

APPLICATION OF PRINCIPLES FROM NATURAL AND
SOCIAL SCIENCES TO THE CARE OF A PATIENT
WITH DIABETES MELLITUS

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TABLE OF CONTENTS

CHAPTER	PAGE
I. THE PROBLEM AND DEFINITION OF TERMS USED	6
Selection of the problem	6
Introduction to the problem	7
Statement of the problem	10
Purpose of the study	10
Limitations of the study	10
Definitions of Terms Used	11
II. METHODOLOGY	12
Development of the tool	12
Instructions for use of the tool	13
Category Study	14
Example of the functional capacity of the tool	16
III. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS	55
Summary	55
Conclusions	55
Recommendations	56
LITERATURE CITED	57

ABSTRACT

The aims of this study were (1) to develop a conceptual framework wherein (2) ten principles from the natural and social sciences could be applied to the nursing care of a patient with Diabetes Mellitus.

The study dealt with ten principles, two from each of the basic sciences the student had studied before coming to the clinical area at the hospital. The category study, which was the tool developed to deal with the problem, was demonstrated to have the functional capacity necessary to its purpose.

CHAPTER I

THE PROBLEM AND DEFINITION OF TERMS USED

Selection of the problem. The application of the principles from the natural and social sciences to the nursing care of the patient have been emphasized repeatedly for the last several years in nursing education. The nursing instructor is expected to guide the student in such manner that the student can recall principles from the natural and social sciences and apply this knowledge to the various nursing situations by the problem-solving method. Understanding these principles will help the student see the relationship between the science knowledge learned and the nursing care needs of the patient.

It is the belief of the investigator that the principles from the natural and social sciences can be and should be identified, applied and integrated into clinical nursing. There is need for a conceptual framework which would give the student a comprehensive view of the principles and relevant relationships which should be considered in clinical learning-teaching situations.

There are urgent reasons for fostering the integration and application of natural and social science principles into nursing care. Total patient care can be achieved more effectively if the nursing student can view the patient from several aspects and so become aware of the relationship between the physiological and sociopsychological factors and the behaviors and attitudes fostered by them.

In the investigator's experience it has been noted that student

nurses are more stimulated to learn if they approach the patient as a person. With this approach the student realizes that the patient has feelings, expectations, certain beliefs, and certain patterns of behavior which may have relationship to his physical illness.

The application of the principles from the social sciences are important today because the student nurse has a unique role as observer, listener, supporter, and teacher. Without these principles she cannot pick up significant clues which have a bearing on the patient's response or resistance to treatment. It is important to know why a patient has certain physical symptoms as it is to know why a patient has particular problems and needs.

It is through the full understanding of the therapeutic use of this relationship that the nurse can give expert nursing care. Dr. Hildegard E. Peplau discusses this facet of nursing in the four overlapping phases of the nurse-patient relationship.¹ The phases are called orientation, identification, exploitation, and resolution.

Nursing is a process through which a student nurse may aid the patient to meet his present needs so that more mature needs can emerge and be met. Students who understand the principles which govern the four phases in nurse-patient relationship can understand why some patients somatize when needs are not met.

Introduction to the problem. In studying the problem it seemed that a conceptual framework was needed; one which would serve as reservoir for

¹Peplau, Hildegard E., Interpersonal Relations in Nursing. (New York: G. P. Putnam's Sons, 1952), p. 21.

the compilation of knowledge about the patient's physical condition, his feelings about his illness, and the sociopsychological factors. This type of structure could serve as a basis for the application of principles because both the physiological and sociopsychological symptoms would be incorporated into the framework.

The traditional "case study" form does not demand the student to use the problem-solving technique. Therefore, this form could not be used in this study.

A new type of study, called the "Category Study," was used by Margaret Anne Marshall, Instructor at the State University, Rutgers, when teaching student nurses in psychiatric nursing. The "Category Study" is a written case study from the nursing diagnostic point of view with emphasis upon nursing care. A category study provides a means through which assembled material may be classified and placed into designated areas. The material essential to doing a category study must be obtained in part from the patient.

