EVALUATION OF A PROGRAMMED INSTRUCTION BOOKLET AS A METHOD OF TEACHING NURSING HOME PERSONNEL ABOUT DIABETES

By

SHIRLEY OSBORNE GIBBS,

Bachelor of Science

Berea College

Berea, Kentucky

1957

Submitted to the Faculty of the Graduate College
of the Oklahoma State University
in partial fulfillment of the requirements
for the Degree of
MASTER OF SCIENCE
May, 1972

EVALUATION OF A PROGRAMMED INSTRUCTION BOOKLET

AS A METHOD OF TEACHING NURSING HOME

PERSONNEL ABOUT DIABETES

Thesis Approved:

Mary E. Leidigh
Thesis Adviser

Esther Winterfeast

Bernice Kapel

[illegible]
Dean of the Graduate College

ACKNOWLEDGMENTS

The writer wishes to express sincere appreciation to Miss Mary Leidigh, the writer's adviser, for her encouragement, guidance and interest throughout this study. To Dr. Esther Winterfeldt, Head, Department of Food, Nutrition and Institution Administration, special thanks are extended for her help.

The author is greatly indebted to the administrators, director of nurses, and employees of the nursing homes that participated in this study. Gratitude is expressed to Western Kentucky University Statistical Laboratory for their help with the statistical analysis in this study.

To my husband, James, and sons, Roger, Luther and Gary, this study is dedicated.

TABLE OF CONTENTS

LIST OF TABLES

CHAPTER I

INTRODUCTION

The disease known as diabetes was named and described at the beginning of the Christian Era by Aretaeus, a physician in the Roman Empire. Diabetes was described as:

> . . . a meeting of the flesh and limbs into urine . . . The patient never ceases to make water and the flow is incessant as a sluice let off. The patient does not survive long for the wasting is rapid and death is speedy. The thirst is ungovernable, the copious potations are more than equalled by the profuse flow of urine.

Comparing this definition with the definition of diabetes found in Webster's Third International Dictionary reveals interesting advances in medical history. Diabetes is defined in Webster's as:

> . . . a familial constitutional disorder of carbohydrate metabolism involving inadequate secretion of insulin characterized by hyperglycemia, glycosuria, polyria, and marked by thirst, hunger, itching, weakness, loss of weight and when severe, acidosis and coma.

Diabetes is known as a universal disease because it has been and is reported in all countries of the world. A cure for diabetes has baffled medical science for years even though progress has been made in its treatment. When insulin was discovered and introduced, scientists believed that the solution to the diabetes problem was just around the corner. But in the intervening 50 years, continued research has shown diabetes to be a much more complex disease than originally believed.

In 1961 Jacob reported that nineteen million persons in the United States were 65 years of age or over, with more than 800 being added to

this population per day. As the number of aging population increases, increasing numbers of persons are developing diabetes. A report from the Public Health Service (1967) substantiated that four out of five cases of diabetes are diagnosed after a person's forty-fifth birthday. In 1969 the American Diabetes Association estimated that every one in twenty persons has diabetes or is a potential diabetic.

Since increasing numbers of persons over 65 years of age reside in nursing homes, the care of groups of aged individuals has become more specialized. This in turn has created a need for nursing home personnel who as groups of non-professionals need some specialized knowledge and skills. The term "nursing home" itself is confusing because it refers to many different kinds of facilities performing a wide range of functions. It can mean almost any type of facility that provides some type of health or custodial care short of that offered by a hospital. The services vary from skilled nursing and medical attention to strictly personal service. For purposes of this study the term "nursing home" will refer to homes that provide custodial and medical care for 25 to 30 residents.

The prevalence of nursing homes in the United States today has forced consideration of new types of training programs. For example, past programs for diabetics were directed toward teaching the patient how to live with his disease. Today nursing home personnel must be taught how to care for the diabetic, since the patients are, in some instances, senile or unable to make decisions for themselves.

At present most nursing home personnel are local residents and are paid minimum wages. The only training they receive is verbal instructions from the administrative staff and some in-service work from state

administrators and local colleges. Most nursing homes are locally owned and operate on a limited budget which does not allow them to give extensive personnel training. It is with this information in mind that programmed instruction about diabetes was chosen as a method of supplementing training programs already in existence in nursing homes. It is felt that a programmed instruction format in booklet form would be an inexpensive method of training personnel. With the readability level of the program controlled to the extent that a fourth grade education would be all that was necessary to participate, most locally employed people could receive instruction.

A programmed instruction course about diabetes was tested by Moore and Klacko (1967) using nursing home personnel. The results indicated that programmed instruction was effective and well accepted. Chidester (1967) characterized programmed instruction in the following way:

(a) The material to be learned is presented in steps.

(b) At each step, the student is required to participate and respond.

(c) At some time after the student responds, he receives the handbook.

The purpose of this study will be to investigate the effectiveness of programmed instruction in teaching nursing home personnel in two nursing homes in southwestern Kentucky where the author has been employed as a consultant dietitian. The population will be nursing home personnel directly involved in the care of patients.

The program will consist of developing a booklet, "Programmed Instruction for the Care of Diabetes." Prior to the administration of the program, a pre-test to check each employee's knowledge of diabetes will be administered. Test items will be taken from information

provided in the programmed booklet. A copy of the program, prepared by the examiner, will be studied for one month. At the end of the month, a post-test will be administered. Evaluation of achievement will be based on the following assumptions: (1) programmed instruction will produce measurable changes in the knowledge of nursing home personnel; and (2) reasonably valid and objective techniques can be developed to measure these changes.

CHAPTER II

REVIEW OF LITERATURE

At the beginning of the twentieth century diabetes ranked twenty-seventh as a cause of death by disease. Today it ranks eighth, as reported by Sharkey (1971), and diabetes is the third ranking cause of blindness. Based on an estimated population of 200,000,000 as of July 31, 1967, the American Diabetes Association (1969) estimated that there were 4,200,000 individuals with diabetes in this country. Of the above estimate, 1,600,000 diabetic persons were undiscovered and there are 5,600,000 additional persons who are potential diabetics. The American Diabetes Association thinks these figures are minimal and that diabetes may be more prevalent. The above facts partially explain why the Public Health Service and the American Diabetes Association sponsor free diabetic clinics.

Sharkey (1971) outlined the following reasons for the increasing number of persons with diabetes:

(a) Today in the United States it is estimated that there are twenty million persons 65 years of age or older. This represents a substantial increase in this age bracket since the beginning of the century and therefore the potential for an increase in the number of persons with diabetes.

(b) The life expectancy of a diabetic child is now close to that of the general population, if the diabetes is controlled. This contrasts with the situation before insulin was discovered in 1921. Then a child with diabetes had only a few months to live. For example, when

Theodore Roosevelt was president a child could expect to live about fifty-seven months. Even as late as 1951 a diabetic child had a life expectancy of only forty-three years.

(c) A few years ago a woman with diabetes could not expect to have children, but today successful delivery is possible in as many as ninety percent of the cases.

(d) Intermarriage of people with family histories of diabetes tends to increase the potential for diabetes. Sharkey concluded that diabetes is a combination of genetic factors and environmental factors, such as eating habits.

(e) Antibiotics save the lives of many diabetics and this increases the chances of having a larger population carrying the diabetic genes. However, improved medical care of today allows for better diagnostic and educational programs, which help the patient survive, have families, and live normal lives. Few individuals die of diabetes today; rather their deaths are due to complications such as coronary thrombosis, strokes, and kidney disease.

Dr. Max Ellenberg (1965) pointed out that today doctors should look for early symptoms of diabetes rather than wait until the overt symptoms of diabetes appear.

Goodkin (1971) divided the treatment of diabetes into eras. The eras were the Naunyn Era, the Allen Era, the Banting Era, the Hagedorn Era, and the Best Era. The most important era for the diabetic was the Banting Era. It was in 1921 that Frederick Banting and Charles Best used extracts from certain cells in the pancreas to lower the blood sugar of diabetic animals. In 1922, Banting and Best first tested these extracts on diabetic patients. It was with the introduction of insulin that mortality rates were reduced and the hope that diabetics could lead "normal" lives became a reality.

The editors of Good Housekeeping (1971) reported the results of an eight-year study that had been conducted in twelve University Hospital Centers in the United States and Puerto Rico. The study involved the

testing of oral drugs for treating diabetic patients. The results of the eight-year study caused a great controversy to develop over the use of oral drugs that were first introduced in 1957 and thought to be a major step in treating diabetes. A higher mortality rate from cardiovascular disease among the patients who had used the drug, tolbulamide, and diet as compared to those using insulin and diet or diet alone was indicated by the study.

Reported in the same Good Housekeeping news story was the following recommendation from the Food and Drug Administration concerning the use of oral drugs for treating diabetes:

> Oral drugs should be used only in patients whose diabetes cannot be controlled by diet alone and in whom the addition of insulin is impractical or unacceptable. The oral drugs will be further studied to determine their usefulness.

The story also reported the position of the American Diabetes Association which was: "Oral drugs will be useful for patients who cannot take insulin. It is suggested that insulin should be used in preference to oral drugs, when dietary treatment fails to control the disease."

Continued research has shown that diabetes has a very involved chemistry, and the mystery of how insulin is carried through the blood stream and how it affects the body is still unknown today. Time magazine (1965) reported a statement by Dr. Rachmiel Levine of the New York Medical College: "Many times in the history of diabetes, the elusive 'cause' was almost caught in a net of data - only to escape nimbly through a convenient hole. It is still at large."

People who have diabetes and know about this disease and how to control it can lead "normal" lives. However, Dr. Glen W. McDonald

(1970), who heads the Diabetic and Arthritis Control program of the United States Public Health Service, reported a serious deficiency in the area of diabetes patient education. Rosenthal (1971) confirmed this when he reported the results of a recent National Health Survey that found only 53 percent of about 1,800 diabetics followed a prescribed diet, 25 percent had received a diet but did not follow it, and the remaining 22 percent claimed that they had never been given a diet.

Diabetes differs from many other illnesses in that control is a life-long daily procedure. McDonald and Kaufman (1963) related that an essential part of treating the condition is teaching the patient how to live with the disease. The better informed the patient is with regard to the nature of his disease, its treatment and possible complications, the greater are the chances that the given patient will enjoy a normal span of life with gainful occupation and enjoyable leisure.

The objectives of dietary treatment as stated by Proudfit and Robinson (1967) are to provide adequate nutrition, to improve the ability of the body to utilize glucose, to correct faulty metabolism of sugar and fat by eliminating sugar from the urine, and to help avoid such complications as atherosclerosis and infections.

