-funded community college system, while other states do not have the same educational structure. Influences from state regulating bodies may be stronger than influences from research or practices in other states. Therefore, results cannot be generalized to other associate degree programs in the United States.

Timing of this study may have influenced the results. The changes in Title 5 went into effect in 1993, causing programs to re-evaluate their prerequisite criteria. This study was conducted in 1995, when programs may have been still focusing on changes they were required to make. Major changes fresh on their minds may have caused the directors to respond differently than if sufficient time had passed for the effects of Title 5 to be well in place.

Potential bias of the researcher must be considered as well. The researcher is currently a faculty member in an associate degree nursing program. While the open-

ended questions were intended to allow the respondents free text answers without leading responses, it is conceivable that the questions chosen could have been misleading.

Recommendations

This study and prior research pose questions for further study. It is suggested by this study that there is no standardized method of determining prerequisite or admission criteria to associate degree nursing programs in California. It is also suggested that general state educational regulations are a major influence in how nursing prerequisite criteria are determined within the community college system. The only standardized method of determining educational preparation is the NCLEX-RN licensing examination.

If California state regulations provide strong influence to community colleges in their determination of prerequisite criteria, will these changes influence outcomes over a period of time? Longitudinal studies must be conducted to determine this. It is unknown what the impact is of state regulatory influence by non-nursing educators.

Because research has not substantiated the benefits of specific prerequisite criteria, tradition still plays a strong part. The education of nurses is as ever-changing as the profession itself. Scientific methodology must be employed to continue to provide optimal education for new nurses.

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APPENDIXES

APPENDIX A

Questionnaire

Questionnaire

Number _____

College location _____

Number of students admitted each year _____

Selection method:

Multi-criteria point system ____

GPA ____

Waiting list ____

Random selection (lottery) ____

Other (please specify) _____

Please indicate the prerequisite courses for your program

Anatomy ____

Physiology ____

Chemistry ____

Algebra ____

Nutrition ____

Psychology ____

Pharmacology ____

Sociology ____

Anthropology ____

Other (please specify) _____

Please indicate prerequisite criteria, other than courses, which your program requires

Please proceed to next page

What changes in selection criteria or prerequisites have you made in recent years?

What factors have influenced changes in determination of prerequisites for your program?

What influence do you feel prerequisites have on the potential for student success?

Do you have any other comments?

APPENDIX B
Human Subjects Approval



Office of the Academic Vice President • Associate Academic Vice President • Graduate Studies and Research
One Washington Square • San Jose, California 95192-0025 • 408/924-2480

TO: Wendy McIntosh
12 Grove Street
Salinas, CA 93901

FROM: Serena W. Stanford *Serena W. Stanford*
AAVP, Graduate Studies & Research

DATE: October 9, 1995

The Human Subjects-Institutional Review Board has approved your request to use human subjects in the study entitled:

"Determinants of Prerequisite Criteria for Associate Degree Nursing Programs in California"

This approval is contingent upon the subjects participating in your research project being appropriately protected from risk. This includes the protection of the anonymity of the subjects' identity when they participate in your research project, and with regard to any and all data that may be collected from the subjects. The Board's approval includes continued monitoring of your research by the Board to assure that the subjects are being adequately and properly protected from such risks. If at any time a subject becomes injured or complains of injury, you must notify Serena Stanford, Ph.D., immediately. Injury includes but is not limited to bodily harm, psychological trauma and release of potentially damaging personal information.

Please also be advised that each subject needs to be fully informed and aware that their participation in your research project is voluntary, and that he or she may withdraw from the project at any time. Further, a subject's participation, refusal to participate, or withdrawal will not affect any services the subject is receiving or will receive at the institution in which the research is being conducted.

If you have any questions, please contact me at (408) 924-2480.