For many years educators, lawyers and others have written about the "Case Study Method" of teaching. In fact, Hippocrates was one of the first to use this method. It fell into disuse until fifty years ago when the Harvard Law School started using it. Florence Nightingale used a modification of this method in her school of nursing; she had the students keep notes on their most interesting cases and then quizzed them later.²

Tyler states, "that learning takes place through the active behavior

²Heidgerken, Loretta E., Teaching in Schools of Nursing (Philadelphia: J. B. Lippincott Company, 1946), p. 340.

of the student; it is what he does that he learns, not what the teacher does."³

The "Category Study," with the application of principles to some of the natural and social science aspects of nursing is a learning experience that develops skill in thinking particularly that type which involves problem solving. The completion of a "Category Study" cannot be achieved by the use of a textbook or some other reference book. Therefore, the student will be using inductive, deductive and logical thinking. Tyler defines thinking as follows:

Inductive thinking involves drawing generalizations from several items of data. Deductive thinking involves applying one or more generalizations to specific cases. Logical thinking involves the arrangement of assumptions, premises and conclusions in a way to develop a logical argument.⁴

The "Category Study" involves problem solving and follows Tyler's steps in thinking:

- a. Sensing a difficulty or a question that cannot be answered at present.
- b. Identifying the problem more clearly by analysis.
- c. Collecting relevant facts.
- d. Formulating possible hypothesis, that is, possible explanations or alternative solutions to the problem.
- e. Testing the hypothesis by appropriate means.
- f. Drawing conclusions, that is, solving the problem.

³Tyler, Ralph W., Basic Principles of Curriculum and Instruction (Chicago: The University of Chicago Press, 1950), p. 41.

⁴Ibid., p. 44.

In formulating possible hypothesis, he will frequently be able to draw upon generalizations or principles that he already knows and may in this case be able to solve the problem immediately without testing the hypothesis that this principle is relevant. In particular cases, these steps in problem solving may vary and certain of them may not be necessary. But, in general, the learning experiences should give the student an opportunity to follow through the essential steps in problem solving to see what each of the steps involve and to become skillful in taking necessary steps.⁵

In nursing education one should try to organize the teaching situations whenever possible so that the student is doing more than watching or listening to an instructor.

Statement of the problem. This study dealt with the problem (1) of the development of a conceptual framework for the (2) application of the ten principles from the natural and social sciences (3) which were applied to the nursing care of the patient with Diabetes Mellitus.

Purpose of the study. It was the purpose of this study to establish a developmental method of teaching which would be of assistance to the student nurse in learning the application of the principles from the natural and social sciences to the care of the patient with Diabetes Mellitus.

Limitations of the study. This study has been limited to the developmental method of teaching. In this study:

1. The "Category Study" was selected as the structure to use when learning how to give nursing care to a patient with Diabetes Mellitus.

2. The application of two principles from each of the sciences: anatomy and physiology, bacteriology, chemistry, sociology and psychology

⁵Ibid., p. 45.

were used in collaboration with the content in the category study labeled "Physical Manifestation".

Definition of Terms Used.

Method. A way of teaching a given end by a series of acts which tend to secure it.

Developmental method. A procedure by which the student goes through the necessary learning experiences under the leadership or guidance of the instructor.

Category study. A conceptual framework through which the patient is studied from the nursing diagnostic point of view.

Principle. A statement of a fundamental truth that is meaningful and which can be used as a guide to action.

Classic study. The textbook description of a condition presented by the patient.

Observation of physical manifestations. The data for the study as gathered while observing the patient, giving nursing care, listening to the patient, reading the chart, talking to personnel on the ward and the patient's physician.

Emotional overlay. This is a summary of the nurse's understanding of the patient's emotional problems.