The diabetic should be taught the reasons for a specialized diet, the size of portions, and substitutions that are possible in the diet. A method of prescribing a diet was prepared in 1950 by the American Dietetic Association in cooperation with the American Diabetes Association and the United States Public Health Service. The result is the booklet, Meal Planning with Exchange Lists, which is the method most widely used in the dietary treatment of diabetes. The booklet has six food groupings or exchange lists which are milk, vegetables, fruit,

bread, meat and fats. Many medical centers have established their own instruction pattern, but the exchange list is the core of most programs.

Dietary education is important for the diabetic patient, who also must be taught to administer insulin (if insulin is prescribed) and regulate its dosage, how to test for sugar in the urine, the importance of good hygiene, the value of well-regulated exercise, and what to do if symptoms of trouble appear. The complications that can result if the prescribed treatment is not followed indicate the importance of helping the diabetic follow the prescribed treatment.

Much of the research done today involves complications of diabetes that may ultimately lead to death. Sharkey (1971) reported that diabetics in general are known to develop atherosclerosis in larger numbers and at an earlier age than the rest of the population. As a result, doctors often restrict the kind and amount of fat permitted in the diet.

Sharkey also reported that about 40 percent of the American population is obese, and obesity is prevalent in patients with adult-onset diabetes. Scientists are trying to determine if obesity causes diabetes or diabetes causes obesity. Obesity carries with it a higher mortality rate in both diabetic and nondiabetic subjects. Beardwood and Kelly (1954) stated that, "the fact that obesity is a predisposing factor in the development of diabetes and that it can be controlled by diet makes control one of the preventive measures that can be taken in this disease." It has been known for years among clinicians that weight loss in an obese, diabetic patient is beneficial, and frequently blood glucose returns to normal. The complexity of this problem is explained by Wasserug (1969):

> **The diabetic patient is caught in a vicious cycle. The muscle fails to store glucose, blood sugar rises, when blood sugar rises more insulin is secreted, appetite increases and storage of fat increases. This helps explain why four out of five diabetics are obese.**

The most effective diabetic treatment we have today is good control from the onset of the disease. The diabetic is forced to make many adjustments to their mode of living. Medical health teams must provide information about diet therapy, medication therapy, and emotional therapy for the diabetic to aid in the control of this disease.

Programmed Instruction as a Teaching Device

The use of programmed instruction as a teaching methodology is a relatively new development. Pressey (1927), one of the early pioneers in the development of programmed instruction, developed a testing-teaching machine at Ohio State University which was used for instruction and grading of papers. Apparently this was well ahead of others, because a quarter of a century elapsed between these first experiments and the introduction of the teaching machine developed by B. F. Skinner (1954).

There are two basic types of programmed instruction: linear programming and scrambled format. In linear programming the student makes a response and compares his answer with the answer printed on the same page. On the other hand, the scrambled format requires the student to select one of three or four responses, and then turn to another page to check his answer. If the response is correct, instructions are given on how to proceed. If the response is incorrect, the student is given additional information and reselects an answer from the choices.

Downing (1964) reported that the greatest strides in the development and use of programmed instruction were in the military services. Business and industry have been second in the use of programmed instruction and education has been third.

In an early experiment, Kirk (1947) used many elements of programmed instruction in the correction of reading defects among mentally retarded students. Kirk attempted to evaluate different methods of instruction that had proven useful in the remediation of reading defects. An individualized program was emphasized by Kirk that allowed the student to move at his own pace, receive extensive prompting, and immediate knowledge of results.

Lewis (1961) related results released by Encyclopedia Brittannica Films, Incorporated. Through its Temac Division, results showed high school students of average ability, using programmed instruction, could master algebra, geometry, trigonometry, and calculus in half the time ordinarily devoted to these subjects using the traditional methods of teaching. Accelerated students showed even more impressive records.

The use of the filmstrip, "Taking Care of Diabetes," which was programmed by Marian Heglund Sierra-Franco for the Auto Tutor Mark II machine was reported by McDonald and Kaufman (1970). This program was designed to be used as a tool along with individual counseling and group classes. The teaching machine was selected by McDonald and Kaufman as the first step in putting responsibility for self care in the hands of the diabetic patient. It was felt that programmed instruction was effective in teaching diabetic patients to care for themselves.

The Diabetes and Arthritis Program of the Public Health Service has explored the possibility of using automated instruction for teaching

the diabetic. A pilot test using programmed instruction for teaching diabetics was described by Skiff (1965). The objective of the program was to find a method which could conserve increasingly scarce professional time, and could be used where no patient instruction previously existed. The program provided individual instruction, presented standardized information in small steps, demanded patient involvement, immediately confirmed or corrected the reader's response, and permitted the learner to go at his own pace. The conclusion reached after the pilot test was that programmed instruction promised to be a useful part of a planned teaching program after further testing and evaluation.

According to Marovich and Campbell (1968) programmed instruction can provide a learning situation in the area of food science. The purpose of their study was to determine the effectiveness of the procedure rather than its effectiveness relative to that of another method of presentation. Marovich and Campbell's research revealed that a majority of the student subjects expressed approval of the active participation required by programmed instruction.

Vergason (1968) investigated the effects of using an auto-instructional method as opposed to the traditional method of teaching educable mentally retarded children in special education classes. For treatment, a paired associate method, using automatic slide projectors to pair words with pictures, was used with half of the words, and the other half of the words were taught by traditional methods. Good retention rates were produced by both methods after one day, but significant differences were found for retention after one, fourteen, and twenty-four months in favor of auto-instruction.

Many teaching machines were produced for school use in the 1950's and in the 1960's, but they served only as a means of presenting learning materials, informing the student of his progress and tabulating his errors. It became obvious, according to Murphey (1968), that this type of machine could be no better than the programs put into it. It was discovered that programs in book form could be very effective without benefit of a machine. Since 1965, the emphasis has been on the production of learning materials and studying the process of programming.

Programmed instruction in basic nutrition, according to Kiang (1970), was an effective teaching methodology for five-year baccalaureate nursing students. The students were divided into three groups. Group I received programmed instruction; Group II was given assigned readings; and Group III was the control group and was given no instruction. The students who received programmed instruction in basic nutrition achieved significantly higher scores on tests than a comparable group of students who had studied assigned readings covering the same material. The students who had the assigned readings achieved higher scores on tests than the control group. The time needed for completion of the programmed material was about the same as that required for the assigned reading. The scores on the post-test were favorable for programmed instruction.

Tani and Hankin (1971) developed the audio-visual self-learning program, based on the principles of programmed learning for assisting patients with diabetes in their dietary management and for supplementing the individual interview of the dietitian. The program featured colored slides synchronized with tape recordings and was divided into two parts for two successive clinic visits by the patient. The results indicated

that the new and traditional methods were comparable for retention of knowledge and that programmed learning could extend the professional expertise of the dietitian or nutritionist.

Nursing Care for the Aged

Nineteen million persons in the United States are now 65 years of age or over, with more than 800 being added per day. Jacobs (1966) reported these figures to illustrate that the problem of chronic illness which is centered on this portion of the population will continue. This fact was emphasized in the findings of the 1963 Survey of the Aged, conducted by the Social Security Administration. Because of the increasing number of persons over 65 years of age, increased cost for hospital care, and for changing family living patterns, the demand for more and better care for the elderly in the nursing and retirement homes will increase.

The Old Age Assistance program (1935) initiated the nursing home industry and by the early 1950's it had been accepted as part of the national scene. The licensing and regulation of nursing homes was still left to the discretion of individual states. Alpert (1970) reported that a combination of three elements started changing regulations governing the nursing home industry in 1967. These were:

(a) Considerable evidence of widespread fradulent practices on the part of nursing home operators, suppliers, druggists, and some doctors.

(b) Evidence that states with relatively strict licensing and other regulatory laws and regulations were failing to correct abuses or raise standards.

(c) Realization by lawmakers that even though the federal government, through Medicare and Medicaid program

> payments, was the largest single source of support for the nursing home industry, they did not know how the money was being used.

Besides Medicare, Medicaid, and Medical Assistance for the aged, the federal government is also a major financial backer of nursing home construction. The three major federal programs are: the Hospital Survey and Construction Act (known as the "Hill-Burton" programs), the Small Business Administration loan program, and the Federal Housing Administration.

In 1963 the American Medical Association referred to the term "nursing home" as a continual source of confusion because it "means almost any type of health or custodial facility other than the care offered in a hospital." The services offered may vary from skilled nursing and medical attention to strictly personal attention. The American Hospital Association and the Public Health Service (1963) feel the problem is compounded by the fact that:

> . . . physicians and persons in other health professions tend to consider care of the long-term patients (those in nursing homes) less interesting and less rewarding than work in fields of health endeavor and have been diverted to areas of professional interest considered more attractive.

When the United States Senate held hearings during its consideration of the 1967 Social Security Act Amendments, Senator Frank E. Moss remarked:

> Too often patients entering nursing homes are simply left there for the rest of their days. Months or years pass without re-evaluation of a patient's condition to determine if the services of the home are adequate for the patient's needs, or if they are still appropriate and needed. . . Witnesses before the subcommittee testified almost without exception that physician visits to welfare patients are infrequent and often prefunctory.

During the hearings held by the United States Finance Committee evidence showed that even states with relatively strict licensing and

other regulatory laws and regulations were failing to correct abuses or raise standards. Senator Moss again commented:

> One might assume that if a nursing home were in violation of state laws it would simply not be permitted to operate. But that is not the case. Nursing homes which do not conform to state laws do continue to operate, and while one department in the state is trying to close them another department is patronizing them by placing welfare patients in them.

For example, the subcommittee was told that in California two-thirds of the homes in that state are in violation of the code -- state licensing agencies generally have no sanctions available to them except revocation of a license. This requires lengthy and elaborate procedures, a heavily documented case, and a hearing. The decision then may be appealed to courts. It may take years to succeed in closing a nursing home while the patients continue to suffer from neglect and improper care.

The 1967 Social Security Amendments may have been the turning point in the nursing home industry because the amendments were directed toward regulation and control of the nursing home industry. The new regulations called for sharply improved fire and safety standards and strict licensing requirements. In the future, medical standards and supervision in nursing homes were to be strictly regulated. But these regulations meant that nursing home charges would skyrocket. Many smaller, independent nursing homes were forced out of business and were replaced by fewer but larger establishments.

The nursing home patient who was forced to depend entirely on welfare was the one to suffer unless the commissioners increased the allowance per patient. The patients suffered in terms of reduced quality and amount of food, poorer service, and deteriorating furnishings and equipment in the nursing homes.

The advantages that the Social Security Amendments were supposed to bring about were disclosure of ownership, registered nurses on duty, complete medical records, a dietitian for planning menus and special diets, working relations with general hospitals, meeting strict national fire and safety standards, licenses for nursing home managers, medical reviews and intermediate care facilities for those patients not in need of skilled nursing care.

