A study of nursing students understanding of pain before and after clinical practice
by Mary Claire Mortensen

A thesis submitted to the Graduate Faculty in partial fulfillment of the requirements for the degree of
MASTER OF NURSING
Montana State University

Abstract:
The problem of the study was to determine, for a group of nursing students, the extent of their understanding of the concept of pain as to its expression and alleviation after exposure to the concept in theory only, and again after exposure to clinical practice. A test was administered to a group of baccalaureate nursing students prior to any clinical practice and again after they had been exposed to two quarters of clinical practice.

The extent of the students' understanding was determined by the percentage of correct responses to each of the test items. The test items dealt with the expression and alleviation of pain on a physiological, psychological, and socio-cultural basis.

The findings suggest that the students performed much better on those items dealing with the psychological and socio-cultural aspects of pain than on those items dealing with the physiological aspects of pain. The findings also suggest that neither age, sex nor personal experience with pain had any significant relationship with how well the student did on the tests.

Other studies confirming the conclusions and seeking additional findings concerning student learning are recommended.

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Date June 4, 1974

A STUDY OF NURSING STUDENTS' UNDERSTANDING OF THE CONCEPT OF PAIN BEFORE AND AFTER CLINICAL PRACTICE

by

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A thesis submitted to the Graduate Faculty
in partial fulfillment of the requirements for the degree

of

MASTER OF NURSING

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ABSTRACT

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Chapter I

INTRODUCTION

"From birth to death, pain is part of man's biological and socio-cultural life."[1] The anticipation of and the actual sensation of pain is a phenomenon which most humans have experienced, except those with congenital indifference to pain.[2] Since pain remains one of the most common and compelling symptoms for which a person seeks medical assistance, its relief becomes a major task of medical personnel.[3]

When evaluating an individual's pain, medical personnel are not so much confronted with the actual sensation of pain as they are with the expression of the pain.[4] Since the pain itself cannot be observed, the individual's reaction to the anticipation or sensation of pain can be observed in terms of his physical and/or psychological behavior. A person's response to pain is influenced by many factors derived from that person's total life experience, and can be observed on an emotional and behavior level; behavior often being determined by feelings and

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[1] Mark Zborowski, People in Pain (San Francisco: Jossey-Boss Publishing, 1969), p. 18.

[2] Walter Modell, Relief of Symptoms (St. Louis: C. V. Mosby company, 1961), p. 75.

[3] Zborowski, op. cit., p. 15; Modell, loc cit.; Cyril Mitchell McBryde, Signs and Symptoms (5th ed.; Philadelphia: J.B. Lippincott Company, 1970), p. 44.

[4] Zborowski, loc. cit.

attitudes brought into play by the sensation or anticipation of pain.[5]

In the hospital setting, the nurse will encounter people anticipating or experiencing pain regardless of the type of health service or clinical setting. The nurse is the member of the health team most readily and consistently available to the individual. The nurse also is the member who should understand the individual's total pain experience and hopefully be the one to alleviate or modify this experience in some way.[6]

It is crucial, therefore, that the nurse understand the concept of pain; the individuality of each pain experience; how cultural background and mores influence behavioral and emotional manifestations of pain; how pain involves the whole person; and how some medical conditions may interfere with the physiological transmission of pain, perhaps rendering the individual unable to feel pain and thus unable to protect himself.

This study was concentrated upon nursing education and dealt with nursing students' understanding of the concept of pain as to its alleviation and expression.

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[5] Ibid.

[6] Margo McCaffery, Nursing Management of the Patient with Pain (Philadelphia: J. B. Lippincott Company, 1972), p. 5.

Statement of the Problem

The problem of this study was to determine the extent to which a group of baccalaureate nursing students understand the concept of pain as to its expression and alleviation after exposure to the concept of pain in theory only, and again after exposure to clinical practice within the hospital setting.

Purpose of the Study

It has been observed by the researcher that many nurses in the hospital setting seemed unable to deal effectively with individuals experiencing or anticipating pain. The apparent overuse of pain-relieving medications and the labeling of individuals according to their behavior while experiencing or anticipating pain by professional nursing staff, led the researcher to undertake this study utilizing student nurses at two different levels in a baccalaureate nursing program.

This study was an attempt to determine two areas of concern: 1) the extent of nursing students' understanding of the concept of pain as to its expression and alleviation after exposure to theoretical consideration only, and 2) the extent of the students' understanding of the concept of pain as to its expression and alleviation after exposure to two quarters of clinical practice. If these two areas can be determined, the effect of both theoretical consideration and clinical practice hopefully will be identified.