CHAPTER II

METHODOLOGY

Development of the tool. The development of a tool whereby the student would be able to apply principles from the social and natural sciences while actually giving care to a patient was a major problem in this study. Nursing students in this school of nursing study anatomy and physiology, chemistry, bacteriology, sociology and psychology as prerequisites to courses in clinical nursing. A tool was needed which would give the students an opportunity to recall principles previously learned and to make application to the clinical situation. The tool encompasses an actual patient because this way of viewing would present a typical situation in which the student functions. It was also felt by the investigator that the student should have knowledge about the textbook picture of the condition manifest by the patient diabetes mellitus so this category was added to the tool. The tool now had two categories, the textbook picture of "Classic Study" and the observations from the actual patient, or "Observation of Physical Manifestation". The category entitled "Emotional Overlay" was incorporated because a student also needs to learn to identify covert nursing care needs. The column entitled "Principles" was inserted so that application of principles could be made as the student completes the "category study" of the patient and plans for nursing care.

The "category study" was developed in the above identified manner because present day trends in nursing are characterized by a sharp shift from the pragmatic approach to the problem-solving approach of the scientific

method. Therefore this method would demonstrate that, with the application of principles from the social and natural sciences, a nurse can actually solve more problems arising from specific patient needs. Faye G. Abdellah says:

"During the past thirty years, the practice of nursing, and of organized service, have gone through three phases of development similar to those through which the field of medicine have passed. These phases have been characterized on the emphasis, first, upon physical aspects of nursing and medical care of hospital patients; second, on more comprehensive care of the 'patient as a whole' including individual and social aspects of care of patients in homes and health agencies; and, third, a phase which is just beginning, on a broader scientific basis for professional service.
 To meet the total health needs of people and the growing emphasis that is placed upon comprehensive nursing care, which includes the patient's physical, emotional, sociological nursing needs as well as consideration of the psychosomatic origin of illness, have begun to have their impact on nursing education."¹

Instructions for use of the tool. The following form is the structural framework of the "category study", which this investigator organized.

¹Abdellah, Faye E. and others, Patient-Centered Approaches to Nursing (New York: The Macmillan Company, 1960) pp. 5-6.

Category Study

Type of Patient _____

Classic Study	Principles	Emotional Overlay	Observation of Physical Manifestation
(Textbook picture of the condition)	Social and natural science principles which apply to aspects of the classic study as well as physical manifestations of the patients.	(Identification of covert needs)	(Observations from the actual patient)

The pattern of the above "Category Study" is designed to give the learner insight and understanding of the "Classical Study" as well as the overt and covert "Manifestations" presented by the actual patient. Both the "Classic Study" and "Observation of Physical Manifestation" are broken down into the following sub-headings which run parallel to each other.

I. Definition

II. Etiology

III. Predisposing causes--influence of inheritance, social environment, (including home and family) occupational influence on health and prevention

IV. Clinical signs and symptoms

V. Diagnostic methods--laboratory findings, X-ray findings and other tests

VI. Treatment--medical and surgical

A. Medical regime

1. Medicines and results

2. Diet and results

3. Post-operative care

VII. Complications

VIII. Personality--effect of illness on emotional reactions and attitude toward treatment and recovery

IX. Health teaching opportunities--evidence of value to patient

X. Nursing care

XI. Provision for rehabilitation--use made of health and social agencies

The material in the column entitled "Classic Study" is gained by reading the textbook and references which are relevant to the condition specified.

The material in the column entitled "Observation of Physical Manifestation" is obtained by the learner from the patient's chart, direct observation of the patient, process recordings, conferences with the doctor, instructor, head nurse and the other personnel from the allied professions.

In the column entitled "Emotional Overlay", the learner summarizes her understanding of the patient's emotional problems which were specified in each sub-heading from the column labeled "Observation of Physical Manifestation". This information is gained by listening to and by observing the patient.