In 1961 the United States Department of Health, Education and Welfare, the Public Health Service, and the Division of Hospital and Medical Facilities divided the nursing homes into types depending on the type of care supplied. The four main types of care were set up as primary type of care (the type of care provided to a majority of the residents), skilled nursing care, personal care, and residential care. As the "geriatric load" grows, the importance of the well-equipped and soundly administered nursing home will expand accordingly.

The Social Security Amendments were directed toward the physical care of the nursing home patient, but the adjustment to living in a nursing home is frequently difficult for the patient. Hubert Shores (1967), Executive Director for Jewish Aged, pointed out that the older person who goes to live in a nursing home gives up a way of life he has known and controlled in return for care and survival. Most people resist moving to a nursing home and only do so because of ill health, serious economic reversals, and disruptions of their normal living patterns. Living in a nursing home brings accompanying fears, uncertainties and loss of mastery of one's own environment. What may appear to be ungrateful, hostile, aggressive behavior on the part of the resident may be a plea for help and understanding.

The feelings of the new resident were summed up by Tobin (1966) in terms of helplessness and hopelessness. Helplessness is a feeling of loss of control, that one cannot affect the outcome of his or her life, and that many of the decisions of everyday living have been given over to others. Hopelessness is the more serious feeling of despair. It is a pervasive feeling that there is no future in one's life and that life has lost its meaning. The staff of the nursing home has a difficult task in assisting the new resident in his adaptation to the home, which assistance necessitates understanding the resident through his internal framework.

The initial adaptation for a resident in a nursing home is traumatic regardless of how well the residence is chosen. Dr. Jerome Grunes (1966), a psychiatric consultant at the Drexel Home in Chicago, has labeled the symptoms seen during the initial adaptation to the home as the "First Month Syndrome." In his clinical judgment, any new resident will deteriorate during the first month, but will most likely reintegrate at the end of this period.

Savitsky and Zetterstrom (1959) stated that the first clinical evidence of emotional disturbance in a resident is often elicited in the context of the feeding situation. Maladjustments stemming from other areas may be reflected in disturbed behavior in the dining room. The search for an understanding of feeding difficulties must extend beyond the confines of the feeding relationship. Ingenuity, patience, and thoughtfulness on the part of the nursing home staff will provide the best guide to care of the individual senior citizen.

A look at the elderly patient as an individual, as a member of a social structure, and as a changing physical being gives a good

perspective in viewing the nutritional problem of the aged person. Buckley (1959) stated that lifelong patterns of cultural and religious influences, living arrangements and economic factors all have bearing on the food preferences and eating habits of the senior citizen. He may hang on to food fads and notions with complete disregard for, and ignorance of, nutritional principles. At Benjamin Rose Hospital, an institution devoted to the maximum rehabilitation of the aged person, it has been found that the patient's intake of food varies from one meal to the next. Consideration is given to the total daily intake instead of that for each meal.

Obert and Burr (1963) discussed training programs for food service personnel in nursing homes based on three assumptions: (a) that the meals should be nutritionally adequate, (b) that the food should be highly acceptable according to good food standards, and (c) that management practices determine nutritive content and food acceptability. The pioneering effort in training food service personnel in nursing homes was a cooperative volunteer study in 1949-51 done by members of the American Dietetic Association. Then a recommendation that the licensing agency should assume responsibility for education and training in all phases of food service for all personnel in nursing homes and homes for the aged was formulated by the Nutrition and Food Service Section of the 1958 Conference on Nursing Homes.

According to Horwitt (1953) the greatest problem in feeding the older individual is how to induce him to choose and to like that which is good for him. Older people tend to choose tea and toast which give only calories, therefore, those involved with feeding older people must be watchful and encourage them to eat a balanced diet.

Mealtimes are very important to the older person because this is a social time that breaks the monotony of a dull day. Dining room service is recommended for nursing homes for all those able to be served in the dining room. Baltz (1966) discussed the advantages of dining room service as a psychological factor that helps the older person eat more, forget troubles and dispel moodiness. Savitsky and Zetterstrom (1959) expressed the belief that a group of four in the dining area is most desirable. The menu should be planned to meet the needs of the group to be fed with some attention given to the cultural patterns of the group.

An area that must be given some attention in nursing homes is that of modified diets for treatment of disease. Ohlson (1966) stated that the patient with the modified diet may eat essentially the same food as his neighbor. There are two basic differences: first, the total amount of food may be limited, and second, the cookery may be modified; as in ommission of salt or sieving and pureeing. The diet is written to prescription by the doctor and controls the amount of one or more nutrients allowed the patient. The prescription must be converted into a meal plan and the meal plan will then be converted into menus for the patient. The likes and dislikes of the individual should be considered when writing each day's menu. The goals of all food services in nursing homes should be to improve food practices in a safe environment with constructive nursing care.

Evaluation Methods

Evaluation implies that consideration has been given to certain value standards and that the results of measurement have been interpreted in the light of the particular situation and the goals which the

group or individual is striving to attain. Mager (1962) stated that the first step is to decide upon the goals that are to be reached by the end of the program or course. Then the procedure, content, and methods that are relevant to the objectives must be selected; and then there is an evaluation of the performance according to the objectives or goals originally selected.

One form of evaluation is a test that is used for one specific purpose. A decision as to what type of test will best achieve the purpose must be made. Cooksey (1964) stated that the teacher who wants to measure and evaluate effectively needs to become familiar with many techniques, to know the uses and limitations of each, and to be able to judge whether or not a specific technique is worth using, either in a given situation or at all.

According to Ahman and Glock (1969) an efficient and convenient way to measure a person's ability to recall the information identified by a table of specifications is to build and administer a series of pertinent objective test items. An objective test is one that can be scored in such a way that judgment is, for all practical purposes, eliminated when determining the correctness of a subject's answer.

Ahman and Glock (1969) classified objective test items as the supply type of item or selection type of item. When responding to a supply type of item, the person has to provide the words, numbers, or symbols necessary. The selection type of item allows the person to choose the response from the information provided.

The true-false test is one of the selection type of items that is widely used. Arny (1953) discussed the true-false form of test item

as one of the least satisfactory in testing achievement, but one which has real value in motivating study and stimulating discussion.

The arguments in favor of true-false items as listed by Arny are: they can be scored with an inflexible key; students can answer more items within a given time than they can of another type of test, so that a wide sampling is possible; and they are also easy to construct. True-false statements must be unequivocally right or wrong under all circumstances and few statements can meet this requirement.

In order to reduce the guessing when answering true-false questions, different modifications have been made. Some correction formula listed by Arny are:

1. $S = R - W$
2. $S = R - 1/3\ W$
3. $S = R + 1/2\ O$

Key: S = Score
R = Right Answers
W = Wrong Answers
O = Omissions

Experiments have indicated that the R-W formula tends to over-penalize. The third formula is advocated by those who believe that students should be given credit for knowing that they do not know the answer. When subjects know that one of these formulas will be used, they are encouraged to omit rather than to guess at answers which they do not know.

To be able to score with an inflexible key and cover a large subject matter in a short period of time, it appears that a pre- and post-true-false test can be utilized to determine the effectiveness of programmed instruction in teaching nursing home personnel about diabetes.

CHAPTER III

DEFINITION OF TERMS

For statistical reasons and to interpret accurately the results of this research, certain definitions for the entire study were determined as procedural guidelines.

Dale-Chall Readability Formula - This formula was developed at Ohio State University by Edgar Dale and Jeanne S. Chall (1948) and is used to determine the difficulty of narrative type reading materials. The formula is based on sentence length and common vocabulary words. Basis of the formula is a list of 3,000 familiar words most frequently found in textbooks.

Readability Level - The grade-level difficulty of the reading material.

Linear Programmed Instruction - The material to be learned is presented in very small steps; the participant is required to actively participate by constructing a response; and immediately after he constructs his response, he receives reinforcement from the answer which is included on the same page as the question.

CHAPTER IV

PRESENTATION OF THE PROGRAM

Due to the proliferation of the over 65 population, nursing homes have become a necessary part of our society. The sudden rise of the nursing home industry without enforceable regulations has created many problems. Trained professional personnel are not attracted to nursing homes because of low pay scales; consequently, untrained personnel are employed by nursing homes.

Effective training programs for nursing home personnel are needed if nursing home standards are to be improved. Most nursing homes have a low operating budget and are not investing large sums of money in continuing education programs. Nursing homes need effective, but inexpensive programs for training personnel. Many nursing home employees have poor educational backgrounds and this factor makes it especially necessary to have training programs that are easy to understand.

The data for this research was collected from typical nursing homes in Southwestern Kentucky. The administrator of each nursing home was contacted to secure permission to administer the program to the personnel. A meeting with the administrator, director of nurses, and the investigator was held at each nursing home. An explanation of all aspects of the program, the method to be used to administer it, employees' time needed for administering it, and required expenditures

on the part of the nursing homes were discussed and planned in the meetings. Each administrator agreed to select employees to participate in the program. Also discussed were possible advantages to be gained by the nursing homes participating in the program; the personnel would have a better understanding of diabetes and would be better trained to handle diabetic patients.

The bed capacity of the three nursing homes used in the research ranged from 25 to 50 beds. The population selected for the research was to be personnel directly concerned with the care of the nursing home patients. The personnel were white females with an average age of 45 years and residents of the community where the nursing home was located. According to the administrators, none of the participants had attended college. The personnel files were not available to the investigator. The administrators selected personnel they thought would benefit from the program. The population that participated in the research was as follows: Home I, 22 employees; Home II, 15 employees; Home III, 13 employees.

The purpose of this research was to investigate the effectiveness of a low cost programmed instruction booklet as a teaching aid for nursing home personnel. It was felt that a programmed instruction format would be an inexpensive method of training the personnel. The initial time spent by the researcher in developing the program was the largest investment.

A programmed instruction booklet (hereafter referred to as P.I.B.) about diabetes was written by the investigator because available programmed booklets on diabetes had above a ninth grade readability level

as determined by the Dale-Chall readability formula. It was determined that an easier to understand program should be written. The Dale-Chall readability formula was used to establish a fourth grade readability level. Publications which were consulted for information were "Diet and the Diabetic" (1970), "Teaching Guide for People Who Have Diabetes" (1968), "Meal Planning with Exchange Lists" (1956), and "Food, Nutrition, and Diet Therapy" (1966).

While working as a consultant for nursing homes, the investigator became very concerned about the lack of information nursing home personnel had about diabetes. The personnel were responsible for the care of daibetic patients with little realization of the seriousness of the patient's lack of eating, improper care, and so on.

