

ACHIEVEMENT IN A DISASTER NURSING TEST TAKEN BY 120  
STUDENTS ENROLLED IN THREE SCHOOLS  
OF NURSING IN OREGON

by

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A THESIS

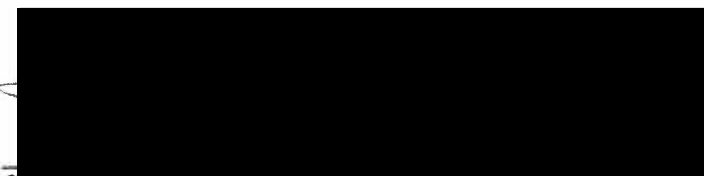
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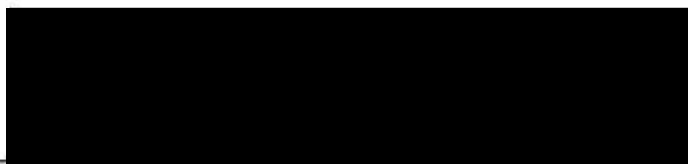
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## CHAPTER I

### INTRODUCTION

#### Statement of the Problem

Newspaper, radio and television reports of disasters are evidence of the increasing frequency with which disasters strike. The result of these disasters is that large numbers of people are left dead, injured, sick and homeless. The involvement of nurses who are anywhere near the disaster is inevitable. Whether those nurses will be able to function so as to "give the greatest good for the greatest number," (4) will depend to a large extent on the preparation and experience they have had in emergency and disaster situations.

The need for nurses to be thoroughly oriented and psychologically prepared to function under stresses associated with disasters has been demonstrated through experience. The National League for Nursing has published a statement of belief that all nurses and auxiliary personnel need:

1. To be prepared to function in disasters at a high level of efficiency.
2. To be prepared to teach others how to cope with anticipated situations.



3. To be prepared to cope with post-disaster health problems.

4. To have the know-how of self-preservation. (27)

Nurse educators have agreed that the most advantageous time to expose nurses initially to the needed information is during their impressionable basic student experiences.

It would therefore seem important to ascertain if the nurses are being prepared to function competently in disaster situations. Specifically, are the student nurses in Oregon being prepared to function effectively in disaster?

### The Purpose of the Study

The purposes of this study were:

1. To determine if there is any significant difference in the effectiveness of preparation in disaster nursing, as revealed by the disaster nursing achievement test scores, between the students prepared in a selected baccalaureate school of nursing and those baccalaureate students on whom the test was standardized.
2. To determine if there is any significant difference in the effectiveness of preparation in disaster nursing, as revealed by the disaster nursing achievement test scores, between the students prepared in selected diploma nursing

schools and those diploma students on whom the test was standardized.

3. To determine if there is any significant difference in the effectiveness of preparation in disaster nursing, as revealed by the disaster nursing achievement test scores, between students prepared in a selected baccalaureate nursing school and those prepared in selected diploma schools.

### Hypotheses

The following null hypotheses are tested in this study:

1. There is no difference in the disaster nursing achievement test scores of students prepared in a selected baccalaureate school of nursing in Oregon, and those test scores of the baccalaureate student nurses on whom the test was standardized.
2. There is no difference in the disaster nursing achievement test scores of students prepared in selected diploma schools of nursing in Oregon, and those test scores of the diploma student nurses on whom the test was standardized.
3. There is no difference in the disaster nursing achievement test scores of student nurses in a selected baccalaureate school in Oregon, and those test scores of student nurses

in selected diploma schools in Oregon.

### The Limitations of the Study

This study was limited to:

1. data obtained using the National League for Nursing Comprehensive Achievement Test for Disaster Nursing.
2. data collected by testing 120 senior nursing students enrolled in three schools of nursing in Oregon.
  - a. sixty-three senior students from a baccalaureate school of nursing.
  - b. nine senior students from one diploma school of nursing and 48 from another.

### Assumptions

It may be assumed that each nurse will encounter emergency situations as part of her experience and that such emergencies could very well be of such magnitude as to constitute mass disaster. It may further be assumed on the basis of the above, that instruction in emergency and disaster nursing has been included in the curriculum of the schools participating in this study.

## The Justification of the Study

Reports from news media establish that disasters occur with increasing frequency. The professional nurse will be expected to assume responsibility and leadership in many ways and in a wide variety of emergency and disaster situations. These expectations come from the general public and from each nurse's personal philosophy of service in nursing. An integral part of being a nurse implies the skill and ability to handle emergency and disaster situations. It is important therefore, that those in the nursing profession be prepared to function in disasters and that the preparation begin in the basic nursing program.

## Definitions

For the purpose of this study the following definitions are used:

Disaster is an acute misfortune usually involving large numbers of people, where the number of persons needing care and treatment greatly exceeds the number of professional personnel, supplies and equipment to give that care.

Emergency is an unexpected serious happening demanding immediate action.

Triage is the process of sorting the injured according to a set plan.

## Procedure for Solution

### Sources of data/

The primary source of the data consisted of the scores obtained in the National League for Nursing Achievement Test for Disaster Nursing taken by 120 senior student nurses from three schools of nursing in Oregon.

The secondary sources of the data were obtained from the literature and related studies including the National League for Nursing pilot study Disaster Nursing Preparation reported by Neal.

### Procedure

The steps in the development of this study were as follows:

1. Related literature and studies were reviewed for a frame of reference.
2. The problem was identified as a result of reading, interest and need.
3. An unstructured interview was conducted with the Nursing Director of the Oregon Trail Chapter of the American Red Cross. The purpose of this interview was to learn of the possible needs in the disaster nursing field and to gain understanding of the role of the Red Cross in disaster nursing.
4. The problem was delimited and assumptions were made.
5. The hypotheses were formulated.

6. Permission was obtained from the National League for Nursing to use the tests in disaster nursing.
7. The sample was identified. The criterion that determined student selection was that they were nursing students in the last half of their senior year as were the students on whom the test was standardized.
8. The directors of four selected schools of nursing were contacted by letter. Willingness to participate was indicated by one baccalaureate school and two diploma schools.
9. Arrangements were made to give the test at convenient times. Two instructors at the baccalaureate school volunteered to give the test to the students in their classes. The researcher gave the test to the remaining baccalaureate students and to the students in one diploma school. The other diploma school faculty administers the test to their senior students annually and offered the results of this year's tests to be used in the study.
10. The tests were returned to the National League for Nursing to be scored.
11. The data were tabulated, analyzed and the findings interpreted. Tables were constructed.
12. The study was summarized, conclusions drawn and recommendations made for further study.