In the column labeled "Principles" the learner places principles from the natural and social sciences. The learner should, with some assistance, be ready to transfer previously learned principles found in social and natural science textbooks, to clinical nursing. The application of previously learned principles to the nursing care of a patient with Diabetes Mellitus

is specified in the columns labeled "Classic Study" and "Observation of Physical Manifestation".

Example of the functional capacity of the tool. On the following pages are excerpts from the "Category Study". It was the writer's purpose to show how (1) principles from the social and natural sciences apply to the nursing care of the patient with Diabetes Mellitus in the (2) conceptual framework of the "Category Study". Therefore in the complete study additional principles and emotional overlay would be designated. In the following example the principles that apply to specified material in the columns labeled "Classic Study" and "Observation of Physical Manifestation" were placed opposite the related materials.

Type of Patient: Compression Fracture
Rheumatoid Arthritis
Diabetes Mellitus

Emotional Overlay	Observation of Physical Manifestation
Mrs. X has three non-cureable conditions. To struggle against realities is to court a mental breakdown. The well-adjusted person learns to capitalize on his assets and to accept his limitations.	1. Definition Mrs. X has diabetes mellitus, rheumatoid arthritis and a compression fracture of the body of the twelfth dorsal vertebrae. There are also sclerotic and osteolytic changes in the vertebrae. The definition of diabetes mellitus is the same as noted in the classic study. Dr. Charles H. Best says that "Most observers regard diabetes mellitus as due, in the majority of cases, to an absolute or relative deficiency of insulin, but the identity of the primary defect or initial change from normal is still unrecognized."⁴ Dr. Best goes on to say that "The primary disturbance may lie in some part of the body quite remote from the pancreas, and the deficiency of insulin may be secondary to it."⁵ Rheumatoid arthritis is a chronic inflammation of the joints, which results in atrophy and rarefaction of the bones and changes in the synovial membrane and periarticular structures. Mrs. X has had rheumatoid arthritis for fifteen years. At this point, Mrs. X has deformity and ankylosis in most of her joints. A compression fracture of the body of the twelfth vertebrae has been pressed or squeezed together. Mrs. X does not have any neurological symptoms.

⁴Best, Charles H. Diabetes Mellitus. Pfizer Spectrum. Charles Pfizer and Company, Brooklyn, N. Y. Vol. 5, No. 4, February 15, 1957, p. 114.

⁵Ibid., p. 114.

Emotional Overlay

This was a traumatic emotional shock for her because she is accustomed to being waited upon and not assuming much responsibility in her home and none in the business.

Observation of Physical Manifestation

Mrs. X developed diabetes mellitus four months previous to this hospitalization. Mrs. X is an obese person; five feet tall and weighs one hundred fifty pounds. Her grandfather, on her father's side of the family, had diabetes mellitus, and her father also had diabetes. About three months before she had definite symptoms of diabetes, Mrs. X's husband had a myocardial infarction and was hospitalized. She had to find transportation to and from the hospital and carry the responsibility of managing the home and the business affairs.

The actual cause of rheumatoid arthritis is unknown. It is believed to be of an infectious origin. Mrs. X did not have any infections of any kind previous to the first symptom, she says.

The cause of a compression fracture may be due to the following:

- a. A fall in a sitting or stooped position.

Emotional Overlay	Observation of Physical Manifestation
	b. Jack-knife type of injury such as occurs when force is exerted against shoulders and pelvis at the same time. c. Direct blow against back or flank. d. Diseases which cause disintegration of bones such as hyperparathyroidism and malignant metastases. Here a break occurs spontaneously or with minimal strain. e. Large dose or prolonged cortisone or hydrocortisone therapy causes side effects such as disorders of calcium metabolism especially in women after menopause. Due to the calcium deficiency, osteoporosis and spontaneous fractures occur. Other side effects are Cushing syndrome.
During the last week, Mrs. X hasn't been eating all of the food requirements for the day and has been trying to readjust the insulin dosage herself. Last evening she said she had an insulin reaction. The doctor suggested she should be hospitalized so the diabetic condition	Mrs. X has been on Acthar Jell therapy for a prolonged time. She also has some of the symptoms of the Cushing syndrome. Mrs. X stated that about two weeks ago she was moving boxes from the basement of her new home when one of them struck her on the flank. She did not fall, but said that she has had pain in the lower back area since that time.