The P.I.B. was developed along a linear program format and included basic information necessary to good care of diabetic patients. The linear program format was chosen because there are fewer instructions for the participants to remember, the answers are on the same page as the questions so the participant can receive immediate reinforcement, and the time required to complete the program is shorter than for scrambled format programs. The P.I.B., as developed, consisted of 48 pages (Appendix A). Instructions on how to use the P.I.B. may be found on the first page of the booklet.

In addition to the P.I.B., an evaluation tool was developed by the investigator and was administered to all the selected population on a pre- and post-test basis. The evaluation tool was a written test (Appendix B) which consisted of 25 true-false questions formulated from information provided in the P.I.B. A true-false test was chosen because

it can be scored with an inflexible key and because less time is required to take the test.

Collection of Data

Three typical nursing homes were selected to supply the population of 50 to participate in the research. The administrator from each nursing home selected the population they wished to participate in the program. This represented about 50 percent of the total working population of the nursing homes. The investigator met with the selected population and administered the pre-test under controlled conditions. Directions were given by the investigator before the subjects began answering the test questions. The subjects put their names at the top of the page. It was emphasized that there was to be no discussion during the test. The questions were answered by circling one of the answers -- true or false. One point was given for each correct answer, so a total of 25 points was possible.

Each subject then was given a copy of the P.I.B. to study for one month. At the end of the month, a second meeting was held with the subjects. A question and answer session was held at the beginning of the meeting. The subjects were given the opportunity to discuss any part or parts of the P.I.B. At the end of the question and answer session, the post-test was administered to all the subjects. The same controlled conditions were set up as in the pre-test. Again, it was emphasized that there was to be no discussion during the test. The subjects were asked to put their names at the top of the test page. The questions were answered by circling one of the answers -- true or

false. A point was given for each correct answer; a total of 25 points was possible.

CHAPTER V

RESULTS AND DISCUSSION

Findings From the Written Test

This research was an attempt to investigate the effectiveness of a learning program about diabetes that had been written and programmed by the researcher. Nursing home employees were chosen as the participants to test the program. Prior to the administration of the program, a pre-test to check each employee's knowledge of diabetes was administered. Test items were taken from information provided in the P.I.B. A copy of the program was studied for one month. At the end of the month, a post-test was administered.

The raw scores of the pre- and post-tests are presented in Table I. The pre-test scores have a range of 15 to 24, with a mean of 19.48 (see Table II). The scores on the pre-test tend to indicate that the population had some knowledge of diabetes. This was not unexpected because of the daily exposure to the care of diabetics.

Table II also indicates the frequency and range of the post-test raw scores, which were from 20 to 25 with a mean of 23.24. The mean of the post-test raw scores is near the total of 25 points. Visual inspection of the data would indicate a significant difference between the pre- and post-test scores.

The pre- and post-test scores were tabulated and analyzed using the following "t" test for correlated means:

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{S_1^2}{M_1} + \frac{S_2^2}{M_2} - 2r\left(\frac{S_1}{\sqrt{M_1}}\right)\left(\frac{S_2}{\sqrt{M_2}}\right)}}$$

Since the two groups were matched and the pre- and post-tests were equivalent, the tool used to test for significance of difference of the means was the "t" test for correlated data as reported by Popham (1967).

TABLE I

RAW SCORES OF PRE- AND POST-TESTS

Population	Pre-Test	Post-Test	Population	Pre-Test	Post-Test
1	17	25	26	16	22
2	22	24	27	19	22
3	23	23	28	19	25
4	17	22	29	19	25
5	19	20	30	22	23
6	20	23	31	16	21
7	15	24	32	19	22
8	16	23	33	17	23
9	19	23	34	17	20
10	21	23	35	21	25
11	15	22	36	18	23
12	21	25	37	20	24
13	17	24	38	20	23
14	22	25	39	22	23
15	19	24	40	21	22
16	21	25	41	16	25
17	21	23	42	20	22
18	20	24	43	21	25
19	20	22	44	21	25
20	21	23	45	21	24
21	20	24	46	21	23
22	21	25	47	17	20
23	19	23	48	19	21
24	24	25	49	19	23
25	20	24	50	23	23

TABLE II

FREQUENCY PLOTTED FROM THE DISTRIBUTION OF THE PRE- AND POST-TEST SCORES

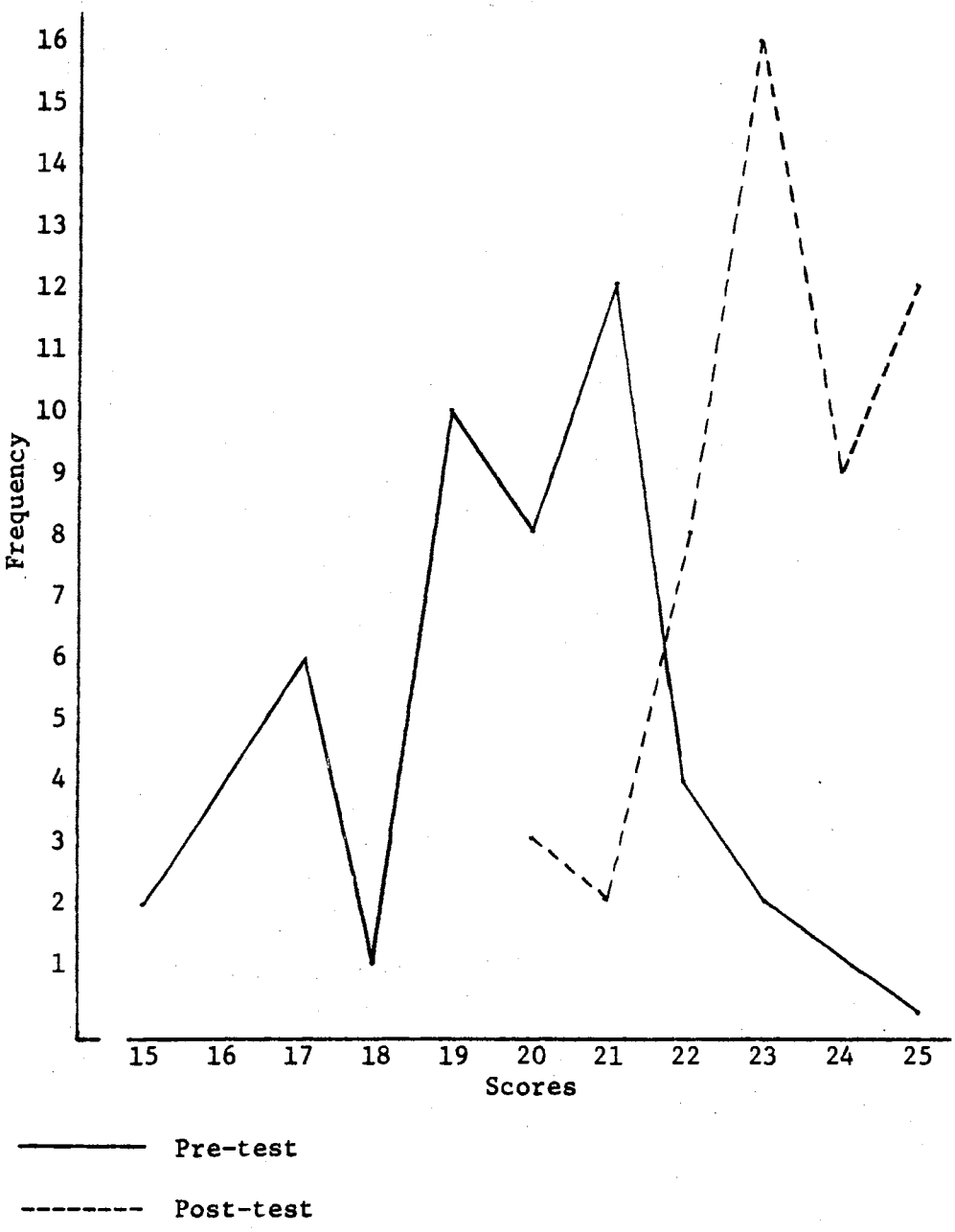

TABLE III

STATISTICAL COMPARISON OF PRE- AND POST-TEST SCORES FOR THE TEST GROUP

Test	No. of Subjects	Standard Deviation	Mean Score	"t" value*
Pre	50	2.1687	19.48	12.3521
Post	50	1.4078	23.24	12.3521

*significant ($\alpha < .001$)

Summary and Conclusions

This research was an attempt to investigate the effectiveness of a learning program about diabetes that had been written and programmed by the investigator. Nursing home employees were chosen as the study group to field test the program.

Evaluation of the employees' achievement was based on the assumptions that: (1) proper materials were given to produce measurable change; and (2) reasonably valid and objective techniques could measure such changes.

As a result of this limited study, it would appear that information is needed by nursing home personnel and "programming" is one method of teaching about diabetes. In comparing the pre- and post-test scores, there was a statistically significant difference at the .001 level of confidence.

Many variables could have influenced the results obtained, so further investigation would seem to be worthwhile. Cooperation and

interest of all the personnel concerned were maximum. This program needs further testing by nursing home personnel in other homes. Perhaps it could be utilized with student nurses and hospital personnel, although the readability level might need to be raised. With a larger sample it should be possible to obtain more conclusive data. Further study with the use of more effective evaluation procedures may be necessary because of the guessing factor introduced by the use of the true-false test.

Other readability levels should be established and field tested on this and similar materials using different populations to determine just what effect the readability level has on learning.

SELECTED BIBLIOGRAPHY

.hmann, J. S., and Glock, M. D.: Evaluating Pupil Growth-Principles of Tests and Measurements. Boston: Allyn and Bacon, Inc., 1967.

.lpert, H.: Nursing homes: The real problem. Harvest Years 10: 7 (Nov.), 1970.

rny, C. B.: Evaluation in Home Economics. New York: Appleton-Century-Crofts, Inc., 1953.

altz, D. A.: Food service in the dining room and at the bedside. In Jacobs, H. L. and Morris, W. W., Eds. Nursing and Retirement Home Administration. Ames, Iowa: The Iowa State Univ. Press, 1966.

arlow, D. J., Edge, E., and Wulff, J. A.: Teaching Guide for People Who Have Diabetes. Okla. City, Okla.: Univ. of Okla. Medical Center, 1968.

ardwood, J. T., and Kelly, H. T.: Simplified Diabetic Management. Philadelphia: J. B. Lippincott Co., 1954.

ickley, B. R.: Feeding the aged person. Am. J. of Nursing 59: 1951 (Nov.), 1959.

aracteristics of Persons with Diabetes. United States, July, 1964-June, 1965. Public Health Serv. Publ. No. 1000, Series 10, No. 40, 1967.

idester, F. H.: Programmed instruction: Past, present and future. J. Am. Dietet. A. 51: 413, 1967.

mmittee on Statistics: Fact Sheet on Diabetes. N. Y., N. Y.: Am. Diabetes Assoc., 1969.

oksey, D. C.: Pretest in beginning college nutrition based on objectives, concepts, and generalizations. M.S. thesis, Okla. State Univ., 1964.

le, E., and Jeanne, S.: A formula for predicting readability. Educ. Research Bulletin 27: 11, 1948.

et and the Diabetic. Kalamazoo, Mich.: The Upjohn Co., 1970.

wning, C. B. What is programmed instruction? Values and uses. J. Am. Dietet. A. 46: 39 (1965).