## Presentation of the Study

The study is presented in four chapters. Chapter I has presented a statement of the problem, the purpose of the study, hypotheses, assumptions and limitations, the justification of the study, definitions and the design of the study. Chapter II presents a review of related literature and studies. Chapter III describes the study, presents the findings and interpretation of same. Chapter IV provides a summary, conclusions and recommendations for further study, based on the data obtained.

## CHAPTER II

### REVIEW OF RELATED LITERATURE AND STUDIES

The literature was reviewed for references related to disaster nursing, specifically, for the preparation of nursing students to function in a disaster. The need for professional nurses to be prepared in specific ways to function in disasters was emphasized. There was general agreement that the preparation should begin in the basic nursing education program.

Various studies have shown that the population explosion, rapid industrial growth and technological advances of the past few decades have increased disaster casualties. As a result, research and planning for human problems during disaster came about. (5, 8, 15, 17, 19)

Since nurses constitute the largest group of trained professional health workers, it was concluded that their involvement in the care and treatment of disaster victims is inevitable. (17) Professional nursing organizations have contributed to research through investigation of nursing roles and responsibilities and through planning methods facilitating preparation for disaster nursing. (3, 4, 22, 27) The American Nurses' Association Committee on National



Defense prepared the following statement:

Nurses with specific knowledge, skills and qualifications as stated in the American Nurses' Association Statement of Functions, Standards and Qualifications for Practice have the basic preparation for disaster nursing. However, it is essential that they have additional preparation in the adaptation of nursing skills to emergency situations in a disaster environment. Such additional preparation is necessary because of the nature of disaster and the diversified functions nurses are called upon to perform. (4)

Maule has indicated that disaster nursing opens a broader opportunity for service than any other area in nursing. (18) Elliman and Neal stated that the occurrence of disaster will require the nurse to adapt her nursing skills to the demands of the situation. She will be called upon to function in leadership roles as organizer, teacher, and supervisor and to improvise equipment and supplies, to eliminate the non-essentials and to give care which may impinge on medical practice. (11, 20)

The conditions under which the demands must be met are generally tragic and emotionally stressful. Rayner said that in a disaster, nurses are subject to the same physical, emotional and social disorganization as the general population, and may react typically to shorten the stress by doing something about the stress in a random and haphazard way. (24) The key to the problem, as stated by Maule, is preparation. (18) The nurse who is psychologically oriented to situations as might be encountered in a variety of

disasters will be more able to function so as to do "the greatest good for the most with the least by the fewest." (4)

Werley and Goldstein advise that fear of the unknown will cause evasion of the problem, and the best weapon against fear is education and training. Confidence for action in disaster is gained with timely, purposeful and realistic training. This education and training which can be done before the occurrence of disaster avoids the stress of the disaster and allows for correction, repetition and practice. The training practices aid in developing an automatic response pattern and enables the individual to function better under duress. The realistic, continuous, progressive training program is advised and practice acts must go along with the theory. (30)

The time for nurses to begin preparation is in their basic nursing program. According to Spitz, nurse educators have agreed that the most advantageous time to present information concerning nursing and medical responsibilities and functions in disaster is in the impressionable years in basic nursing education. (25) Ellison has said that it is the responsibility of educators to include in the preparation the range of nursing function in disaster and to impress upon the student that she has an individual and personal responsibility to advance further her knowledge and special skills for disaster nursing. (12)

The benefit of a basic background in disaster nursing was

related by Brooks, who questioned a nurse involved in the rescue of patients from a fire in the hospital in which she was employed.

When asked what in her background was considered by her as most helpful, she referred to the instruction in how to fight fires which was given early in her course in nursing, the preparation for meeting disasters she had received during her basic program, and the specific instruction she had had in her orientation program when she was employed at the hospital. (6)

Ellison remarked that students will not necessarily remember the needed information and adapt it to the situation under the stress of disaster. She believed that the student needs conditioning by providing the opportunity to use and test the knowledge in solving typical disaster problems and that it is necessary for the student to have practice. (13)

Brooks stated that the trend in nursing education is to combine theory and practice by building on a set of principles and directing the student through practice so a transfer of learning will take place when needed in similar situations. In this way emergency problems are presented and the student is expected to follow through when disaster occurs. (7)

A question and answer feature in the American Journal of Nursing posed the question, "How do you include nursing in disasters in your curriculum?" Three nurse educators responded that they

use an integrated curriculum beginning in the first year in the school and continuing through the final year with emphasis on the role of the nurse in disaster. Trammel stated that the school with which she is affiliated has a program which includes a pseudo-disaster exercise in the last year in the school of nursing to provide a practice situation for the student. (29)

The literature revealed some controversy as to whether the policy of preparing nurses in the basic nursing programs to function in disasters is universal. Neal, in 1960, stated that neither the undergraduate nor the graduate programs have prepared students to give the essential nursing care during disaster. Included would be the administration of safe nursing care without equipment and utilities, teaching untrained persons essential nursing tasks, rendering care that impinges on medical practice and application of disaster triage. (20)

According to Owens, a survey of nurses showed that they were ill prepared to assist the physician in emergency procedures and were reluctant to assume responsibility in his absence. (23)

Ellison has stated that there is a lack of prepared faculty interested in teaching disaster nursing. Although nurse educators talk about the benefits of disaster studies in the curriculum, little is actually being done to establish a solid basic program for disaster nursing. (12)

### A Review of Related Studies

A review of the literature revealed only one study of disaster nursing preparation, namely a comprehensive study undertaken by the National League for Nursing and financed by the Federal Civil Defense Administration (now the Department of Defense, Office of Civil Defense). Neal directed the Disaster Nursing Project for the National League for Nursing and prepared the report.

In 1954 the National League for Nursing Committee on Nursing Service and Education in National Defense was appointed and the original plans for the project were formulated. This committee also participated in the on-going development of the project as the advisory committee.

The problem was defined and listed in statements of problems encountered by nurses in disaster situations such as the need to:

1. Organize under chaotic conditions.
2. Manage large wards with little or no professional assistance.
3. Utilize volunteer help, both trained and untrained.
4. Adapt and develop nursing care procedures to meet the demands of a disaster situation.
5. Adapt and develop public health nursing functions to meet the demands of the situation. (22)

The purpose of the project was to "investigate and demonstrate

ways by which students of nursing and personnel in hospital nursing services can be prepared to cope with those five disaster nursing problems and those additional activities which impinge on medical practice." (22)

Subcontracts were made with four institutions for the project demonstration studies. These four institutions included:

1. Massachusetts General Hospital--Diploma program and hospital nursing service.
2. University of Minnesota--Practical nursing program and basic baccalaureate degree program.
3. Skidmore College--Basic baccalaureate degree program.
4. Teachers College--Columbia University--Baccalaureate degree program for registered nurses and graduate program.

Each of the institutions was assigned one or more project directors to guide the activities.

The project was begun in January, 1958 and continued until December, 1961. A Project Conference Group was formed to plan the overall development of the project.