The information in this study may be useful to all nurses, particularly to nursing educators who may find the results helpful in determining a theoretical approach to the concept of pain, choosing clinical learning experiences, and emphasizing various aspects of the pain concept.

Assumptions

1. All nursing students participating in the study were exposed to theoretical considerations of the concept of pain.

2. The testing tool was valid and reliable.

3. The student responses on the test would change from pretest to post test.

4. The students followed the directions as given verbally and as written on both the pretest and post test.

Methodology of the Study

The study was a descriptive investigation attempting to determine the extent of nursing students' understanding of the concept of pain as to its expression and alleviation after exposure to the concept in theory only, and again after exposure to clinical practice. Thus, the effects of clinical practice upon the students' understanding of the concept of pain was determined.

The population utilized in this study was a group of nursing students enrolled in one university School of Nursing baccalaureate

program. The method of research was the administering of a test to the students before they began clinical practice, and again after the same students completed two quarters of clinical practice.

The tool used to collect the data was a test developed by the researcher. The test questions and appropriate responses were developed in accordance with the following criteria imposed by the researcher. There was agreement on the content of each test item by two or more authors. The content of each test item related either directly or indirectly to the problem of the study. Therefore, the test items pertained to pain expression and/or pain alleviation. The content of the test included an approximately equal quantity of items pertaining to the socio-cultural, psychological, and physiological aspects of the pain concept. Each test item was designed to measure an objective also constructed by the researcher.*

The test was constructed to be used as both the pretest and post test. It contains a number of multiple choice and true-false items.† This tool was piloted on twenty students not participating in

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*The objectives were constructed as suggested in Robert F. Mager's Developing Attitude Toward Learning (Belmont, California: Fearnon Publishers, 1968).

†Test item construction was facilitated by the material presented in: Robert Ebel, Measuring Educational Achievement (Englewood Cliffs, New Jersey: Prentice Hall, Inc., 1965), Chapter 5 and 6, and Robert Thorndike (ed.), Educational Measurement (Washington, D.C.: American Council on Education, 1971), Chapter 4.

the study. After the pilot study results were analyzed, several additional items were added to the original tool. The final test contained eighteen multiple choice and five true-false items. All of the multiple items offered four possible responses with only one correct response. Five items at the beginning of the test elicited personal data about each student.

The purpose of the test and the anonymity of the results were stressed to all of the participants by the researcher. The students were instructed both verbally and on the test, not to guess at the answer.

Each response was hand coded and key punched into computer data cards. The computer was programmed, and the printout was utilized for the data presented.

Limitations of the Study

1. Due to the time in which the study was to be completed, the population tested was limited to sophomore nursing students, tested before clinical practice and again after two quarters of clinical practice.

2. Only one university nursing program was used in the study.

3. The tool was composed of multiple choice, true-false type questions which allow for guessing on the part of the students even though they were instructed not to guess.

4. Certain variables were not controlled, such as teacher methodology and variations in clinical practice.

5. The students were not identified individually and therefore their responses were treated as a single group throughout analysis of the data.

Definition of Terms

The following definitions are presented for the purposes of this study.

Understanding: to grasp the meaning of; to comprehend; to be familiar with the characteristics of.

Concept: compilation of facts, experiences and observations into a meaning which may be directly grasped and readily used and thus fixed by a word.

Pain: a subjective experience influenced by numerous physical, psychological, and socio-cultural factors.

Alleviation: to reduce or relieve; to make better able to endure.

Expression: is meant here to encompass the behavior of a patient in pain. This includes motor, vocal, verbal and phycho-social responses.

Exposure: is used here to mean that the subject content is presented to the students either by films, lecture, discussion,

independent reading, or by caring for actual patients.

Theoretical exposure: this term encompasses the presentation of the subject content in the classroom or by a text or reference book.

Clinical practice: this term describes those experiences that the students acquire in health agencies such as the hospital, nursing home, or patient's home.

Organization of the Remainder of the Study

The remainder of the study is arranged into three chapters. Chapter II consists of a review of pertinent literature. Chapter III includes a description and analysis of data obtained from the study's tool. Chapter IV presents the summary, conclusions and recommendations for further study.

Chapter II

REVIEW OF LITERATURE

There has been quite a number of research studies concerned with nursing intervention in the relief of pain, but very limited number in the area of measuring a nurse's understanding of the concept of pain. It is the researcher's feeling that a nurse cannot make a proper decision about what type of intervention is necessary in a given situation without a basic understanding of the concept of pain and the various behavioral responses of individuals anticipating or experiencing pain.