Early diabetes signs. Sci. Digest. 58: 17 (Dec.), 1965.

Gold in geriatrics. Time. 93: 103 (June), 1969.

Goodkin, G.: How long can a diabetic expect to live? Nutrition Today. 61: 21 (May-June), 1971.

Grunes, J.: Adaptation to a home. In Jacobs, H. L., and Morris, W. W., eds. Nursing and Retirement Home Administration. Ames, Iowa: The Iowa State Univ. Press, 1966.

Horwitt, M. K.: Dietary requirements of the aged. J. Am. Dietet. A. 29: 443, 1953.

How safe and effective are oral drugs for diabetics? Good Housekeeping. 172: 123 (Jan.), 1971.

Jacobs, J. L.: Introduction. In Jacobs, H. L., and Morris, W. W., eds. Nursing and Retirement Home Administration. Ames, Iowa: The Iowa State Univ. Press, 1966.

Kiang, M. H.: Programmed instruction for nursing students. J. Am. Dietet. A. 57: 423, 1970.

Kirk, S. A.: Teaching Reading to Slow Learning Children. Cambridge: Riverside Press, 1947.

Krause, M. V.: Food, Nutrition and Diet Therapy. Philadelphia and London: W. B. Saunders Co., 1966.

Levine, R.: Nutritional aspects of diabetes mellitus. Bordon's Review of Nutrition Research. 29: 15, 1968.

Lewis, P.: Teaching machines: New resources for the teacher. J. of Home Econ. 53:820, 1961.

Look at diabetes. Time. 85: 79 (June), 1965.

Mager, R. F.: Preparing Instructional Objectives. Belmont, Calif.: Fearon Publishers, 1962.

Marovich, P. E., and Campbell, A. M.: Programmed instruction in teaching food science. J. Am. Dietet. A. 52: 407, 1968.

McDonald, G. W., and Kaufman, M. B.: Teaching machines for patients with diabetes. J. Am. Dietet. A. 42: 209, 1963.

Meal Planning with Exchange Lists. The Am. Dietet. Assoc. and Am. Diabetes Assoc., Inc. N. Y., N. Y.: 1950.

Moore, A. N., and Klachko, H. W. Problems in producing programs for auto-instruction. J. Am. Dietet. A. 51: 420, 1943.

Murphey, V. R.: Development and evaluation of programmed instruction modules in food for the college level. Ed.D. dissertation, Okla. State Univ., 1968.

Obert, J. C., and Burr, N. E. Training in food service in nursing homes. J. Am. Dietet. A. 42: 223, 1963.

Ohlson, M. A.: Diets for the elderly. In Jacobs, H. L., and Morris, W. W., eds. Nursing and Retirement Home Administration. Ames, Iowa: The Iowa State Univ. Press, 1966.

Pincus, G., and White, P.: On the inheritance of diabetes mellitus. An analysis of 675 family histories. Amer. J. Med. Sci. 186:1, 1933.

Popham, W. J.: Educational Statistics: Use and Interpretation. N. Y.: Harper & Row, 1967.

Pressey, S. L.: A machine for automatic teaching of drill mateials. School and Society. 25: 549, 1927.

Proudfit, F. T., and Robinson, C. H.: Normal and Therapeutic Nutrition. 13th ed. London: The MacMillan Co., 1967.

Rosenthal, A.: Learning to lead not-so-normal lives. Today's Health. 48: 56 (April), 1971.

Savitsky, E., and Zetterstrom, M. Group feeding for the elderly. J. Am. Dietet. A. 35: 938, 1959.

Sharkey, T. P.: Diabetes mellitus-present problems and new research. J. Am. Dietet. A. 58: 201, 1971.

Shores, H.: The nursing home patient. J. Am. Dietet. A. 52: 287, 1968.

Skiff, A. W.: Programmed instruction and patient teaching. Amer. J. Public Health and the Nation's Health. 55: 409, 1965.

Skinner, B. J.: The science of learning and the art of teaching. Harvard Educ. Review. 24: 83, 1954.

Tani, G. W., and Hankin, J. H.: A self-learning unit for patients with diabetes. J. Am. Dietet. A. 58: 331, 1971.

U. S. Department of Health, Education and Welfare, Public Health Service, Division of Hospital and Medical Facilities. National Inventory of Nursing Homes and Related Facilities, 1961.

Vergason, G. A.: Retention in educable retarded subjects for two methods of instruction. J. of Mental Deficiency. 1020: 638, 1966.

Wasserug, J. D.: New clues to the diabetes riddle. Sci. Digest. 66: 76 (Oct.), 1969.

APPENDIXES

APPENDIX A

A PROGRAMMED COURSE OF INSTRUCTION

ABOUT DIABETES

This book was written to help you learn some of the things you need to know to help the diabetic keep his disease in check and prevent problems.

This book is different from most other books. Read the facts on each page, and then you will be asked questions. Answer these questions before going on to the next page. The questions will be answered in different ways. You may be asked to write a word or a few words, choose between two answers, or check a box beside a sentence. When you are asked to answer by checking boxes, you should check any and all boxes that are correct. The question will not tell you how many boxes should be checked.

You should not look at the correct answer until you have written your answer. Use the strip of paper that comes with the book to cover the answers until you are ready to see the correct ones.

As soon as you have written the answer, you can find out if your answer is correct by looking at the left of the page. If the answer you gave is not correct, read the given facts again and try to understand why the printed answer is correct.

The first part of this program will tell you some of the facts about diabetes and the importance of the right diet for people who have diabetes. You will see how the proper diet will help keep diabetes in check.

et

The right _____ is important for people who have diabetes.

In the following pages are some important facts about foods. One fact will show how energy in food is measured. Another will show how the amount of food needed by a person depends on many things. Such things are:

(1) how tall a person is,

(2) the amount of body fat and lean, and

(3) the amount of exercise.

The amount of food needed by a person depends on three things. List these three things:

ɔw tall the
ɛrson is (1)_____

nount of body fat (2)_____

nount of exercise (3)_____

A meal plan is ordered by the doctor for the diabetic. The meal plan shows how much and what kind of food the diabetic should have each day. The meal plan tells how many "exchanges" of different kinds of foods the diabetic may use at each meal.

The meal plan is:

/_/ /_/ the medicine that the doctor orders for the diabetic.

/X/ /_/ the food that the doctor orders for the diabetic.

exchanges

The meal plan tells how many _____ of different kinds of foods the diabetic may use at each meal.

There are six different "exchange" lists. Each food on these lists is called an "exchange". Each food is called an "exchange" because it can be substituted for any other food on that same list. Each "exchange" list has the foods that can be exchanged for each other.

exchange list

Each list is called an _____.

exchange

Each food on one of these lists is called an _____.

six

There are _____ different "exchange" lists.

In diabetes a part of the body, the pancreas, is not working as it should. This causes a need for insulin, a substance usually made in the pancreas. If the body does not have enough usable insulin, it must be given by injection or oral drugs. Some diabetics have enough insulin, but it does not work properly. Insulin helps to use up the sugar in the body.

What substance do some diabetics have too little of? (Other diabetics may have enough of this substance but it does not work properly.)

insulin

Insulin helps to use up the _____ in the body.

sugar

Diabetes is a disease that can not be cured. The patient will have diabetes the rest of his life. If diabetes is not cared for properly, troubles may arise. The troubles could cause (1) the loss of eye sight, (2) the loss of a leg, or (3) even the loss of life.

To keep these troubles from happening it is important to understand and help the patient follow the doctor's orders.

An important fact about diabetes is that:

/_/ /_/ it can be cured

/X/ /_/ it can not be cured

/_/ /_/ it is not important to follow doctor's orders.

List three things that may happen if diabetes is not cared for properly.

Loss of eye sight (1)_____

Loss of a leg (2)_____

Loss of life (3)_____

Sugar in the body comes from the food we eat. Almost all foods can be changed by the body into sugar. This sugar is found in the blood. Insulin helps the body use the sugar found in the blood. The body uses this sugar for energy. Some diabetics do not have enough insulin in their bodies to use this sugar fully. Other diabetics have enough insulin, but the insulin does not work properly.

Almost all foods can be changed by the body into sugar.

/X/ /_/ Yes

/_/ /_/ No

Insulin _____ helps the body use the sugar found in the blood.

Energy The body uses sugar for _____.

Sugar not used by the body remains in the blood, and sometimes it "spills over" into the urine. Therefore, too much sugar may be found in the blood of diabetics who are not properly treated; sugar may also appear in the urine. If sugar is found in the urine then the blood sugar is high.

Diabetics who are not following the proper diet and doctor's orders may have:

/X/ /_/ Too much sugar in the blood.

/X/ /_/ Sugar in the urine.

/_/ /_/ Too little insulin in the body.

/_/ /_/ Enough insulin, but the insulin does not work properly.

If sugar is found in the urine then the blood sugar is High.

The diabetic must follow the doctor's orders to keep the insulin and blood sugar at the proper amounts. Diet is an important part of the treatment for all diabetics. If the diabetic follows the meal plan, it helps keep the diabetes in check. Some kinds of diabetes can be checked by the diet alone. Other kinds of diabetes need diet and insulin or oral drugs.

Diet is a part of treatment for:

/✓/ /_/ Some diabetics.

/X/ /_/ All diabetics.

Insulin or oral drugs are part of the treatment for:

/X/ /_/ Some diabetics.

/_/ /_/ All diabetics.

If the diabetic does not follow doctor's orders the blood sugar may be too High.

In deciding the diet for the diabetic, the doctor considers (1) how tall the person is, (2) the amount of body fat and lean, and (3) the amounts of daily exercise.

The diet is:

/X/ Planned for each diabetic.

/_/ The same as the diet for every other diabetic.

Does everyone with diabetes eat the same number of meals and snacks each day?

/_/ Yes

/X/ No

Does everyone with diabetes eat the same amounts of food?

/_/ Yes

/X/ No

Do all diabetics have to follow a meal plan to keep diabetes in check?

/X/ Yes

/_/ No

A meal plan is ordered by a doctor for each diabetic. The meal plan is planned to meet the needs of the patient. The meal plan tells (1) the number of meals to have daily, (2) the "exchanges" to have at every meal, and (3) the number of calories the diabetic needs every day.