In August, 1958 a questionnaire survey of all known nursing education programs was made to determine the current status of disaster nursing preparation. Four areas were covered in the questionnaire:

1. Whether or not disaster nursing instruction over and beyond a first aid course was being offered.
2. Whether or not instruction included specific problems encountered in disaster.
3. What disaster nursing preparation the faculty had.
4. Whether or not the program would be willing to share its plan of disaster nursing instruction with the project.

Of the 1,194 returned questionnaires, 53 per cent of the programs reported they offered preparation in disaster nursing. It was noted that, in general, the longer the curriculum, the greater the likelihood that disaster nursing instruction was included. The returned questionnaires also indicated that faculty members of many programs had some type of preparation for teaching disaster nursing or were attempting to obtain preparation in disaster nursing. Three hundred ninety-three programs offered their plans for disaster nursing instruction; these were reviewed and used by the Project Conference Group in the study.

The Project Conference Group prepared the statement of beliefs and assumptions. Five agreements forming the basis for the development of the project within each of the participating institutions were made. These were:

1. sameness of purpose
2. the recognition of each institution's prerogatives.

3. the basis for reality for planning.
4. the development of educational materials that would be useful to others.
5. the development of disaster nursing content by clinical experts.

Disaster nursing content considered essential for any instructional program was identified and methods for presenting content was introduced in some instances.

Each school and nursing service participating in the study developed the program that best fitted their particular needs and consulted with the conference group for guidance. Faculty were prepared to teach disaster nursing and curricula were developed according to the philosophy of each school. A plan for reporting the content and results of each program was agreed upon. The plan included identification of the problem, formulation of the objectives, description of the teaching methods and techniques, evaluation of the results and formulation of the conclusions and recommendations.

#### Summary of the Study in the Diploma Program of the Massachusetts General Hospital School of Nursing

A statement of philosophy was developed for the nursing department of Massachusetts General Hospital which included the delegation of responsibility for disaster nursing instruction to the faculty. The faculty was thus prepared through faculty in-service to integrate



principles of disaster nursing in the curriculum.

An inventory of student preparation was made through a questionnaire to determine what, if any, background in disaster preparation the students might have had. The findings indicated that less than 10 per cent of students had completed courses related to disaster preparedness.

Then an analysis of existing courses was made to determine what content was needed to further prepare students for disaster nursing. The faculty then decided a core unit of disaster nursing instruction built upon previous fundamental learning would be the best approach. This core unit was presented in the last year of the program.

Performance in group work, in conference, on the National League for Nursing Achievement test and on teacher made tests were the evaluation methods used. Results indicated that the original plan was sound and suitable for the program.

#### Summary of the Baccalaureate Basic Program of the University of Minnesota School of Nursing

To determine what disaster nursing content was now being included or could be included in the curriculum, a list of questions was given to the faculty members. A committee was formed to study the results. It was decided that disaster nursing should be taught by

showing how knowledge and skills already in the curriculum can be applied to disaster nursing situations, and that three disaster nursing blocks of instruction be presented in the third and fourth years in the clinical experience.

Tests were given at the end of each of the three blocks, and some broad conclusions were drawn. These were:

1. Students gave evidence of increased knowledge of disasters and the need to prepare for them.
2. Students were not content with knowledge and understanding, but desired an opportunity to practice.
3. Psychological resistance to preparation for nuclear disaster had been dissipated with the adequate preparation.

Summary of the Baccalaureate Degree Program  
Skidmore College, Department of Nursing

A committee was formed as a study group and steering committee to analyze curriculum and determine content needs. It was decided that much of the disaster nursing course could be integrated in the clinical nursing courses by scattering throughout the experiences. The part of the disaster nursing that could not be integrated was presented in two units of instruction; one was on first aid and emergency care; the other focused on organization and other aspects of large scale disaster including a civil defense hospital exercise.

Evaluation of the training exercise was highly rated both by faculty and students. Evaluation of the integrated program was difficult but was done by using the National League for Nursing Achievement Test, teacher made tests and written assignments.

Summary of the Graduate Nurse Programs of the  
Department of Nursing Education, Teacher's  
College, Columbia University

A description of the Nursing program at Teacher's College stated the school was primarily a school for advanced professional education. Programs for teachers and administrators in schools and institutions of higher education and for Guidance and Nursing are offered.

The program of instruction to prepare nurses for extended responsibilities in disaster nursing was included in the curriculum and specific learning experiences in this area were given.

As part of the study for the Project, an inventory of students and faculty members was prepared through questionnaire as to the extent of their preparation for participating in mass disaster and the experiences in and reactions to mass disaster situations. This questionnaire was also used to secure an indirect estimate of the responsibilities that nurses were expected to assume in disaster situations. The results of this survey were used as a tool for the identification of disaster nursing content needed and that already

included in the course. Methods of incorporating disaster nursing content into the various programs were developed.

A course entitled "Nursing in Disaster" was developed and offered as an elective for students in both the baccalaureate degree program and graduate program.

The students were asked to submit a written evaluation of the course each semester. They in turn were evaluated by reports submitted and a final examination.

Analysis of the Project in the Professional Nursing  
Programs of the Massachusetts General Hospital,  
University of Minnesota and Skidmore College

Each of the programs accepted the National League for Nursing Project statement of problems in identifying the problem. It was found the goals of disaster nursing instruction were much the same in the three basic professional programs. These goals included: assisting the student to accept a philosophy permitting her to function effectively in a disaster, developing an understanding of the meaning of disaster and the problems created in a disaster, developing an understanding of the nurse's role in disaster, and developing skills that can be applied in a disaster situation.

In each of the programs the faculty studied courses to determine how these were related to disaster nursing preparedness. The placement of the disaster nursing content in each of the schools was

different because of the variation of the curriculum of the schools. However, all of the schools' faculties recognized the importance of everyday practice in nursing as relating to disaster nursing and also the need for specific disaster nursing content not included in the daily experiences in nursing. The variation extended into the implementation of disaster nursing from year to year, and changes were made within the schools as the program was evaluated. This demonstrated the principle which was considered important; that

Any school that wishes to prepare its students to function in a disaster must develop its own plan in accordance with its own philosophy, its faculty and other resources, and its current and developing curriculum. (22)

#### The Development of the Achievement Test

An essential part of the project was the development of an achievement test that could be used to test the effectiveness of the teaching of disaster nursing in all basic nursing programs. The project directors, faculty members from the participating institutions and experts in disaster preparedness, civil defense and mass casualty care, prepared the overall plan for the test and the test items. The test was designed to be used by the students in the last part of their senior year, because the knowledge necessary for disaster nursing must include a variety of experiences which are gained throughout the nursing program.