In view of the lack of other research in the area of measurement of nurses' understanding of the concept of pain, the researcher will present a review of the literature which will be utilized in developing the tool that will be used in this study. Also, since the tool will be measuring understanding of the pain concept, some literature pertinent to learning and its measurement will be reviewed. Certain sociological, psychological, and physiological concepts provide the basis necessary for nurses to provide a rational approach in caring for individuals anticipating or experiencing pain.

Pain is a very subjective experience. McCaffery defines pain as "...whatever the experiencing person says it is and exists whenever

the patient says it does."[7] This allows the patient to define pain as he experiences it, utilizing the approach that the patient is the only person who knows what he feels and when he feels it.[8] "...real knowledge of what pain is belongs only to the one who experiences it."[9]

People develop their own way of handling pain. This pattern of behavior is an adaptive mechanism for coping with pain. No matter how effective it is, it usually is the individual's best way of coping.[10]

Perception involves comprehending something new by assimilating it with the sum total of one's previous experiences and knowledge. Pain is experienced and responded to in light of its interpretation which involves past experiences. Therefore, the perception that a sensation is painful and that it has a particular character, is subject

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[7]Margo McCaffery, Nursing Management of the Patient with Pain (Philadelphia: J. B. Lippincott Company, 1972), p. 8.

[8]Cyril Mitchell McBryde, Signs and Symptoms (5th ed.; Philadelphia: J. B. Lippincott Company, 1970), p. 44.

[9]M. Kaufmann and D. Brown, "Pain Wears Many Faces," American Journal of Nursing, 61(48):48, 1961.

[10]McCaffery, op. cit., p. 24.

to influence by the individual's current and past experiences.[11]

This leads Smith and Gips and McCaffery to guard nurses against making judgments about how severe pain should be and how much the person should be suffering. They repeat that pain is a private experience and that nurses should allow the individual to express what he feels in whatever way he chooses without imposing any opinions of how much pain he feels.[12] Fear, anxiety, and socio-cultural factors cause some people to suffer intense pain in silence and others to suffer fairly small amounts of pain with great verbal response.[13]

Pain has a greater symbolic significance than any other symptom, and thus evokes a larger variety of adaptive-protective reactions.[14] Both consciousness and attention are necessary for one to experience pain. Psychological, sociological and cultural factors significantly

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[11]Cyril Mitchell McBryde, Signs and Symptoms (5th ed.; Philadelphia: J. B. Lippincott Company, 1970), p. 45; see also Margo McCaffery, Nursing Management of the Patient with Pain (Philadelphia: J.B. Lippincott Company, 1972), pp. 54-55; Walter Modell, Relief of Symptoms (St. Louis: C.V. Mosby Company, 1961), p. 78.

[12]Dorothy Smith and Claudia Gips, Care of the Adult Patient (Philadelphia: J.B. Lippincott Company, 1966), p. 109.

[13]McCaffery, op. cit., p. 45; Modell, op. cit., p. 80.

[14]McCaffery, op. cit., p. 12; Modell, op. cit., p. 76.

influence and modify how people react to and report pain.[15] Modell reports that some people with a low pain threshold may experience severe pain from a relatively low intensity stimulus, whereas other individuals have a higher pain threshold and may experience only a moderate amount of pain with a relatively high intensity stimulus.[16]

Various types and causes of pain make it more of less intense and affect the physiological response to pain, but it is often the psychological factors that determine its tolerability. The nervous system remains more or less stable, but the attitude toward pain shifts from one situation to another.[17]

The more pain a person experiences, the more he concentrates and directs his attention on the pain. This makes him less aware of his surroundings and increases the difficulty to distract him. The degree of attention is one measure of the amount of pain the person perceives he has. An increase in anxiety will also increase perceived pain. A person's anxiety may be observed in the form of tension, irritability, and worry.[18]

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[15] McBryde, loc. cit.; see also McCaffery, op. cit., pg. 38.

[16] Modell, op. cit., p. 79.

[17] Ibid.

[18] McBryde, op. cit., pg. 53.

Pain may indicate actual injury and serves as a protective reflex. For example, pain which accompanies muscle spasm surrounding the area of a fractured bone prevents further tissue damage due to movement.[19] Pain sensation may also indicate a threat of injury to the individual whereas absence of pain may indicate no injury to the individual when in fact injury may be present. Furthermore, pain may come to symbolize injury even in the absence of stimulation, if and when it serves the psychological needs of the individual. In this way, an individual may suffer pain when, for example, guilt imposes a need for punishment.[20]

The need to suffer or to assume the role of a sufferer may result in reports of severe pain when the patient may appear quite comfortable. People who utilize the role of sufferer, consciously or unconsciously, exhibit more pain in the presence of others.[21]

Pain functions very early in our lives. For example, in infancy, it contributes to the process of differentiation of the body

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[19]Walter Modell, Relief of Symptoms (St. Louis: C.V. Mosby Company, 1961), p. 42.