Emotional Overlay

Observation of Physical Manifestation

could be regulated and to
diagnose the condition in
her back.

Emotional Overlay

Observation of Physical Manifestation

Emotional Overlay

Observation of Physical Manifestation

Emotional Overlay	Observation of Physical Manifestation
Mrs. X appears to be a lonely and helpless person. Many people belong to social and civic organizations even though they do not participate physically. Mrs. X tends to stay away from public functions; even the church. She probably has feelings about her physical appearance.	III. <u>Predisposing Causes--Influence of Inheritance, Social Environment, Occupational Influence on Health, and Prevention.</u> Mrs. X is a fifty year old woman who has been married twenty-five years. Her ancestors were Scotch and English. She was born in Indiana and moved to Montana as a child with her parents. She has one brother who is four years older than she. He is a college graduate and works for one of the large industrial companies in Cleveland, Ohio. They have four children. Mrs. X graduated from high school and then stayed home to help her father and mother manage their grocery store. The father died six months ago after a lingering illness due to the complications of diabetes. He had arteriosclerosis and gangrene in both lower extremities. Mrs. X leads a very quiet life at home. She says she does not belong to any social or civic organizations because she isn't physically able to attend and participate. Both of her hands are slightly deformed from arthritis. She does belong to the Assembly of God church and

Emotional Overlay

Observation of Physical Manifestation

attends when she is able to do so physically. However, Mrs. X is a very religious person and she says she prays daily so that God will forgive her sins and give her good health again.

Mr. X is a very busy business executive. He and his associate manage a large department store in this city. Mr. X belongs to and participates in several of the civic and social organizations. He also belongs to the Assembly of God church. Mr. X leaves home early in the morning and sometimes isn't home until late evening. Mrs. X says he always comes home for lunch and dinner and especially to see how she is getting along. Mrs. X always has someone come in to do the housework, washing, ironing and cook the meals.

Even though one-third of all diabetics have a history of diabetes in their families, there is no difference in the progress of the ailment between them and others.

The predisposing causes of diabetes for Mrs. X would be hereditary. Both her father and grandfather had diabetes mellitus. Diabetes is more prevalent among people living in urban communities. Mrs. X has always lived in an urban community. Statistics show that diabetes is more prevalent among professional persons

Emotional Overlay

Observation of Physical Manifestation

than among those with some type of manual occupation. Mrs. X is not a professional person but she has not done any work which is considered manual.

Diabetes is more common among married women who are obese. Mrs. X has all three of these associated factors. Mrs. X's diabetic symptoms were not preceded by an infection and she is not Jewish or Italian. However, Mrs. X is obese and has been for several years. Her obesity may be another factor relative to her diabetes. Statistics also show that persons associated with nervous tension and responsibility may develop diabetes. Mrs. X certainly was associated with nervous tension and responsibility. Her father died and her husband had a heart attack just previous to her diabetic symptoms. She loved her father equally as well as her husband. She still talks about both of these incidents as though they just happened yesterday. This was an emotional disturbance for her because she leads a very quiet life. This was a sudden turn about and she had to do

As a group, diabetics have a rather high proportion of nervous disorders in their ancestry. If this is true in Mrs. X's family, she has carefully avoided the point.

Emotional Overlay

Observation of Physical Manifestation

something about the situations herself.

Since Mrs. X is a housewife, and has help in the home, her environment is safe. However, she is trying to lose weight without much success.

Mrs. X developed rheumatoid arthritis fifteen years ago without having any previous infection.