The first draft of the test was sent for review to 187 faculties of nursing schools meeting the following criteria:

1. Their programs were accredited.
2. They had indicated that they were providing instruction in disaster nursing.
3. They had at least one faculty member who had had a course or experience in disaster nursing.

An experimental test was prepared from the reviewed draft and was administered to approximately 3,000 graduating students from schools meeting the criteria established for the review draft. Item analysis data and initial norms were thus obtained. As a result the final form of the test was constructed and was made available by the National League for Nursing Evaluation Unit.

#### A Study of Students With and Without Disaster Nursing Instruction

A study was undertaken to determine:

1. The degree to which students who have not had formal instruction in disaster nursing can apply general nursing knowledge in disaster situations.
2. The degree to which students without formal preparation in disaster nursing have acquired knowledge of facts and principles peculiar to disaster nursing.
3. The correlation between the achievement of those who have had disaster nursing instruction and the achievement of those who have not received formal disaster nursing instruction.

The selection of the participating schools was taken from the 1958 survey. The uninstructed group (group I) was chosen if they met the following criteria:

1. They were accredited.
2. They reported that they were not teaching disaster nursing.
3. They reported that no faculty member had had disaster nursing experience or had attended a training course in disaster.

At the time of the study in 1961, 13 diploma schools met these requirements and constituted the uninstructed group.

The instructed group (group II) was chosen from 13 accredited diploma schools in which students received disaster nursing instruction; the faculty at these schools had at least one member with preparation in disaster nursing. The schools were paired as to type, control, size and location.

The findings indicated there was no significant difference between the scores for group I students and those for group II students as to general nursing items on the test. There was a significant difference in seven of the paired groups as to the scores in the disaster nursing items, and no significant difference in the scores of five of the paired groups. One paired group difference was zero. In the total scores of the eight groups of differences, there was no significant difference indicated, but it was thought that because these

groups' mean scores were fairly comparable with respect to general nursing knowledge, this might have had a bearing on these findings.

### Conclusions of the National League for Nursing Project

The following conclusions were made as a result of the disaster nursing project report:

1. Nursing functions essential for optimum care that is directed toward the preservation or maintenance of life during a disaster have not been identified.
2. A basic educational program in nursing can include preparation in only the fundamental knowledge and skills essential for effective functioning by nurses in a disaster situation.
3. Disaster nursing is not a clinical specialty.
4. Disaster nursing instruction may be included within the usual nursing courses, or may be given as a special course.
5. Clinical laboratory settings for learning experiences in disaster nursing are limited to the setting of everyday practice of nursing.
6. At the present time, faculty members in schools of nursing have limited preparation for teaching disaster nursing.
7. Courses for teacher preparation in disaster nursing are almost nonexistent.
8. The inservice program is one effective means of preparing nursing instructors in disaster nursing.
9. Not all faculty members have the same interest in the development of disaster nursing content.



10. Students in nursing are inadequately informed about national and world affairs that have direct implications for national security and indirectly for disaster nursing.
11. Faculty study and action concerning disaster nursing results in a strengthening of the total curriculum.

### Summary

The review of the literature pointed up the fact that disaster occurs with increasing frequency and the resultant casualties require planning for many problems involved. Nurses will be involved in the care of these victims and therefore need to be prepared to function in disasters. The role and responsibilities of the nurse have been defined as varied and can be summed up generally as an adaptation of nursing skills to the disaster situation in which the nurse finds herself. It is the responsibility of nurse educators to prepare student nurses to accept their role and responsibilities and to condition them to the possible disaster situation so as to reduce the anxiety which would otherwise reduce efficiency at a time when it is important to be able to function. Some of the literature indicates that despite research and expressed need, preparation for disaster is not being given in many nursing schools.

A comprehensive study by the National League for Nursing reported that each nursing school must develop the disaster nursing

program according to its own needs. The study also indicated that basic education programs can include the fundamental knowledge and skills needed to function in a disaster situation and faculty needs to be prepared to teach disaster nursing and such preparation will strengthen the program. A result of the study was the development of the National League for Nursing Achievement Test for Disaster Nursing.

## CHAPTER III

### REPORT OF THE STUDY

#### Design of the Study

This study was undertaken for the purpose of investigating whether student nurses in Oregon are being prepared to function effectively in disaster situations. The determination was made by administering an achievement test in disaster nursing to see if there were any differences between scores of students prepared 1) in a selected baccalaureate school of nursing and scores of baccalaureate students on whom the test was standardized; 2) in selected diploma schools of nursing and scores of diploma nursing students on whom the test was standardized; and 3) in a selected baccalaureate school of nursing and scores of selected diploma school nursing students. The study follows the steps outlined in Chapter I. The limitations and assumptions as stated in Chapter I have been the defining propositions of this study.

The following hypotheses were tested:

1. There is no difference in the disaster nursing achievement test scores of student nurses prepared in a selected baccalaureate school of nursing in Oregon, and those test scores

of the baccalaureate student nurses on whom the test was standardized.

2. There is no difference in the disaster nursing achievement test scores of students prepared in selected diploma schools of nursing in Oregon, and those test scores of the diploma student nurses on whom the test was standardized.
3. There is no difference in the disaster nursing achievement test scores of student nurses in a selected baccalaureate school in Oregon, and those test scores of student nurses in selected diploma schools in Oregon.

#### Selection of Data Collecting Instrument

Following the review of the literature, and the report of the study Disaster Nursing Preparation, the decision was made to use the National League for Nursing Achievement Test in Disaster Nursing. This test was designed specifically to test the knowledge of the professional nurse necessary to function effectively in disaster situations. The test is divided into four major groupings of questions: 1) general items applicable to nursing in any type of disaster, (11 items); 2) items relating to three nature-caused disaster situations, (33 items); 3) general items relating to an enemy-caused thermonuclear disaster, (37 items); and 4) items relating to an enemy-caused thermonuclear disaster situation, (67 items). (22)

Examples of questions representative of those included in the test may be found in Appendix B.