[20]Margo McCaffery, Nursing Management of the Patient with Pain (Philadelphia: J.B. Lippincott Company, 1972), p. 3; see also McBryde, op. cit., p. 46 and 51.

[21]Cyril Mitchell McBryde, Signs and Symptoms (5th ed.; (Philadelphia: J.B. Lippincott Company, 1970), p. 54.

from the environment and the formation of a body image.[22] Szas, in a study on pain and pleasure, suggested that this idea of early psychological equation may contribute to a later use of pain as a means of denying the loss of a body part, called phantom pain.[23]

Phantom pain involves the perception of pain in a part of the body that has been removed, be it a limb or a gallbladder.[24] Some people have congenital lack of the apparatus necessary for pain perception, and others have had their physiological process deliberately or accidentally obliterated.[25]

An individual may express his pain through reflex responses such as tensing of muscles, wincing facial expression, and changes in pulse and blood pressure. Observation of these reflex responses are helpful in determining the presence of pain but cannot be relied upon to determine specific qualities of the painful sensation, including its intensity, location, and duration. These qualities may be reflected in the person's behavior or his selection of words used to describe the pain.[26]

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[22]Ibid., p. 50. [23]Ibid.

[24]McCaffery, op. cit., p. 4.

[25]Modell, op. cit., p. 76.

[26]Mark Zborowski, People in Pain (San Francisco: Jossey-Boss Publishing, 1969), p. 18.

As far as the physiology of pain is concerned, all pain is physiological in the sense that certain physiological processes are necessary for the production of the pain sensation, whether the original stimulus is physical or psychological.[27] When a noxious stimuli comes in contact with the skin, pain receptors are stimulated. This impulse is carried via nerve fibers to the spinal cord and then to the thalamic section of the brain. It is in the thalamus that the pain is perceived. The impulse then travels to the cerebral cortex where pain is interpreted and behavioral responses are initiated.[28]

Since this study was attempting to show an increase in the extent to which students understand the concept of pain as to its expression and alleviation from pretest to post test, through exposure to clinical practice, a review of some of the literature pertinent to learning and its measurement was necessary. Transfer of learning is an important concept in this study. The students were exposed to the theoretical considerations of the pain concept in the classroom. The students were then placed in clinical settings, in part, to apply what they had learned in the classroom. The students were required to transfer theoretical learnings to the actual situation.

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[27] McCaffery, op. cit., p. 29.

[28] "Pain: Basic Concepts and Assessment," Programmed Instruction, American Journal of Nursing, 66(5):2348-2349, May, 1966.

Man has not only wanted to learn, but has been, and continues to be very curious about how he learns. There have been many theories about how people learn. These all are linked to a conception of the basic nature of man.[29] Educational authorities have written that the central aim of education is to help students to increase their abilities to think. Bigge contends that these educators are referring to the concept of transfer of learning, the key to the value of learning.[30]

Transfer of learning means the relationship between a person's learning process and his ability to use his learnings in future situations.[31] Transfer occurs when a person's learning in one situation influences his learning and performance in other situations.

Also, what is learned in one situation tends to facilitate learning in other situations.[32] Redman states that "transfer can be defined as the effect of prior learning on subsequent learning, and is one of the most important products of education since no learner can practice all situations he will meet."[33]

Charles Judd did much work in the field of transfer. Judd and his followers view the degree of transfer of learning which does occur

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[29]Morris Bigge, Learning Theories for Teachers (New York: Harper and Row, Publishers, 1964), p. 11.

[30]Ibid., p. 11. [31]Ibid., p. 16. [32]Ibid., p. 243.

[33]Barbara Redman, The Process of Patient Teaching in Nursing (St. Louis: The C.V. Mosby Company, 1972), pp. 73-74.

depends upon the extent to which the products of learning are consolidated into generalizations. A generalization is a characteristic common to many situations.[34] A generalization is a statement or an understanding of relationships, and may also be called a principle, rule, or law. Judd states that "a generalization is another name for the relating of experience in such a way that what is gained at one point will rebound to the advantage of the individual in many spheres of that action.[35]

Jack Kittel supports Judd's views in his studies measuring transfer of learning in sixth graders. He concluded that "evidence from this experiment and that of similar experiments indicates that furnishing learners with information in the form of underlying principles promotes transfer and retention of learning principles and provides the background that may enable future discovery of new principles."[36] Judd states further that "...the most effective use of knowledge is assured not through the acquisition of any particular item of experience but only through the establishment of associations which illuminate and expand an item of experience so that it has general value."[37]

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[34]Morris Bigge, Learning Theories for Teachers (New York: Harper and Row, Publishers, 1964), p. 273.

