

COMPARISON OF TWO METHODS OF TEACHING THE DIABETIC DIET TO
ELDERLY WOMEN

by

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Thesis submitted to the Faculty of the
Virginia Polytechnic Institute and State University
in partial fulfillment of the requirements for the degree of

MASTERS OF SCIENCE

in

Human Nutrition and Foods

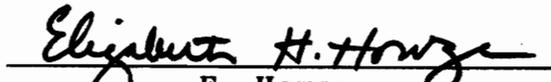
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February, 1990

Blacksburg, Virginia

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By Lisa Ringhausen Mason

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(ABSTRACT)

Thirty females, 55 to 70 years old, participated in an investigation comparing two methods of teaching the diabetic diet. Subjects were required to take the WRAT-R, a test which assessed their reading capabilities. Only those scoring at the seventh grade level or below qualified for this investigation. Following the test, subjects were assigned to one of two groups. Participants in Group 1 received one-on-one instructions of Healthy Food Choices, whereas participants in Group 2 received videotaped instructions of Healthy Food Choices. Healthy Food Choices is a more simplified meal planning tool designed for those that cannot understand the concepts of the Exchange Lists for Meal Planning.

Participants were instructed by the researcher, either on videotape or one-on-one. A follow-up visit occurred in a mean of 10.3 days to assess comprehension of the instructions provided. Each participant was contacted again by telephone in a mean of 28.7 days from the follow-up visit to assess long term retention of the instructions they were provided. The sample menu collected from the two contacts

provided data on choice deletions and additions. These data were analyzed by t-tests. There were no statistically significant differences found between diabetic diet instructions done by videotape or one-on-one at either follow-up visit or telephone contact. In this sample, videotaped instructions of the diabetic diet were just as effective as one-on-one instructions.

ACKNOWLEDGEMENTS

I would like to extend my appreciation to Dr. Mary Ann Novascone, my Committee Chairperson who gave her encouragement, support, insight, and knowledge to this research. I also would like to thank Dr. Jane Wentworth for her helpful insight and input. The Clinical Nutrition staff at Portsmouth Naval Hospital deserves acknowledgement for their assistance in finding and scheduling clients for this research. I would especially like to thank Lt. Martie Slaughter of the Clinical Nutrition staff for her encouragement and support. Finally, I thank my husband, Hilton Mason, for his constant concern and encouragement. Without his unlimited support for this research it would never have been accomplished.

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CHAPTER I

INTRODUCTION

Individuals diagnosed with diabetes mellitus need to make changes in their eating habits to control their blood glucose, thus enhancing their health and well-being(1-3). For the elderly this may mean changing eating patterns that were established during childhood and which, over the years, have been influenced by culture, family group, peer and social groups, work groups, and socioeconomic status (3). Then as individuals age, their food habits may change because of disease, poor dentition, reduced mobility, isolation, and reduced purchasing power (3-4). With the diagnosis of diabetes, the elderly are required to make more changes in their eating habits(1-3, 5). Thus a diet prescribed for elderly diabetics should be individualized as closely as possible to previous eating habits to maximize compliance(6-9). Factors such as food preferences, culture, life-style, home resources, economic status, and social activities should be taken into account when individualizing a diabetic diet plan(8, 10). As the eating habits of older individuals differ from those of children, teen-agers, or young adults, so do their educational needs differ(11). Educating older adults requires different techniques targeted to meet their specific needs which may result from hearing and sight impairments as well as a lack of formal

education(5, 11-14). Specially designed teaching tools for the elderly which compensate for impairments of the senses may enhance their learning(12). Also presenting information in a slow and organized format may lessen anxiety and confusion(15).