The scores of this test are divided into two subscores: 1) a subscore on general nursing knowledge applicable (GNA) to disaster situations, 90 items; and 2) a subscore on facts and principles peculiar to disaster and disaster nursing (DN), 58 questions. These subscores are totaled to give an overall score. The Guide for the Interpretation of National League for Nursing Achievement Test Report states:

The scores are not intended to determine a pass-fail status but rather are to help users to evaluate the effectiveness with which they are meeting objectives of these programs throughout the country. (29)

The National League for Nursing Disaster Nursing Achievement Test was evaluated for content validity. In defining content validity, the staff of the National League for Nursing Test services has stated, "An achievement test has content validity to the extent to which its coverage is adequate and pertinent in light of its stated purpose." (31) The purpose of the disaster nursing achievement test was stated as specifically to test the knowledge of the professional nurse necessary to function effectively in disaster situations. The need for such a test was agreed upon by a group of experts in disaster preparedness and members of the study project. A plan was developed by this group which provided for the testing of knowledge

of disaster content, and its application in natural and man-made disaster. A review draft of 226 items was prepared and sent to faculties of 38 basic baccalaureate nursing programs and 149 diploma and associate degree nursing programs who were selected from the set of criteria used in the survey described in Chapter II, to be reviewed for comments and suggestions. The experimental form of the test was administered to approximately 3,000 students from diploma, associate degree and baccalaureate degree nursing programs who were nearing graduation and met the criteria established for the review draft. Item analysis data which resulted from this testing was the basis for a 148-item final form of the test. (22)

Reliability coefficient of the Disaster Nursing Achievement Test was determined by the Kuder-Richardson Formula #21. In determining the Kuder-Richardson (K-R) formula, each item in the test must have the same weight in the total score. The test item is considered good if all the top score people taking the test got the item correct and all the bottom score people got the item wrong. Table 1 shows the 1960 results of K-R #21 on the Disaster Nursing Achievement Test.

Table 1. Kuder-Richardson Reliability Coefficients of the Disaster Nursing Achievement Test as Established in 1960.\*

Number of Senior Students	K-R Reliability Coefficient		
	GNA	DN	ALL
(1)	(2)	(3)	(4)
All 3,204 Senior Students	0.67	0.60	0.78
2,992 Accredited Diploma Students	0.67	0.59	0.78
272 Accredited Baccalaureate Degree Students	0.63	0.57	0.76

\*Taken from Disaster Nursing Preparedness report. (22)

A more recent reliability coefficient has been established on 10,531 students as shown in Table 2.

Table 2. Kuder-Richardson Reliability Coefficient on Disaster Nursing Achievement Test on 10,531 Student Nurses as Established in 1962.\*

Number of Senior Students	K-R Reliability Coefficient		
	GNA	DN	ALL
(1)	(2)	(3)	(4)
10,531 Senior Students	0.59	0.58	0.74
7,375 Accredited Diploma Students	0.58	0.57	0.73
646 Accredited Baccalaureate Degree Students	0.60	0.56	0.74

\*Taken from information letter form 261 sent to this researcher by N. L. N. Testing Unit.

As a result of the survey of the literature on the Disaster Nursing Achievement Test it was determined that for the purposes of this study the test was reliable and had content validity. The National League for Nursing Measurement and Evaluation Unit was contacted by letter and permission was granted to use the examination for the study.

### The Selection of the Population

The content of the Disaster Nursing Achievement Test was designed to test the knowledge and application of knowledge in a variety of everyday nursing situations. The examination could be useful only in testing senior nursing students nearing graduation and graduate professional nurses, who have been exposed to these experiences. (22) The participants selected for this study were students in the last half of their senior year in the selected nursing schools.

The available test score norms were only for students in baccalaureate and diploma schools of nursing and it was therefore decided to test the students from these two types of programs in Oregon. Although there are two baccalaureate degree granting programs in Oregon, the senior class of one school was quite small and the possibility of getting a representative sample seemed impractical. The dean of the larger baccalaureate nursing school was contacted by letter and she agreed to student participation in that school. The



directors of the three schools which currently grant diplomas in nursing were contacted by letter and two of these indicated willingness to participate in the study.

### The Setting

The three schools of nursing participating in the study integrated disaster nursing into the curriculum. The baccalaureate school was described by a faculty member as having no direct instruction in disaster at the present time, although a few years earlier a disaster workshop was included in the curriculum. Basic sciences are expected to lay the foundation for emergency procedures, and experiences with emergency situations as they arise on the wards are expected to give the student nurse confidence in handling emergencies. Students are taught to think through problems, to be creative in thinking and to understand themselves. A concentration on leadership skills in the curriculum also provides a good background to function in emergency and disaster situations.

Diploma School A students become acquainted with emergency situations in caring for patients on the ward and in a period of service in the emergency room of the hospital. Special field trips are arranged to introduce the students to local civil defense organizations and to familiarize them with the available information in disaster situations. The program in disaster nursing is further

supported by the fact that the National League for Nursing Achievement Test in Disaster Nursing is annually administered to students in the senior year, which implies a concentration of preparation for the test. After the test has been administered, the instructors discuss the questions and problems students had in answering items on the test; thus the test is used as a teaching tool.

Diploma School B integrates strands of disaster nursing throughout the entire program. An activity hour for the student body is planned around disaster nursing, including talks and discussion with Red Cross personnel. The students are also involved in the hospital disaster exercises and in fire drills both in the hospital and in the nurses' residence. The students in this program have emergency room experience included in the curriculum.

The assumption is made on the basis of this information that disaster nursing preparation is included in the nursing school curriculum in all schools tested.

#### Procedure for Collecting Data

The director of one of the diploma schools stated that the Disaster Nursing Achievement Test is given annually in that school and offered the test scores from this year to be used in the study. The scores of these 48 students are listed as School A.

Administration of the test to School B and School C was

conducted over a period of three weeks. Instructors in two classes of School C students, who were off campus at other institutions, volunteered to give the test to their classes. The researcher administered the test to the remaining students on campus and to the students from School B. Of the 79 senior basic nursing students enrolled in School C, 63 took the test. Nine senior students out of the class of 52 at School B were given the examination.

The tests were then sent to the National League for Nursing Measuring and Evaluation Unit to be scored. The tabulation of the returned test raw scores may be found in Appendix C.

#### Description of the Statistical Method

A t-test was computed on the difference between the means of the 63 School C baccalaureate degree nursing students on the National League for Nursing Disaster Nursing Test and the means of the scores of the baccalaureate students on whom the test was standardized. The t-test is used to permit the comparison of groups when the sample size is small because the distribution in these instances is not considered to be normal.

Differences were computed on the total score and the two subscores, General Nursing Applicable and Disaster Nursing. The differences were found to be significant in all three sets of scores at the .05 level of significance.

In testing the hypotheses of no difference in scores of the 57 students prepared in selected diploma schools A and B in Oregon and the diploma students' scores on whom the test was standardized, the t-test was used. The t-test indicated no differences in the subscores as well as in the total scores.

An analysis of variance for unequal sizes was used to determine if there was any difference between the achievement test scores of the selected baccalaureate school student nurses and the test scores of the student nurses of each of the diploma schools tested. Analysis of variance was designed for testing significant differences between groups when more than two groups are being compared. Weighting is done so that the squared deviations based on the larger number of observations are given greater weight than those based on the smaller number of variations. The analysis of variance was performed on the total scores and the two subscores. This testing showed no differences for the total scores and the GNA subscores, but the DN score gave an F value of 2.77 which was significant at the .05 level. A Newman-Kuels procedure using harmonic means was performed to show where the differences actually were, as the F test used in the analysis of variance is too global to answer this question.