[35]Ibid., p. 274. [36]Ibid., pp. 275-276.

[37]Ibid., p. 276.

Cronback, a cognitive field theorist, believes Judd did an inadequate job in noting the conditions necessary for transfer to occur. He contends that transfer of a behavior learned in one situation to a new situation will likely occur only when the learner recognizes the new situation as similar to other situations for which the behavior is appropriate. Cronback also believes that to facilitate transfer, a student needs to learn general principles and be given the opportunity to recognize the applicability of the principles.[38]

Thus, Gestalt field psychologists view transfer as occuring because of perceived similarities between two situations, and that learning is in the form of generalizations, concepts, or insights which are developed in one learning situation and are usable in others, in other words, transposition.[39] They also believe that transfer of learning to new tasks will be improved if in learning, the learner can discover relationships for himself and be given the opportunity to apply his learning to a variety of tasks. Transfer is dependent upon methods of teaching and learning which use life-like situations.[40]

Redman points out that the development of a learner's ability to transfer is really aimed at helping the learner remember. The more interconnections a learning has with the learner's experiences and the more active he has been in using the learning in different situations,

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[38]Ibid., p. 277. [39]Ibid., p. 278. [40]Ibid., p. 283.

the deeper the impact on his memory.[41]

According to Bloom, learning takes place in three domains; the cognitive, affective, and psychomotor. Cognitive learning involves acquiring and developing concepts or mental constructs. Affective learning involves attitudes, emotionally toned predispositions to react in a particular way toward an object, an idea, or a person. Psychomotor learning involves performing skills. In order to perform a skill, the learner must first possess a neuromuscular system that is capable of performing the skill and the learner must have a mental image of how it is to be done.[42] This study involves that area of learning Bloom calls the cognitive domain.

Measuring learning involves measuring behavior and interpreting it in terms of the desired behavior.[43] All measurement of behavior involves direct or indirect observation. Direct observation involves viewing the actual behavior, and indirect involves the student's written or verbal responses.[44]

It is most accurate to measure a behavior by direct observation. Natural behavior is not always accessible and is not an expedient measurement. Therefore indirect methods of measurement must be used. Tests are one means of indirect measurement. Test strategy involves

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[41] Barbara Redman, The Process of Patient Teaching in Nursing (St. Louis: C.V. Mosby Company, 1972), p. 73.

[42] Ibid., p. 78. [43] Ibid., p. 133. [44] Ibid.

controlling the situation in such a way that the desired behavior can be stimulated at will in the form of written responses to a mock situation.[45]

Written test items such as multiple choice and true-false questions with only one right answer are able to measure all of the levels within the cognitive domain. However, they are not adequate in measuring the affective domain except if a statement is given and the student must agree or disagree on a scale from say, strongly disagreeing to strongly agreeing. In this domain, there is not one right answer.[46] In a multiple choice test, the learner must be able to produce information from his memory and discriminately choose between ideas, some of which he might not otherwise have considered, thus helping to measure his depth of understanding. True-false items are most adaptable for testing knowledge and comprehension.[47]

Morris Bigge presents an interesting discussion of teaching-learning situations. He classifies teaching-learning situations into three categories: memory-level, understanding-level, and reflective-level. Memory-level learning encompasses committing facts to memory. The more meaningful the material to be learned, the easier it is to commit to memory. Testing in this level is best accomplished through

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[45]Ibid., p. 134. [46]Ibid., p. 147. [47]Ibid., pp. 143-144.

short answer completion.[48]

Understanding-level learning encompasses the development of a generalized insight. Understanding equips the learner with generalized insights which can be applied to problematic situations. These generalized insights involve principles, relationships, concepts, rules, laws, and theories. Testing at this level is best accomplished through factual essay, true-false, or multiple choice.[49]

Reflective-level learning involves problem-centered, exploratory learning. The student must actively participate and use his imagination and creativeness. It involves what is learned at the other two levels, independent thinking and a scientific outlook. Testing at this level is accomplished best by use of the problem-centered essay.[50]

The study's tool was developed to measure objectives concerned with the concept of pain as to its expression and alleviation. The tool concentrates on the students' understanding level in the cognitive domain.

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[48]Morris Bigge, Learning Theories for Teachers (New York: Harper and Row, Publishers, 1964), pp. 316-327.

[49]Ibid., pp. 323-327.