Check the items that will help the diabetic keep diabetes in check.

/X/	/_/ Eating the right number of meals each day (as ordered by the doctor).
/_/	/_/ Eating whenever the diabetic feels hungry.
/_/	/_/ Eating fewer meals each day (than ordered by the doctor).
/X/	/_/ Eating only the kinds of food ordered by the doctor.

Meal Plan

The _____ is planned to meet the needs of the patient.

When a disease causes someone to feel different in any way, that feeling is called a "symptom". When the blood sugar is too high the diabetic may have certain "symptoms". Sugar in the urine may be the first warning that the blood sugar is too high. Orders by the doctor tell how often the urine of each diabetic is to be tested. Usually it is tested daily.

Symptom

A _____ is when a disease causes the patient to feel different in any way.

The urine of the diabetic should be checked hourly.

/_/ /_/ Yes

/X/ /_/ No

The first warning that the blood sugar is too high may be:

/_/ /_/ When the patient does not feel well.

/X/ /_/ When the daily test shows sugar in the urine.

The urine of the diabetic should be checked daily.

/X/ /_/ Yes

/_/ /_/ No

Diabetics who do not take proper care of the disease may have certain symptoms. These symptoms tell you the blood sugar is too high. The symptoms are: (1) the need to go often to the bathroom, (2) the desire for large amounts of water, (3) weakness, and (4) great hunger; or the patient may not show any symptoms.

The four symptoms a diabetic may have if the blood sugar is high are:

Need to go to the bathroom often — (1)_____

Desire for large amounts of water — (2)_____

Weakness — (3)_____

Great hunger — (4)_____

If a diabetic is not following doctor's orders:

/_/ /_/ The above symptoms will always be present.

/X/ /_/ The above symptoms may or may not be present.

A diabetic will have the symptoms listed above only if the blood sugar is:

/X/ /_/ High

/_/ /_/ Low

The blood sugar can be nearly what it should be if the diabetes is in check. That is why a person with diabetes must follow the doctor's orders. The meal plan helps keep the diabetes in check.

Mark the symptoms that a diabetic may have if the blood sugar is too high.

/X/ /_/ A greater desire for food.

/_/ /_/ No desire to eat.

/X/ /_/ The need to go the bathroom more often.

/X/ /_/ The need for water.

/X/ /_/ May feel weak.

Which of the following sentences is true?

/_/ /_/ All diabetics have these symptoms.

/X/ /_/ Some diabetics that are not treated have these symptoms.

So far you have learned how diabetes can get out of control when there is too much sugar in the blood. Diabetes can also get out of check if there is too much insulin in the blood. If there is too much insulin in the blood, the blood sugar can get too low.

To avoid high or low blood sugar diabetics eat the right amounts of the right kinds of food at the right times. When the blood sugar is too low the diabetic may (1) feel weak, (2) hungry, (3) have eye sight that is not clear, and (4) be nervous and sweaty. Sometimes the diabetic may only have a headache or not be able to think clearly.

List four symptoms a diabetic may have if the blood sugar is low:

Feel weak (1)_____

Hungry (2)_____

Be nervous and sweaty (3)_____

Have eyesight that is not clear (4)_____

If there is too much insulin in the blood, the blood sugar can get too _____.

Low

The three aids used in the care of diabetics are:

(1) Meal Plan (Diet)

(2) Medicine

(3) Exercise

When the meal plan alone can not keep the blood sugar at the proper level, oral drugs or insulins are used to help control diabetes.

The meal plan is part of the treatment for:

/_/ /_/ Some diabetics

/X/ /_/ All diabetics

What is used besides medicine (oral drugs or insulins) to keep diabetes in check?

Meal Plan (1)_____

Exercise (2)_____

Exercise is bad for a person with diabetes.

/_/ /_/ Yes

/X/ /_/ No

A diabetic will be overweight, underweight, or be of ideal weight. However, diabetes and extra weight seem to go together in many persons. Since most adult diabetics are overweight before treatment, you can expect most adult diabetics to be overweight.

Adult diabetics who have not started treatment are most likely to be:

/_/ /_/ Underweight

/_/ /_/ Of normal weight

/X/ /_/ Overweight

The meal plan ordered by the doctor will help the overweight diabetic lose weight.

/X/ /_/ Yes

/_/ /_/ No

Diabetes and extra weight seem to go together in many persons.

/X/ /_/ Yes

/_/ /_/ No

Good eating habits are important to everyone. They are even more important to diabetics, because the food a diabetic eats can change the "symptoms".

A diabetic must follow a meal plan that will keep him (1) feeling well, (2) the diabetes under control, and (3) the weight where it should be. Foods that should not be eaten by the diabetic are those made with sugar or pure sugar.

Which of the following foods do you think might be harmful for the diabetic?

/_/ /_/ Meat

/_/ /_/ Green vegetables

/X/ /_/ Candy

/S/ /_/ Pastries

The foods that are left out of diabetic diets because they make the disease worse are those foods that contain a lot of _____.

Sugar

Good eating habits are important for everyone.

/X/ /_/ Yes

/_/ /_/ No

Changes that an overweight diabetic can expect after following his meal plan for a while are: (1) that levels of sugar in the blood should go down, (2) loss of weight, (3) very little or no sugar in the urine, and (4) the diabetic "symptoms" should be better.

(When an overweight diabetic carefully follows a diabetic diet, certain changes are likely to take place.) Check the right box to finish each sentence below. They show what changes can be expected after the meal plan has been followed for a while.

The amount of sugar in the blood should:

/_/ /_/ Go up

/X/ /_/ Go down

The amount of sugar in the urine (if present before) should:

/_/ /_/ Go up

/X/ /_/ Go down

The body weight should:

/_/ /_/ Go up

/X/ /_/ Go down

The diabetic symptoms (if present before) should:

/X/ /_/ Get better

/_/ /_/ Get worse

The tools that doctors use to direct diabetics are: (1) the diabetic diet, (2) medicine (oral drugs and insulins), (3) exercise. Sometimes diet alone is enough to keep the diabetes in check. For other diabetics, diet and insulins or oral drugs are used to keep the patient feeling his best. Exercise, such as daily walking, is important to health.

Diabetes cannot be cured, therefore, a diabetic must follow his diet even though the symptoms of diabetes have gone.

Which of the following measures should be used by all diabetics?

/X/ /_/ Diabetic diet

/_/ /_/ Oral drugs

/_/ /_/ Insulins

Which of the following may be ordered by the doctor for the diabetic?

/X/ /_/ Diabetic diet only

/X/ /_/ Diabetic diet and oral drugs

/X/ /_/ Diabetic diet and insulins

Diabetic diets are used by:

/_/ /_/ Only some diabetics

/X/ /_/ All diabetics

Any person works best and feels best at his ideal body weight. Each person's ideal body weight depends on the following three things:

(1) Height (The taller a person is, the more he should weigh.)

(2) Sex (A man should generally weigh more than a woman of equal height.)

(3) Body build (A person with large bones should weigh more than a person with small bones.)

To test your understanding of ideal body weight, finish the following statements.

A woman and a man of exactly the same height and bone frame will have:

/_/ /_/ The same ideal body weight

/X/ /_/ Different ideal body weight

A tall large-boned woman and a short small-boned woman will have:

/_/ /_/ The same ideal body weight

/X/ /_/ Different ideal body weight

The doctor will decide the ideal body weight for the diabetic. He will then decide how much food the diabetic needs each day. The meal plan tells how much and what kind of food the diabetic should have every day. The meal plan ordered by the doctor will help the diabetic to reach and keep his ideal body weight.

Ideal body weight

The weight at which any person works his best is his _____.

The weight that a person should be in order to work best and feel best does not depend on:

/_/ /_/ Height

/_/ /_/ Sex

/X/ /_/ Whether or not the person is a diabetic

/_/ /_/ Body build

The diabetic must:

/_/ /_/ Figure out his ideal body weight

/X/ /_/ Follow the doctor's orders as to how much to eat each day

Food gives the body energy. This energy is measured in amounts called calories. The number of calories in a serving of food tells how much energy the food gives the body when it is eaten. Since calories measure food, it follows that energy-rich foods have many calories.

The more exercise a person gets the more calories he needs. Therefore, in deciding how many calories a person needs each day, the doctor will consider:

/_/ /_/ Whether or not the person likes to nibble between meals

/X/ /_/ How much exercise a person gets each day

The doctor will tell the patient how much to eat every day by telling the patient that he needs so many:

/_/ /_/ Ounces of food daily

/X/ /_/ Calories daily

Calories _____ measures the amount of energy that food gives the body.

The doctor will think about many things when he plans the diet for the patient. Some of these things will be: (1) ideal body weight, (2) how to reach ideal body weight, and (3) the amount of exercise done each day. The meal plan (diet) tells how much food the diabetic should eat each day and the kinds of foods to be eaten daily.

The meal plan tells:

/X/ /_/ How many calories the diabetic needs each day

/_/ /_/ What kinds of foods the diabetic should eat

Calories

The amount of food energy contained in a food is measured in _____.

List three things the doctor will think about when he plans the diet for the patient.

Ideal body weight (1)_____

How to reach ideal body weight (2)_____

Amount of exercise done each day (3)_____

Most foods that we eat have different amounts of vitamins, minerals, and one or more of the three important foodstuffs. The three important foodstuffs are proteins, fats, and carbohydrates. A well-planned diet will contain all of the important foodstuffs.

Our daily food is made up from protein, fat, and carbohydrates. Each of these is in part turned into sugar by the body. Foods that contain mostly carbohydrates make more sugar more quickly than foods containing mostly protein or fat.

Which of the following diets would not be healthy?

/X/ /_/ A diet that has only proteins

/X/ /_/ A diet that has only carbohydrates

/X/ /_/ A diet that has only fats and proteins

/_/ /_/ A diet that has fats, proteins, and carbohydrates in the right amounts

It is important to know how much sugar is made from the food eaten by the diabetic because it helps to check the _____.

Blood sugar

You should remember that diabetics have too much sugar in their blood. Some kinds of carbohydrates should not be eaten by the diabetic because the body digests then and changes them into blood sugar too quickly. Most of the foods that contain these kinds of carbohydrates are foods that are thought of as having lots of sugar.

Which of the following foods do you think might be harmful?

/X/	/ / Candy
/X/	/ / Cake
/ /	/ / Bread
/ /	/ / Milk
/X/	/ / Jams, jellies, and preserves
/X/	/ / Table sugar

Name a food that has carbohydrates that is all right for the diabetic to eat.

Milk or bread _____

What substance helps to use up the sugar in the body?

Insulin _____

A food that can be used to take the place of another food is called an "exchange". Exchanges are measured or weighed amounts of foods which are nearly equal in calories and food value.