APPENDIX C
Information Letter

College of Applied Sciences and Arts • School of Nursing
One Washington Square • San José, California 95192-0057 • 408/924-3130 • Fax 408/924-3135

Wendy McIntosh, RN, BSN, CCRN
12 Grove Street
Salinas, California 93901

October 10, 1995

Dear Associate Degree Nursing Director:

I am pursuing a master's degree in nursing education from San Jose State University. I also teach nursing in a community college, Hartnell College in Salinas, California. For my master's thesis, I am conducting a study to determine what criteria community colleges use as prerequisites to their programs of registered nursing. I am also conducting a qualitative study to examine influences in determining prerequisite criteria.

I am sending a brief survey to the directors of all of the associate degree nursing programs in California. The information gathered will help me to determine what are the most common prerequisite courses and conditions required for admission to nursing programs. In addition, I will be conducting a qualitative study involving the interview of five associate degree directors to ascertain trends or problems in the decision making of prerequisite criteria for admission.

The purpose of this research is to identify trends and phenomena in the process of determination of appropriate prerequisite criteria. Information gathered will be kept strictly confidential. The surveys will be tabulated by the researcher only, and results will be kept locked in my home. Demographic data gathered will be to determine the extent of responses, not to identify colleges. Names will not appear on surveys, and responses will be in no way associated with colleges. Original surveys will be destroyed within 6 months of completion of the research.

Because the survey is confidential, there is no foreseeable risk to participants. Possible benefits will include my access to the results, which may enhance my understanding of what other associate degree educators experience in this area.

I would appreciate it if you would fill out the brief survey enclosed, and mail it to me in the enclosed envelope. Your quick response is sincerely appreciated. I will be happy to provide you with results of the research upon request.

Questions about the research may be addressed to the principal investigator at (408) 424-6726. Complaints about the research may be presented to the Graduate Coordinator for Nursing, Coleen Saylor, RN, Ph.D., at (408) 924-1321. Questions or complaints about research, subjects' rights, or research-related injury may be presented to Serena Stanford, Ph.D., Associate Vice President of Graduate Studies and Research, at (408) 924-2480.

Sincerely,


Wendy McIntosh

APPENDIX D

Informed Consent Letter

College of Applied Sciences and Arts • School of Nursing
 One Washington Square • San José, California 95192-0057 • 408/924-3130 • Fax 408/924-3135

Agreement to Participate in Research

Responsible Investigator: Wendy McIntosh, RN, CCRN, BSN

Title of Protocol: Determinants of Prerequisite Criteria for Associate Degree Nursing Programs in California

I have been asked to participate in a research study investigating what factors influence the determination of prerequisite criteria for associate degree nursing program. I have been asked to answer questions about my experiences and feelings regarding prerequisite criteria and phenomena surrounding the process.

Because the survey is confidential, there is no foreseeable risk to participants. Possible benefits will include my access to the results, which may enhance my understanding of what other associate degree educators experience in this area.

I understand that results of this study may be published, but that no information that could identify the participants will be included. I also understand that there will be no monetary compensation for participation in the study.

Questions about the research may be addressed to the principal investigator at (408) 424-6726. Complaints about the research may be presented to the Graduate Coordinator for Nursing, Coleen Saylor, RN, Ph.D., at (408) 924-1321. Questions or complaints about research, subjects' rights, or research-related injury may be presented to Serena Stanford, Ph.D., Associate Vice President of Graduate Studies and Research, at (408) 924-2480.

Participation in this research is and consent to do so is given voluntarily. A subject may refuse to participate in the study or in any part of the study. If a subject consents to participate he or she is free to withdraw at any time without prejudice to the subject's relations with San Jose State University or any other participating institution.

I have read and understood the above, and have received a signed and dated copy of the consent form. The signature of a subject on this document indicates agreement to participate in the study. The signature of the researcher on this document indicates agreement to include the above named subject in the research and attestation that the subject has been fully informed of his or her rights.

Subject's Signature

Date

Wendy McIntosh 10/9/95
 Investigator's Signature Date