The purpose of this study was to compare two methods of teaching the diet for diabetes to elderly females. These methods consisted of the more traditional one-on-one instructions and videotaped instructions which may suit the elderly person's learning needs better since videotapes allow the client the opportunity to view the instructions as often as necessary, thus reducing anxiety and confusion(16). A videotaped lesson on the diet for diabetes may help not only the elderly person, but also the registered dietitian. At present most hospitals are concerned with finding ways to cut costs and become more efficient. Providing the elderly patient with a videotaped lesson allows the dietitians more time with other patients and allows them to be more time efficient(17). Many innovative methods and tools have been used to teach the individual with diabetes. Bingo games, DOTS, Calorie counting, one-on-one instructions, color coded posters or pictures, luncheons with instructors, videotapes, and autotutorials are used to teach the diet for diabetes(18-23). With these various educational techniques, basic information is covered with the client. It is

important for the client with diabetes to know the rationale for diet therapy, correct food preparation methods, the mechanics of the diet, and portion sizes. The choice of method or form used to teach these principles depends on the assessment of the client's needs by the dietitian. Certain people may find that Calorie counting allows them more freedom of choice than the Exchange Lists for Meal Planning by the American Diabetes Association and American Dietetic Association(24). Therefore, adherence would be greater even though Calorie counting may be more time consuming since the individual must look up each food value(18). Likewise, an individual who cannot read well may find instructions with pictures easier to comprehend and adhere to than the Exchange Lists for Meal Planning or Calorie counting(24). The American Dietetic Association and the American Diabetes Association recently have revised the Exchange Lists for Meal Planning(24). They also developed a simplified version of the Exchange Lists for Meal Planning, called Healthy Food Choices(25)(Appendix A).

In this study both teaching methods were based upon Healthy Food Choices, but the method of presentation varied: a one-on-one explanation of Healthy Food Choices versus a videotaped explanation. A comparison was made to determine if one method was more effective than the other with elderly females with diabetes who have a reading level of seventh

grade or below. To compare the effectiveness of educational methods, total choice additions and deletions from the patient's individualized meal pattern were used.

CHAPTER II

Review of the Literature

Diabetes mellitus is one of the most prevalent diet related diseases in the United States. It is estimated that one-third of the diabetic population is elderly(2). Education is recognized as an essential part of the treatment plan for diabetes with diet considered as one of the cornerstones of treatment.

Assessment of the Educational Needs of the Elderly

As educators in a hospital or clinic, dietitians need to assess the ability of the elderly to read printed educational material. Without some type of assessment, the proper teaching tools cannot be utilized. For example, when a teaching tool that is too sophisticated for individuals with poor reading skills is used, they may report problems with glasses, or that they do not have them available(27). They may indicate that there is no need to look over printed material because they understand the verbal instructions(27). When this is the case, the patients really do not have the knowledge necessary to comply with the diet. Dietitians, as educators, need to assess reading skills and provide educational material appropriate for that individual's reading ability. Otherwise, the educator may use material unsuited for the individual's capabilities.

The Wide Range Achievement Test-Revised(WRAT-R) is one

method an educator can use to assess an individual's reading skills(49). This standardized test has been shown to be an accurate measurement for reading ability(49). The design is simple and both time to administer and cost are minimal. The WRAT-R consists of three subtests, reading, spelling, and arithmetic(49). Standard scores can be used to determine grade level. There are two levels to the reading subtest. Level one pertains to those five to 11 years old and level two is for those 12 to 75 years old(49). A stratified national sample was used to standardize the WRAT-R. The sample was controlled for age, sex, race, geographical region and metropolitan/non-metropolitan region(49). The WRAT-R reading subtest correlates highly with both the California Achievement Test($r=0.81$) and with the Stanford Achievement Test($r=0.82$)(49). The WRAT-R was evaluated for white/non-white bias. For the reading and spelling subtests no bias was found(49). The arithmetic subtest was found to be more difficult for the non-white sample than for the white sample. Diversity of the items and time limit on the arithmetic subtest may have produced the differences(49).