Emotional Overlay	Observation of Physical Manifestation
Mrs. X received three meals a day. She said she was not hungry at any time during the day or night. Since Mrs. X felt this way in the hospital one wonders why she couldn't feel this satisfied at home. Perhaps the pleasure of eating was substituted for other pleasures which were desired but were unavailable.	Multicebrin is a multiple vitamin preparation. Vitamin D promotes optimum conditions for the healing of bone because of a fracture. The other vitamins all play an important role in metabolism, especially vitamin C whose role concerns formation of collagen in all fibrous tissue including bone. A diabetic has a great need for the B complex vitamins. Mrs. X is on an 800 calorie reducing diet, therefore, the vitamins will help maintain optimum health. There is no special diet that will cure or alter the course of rheumatoid arthritis. Therefore, the diabetic diet does not have to be altered in any way. The diet required for a patient who has Cushing Syndrome should be low sodium and high potassium. Since the diabetic diet was not altered, the situation was taken care of by the use of the drugs, hydrodiuril and potassium chloride, as listed previously. The suggested diet for a patient with a fracture is high protein, high in vitamins, and roughage for the non-ambulatory patient.

Emotional Overlay	Observation of Physical Manifestation
Since the best approach to teaching the patient is to begin with what he knows, a "Diabetic Teaching Guide" was used. It was felt that the teaching program was of value to the patient because she was eager to learn more about several aspects of her condition.	The diabetic diet was only altered as far as the protein requirements were concerned, and the reduction of calories. The basic daily caloric requirement for a person is figured by multiplying the ideal weight in pounds by ten. If the person is active, this may be increased from 30 to 60 per cent. This diet was ordered at 800 calories so Mrs. X would lose weight. Opinions differ as to what constitutes an optimal distribution of the daily caloric allotment among carbohydrates, protein and fat. A frequent prescription allows 40 per cent of the calories as carbohydrates, 15 per cent as protein and 45 per cent as fat.¹¹

¹¹Diabetes. (The Upjohn Company, Kalamazoo, 1960), p. 61

Emotional Overlay

Observation of Physical Manifestation

Emotional Overlay

Observation of Physical Manifestation

Emotional Overlay

Mrs. X talked almost all of the time. If the nurse was a good listener this hastened the development of relationship between the patient and the nurse. Mrs. X seemed to have a great need to talk. This seemed to relieve her vague physical symptoms.

Observation of Physical Manifestation

A good nurse-patient relationship was established at the beginning, which apparently expedited the nursing care plan with greater ease.

The form for the "nursing care plan" was used in conjunction with the list of sixteen common nursing problems. This plan was evaluated and revised daily in order to satisfy the needs of the patient.

Emotional Overlay	Observation of Physical Manifestation
Dependent upon her husband and wants to be babied by him. This doesn't make for mutual happiness.	VI. <u>Personality--Effect of Illness on Emotional Reactions and Attitude Toward Treatment and Recovery.</u> Mrs. X seems to be a dependent person.
Got along real well with nursing personnel. Seemed to go more than halfway to meet and talk to the personnel.	She depends upon her husband to make arrangements for household duties, such as employing someone to care for her, cook the meals and do the cleaning in the house. When he couldn't find anyone to do this so she could go home on a certain day, she became very disturbed. She asked every nurse who cared for her and the doctor to help her find a reputable household employe.
Dependent upon her mother and really never wanted her to leave.	Mrs. X was disturbed because her mother was leaving just when she needed her most of all. The mother had been visiting her for the last six months, and had only intended to stay for one month. Mrs. X said her mother stayed because she needed her so badly. Her mother is a frail 70 year old woman, who apparently needs someone to care for her rather than to care for her daughter. Mrs. X talked incessantly about her mother's leaving and seemed to be resentful of the fact that she was going. When her mother came to say goodbye

Emotional Overlay

Observation of Physical Manifestation

to her at the hospital, Mrs. X was docile and wished her mother God speed and a pleasant journey.