## Results

Of the three null hypotheses tested, one could be accepted in its entirety. The hypothesis of no difference in the scores of students prepared in selected diploma schools of nursing and the test scores of diploma students on whom the test was standardized was accepted. The hypothesis of no difference in the test scores of the student nurses prepared in a selected baccalaureate degree school of nursing and those scores of baccalaureate students on whom the test was standardized was rejected at the .05 level of significance. The indication is that there is a significant difference between the scores of baccalaureate degree nursing students taking the National League for Nursing Disaster Nursing Test at this time and the scores of the baccalaureate students on whom the test was standardized.

Table 3 shows the means, standard deviations, and t-tests for the variables of hypotheses 1 and 2.

Table 3. Disaster Nursing Achievement Test Scores Means, Standard Deviations and t-Tests for the Two Subscores and Total Scores of the Selected Baccalaureate and Diploma Schools in Oregon and the Standardized Norms of Diploma and Baccalaureate Schools.

		Oregon		Norms		t-test
		X	s	X	s	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Subscore GNA						
	Baccalaureate	53.90	5.49	56.50	7.20	3.46*
	Diploma	53.14	6.68	53.50	7.10	.40
Subscore DN						
	Baccalaureate	32.27	3.60	36.20	7.10	7.77*
	Diploma	33.05	5.40	33.20	5.70	.76
All Scores						
	Baccalaureate	86.17	7.44	92.60	11.30	6.18*
	Diploma	86.19	10.24	87.10	11.40	.61

\*p < .05

In testing the hypothesis of no difference in the achievement test scores of students prepared in a selected baccalaureate school of nursing and the scores of students in selected diploma schools in Oregon, there was found to be no significant difference in GNA and Total scores, but there was significant difference in the DN scores. A Newman-Kuels procedure was performed to indicate which school was different, and it was found that School A was significantly different from School B and School C at the .05 level. There was no difference between School B and School C. Table 4 presents the summary of analysis of variance for the GNA subscores of the three schools.

Table 4. Summary of Analysis of Variance for the GNA of the NLN Achievement Test for the Three Schools Tested.

Source of Variance	Sum of Squares	df	Mean Squares	F
(1)	(2)	(3)	(4)	(5)
Between Groups	19.68	2	9.84	< 1.00
Within Groups	4,346.12	117	37.15	
Total	4,365.80	119		

Table 5 shows the summary of analysis of variance for the DN scores of the three schools.

Table 5. Summary of Analysis of Variance for the DN Scores of the NLN Achievement Test for the Three Schools Tested.

Source of Variance	Sum of Squares	df	Mean Squares	F
(1)	(2)	(3)	(4)	(5)
Between Groups	110.82	2	55.41	2.77*
Within Groups	2,336.78	117	19.97	
Total	2,447.60	119		

\* $p < .05$

Table 6 presents the analysis of variance for the total scores of the three schools.

Table 6. Summary of Analysis of Variance for the Total Scores of the NLN Achievement Test for the Three Schools Tested.

Source of Variance	Sum of Squares	df	Mean Squares	F
(1)	(2)	(3)	(4)	(5)
Between Groups	124.66	2	62.33	< 1.00
Within Groups	9,171.31	117	78.39	
Total	9,295.97	119		



## CHAPTER IV

### SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

#### Summary

The purpose of this study was to determine if student nurses in selected schools of nursing in Oregon have the knowledge to function effectively in disaster situations. The limitations and assumptions as outlined in Chapter I have been the defining propositions of the study.

The literature was researched to establish a frame of reference. During this research, reference was noted concerning the National League for Nursing Disaster Nursing Achievement Test, and further inquiry assured this test was available. Consent was obtained to use the examination as a data collecting tool.

The directors of selected schools of nursing were contacted by letter and permission for senior student nurses to participate in the study was obtained from a baccalaureate school and two diploma schools in Oregon. One hundred twenty senior student nurses were the final participants in the study.

The following hypotheses were tested:

1. There is no difference in the disaster nursing achievement test scores of students prepared in a selected baccalaureate school of nursing in Oregon and the test scores of the baccalaureate student nurses on whom the test was standardized.
2. There is no difference in the disaster nursing achievement test scores of students prepared in selected diploma schools of nursing in Oregon and the test scores of the diploma student nurses on whom the test was standardized.
3. There is no difference in the disaster nursing achievement test scores of student nurses prepared in selected diploma schools in Oregon and the test scores of student nurses prepared in a selected baccalaureate school of nursing in Oregon.

The data were tabulated and the hypotheses were tested using the t-test, analysis of variance and the Newman-Kuels procedure. The results and interpretations of the statistical tests were presented.

### Findings

The findings of this study indicate that:

1. Student nurses prepared in the selected baccalaureate degree nursing school in Oregon do not have similar knowledge to function in disaster situations as the student nurses

on whom the National League for Nursing established norms.

2. Student nurses prepared in the selected diploma schools of nursing and the National League for Nursing test diploma norms group do share similar knowledge for functioning in disaster situations.
3. Student nurses prepared in the selected baccalaureate degree nursing school and the selected diploma schools in Oregon share similar knowledge in general nursing applicable to disaster situations, but in facts and principles peculiar to disasters and disaster situations, diploma School A had significantly higher score means than either the baccalaureate School C, or Diploma School B. When the subscores were totaled, however, there were no differences between baccalaureate and diploma schools in Oregon.

### Conclusions

In a study of this size it must be recognized that generalized conclusions cannot be made. However, certain inferences are acceptable.

The performance indicated by the mean scores of basic baccalaureate students on the National League for Nursing test when

compared to the norms was significantly low. A factor that may be considered as a possible explanation for the low mean score may be that the curriculum no longer contains the disaster workshop or any specific disaster nursing course. The scope of the present research did not include specific curriculum study of each school, but the inference is that in the baccalaureate school tested, the disaster nursing content in the curriculum is not as adequate as it could be.

The study project report Disaster Nursing Preparation stated that

Competence in disaster nursing is dependent upon competence in every day practice of nursing and that much of the content in existing courses might be considered as preparation for functioning in a disaster. . . . faculty groups also recognized that for assuming the nurse's role in a disaster, some understanding and some skills are needed over and beyond those required for standard nursing practice. (22)

This statement may also be used to make inferences as to the reason why diploma School A had a significantly higher mean score in the Disaster Nursing subscore. Because the National League for Nursing Disaster Test is administered annually to the senior students in this school, the implication is that a concentration of disaster nursing is contained in the curriculum and the test is given to determine the effectiveness of this instruction and, therefore, the Disaster Nursing subscore was significantly higher.

The performance of the diploma school students in Oregon on the National League for Nursing Test was not significantly different

than the National League for Nursing Disaster Nursing diploma test norms group. The inference is that Oregon diploma students are as well prepared to function in disaster situations as the National League for Nursing diploma norms groups.