[50]Ibid., pp. 326-327.

Chapter III

DESCRIPTION AND ANALYSIS OF DATA

Test items one through five deal with personal information about the study's participants. This information was then correlated with pretest and post test scores. Thus, this data and its discussion will follow the presentation of data collected from test items six through twenty eight.

Data from each individual test item six through twenty eight is presented as follows: a statement of an objective that the test item is designed to measure; the test item as it was presented to the participants; a brief description of the test item and a statement of what findings were expected; a presentation of the findings; and the data arranged in tabular form.

Objective: The student will formulate an accurate definition of pain.

Test Item No. 6:

6. Which of the following do you think is the most accurate definition of pain?

____ Pain is a physiological sensation due to a noxious stimuli.
____ Pain is the opposite of pleasure.
_X_ Pain is a subjective experience influenced by numerous physical, emotional, and cultural factors.
____ Pain is an unpleasant feeling state.

This test item deals mainly with the general theoretical aspects of the concept of pain. It requires the student to synthesize theoretical knowledge into an accurate and inclusive definition of pain.

It would be expected that the percentage of correct responses would increase after exposure to clinical practice.

Table 1 shows that the percentage of correct responses increased 7.5 percent from pretest (83.9 percent) to post test (91.4 percent). The extent of the students' understanding of the concept of pain as measured by the percentage of correct responses to this test item did increase after exposure to clinical practice.

Table 1 also shows a 6.3 percent decrease in incorrect responses from pretest (12.7 percent) to post test (6.4 percent). The percentage of those who did not know the answer also decreased 1.2 percent from pretest (3.4 percent) to post test (2.2 percent).

TABLE 1

PERCENTAGES OF CORRECT RESPONSES, INCORRECT RESPONSES, AND THOSE WHO DID NOT KNOW THE ANSWER TO TEST ITEM SIX

Responses to Test Item	Pretest(N=205)	Post Test(N=187)	Difference
Correct response	83.9%	91.4%	7.5%
Incorrect response	12.7%	6.4%	6.3%
Did not know	3.4%	2.2%	1.2%

Objective: The student will identify those cues related to the expression of pain.

Test Item No. 7:

7. What observation(s) would you make in assessing a patient's pain?

A. Facial expression	_____A only
B. The patient's position	_____A,B, and C
C. The presence of perspiration	_____B and C
D. Tenseness of the muscles	__X__A,B,C, and D

This test item deals with the expression of pain. It involves the student's ability to synthesize theoretical information regarding non-verbal expressions of pain and apply this information to the patient. Therefore, an increase in correct responses could be expected after exposure to clinical practice.

Table 2 shows that the percentage of correct responses 1.7 percent from pretest (95.1 percent) to post test (96.8 percent). Although this is a very small increase, the percentage of correct responses were very high before exposure to clinical practice. The extent of the students' understanding of the concept of pain as measured by the percentage of correct responses to this test item did increase slightly after exposure to clinical practice.

Table 2 also shows a 0.1 percent increase in percentage of incorrect responses from pretest (2.5 percent) to post test (2.6 percent) and a 1.9 percent decrease in percentage of those who did not know the answer from pretest (2.4 percent) to post test (0.5 percent).

TABLE 2

PERCENTAGES OF CORRECT RESPONSES, INCORRECT RESPONSES, AND THOSE WHO DID NOT KNOW THE ANSWER TO TEST ITEM SEVEN

Responses to Test Item	Pretest(N=205)	Post Test(N=187)	Difference
Correct response	95.1%	96.8%	1.7%
Incorrect response	2.5%	2.6%	0.1%
Did not know	2.4%	1.5%	1.9%

Objective: The student will determine the nature, location, and duration of a patient's pain through his description of that pain.

Test Item No. 8:

8. What questions would you ask a patient in relation to his complaint of pain?

A.	Where is the pain?	____ B only
B.	Can you describe the pain?	____ A and B
C.	How long have you had the pain?	____ A,B,C, and D
D.	Would you like to see your doctor?	__X__ A,B, and C

This test item deals with the expression of pain and focuses on applying theoretical knowledge in the practical situation. The percentage of correct responses would therefore be expected to increase after exposure to clinical practice.

Table 3 shows a 21.8 percent increase in percentage of correct responses from pretest (65.9 percent) to post test (87.7 percent). This is a substantial increase. The extent of the students' understanding of the concept of pain as measured by the percentage of correct responses to this test item substantially increased after exposure

to clinical practice.

Table 3 also shows a substantial 21.4 percent decrease in percentage of incorrect responses from pretest (33.2 percent) to post test (11.8%). The percentage of those who did not know the answer also decreased 0.5 percent from pretest (1.0 percent) to post test (0.5 percent).