Learning Impairments of the Elderly

Mental impairments impinge on the learning abilities of the elderly(28-29). Reige and associates(28) found that nonverbal memory tasks showed a negative correlation with age. They tested individuals 20 to 84 years old on six

nonverbal memory tasks using visual, auditory, and tactile items(28). Visual tests used geometric art, auditory tests used unfamiliar bird calls, and tactile tests used non-meaningful wire shapes(28). They found that test scores became progressively lower from the young to the old(28). Reige and associates(28) suggested that those in their sixties and seventies tended to try to verbally code information. Therefore, the lack of verbal coding or the inability to verbally code this type of data may have made the tasks more difficult(28). Not only were visual task performances poorer, but so also were auditory and tactile memory tasks(28). No age related differences were found with vocabulary scores(28, 30). When educational level was examined, older adults still were found to be slower in accessing memory data than younger counterparts with similar educational backgrounds(29). Verbal tasks of memory data in which the individual had to access categorical information indicated that older adults were slower. Therefore, instructions given to the elderly should be unhurried, allowing more time for information to be assimilated by the individual(29, 31).

Physical abilities, especially vision, tended to decline as one ages, making learning using printed materials difficult(32). Good vision is often taken for granted by the educator, and unfortunately, any change in vision may distort

learning(32). Bennett(33) found that the better educated the older adults were, the better their vision was corrected. He further suggested that those with higher education were more aware of their visual needs and were more likely to seek corrective lenses(33). They sought either larger bifocals or lens power changes to read better(33). The elderly who have not had their visual problems corrected have problems with fast paced instructions or tasks(33). The instructions were more difficult to follow if the vision was poor(33).

Bennett(33) explained that this phenomenon also occurred with the limitations produced by bifocal or high powered reading glasses. Even with the adjustment for vision with glasses, the person may have difficulty distinguishing each letter. Frequently individuals with diabetes mellitus have elevated glucose levels, particularly while in the hospital. This is when they are being taught about the disease, diet, and self care. With elevated blood glucose, visual acuity is skewed, often making reading difficult and, at times, impossible. The educator of patient's with diabetes needs to assess each individual's ability to see printed materials prior to teaching.

Along with the need for corrective lenses, the elderly often have hearing difficulties(11). Difficulty with hearing should result in a louder tone of voice being used by the educator. This may cause cautiousness on the part of the

learner when interpreting audible information, as a louder tone of voice does not always enhance hearing(33). The cautiousness demonstrated by the individual may cause the educator to label them as a slow learner. However, this may not be the case, so that labels such as "slow learner" should not be attached to the individual inappropriately.

Nutrition Knowledge of the Elderly

The elderly showed many common misconceptions about foods and nutrition(34-35). Nutrition knowledge of 64 persons over the age of 62 was assessed using a 25 true-false and multiple-choice questionnaire(34). The subjects also were asked to keep a three day food diary(34). Another questionnaire was used to obtain such data as source of income, occupation(before retirement), educational attainment, living arrangements, cooking facilities, money spent for food, shopping practices, perceived status of health, perceived adequacy of diet, sources of nutritional information, purchase of foods and supplements perceived to be healthful, and reasons for purchases of health foods and supplements(34). Many of their misconceptions were channeled to them through the media(35). The elderly were frequent prey to nutrition misinformation about food fads, food supplements, and weight reducing diets(34). The higher their socioeconomic status, the more likely they were to purchase, health foods and supplements(34). Commonly purchased items

were multivitamin and mineral supplements, vitamin E, ascorbic acid, wheat germ, and honey to give more energy(34).

In another study using 234 persons aged 65 or older nutrition knowledge was assessed using a questionnaire(4). After two or more group nutrition counseling sessions good to very good scores rose from 11 percent to 46 percent by the last visit(4). Food selections also increased in appropriateness from between 33 and 67 percent to between 71 and 87 percent by the end of the study(4). Counseling the elderly in these areas improved their food selection and knowledge of nutrition, with most of the elderly being receptive to changing their eating habits(4). Addressing misinformation about the diabetic diet as well as food supplements, fad diets, and health foods is important because many misconceptions still abound. For example, it was not uncommon for diabetics to think that if they ate potatoes, they should not eat bread. They may think that more of a vitamin and mineral supplement is better and will give more energy(34).