An "exchange list" is a list of measured or weighed amounts of different foods. The list is made up of foods that can be exchanged for each other. For example, one slice of bread has the same amount of calories and food value as two graham crackers.

A food that may be eaten in place of another is an _____.

Exchange

A doctor allows a patient to eat one slice of bread before bedtime. Would it be all right for the diabetic patient to eat two graham crackers instead of the bread?

/X/ Yes

/_/ No

Exchanges are measured or weighed amounts of food which are nearly equal in calories and food value.

/X/ Yes

/_/ No

It is not always easy for a diabetic to be sure which foods he may eat. Also, the diabetic may not be sure how much he may eat. The food exchange lists help this problem. These lists include only those foods that are healthful for a diabetic. These lists tell the weight or measure of different foods that diabetics may eat.

From what you have learned about the exchange lists, you can be sure that these lists:

/X/ /_/ Contain only those foods that a diabetic may safely eat

/_/ /_/ Include all kinds of foods including those that a diabetic should not eat

Weighed or measured

These lists can be used by the diabetic if the food is _____.

A diabetic may eat any of the foods he likes.

/_/ /_/ Yes

/X/ /_/ No

List 1. Milk Exchanges

	Measure
Whole milk	1 cup
*Skim milk	1 cup
Evaporated milk	1/2 cup
Powdered whole milk	1/4 cup
*Powdered skim milk	1/4 cup
*Buttermilk (made from skim milk)	1 cup

*Skim milk products are fat free. When you use a skim milk product instead of a whole milk product, add two fat exchanges to your meal to get the correct food value.

Milk contains large amounts of carbohydrates, protein and fat. If the meal plan calls for whole milk and skim milk is used, then two fat exchanges must be added to the meal.

How much buttermilk would have the same food value as one cup of whole milk?

1 cup _____

How much evaporated milk would have the same food value as one cup of whole milk?

1/2 cup _____

How much whole milk is needed for two milk exchanges?

2 cups _____

List 2. Vegetable Exchanges

The vegetable exchange list is divided into two parts. The first part is called A Vegetables and the second part is called B Vegetables.

A Vegetables: In raw form, the size of serving is not limited. If cooked, the size of serving should not be over one cup.

Asparagus
*Broccoli
Brussel sprouts
Cabbage
Cauliflower
Celery
*Chicory
Cucumber
Eggplant
*Escarole
Lettuce
Mushrooms
Okra
*Parsley
*Pepper, green
Radish
Rhubarb
Romaine
Sauerkraut
String beans, green
Summer squash
*Tomatoes (1 per serving)
Watercress
*Greens
- Beet greens
- Chard
- Collards
- Dandelion
- Kale
- Mustard
- Poke
- Spinach
- Turnip greens

B Vegetables: One exchange equals one-half cup.

Beets
*Carrots
Onions
Peas, green
Pumpkin
Rutabagas
*Squash, white
Turnips

*These vegetables have a high vitamin A content; at least one serving a day should be used

---

What is true about A Vegetables?

/X/ /_/ In raw form, they may be used as desired in ordinary amounts.

/_/ /_/ They must be measured.

/X/ /_/ When they are cooked, a serving is one cup.

What is true about B Vegetables?

/_/ /_/ In raw form, they may be used as desired in ordinary amounts.

/X/ /_/ They must be measured.

/X/ /_/ One exchange equals one-half cup.

With the vegetables that must be measured exactly, one-half cup equals one exchange. These vegetables are found on:

/_/ /_/ A Vegetable Exchanges

/X/ /_/ B Vegetable Exchanges

If the diabetic has one cup of lettuce, radishes, or celery, that would be counted as:

/X/ /_/ One A Vegetable Exchange

/_/ /_/ One B Vegetable Exchange

/_/ /_/ Two A Vegetable Exchanges

/_/ /_/ Two B Vegetable Exchanges

If the diabetic has one-half cup of carrots and one-half cup of peas mixed together, that would be counted as:

/_/ /_/ One A Vegetable Exchange

/_/ /_/ One B Vegetable Exchange

/_/ /_/ Two A Vegetable Exchanges

/X/ /_/ Two B Vegetable Exchanges

List 3. Fruit Exchanges

Fruits may be fresh, dried, cooked, canned, or frozen as long as no sugar is added.

	Measure
Apple (2" diameter)	1 small
Applesauce	1/2 cup
Apricots, fresh	2 medium
Apricots, dry	4 halves
Banana	1/2 small
Berries	
Blackberries	1 cup
Raspberries	1 cup
Strawberries	1 cup
Blueberries	2/3 cup
*Cantaloupe (6" diameter)	1/4
Cherries	10 large
Dates	2
Figs, dried	1 small
Figs, fresh	2 large
*Grapefruit	1/2 small
*Grapefruit juice	1/2 cup
Grapes	12
Grape juice	1/4 cup
Honeydew melon (7" diameter)	1/8
Mango	1/2 small
Nectarines	1 medium
*Orange	1 small
*Orange juice	1/2 cup
Papaya	1/3 medium
Peach	1 medium
Pear	1 small
Pineapple	1/2 cup, cubed
Pineapple juice	1/3 cup
Plums	2 medium
Prunes, dried	2 medium
Raisins	2 tablespoons level
Rhubarb	(List 2 A)
*Tangerine	1 large
Watermelon	1 cup, diced

*These fruits are rich sources of Vitamin C; one serving a day should be used.

The diabetic is allowed one Fruit Exchange for breakfast. You are serving orange juice. How much would you use? _____

1/2 cup

Fruit and fruit juices for a diabetic may be fresh or frozen if unsweetened. The label should say Unsweetened _____.

For dinner the diabetic can have two Fruit Exchanges. How much would you serve of the following items?

1 cup	Pineapple	_____
20 large	Cherries	_____
2 cups	Strawberries	_____
1 small	Banana	_____
4 tablespoons	Raisins	_____
1/2 cup	Grape Juice	_____

List 4. Bread Exchanges

	Measure
Bread	1 slice
Biscuit, roll (2" diameter)	1
Muffin (2" diameter)	1
Cornbread (1½" cube)	1
Cereals, cooked	1/2 cup
Dry (flake, puff and shred types)	3/4 cup
Rice, grits, cooked	1/2 cup
Spaghetti, noodles, cooked	1/2 cup
Macaroni, cooked	1/2 cup
Crackers	
Graham (2½" squares)	2
Oyster (1/2 cup)	20
Saltines (2" squares)	5
Soda (2½" squares)	3
Round, thin	6
Vegetables	
Beans and peas, dried, cooked (lima, navy, split pea, cowpeas, etc.)	1/2 cup
Baked beans, no pork	1/4 cup
Corn	1/3 cup
Popcorn	1 cup
Parsnips	2/3 cup
Potatoes, white	1 small
Potatoes, white, mashed	1/2 cup
Potatoes, sweet or yams	1/4 cup
Flour	2½ tablespoons
Sponge cake (plain 1 1/3" cube)	1
*Ice cream	1/2 cup

*Omit two fat exchanges from the meal plan if the ice cream is used.

If you use ice cream as one bread exchange for the diabetic, what must be omitted from the meal plan? _____ 2 fat exchanges

How many slices of toast can the diabetic have if he has one bread exchange ? _____ 1 slice

How much cooked cereal can you serve for one bread exchange? _____ 1/2 cup

List 5. Meat Exchanges

	Measure or Weight
Meat and Poultry (medium fat) (beef, lamb, veal, pork, liver, chicken, etc.)	1 ounce
Cold cuts (4½" x 1/8" diameter) (salami, minced ham, bologna, liverwurst, luncheon loaf)	1 slice
Frankfurter (8 - 9 per lb.)	1
Egg	1
Fish	
Cod, haddock, halibut, herring, etc.	1 ounce
Salmon, tuna, crab, lobster	1/4 cup
Shrimp, clams, oysters	5 small
Sardines	3 medium
Cheese, cheddar type (American, Swiss, Parmesan, etc.)	1 slice
Cottage cheese	1/4 cup
Peanut butter	2 tablespoons

Meat, poultry and fish are on the Meat Exchange List. Name three other foods which are on the list.

Eggs (1) _____

Cheese (2) _____

Peanut butter (3) _____

If a diabetic can have two Meat Exchanges how much would you serve of each of the following foods?

2 Frankfurter _____

2 slices Bologna _____

2 ounces Ground beef _____

2 ounces American cheese _____

2 ounces Chicken _____

2 ounces Baked ham _____

If the meal plan allows three Meat Exchanges for dinner and you are going to serve a salad, how much of the following items could you use?

1/4 cup	Cottage cheese	_____
1	Hard boiled egg	_____
1 ounce	Tuna	_____
1	Tomatoes	_____
Unlimited	Lettuce	_____

List 6. Fat Exchanges

	Measures
Butter or margarine	1 teaspoon level
Bacon, crisp	1 slice
Cream, light (sweet or sour)	2 tablespoons level
Cream, heavy	1 tablespoon level
Cream cheese	1 tablespoon level
Avocado (4" diameter)	1/8
French dressing	1 tablespoon level
Mayonnaise	1 tablespoon level
Oil or cooking fat	1 teaspoon level
Nuts	6 small
Olives	5 small

Are all kinds of cream on the Fat Exchange List?

/X/ /_/ Yes

/_/ /_/ No

What kind of cheese is on the Fat Exchange List?

Cream cheese _____

Fat Exchanges can be used to prepare or season foods. The diabetic is allowed two Fat Exchanges on his dinner meal plan. How much would you use in each of the following?

You could use one teaspoon of butter on the baked potato and _____ of French

1 tablespoon dressing on the salad.

You could use two tablespoons of cream in coffee and _____ of heavy cream on

1 tablespoon fresh strawberries.

You could use one teaspoon of margarine to fry an egg and _____ of butter

1 teaspoon on a roll.

Foods Allowed As Desired

The following foods and seasonings may be used as desired because they have little or no carbohydrates, fat, and protein when used in small amounts.

Bouillon (fat free)
Celery salt
Cinnamon
Clear broth
Coffee, plain
Cranberries, unsweetened
Garlic
*Gelatin, unsweetened (Knox)
Herbs
Lemon
Mustard, dry
Mint
Nutmeg
Onion, raw
Pepper
Pickle, sour or unsweetened, dill
Rennet tablets
Saccharin
Sucaryl
Spices
Tea, plain
Vinegar

*Not Jello or LeGout

A diabetic can have as much tea or coffee as wanted without adding any:

/X/ /_/ Sugar
/_/ /_/ Sucaryl
/_/ /_/ Lemon
/X/ /_/ Milk

Do you have to be careful about the amount of pepper, onion, vinegar and spices that you use to season a diabetic's food?