TABLE 3

PERCENTAGES OF CORRECT RESPONSES, INCORRECT RESPONSES, AND THOSE WHO DID NOT KNOW THE ANSWER TO TEST ITEM EIGHT

Responses to Test Item	Pretest(N=205)	Post Test(N=187)	Difference
Correct response	65.9%	87.7%	21.8%
Incorrect response	33.2%	11.8%	21.4%
Did not know	1.0%	0.5%	0.5%

Objective: The student will evaluate the patient's status before administering pain relieving medication.

Test Item No. 9:

9. When judging and deciding upon which medication and dosage is suitable when several pain medications are ordered, which factors would you consider?

A. The patient's age	____A,B, and C
B. The description of the pain	____B,C, and D
C. Other drugs recently administered	____A and B
D. The patient's vital signs	__X__A,B,C, and D

This question deals mainly with the alleviation of pain and those factors which should be considered before administering pain

relieving medications. The students are required to apply theoretical knowledge about the actions and precautions of medications to the practical situation. It is expected that the percentage of correct responses would increase after exposure to clinical practice.

Table 4 shows that the percentage of correct responses increased only 0.7 percent from pretest (85.4 percent) to post test (86.1 percent). Since the percentage increase in correct responses was so small, exposure to clinical practice did not appreciably affect the students' understanding of the pain concept as measured by the percentage correct responses to this test item.

Table 4 also shows a 7.0 percent increase in incorrect responses from pretest (6.4 percent) to post test (13.4 percent) and a 7.7 percent decrease in those who did not know the answer from pretest (8.2 percent) to post test (0.5 percent). This shows that after exposure to clinical practice a higher percentage of students evidently believed they knew the correct response but responded incorrectly.

TABLE 4

PERCENTAGES OF CORRECT RESPONSES, INCORRECT RESPONSES, AND THOSE WHO DID NOT KNOW THE ANSWER TO TEST ITEM NINE

Responses to Test Item	Pretest(N=205)	Post Test(N=187)	Difference
Correct response	85.4%	86.1%	0.7%
Incorrect response	6.4%	13.4%	7.0%
Did not know	8.2%	0.5%	7.7%

Objective: The student will identify the components of a total pain experience.

Test Item No. 10:

10. What factors contribute to a patient's total pain experience?

A. The autonomic reflex response	____A and B
B. The physical sensation	____B,C, and D
C. The attitude of the patient toward pain	__X__A,B,C, and D
D. The physical, social and emotional environment	____A,B, and D

This test item deals with the physiological, psychological, and socio-cultural components of a pain experience. The student is required to pool information from various disciplines to understand all that may be involved in a painful experience. It is expected that correct responses to this test item would increase after exposure to clinical practice.

Table 5 shows that the percentage of correct responses actually decreased 2.8 percent from pretest (65.9 percent) to post test (63.1 percent). This is not an appreciable decrease. The extent of the students' understanding of the pain concept as measured by the percentage of correct responses to this test item decreased after exposure to clinical practice.

Table 5 also shows that the percentage of incorrect responses increased 6.7 percent from pretest (19.0 percent) to post test (11.2 percent). The percentage of those who did not know the answer decreased 3.9 percent from pretest (15.1 percent) to post test (11.2 percent).

This shows that after exposure to clinical practice, a higher percentage of students evidently believed they knew the correct response though responding incorrectly.

TABLE 5

PERCENTAGES OF CORRECT RESPONSES, INCORRECT RESPONSES, AND THOSE WHO DID NOT KNOW THE ANSWER TO TEST ITEM TEN

Responses to Test Item	Pretest(N=205)	Post Test(N=187)	Difference
Correct response	65.9%	63.1%	2.8%
Incorrect response	19.0%	25.7%	6.7%
Did not know	15.1%	11.2%	3.9%

Objective: The student will explain why every individual reacts differently to pain.

Test Item No. 11:

11. In the research lab, ten people were given the same painful stimuli but all of them reacted differently. Why?

A. Pain is an individual experience to each person	____A,B, and C
B. Pain has different symbolic meanings to each individual	__X__A and B
	____B and C
C. Pain sensation is felt equally by all people	____A only

This question deals mainly with the theoretical aspects of pain. It requires the student to explain some of the underlying reasons why individuals express and react to pain in different ways. It can be expected that the percentage of correct responses would increase after exposure to patients in the clinical setting.