Has an emotional conflict between resentment of parents and docile submission to them.

Mrs. X blames her father's death on herself. She states that neither her father nor her mother believed in smoking cigarettes and didn't want her to smoke. She started smoking after she was married.

She felt so keenly about this sin that when her father was near death, she promised God she would never smoke again if He would let her father live and her father lived two more years. She has never smoked again since that day.

Emotional Overlay	Observation of Physical Manifestation
Jealous of her brother and his family.	Mrs. X talks about her brother and his lovely family. Yet, many times, she reiterates that he has a college education and she doesn't have because she had to help her parents with their store when she was young.
Superficially diabetics seem to get along well with people, but they are bothered by feelings of insecurity in their relations with others.	Mrs. X didn't have any visitors besides her mother and husband. She said that she didn't go out socially and went to church only occasionally. Mrs. X explained many times about her lack of contact with people, always saying that she wasn't well enough physically to go out socially.
Diabetics have the strangest ideas about how they contracted their disease.	Mrs. X says that she got her diabetic condition from her father. She didn't listen when the nurses referred to this as hereditary.

Emotional Overlay	Observation of Physical Manifestation
Diabetics usually do not take an interest in religion except when there is some special maladjustment they can't cope with. They may then become extremely fanatic.	Mrs. X said she loved her father but that she must pay for her sins in this manner.
Diabetics enjoy being taken care of; they find their illness either an alibi for inadequacy or a prop for weakness.	Mrs. X spoke about having to go home every day and yet she wasn't regulated and the pain in her back wasn't diagnosed. The reason she gave for this was that her husband had had a heart attack since she had been in and she needed to be home so he would go to a doctor and she could take care of him. When questioned further about the heart attack, she apparently meant angina. He came to visit her at the usual time and appeared to be well but she still insisted on going home.

CHAPTER III

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary. The aim of this study was to develop a methodology for applying previously studied principles, from the natural and social sciences, which the student needs to recall before she can plan nursing care for the patient with Diabetes Mellitus. Ten principles, from the basic natural and social sciences which the student had studied before coming to the clinical area in the hospital, were applied to the scientific material involved when considering the condition of the patient with Diabetes Mellitus. This scientific material could be understood and applied more effectively after it had been organized and placed into the demonstrated structural form.

The form entitled "Category Study" was adapted and enlarged by the investigator. It was expanded from a three-column to a four-column study; the column for principles was added by the investigator. The sub-headings were changed to relate to nursing care of medical-surgical patients, because Mrs. Margaret Ann Marshall of Rutgers University, who had devised the original format, had used the form exclusively in psychiatry.

An actual patient with Diabetes Mellitus was selected for use in this study in order to determine the usefulness of this tool. It was thought that this was the best way at this writer's disposal to represent a natural situation in which the nurse functions.

Conclusions. The methodology gave guidance in the preparation and use of the tool for the application of principles from the natural and social sciences to nursing care of a patient with Diabetes Mellitus. The principles

from the natural and social sciences were easily incorporated into the "Category Study". Therefore the following theories are concluded. This method of relating these principles to the clinical nursing care of a patient would appear to make them more significant for the student. This method should provide the means whereby the student increases her understanding of the principles through reasoning rather than memorization alone. Using an actual patient in the compilation of the "Category Study" would place the student into the real situation, and give her something tangible upon which to base nursing care. It also would stimulate the student to do some original thinking in terms of the actual situation (patient's case) in applying the principles.

The application of principles based upon scientific knowledge is a more satisfying experience for the learner. In other words isolated facts are easily forgotten if cognizant application is not made with them.

Recommendations. The investigator recommends that:

1. An experimental study on patients with Diabetes Mellitus be set up to determine the value of the "Category Study".
2. Research on the "Category Study" be extended to other patients in medical nursing, surgical nursing, obstetrics and pediatrics.
3. Research be undertaken to determine whether this tool motivates students effectively to increase their achievement.

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