/_/ /_/ Yes
/X/ /_/ No

You may serve any amount of gelatin and pickles if they have:

/_/ /_/ Sugar
/X/ /_/ No sugar

There are two things you must know about every food you serve the diabetic:

1. On what exchange list a food belongs.

2. How much of a food equals one exchange.

Each food on an exchange list has the same food value and calories as any other food on the same list.

When used in the measurements given, any food on an exchange list:

/X/ /_/ Will have the same amount of the main foodstuffs as any other food on the same list.

/X/ /_/ Will have the same number of calories as any other food on the same list.

/X/ /_/ Can be used for any other food on the same list.

What two things must you know about every food you serve a diabetic?

On what exchange list it belongs (1)_____

How much of a food equals one exchange (2)_____

The meal plan ordered by the doctor tells you how many exchanges from each Exchange List to serve at each meal.

Listed below is a meal plan that could be ordered for a diabetic.

The Meal Plan — Calories - 1800

Breakfast

1 fruit exchange from List 3
1 meat exchange from List 5
2 bread exchanges from List 4
2 fat exchanges from List 6
Coffee or tea (any amount)

Lunch

2 meat exchanges from List 5
2 bread exchanges from List 4
Vegetable from List 2A
1 fruit exchange from List 3
1 milk exchange from List 1
1 fat exchange from List 6
Coffee or tea

Dinner

3 meat exchanges from List 5
2 bread exchanges from List 4
Vegetable from List 2A
1 vegetable exchange from List 2B
1 fruit exchange from List 3
2 fat exchanges from List 6
Coffee or tea

Bedtime

1 milk exchange from List 1
2 bread exchanges from List 4
1 meat exchange from List 5

A doctor will order a meal plan for each diabetic. This plan gives:

/X/ /_/ The number of calories needed each day

/X/ /_/ The number of meals the diabetic should have

/X/ /_/ The exchanges and how many of each exchange the diabetic needs at each meal

/_/ /_/ The name of the foods the diabetic should have at each meal

The meal plan tells every part of the diet but one. What part is left up to you?

/_/ /_/ Deciding how many meals the diabetic should have

/_/ /_/ Deciding which exchanges to have at each meal and how many of each

/X/ /_/ Planning daily menus on the basis of the exchanges you are told to use

It is very important that the diabetic follow the meal plan exactly as the doctor has ordered The diabetic should:

/_/ /_/ Eat the same menu everyday

/X/ /_/ Eat only the exchanges that were ordered

/_/ /_/ Skip meals when he wants to

/X/ /_/ Eat at the times ordered by the doctor

/_/ /_/ Eat extra food if he is hungry

If the diabetic does not like his meal plan, then change it to his desired plan.

/_/ /_/ Yes

/X/ /_/ No

Six How many exchange lists are there? _____

Calories The exchange lists differ from each other in the amount of _____.

A person with diabetes needs to have his urine checked to see if there is sugar in the urine. How often the urine should be tested will be ordered by the doctor.

Sugar in the urine may be the first warning that the diabetic's blood sugar is high and the diabetes out of check. If the blood sugar is high, the reason why it is high should be found.

The urine of the diabetic is checked to see if there is:

/_/ /_/ Sugar in the blood

/X/ /_/ Sugar in the urine

It is cause for worry if the test shows the

High blood sugar is _____.

What three things are used to keep the blood sugar in check?

Meal plan (1) _____

Medicine (2) _____

Exercise (3) _____

When bathing or showering, the person with diabetes must not use very hot water. The diabetic should use lukewarm water and mild soap. A soft towel to gently dry the diabetic must be used. The diabetic should not use brushes to scrub himself. Only mild skin creams can be used when the skin is dry.

A diabetic should use soap that is:

/X/ Mild

/_/ Strong

A diabetic should use water that is:

/_/ Very hot

/X/ Lukewarm

/_/ Cold

Should a diabetic scrub his skin?

/_/ Yes

/X/ No

When the skin is chapped or dry, a diabetic should use:

/_/ A medicated skin cream

/X/ A gentle skin cream

The diabetic should try not to have infections. One way not to have infections is by taking care of the skin and keeping it in good shape. Infections often begin where the skin is cut, raw, dry or burned.

Another way for the diabetic not to have infection is by taking good care of his teeth and gums.

Medicines not offered by the doctor for the diabetic might affect the amount of sugar in the blood and should not be used.

How can the diabetic avoid skin infections?

By taking care of the skin

For a person with diabetes regular dental care is:

/X/ Important

/_/ Not important

If the diabetic needs medicine for his skin:

/_/ Use only mild medicine

/X/ Use only what the doctor orders

/_/ Use the same medicine you have used for another diabetic

A person with diabetes needs to take extra care of their feet. People with diabetes often have cold feet and many times cannot feel pain in their feet.

The feet should be washed daily and dried well. The feet should be gently rubbed with a mild skin cream if they are dry. If the feet are wet they should be gently rubbed with alcohol.

The feet should be checked everyday for cuts, sores, red spots, or blisters. The diabetic should wear clean stockings everyday.

The diabetic needs to give extra care to his feet.

/X/ /_/ Yes

/_/ /_/ No

If diabetes is not taken care of, troubles may arise.

Eyesight This could cause the loss of _____,

Leg the loss of a _____, or even the

Life loss of _____.

Clean stockings everyday are important for the diabetic.

/X/ /_/ Yes

/_/ /_/ No

The diabetic should wear shoes or slippers at all times. Shoes that do not cause red spots or blisters should be worn.

The diabetic's toe nails should be cut smoothly with toe nail clippers. Corns or calluses should only be removed with a soft cloth, emery board or pumice stone. If this cannot be done then a doctor should be called.

The diabetic does not have to worry about his feet.

/_/ /_/ Yes

/X/ /_/ No

It is okay for the diabetic to use medicine from the drug store to remove a corn.

/_/ /_/ Yes

/X/ /_/ No

The diabetic should wear slippers or shoes at all times.

/X/ /_/ Yes

/_/ /_/ No

There are many kinds of insulin and each acts differently in the body. Each diabetic should take only the kind and amount of insulin ordered by the doctor.

Insulin is measured in units and to measure the units an insulin syringe is needed. A u-40 syringe should be used only with u-40 insulin. A u-80 syringe should be used only with u-80 insulin.

If insulin is given in the same spot all the time, the spot will become sore and hard. The spots for the insulin injection should be changed everyday. Insulin can be given in the legs, arms and stomach.

All insulin is the same.

/_/ /_/ Yes

/X/ /_/ No

All insulin syringes are the same.

/_/ /_/ Yes

/X/ /_/ No

The insulin should be given in a different spot everyday.

/X/ /_/ Yes

/_/ /_/ No

If a diabetic produces some insulin or if the insulin is not doing what it should, the doctor may order an oral drug. It is called an oral drug because it can be taken by the mouth.

Several types of oral drugs are used for the treatment of diabetes. The doctor will order the drug that is best for the diabetic.

The diabetic must take only the drug ordered by the doctor and must take the amount ordered.

All diabetics take the same type of oral drugs.

/_/ /_/ Yes

/X/ /_/ No

If the blood sugar is high, then it is okay to give an extra dose of the oral drug.

/_/ /_/ Yes

/X/ /_/ No

APPENDIX B

EVALUATION SHEET

Name_____

Evaluation Sheet

T F 1. The diabetic can lead a "normal" life if the diabetes is cured.

T F 2. A person with diabetes should stay out of crowds because the diabetes may be given to someone else.

T F 3. The sugar in the blood comes from the food eaten.

T F 4. Diabetes can be described as not having enough insulin in the blood to use the sugar in the body.

T F 5. The aim in treating diabetes is to keep the insulin and sugar in the blood in the proper amount.

T F 6. The doctor orders the meal plan that tells the kind and amount of food the diabetic is to eat everyday.

T F 7. Foods for the diabetic must be bought in stores that sell diet foods.

T F 8. Diet is a part of the treatment of all diabetics.

T F 9. All diabetics need the same kind and the same amount of medicine.

T F 10. The same amount of exercise everyday is important for the diabetic to keep the diabetes in check.

T F 11. When bathing or showering, the diabetic should use hot water and strong soap.

T F 12. The easiest way to find out if the diabetes is getting out of check is by testing the urine for sugar.

T F 13. An insulin reaction happens when there is too much insulin in the blood and not enough sugar.

T F 14. To keep from damaging the skin, the insulin injection is given in the same place each time.

T F 15. The meal plan shows how much and what kind of food the diabetic should have.

T F 16. The food a diabetic eats does not affect the disease.

T F 17. An "exchange" is a food that the diabetic may eat in place of another food.

T F 18. The diabetic can drink coffee or tea only at meal times.

T F 19. If the diabetic is not hungry, it is okay to skip the meal.

T F 20. A diabetic can be given any kind of insulin because all insulins are the same.

T F 21. Diabetics need extra care of the feet because they cannot feel pain as they can in other parts of their body.

T F 22. When the diabetic is sick, the blood sugar may go up.

T F 23. All fruits and fruit juices are okay for the diabetic.

T F 24. There are six exchange lists and you can substitute food from one list for food on any other list.

T F 25. To avoid high or low blood sugar the diabetic must eat the right amount of the right kind of food at the right time.

VITA

Shirley Osborne Gibbs

Candidate for the Degree of

Master of Science

Thesis: EVALUATION OF A PROGRAMMED INSTRUCTION BOOKLET AS A METHOD OF TEACHING NURSING HOME PERSONNEL ABOUT DIABETES

Major Field: Food, Nutrition and Institution Administration

Biographical:

Personal Data: Born in Bevinsville, Kentucky, April 25, 1937, the daughter of Mr. and Mrs. Troy Osborne.

Education: Graduated from Wheelwright High School, Wheelwright, Kentucky, in 1953; graduated from Berea College, Berea, Kentucky with a Bachelor of Science degree in Home Economics, with emphasis in Dietetics, 1957; completed requirements for the Dietetic Internship at Oklahoma State University, Stillwater, Oklahoma in 1958; studied at Oklahoma State University in 1966; attended Oregon State University in 1968 and 1969; completed the requirements for a Master of Science Degree at Oklahoma State University in May, 1972.

Professional Experience: Worked as a dietitian at Mount Carmel Hospital, Columbus, Ohio, 1958-1960; the only dietitian at Applachian Regional Hospital, McDowell, Kentucky, 1960-1963; Staff Dietitian, Food Service Units, Oklahoma State University, 1963-1966; dietitian, Memorial Union Food Service, Oregon State University, Corvallis, Oregon, 1968-1969; Director of Food Services, Memorial Union Food Services, Emporia, Kansas, 1969-1971; Consultant Dietitian, Emporia, Kansas area, 1971; Dietitian, Bowling Green-Warren County Hospital, Bowling Green, Kentucky, 1971 to present.