Table 6 shows that the percentage of correct responses increased 8.4 percent from pretest (64.9 percent) to post test (73.3 percent). Although the percentage of correct responses is not appreciably high, it did increase after exposure to clinical practice. Therefore, the extent of the students' understanding of the concept of pain as measured by the percentage of correct responses to this test item did increase after exposure to clinical practice.

Table 6 also shows that the percentage of incorrect responses decreased 5.2 percent from pretest (30.3 percent) to post test (25.1 percent). The percentage of those who did not know the answer decreased 3.3 percent from pretest (4.9 percent) to post test (1.6 percent).

TABLE 6

PERCENTAGES OF CORRECT RESPONSES, INCORRECT RESPONSES, AND THOSE WHO DID NOT KNOW THE ANSWER TO TEST ITEM ELEVEN

Responses to Test Item	Pretest(N=205)	Post Test(N=187)	Difference
Correct response	64.9%	73.3%	8.4%
Incorrect response	30.3%	25.1%	5.2%
Did not know	4.9%	1.6%	3.3%

Objective: The student will identify those psychological factors that may contribute to pain expression.

Test Item No. 12:

12. Fear of the unknown increases anxiety which many times decreases the individual's pain tolerance.

__X__ True ____ False

This question deals with the theoretical aspect of pain expression and requires the student to identify the fear-anxiety-pain cycle. An increase in correct responses could be expected after exposure to patients in the clinical setting.

Table 7 shows that the percentage of correct responses decreased 1.4 percent from pretest (79.5 percent) to post test (78.1 percent). Therefore, the extent of the students' understanding of the pain concept as measured by the percentage of correct responses to this test item actually decreased after exposure to clinical practice.

Table 7 also shows that the percentage of incorrect responses increased 3.7 percent from pretest (16.6 percent) to post test (20.3 percent). The percentage of those who did not know the answer decreased 2.3 percent from pretest (3.9 percent) to post test (1.6 percent). This shows that evidently a higher percentage of students believed they knew the correct answer after exposure to clinical practice, but responded incorrectly.

TABLE 7

PERCENTAGES OF CORRECT RESPONSES, INCORRECT RESPONSES, AND THOSE WHO DID NOT KNOW THE ANSWER TO TEST ITEM TWELVE

Responses to Test Item	Pretest(N=205)	Post Test(N=187)	Difference
Correct response	79.5%	78.1%	1.4%
Incorrect response	16.6%	20.3%	3.7%
Did not know	3.9%	1.6%	2.3%

Objective: The student will determine the symbolic significance of pain.

Test Item No. 13:

13. Pain has a greater symbolic significance to the individual than any other symptom. __X__ True _____ False

This question deals with the theoretical aspect of pain on a psychological and socio-cultural basis. It involves an understanding of pain as a symptom, and the individual meanings attached to pain. It is not necessarily expected that the percentage of correct responses would increase after exposure to clinical practice since the nature of this test item is purely theoretical, unless this content was specifically dealt with in the clinical setting.

Table 8 shows that the percentages of correct responses increased only 0.2 percent from pretest (63.4 percent) to post test (63.6 percent). Therefore, the extent of the students' understanding of the concept of pain as measured by the percentage of correct responses to this test item remained essentially unchanged after exposure to clinical practice. However, the percentage of incorrect responses increased 6.8 percent from pretest (14.1 percent) to post test (20.9 percent). The percentage of those who did not know the answer decreased 6.9 percent from pretest (22.4 percent) to post test (15.5 percent). This suggests that after exposure to clinical practice a higher percentage of students believed they knew the answer but responded incorrectly.

TABLE 8

PERCENTAGE OF CORRECT RESPONSES, INCORRECT RESPONSES, AND THOSE WHO DID NOT KNOW THE ANSWER TO TEST ITEM THIRTEEN

Responses to Test Item	Pretest(N=205)	Post Test(N=187)	Difference
Correct response	63.4%	63.6%	0.2%
Incorrect response	14.1%	20.9%	6.8%
Did not know	22.4%	15.5%	6.9%

Objective: The student will identify the significance of pain as an initiation of many adaptive-protective body mechanisms.

Test Item No. 14:

14. Pain evokes a larger variety of both physical and psychological adaptive-protective reactions than any other symptom.

_X_ True ____ False

This test item deals with the theoretical aspect of pain expression and involves the physiological, psychological and socio-cultural factors of pain. The student is required to understand the meaning of adaptive-protective responses and that pain or its anticipation may trigger them. It could be expected that the percentage of correct responses may increase somewhat after experience with patients in the clinical setting.

Table 9 shows that the percentage of correct responses increased 9.1 percent from pretest (72.2 percent) to post test (81.3 percent). The extent of the students' understanding of the pain concept is measured by the percentage of correct responses to this test item