#### Recommendations for Further Study

In order to determine if disaster nursing preparation in Oregon is adequate for effective performance in civil strife, riot, or mass disaster, it is recommended:

1. that a study be made of the curricula of the Oregon schools of nursing to ascertain the nature and prevalence of subject matter content related to disaster nursing.
2. It is further recommended that a survey be done to determine if preparation for disaster nursing is incorporated effectively in in-service programs of Oregon hospitals, nursing homes and health agencies.

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## BIBLIOGRAPHY

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## APPENDIX A

### Correspondence

Rt. 4 Box 1910  
Gresham, Oregon 97030  
November 12, 1968

National League for Nursing,  
Evaluation Unit,  
10 Columbus Circle,  
New York, N. Y. 10019

Dear Madam:

In partial fulfillment of requirements for a Master of Science degree at the University of Oregon School of Nursing, I am contemplating undertaking a study of disaster nursing.

I am interested in the N. L. N. Comprehensive Achievement in Disaster Nursing test.

Has the test been validated?

Would the test be available to me for testing or evaluation purposes as part of my study?

What would be the cost for copies of the test and for scoring the tests?

Would scores be returned to me in detail sufficient for statistical study?

I would appreciate this information at your early convenience.

Yours sincerely,

(Mrs.) Elizabeth C. Baldwin

C O P Y

National League for Nursing, Inc.  
10 Columbus Circle, New York, N. Y. 10019

November 19, 1968

Mrs. Elizabeth C. Baldwin  
Route 4, Box 1910  
Gresham, Oregon 97030

Dear Mrs. Baldwin:

This will acknowledge receipt of your letter of November 14, in which you inquired about arrangements for the use of the NLN Achievement Test in Disaster Nursing.

As you are probably aware, there are four different types of test validity which are generally recognized in the field of measurement. Concurrent validity is concerned with the relation of test scores to an accepted contemporary criterion of performance in the area which the test is intended to measure; predictive validity is concerned with the relation of test scores to measures on a criterion based on performance at some later time. The application of either concurrent or predictive validity to NLN Achievement Tests would depend upon having a reliable and valid criterion of nursing performance, which has not been readily available. This problem is not exclusive to nursing; no other profession has yet been able to establish reliable and valid criteria of performance.

A third type of validity is "content validity". It is concerned with the sampling of a specified universe of content. In the achievement tests, content validity is derived from the participation of faculty members from schools of nursing in the item writing, review, and evaluation of the tests.

The fourth type of validity is "construct validity". This may be used when none of the other three is suitable, either because no acceptable criterion is available, or because the universe of content cannot adequately be specified. In the case of NLN Achievement Tests in general, and the Disaster Nursing Test in particular, evidence of construct validity may be drawn from the fact that the mean scores of students in baccalaureate programs exceed those of students in diploma programs. In general, we have also found that the mean

Mrs. Baldwin

-2-

November 19, 1968

scores of students in accredited programs exceed those of students in non-accredited programs, which could be considered another evidence of construct validity.

A number of enclosures accompany this letter.

1. A mimeographed page describing the Disaster Nursing Test.
2. An order form for NLN Achievement Tests (please note the material on the back of the form).
3. A "Guide for the Interpretation of NLN Achievement Test Report", which tells you what will be on the test report.
4. Two copies of a blue form entitled "Request for NLN Test Materials", to be completed and returned so that your request may receive formal consideration.
5. Some reprints that may be relevant.

If there is additional information which you require, please do not hesitate to let us know. We look forward to being of service.

Sincerely yours,

/s/ Mildred E. Katzell  
Mildred E. Katzell, Ph. D., Director  
Measurement and Evaluation Services

MEK:dh  
Encls.

Rt. 4 Box 1910  
Gresham, Oregon  
February 28, 1969

Mildred E. Katsell, Director  
Measurement and Evaluation Services,  
National League for Nursing, Inc.  
10 Columbus Circle  
New York, N. Y. 10019

Dear Dr. Katsell,

In partial fulfillment of the requirements for a Master of Science degree at the University of Oregon School of Nursing, I have undertaken a study to determine the effectiveness of preparation for disaster nursing in Oregon. I have requested and received the National League for Nursing Comprehensive Achievement Test for Disaster Nursing. I find that the requirements are to return the completed tests within one week after the students have taken the test. In order for the tests to be given to all the students in the population I plan to test, it will be necessary to keep the tests for at least three weeks.

I would appreciate if permission would be granted to do so, to lessen the possibility of cutting down the tested population for my study. Your help in this matter would be greatly appreciated.

Yours sincerely,

Elizabeth C. Baldwin

C O P Y

National League for Nursing, Inc.  
10 Columbus Circle, New York, N. Y. 10019

To: Director, School of Professional Nursing

From: NLN Evaluation Service

Re: NLN Order Number 34634

Date:

In response to your recent request, the test materials are being sent on the NLN order number indicated above. You may retain these booklets until desired time.

You are being sent enough test booklets in the content area(s) specified on accommodate the largest group you indicated would be taking each test, and sufficient answer sheets to accommodate all groups. Any requests for additional answer sheets should refer to the above order number.

Following each use of tests in this shipment, completed answer sheets should be returned, together with reference to the above NLN order number, an indication of the number of answer sheets for each test being returned, and the addresses to which the reports and invoices should be directed.

Please take every precaution to guard the security of the tests, so that they will continue to be useful to you and to other schools of nursing. The booklets should be counted and checked immediately after each administration, and should then be stored in locked facilities.

If you have any questions, please do not hesitate to let us know. We look forward to continuing to serve you.

Rt. 4 Box 1910  
Gresham, Oregon  
February 10, 1969

Director of Nursing Education  
(Name of Hospital)  
(Address of Hospital)  
(Name of City), Oregon (Zip Code)

Dear

In partial fulfillment of requirements for a Master of Science degree at the University of Oregon School of Nursing, I am undertaking a study to determine the effectiveness of preparation for disaster nursing in specified schools of nursing in Oregon. The study will involve administering the National League for Nursing Comprehensive Achievement Test for Disaster Nursing to a number of senior nursing students. You, your staff and a number of senior nursing students are invited to participate. It is not necessary that the entire senior class take the examination, but it is preferred that at least 25 of your senior students do so.

A self-addressed post card is enclosed for your convenience in indicating your willingness to participate. I will contact you to arrange a mutually satisfactory date for coming to your school to administer the test.

Upon completion of the study, copies of the report will be placed in the library at the University of Oregon Medical School.

Yours sincerely,

(Mrs. ) Elizabeth C. Baldwin

Mrs. Baldwin is a regularly enrolled graduate student at the University of Oregon School of Nursing. Any assistance you can offer Mrs. Baldwin will be greatly appreciated.

Lucile Gregerson  
Thesis Adviser



## SAMPLE POST CARD

Dear Mrs. Baldwin,

My staff, at least 25 senior nursing students,  
and I will be glad to participate in your study  
to determine the effectiveness of preparation  
for disaster nursing in specified schools of  
nursing in Oregon.

Name of Director  
School of Nursing

C O P Y

School of Nursing  
Sacred Heart General Hospital  
1200 Alder Street  
Eugene, Oregon 97401  
March 3, 1969

Mrs. Elizabeth C. Baldwin  
Route 4, Box 1910  
Gresham, Oregon

Dear Mrs. Baldwin:

Your letter of February 28 reached me this morning, and I would like you to know that I am always very interested in helping with research projects in any way I can. Your request, however, poses a problem. All of our students take the N. L. N. Comprehensive Achievement Test for Disaster Nursing along with all the other N. L. N. Comprehensives during their senior year. We do like to have all of our seniors take them together, and they must be scheduled within our class schedule. Our seniors are already scheduled for next month, and the tests have already been ordered.

I would be very happy to share with you the results of the performance of our students on these tests over the past several years if this would be of any help to you. If you would like to come down and talk to me about this and review the results of the past tests, I would be very happy to see you. Just contact me for an appointment.

Sincerely,

/s/ Gylene Fitzpatrick  
Gylene Fitzpatrick, R. N.  
Director

GF:vb  
cc: Lucile Gregerson

Route 4, Box 1910  
Gresham, Oregon 97030  
March 13, 1969

Miss Gylene Fitzpatrick, R. N.  
Director,  
School of Nursing,  
Sacred Heart General Hospital,  
Eugene, Oregon.

Dear Miss Fitzpatrick:

Thank you for your encouraging letter of March 3. I appreciate your interest in my research project in Disaster Nursing.

My advisers indicate that, if it meets with approval, I can use the results of the N. L. N. Comprehensive Achievement Test for Disaster Nursing which are scheduled to be given to your senior students next month. It appears that I can use only the results of tests administered this year.

I would like an appointment to visit with you sometime during the week of March 24. Monday, Tuesday, Thursday or Friday after 11:00 A. M. would be most convenient for me, but if Wednesday is best for you I could be in Eugene on that day.

Please let me know at what time you will be able to see me.

Sincerely yours,

(Mrs.) Elizabeth C. Baldwin

C O P Y

School of Nursing  
Sacred Heart General Hospital  
1200 Alder Street  
Eugene, Oregon 97401

Mrs. Elizabeth C. Baldwin  
Route 4, Box 1910  
Gresham, Oregon 97030

Dear Mrs. Baldwin:

I would be very happy to see you on Tuesday, March 25, at 1:30 P. M. The entrance to the School of Nursing is on Hilyard Street between 11th and 12th Avenues.

I will look forward to seeing you next week.

Sincerely,

/s/ Gylene Fitzpatrick  
Gylene Fitzpatrick, R. N.  
Director

GF:vb

## APPENDIX B

### Sample Test Items

NLN Comprehensive Achievement Test in Disaster Nursing  
Form 261

The following items are representative of those included in the test:

1. If a number of families with small children are together in a shelter, which one of these factors is likely to exert the greatest influence on the reaction of a preschool child to a disaster?
  1. The opportunity for play activities.
  2. The response of other children in the same age group.
  3. The presence of injuries among the victims.
  4. The behavior of the child's parents.
2. Unopened glass containers of I. V. fluids have been contaminated by radioactive fallout. Which way of treating them is best?
  1. By emptying the flasks, boiling the contents, and then considering the fluids usable.
  2. By boiling the flasks and then considering them safe.
  3. By emptying the flasks into prepared sterile containers.
  4. By washing off the flasks and then considering them safe for use.
3. In applying the principle of "the greatest good for the greatest number," which one of these patients in the 200-bed Civil Defense Emergency Hospital would have the lowest priority for care?
  1. A patient who is recovering from anesthesia and is vomiting.
  2. A patient with postoperative urinary retention.
  3. A patient with a cast on the lower leg which is impairing circulation.
  4. A patient with third degree burns of 30% of the body surface, who has anuria.

## APPENDIX C

N. L. N. Achievement Test Report,  
Tabulation of Raw Scores of the Three Schools Tested

Tabulation of Raw Scores

Student No.	General Nursing			Disaster Nursing			Total Scores		
	School			School			School		
	A	B	C	A	B	C	A	B	C
1	057	062	049	038	037	030	096	099	079
2	055	050	058	040	031	032	095	081	090
3	050	057	054	036	032	031	086	089	085
4	049	050	049	044	031	039	093	081	088
5	055	052	057	040	021	037	095	073	094
6	061	055	060	037	033	027	098	088	087
7	061	035	052	042	032	030	103	067	082
8	048	055	050	035	032	030	083	087	080
9	060	058	058	039	022	030	099	080	088
10	047		048	028		031	075		079
11	061		057	038		039	099		096
12	051		055	032		028	083		083
13	055		061	025		039	080		100
14	056		051	039		031	095		082
15	036		053	020		029	056		082
16	063		059	042		038	105		097
17	041		049	023		029	064		078
18	042		058	031		028	073		086
19	048		059	033		031	081		090
20	064		051	031		034	095		085
21	041		050	027		033	069		083
22	050		048	032		035	082		083
23	052		053	030		037	082		090
24	046		063	032		034	078		097
25	056		054	044		031	100		085
26	057		039	030		029	087		068
27	047		056	023		031	070		087
28	058		057	036		034	094		091
29	065		062	033		040	098		102
30	050		054	033		035	083		089
31	042		047	031		027	073		074
32	049		048	028		024	077		072
33	055		050	035		026	090		076
34	045		053	036		032	081		085
35	058		046	033		031	091		077
36	056		059	031		034	087		093
37	054		051	036		031	090		082
38	058		059	030		038	088		097



Tabulation of Raw Scores (continued)

Student No.	General Nursing			Disaster Nursing			Total Scores		
	School			School			School		
	A	B	C	A	B	C	A	B	C
39						031			
40	053		049	031		029	084		078
41	052		055	038		029	083		084
42	056		061	036		037	094		098
43	059		043	033		035	095		078
44	047		048	039		037	090		085
45	053		047	032		032	092		079
46	054		066	033		037	086		103
47	056		048	036		032	089		080
48	060		055	031		029	096		084
49			057			029			086
50			054			029			083
51			052			037			089
52			059			031			090
53			057			030			087
54			054			031			085
55			063			035			098
56			056			030			086
57			048			031			079
58			059			032			091
59			045			031			076
60			059			030			089
61			063			035			098
62			056			033			089
63			051			036			087

Typed by Barbara Glenn