Guidelines for Treating the Elderly Diabetic

Guidelines for treating the elderly diabetic have been defined by the American Diabetes Association(37). Shetty(2) defined goals for treatment of the geriatric population with diabetes mellitus as follows: strict control over fasting blood glucose, moderate carbohydrate restriction, and weight

reduction. Investigators suggested that poor control decreased lifespan with the onset of complications being more rapid(2, 36). For good control blood glucose levels should be at least 120-150 mg/dl.(2, 36). One of the most important ways to control diabetes is through diet(2, 36).

Recommendations for a diet are to provide 45 to 60 percent of the Calories as carbohydrate, 15 percent as protein, and 30 to 35 percent as fat(2, 36). There should be a decrease in saturated fats and an increase in fiber(2, 5). Saturated and polyunsaturated fats should comprise ten percent each of the 30 to 35 percent total fat and cholesterol should be restricted to less than 300mg/day(37, 38). Complex carbohydrates containing fiber should replace simple carbohydrates(5). Additionally, those with Type II diabetes who are overweight may need a Caloric level appropriate to facilitate weight loss, since the primary cause of glucose intolerance is thought to be peripheral tissue insensitivity to insulin due to obesity(2, 36). Age, increased fat deposition, and decreased physical activity are thought to contribute to impaired glucose tolerance(2, 36). A weight reduction diet and exercise program helps control blood glucose levels and weight(2, 36).

Teaching Tools

Dietitians who provide diet therapy to individuals with diabetes need tools to educate these individuals. Frequently

one-on-one instructions are given using the Exchange Lists for Meal Planning(24). The Exchange Lists for Meal Planning consist of six food or exchange lists into which foods are placed based on their carbohydrate, protein, and fat content. Foods are substituted for one another only if they belong to the same exchange list. Another method used to teach meal planning is Healthy Food Choices, a simplified version of the Exchange Lists for Meal Planning in which the word "choices" is substituted for "exchanges"(25). Healthy Food Choices are in a poster format with a sixth to seventh grade reading level(25). The six lists are the same but the contents are more generalized than specific. For example, instead of listing all types of fresh fruit and their specific serving size it lists fresh fruit one medium piece as a serving(25). There are fewer food choices listed in Healthy Food Choices than the Exchange Lists for Meal Planning(24, 25).

Other methods of instructing individuals on the diet include bingo games, DOTS, color-coded pictures or posters, luncheons with instructors, and autotutorials(19-24, 26). Bingo is played like regular bingo except the letters X-C-H-A-N-G-E are used instead of B-I-N-G-O and food portions are used in the squares(20). Another method is called DOTS(23). Colored dots are used to code for each of the different exchange lists(23). The number of colored dots

indicates the number of servings from that exchange list for that meal or snack(23). In another approach, the patients actually select the foods they will eat, measure or weigh the food and the instructors provide feedback to the patient(19). Autotutorials are yet another method used to teach meal planning(21). Printed text appears on a screen similar to a television screen, and at the bottom of the text are multiple choice questions(21). The individual chooses his response and the program states why it is correct and moves the text forward(21). For an incorrect response, an explanation of why it is incorrect is given and the individual is allowed to choose again(21). Color-coded pictures of foods in a poster format also have been used to teach meal planning(26). Meal planning using an exchange system concept similar to the Exchange Lists for Meal Planning is used in each of these methods(24). A meal plan is devised based on Calories prescribed, eating habits and percent of Calories allowed as carbohydrate, protein, and fat. The meal plan states the number of exchanges allowed from each of the six groups for each meal or snack. Foods are substituted for those in the same exchange list(24).

Methods of Teaching Meal Planning

In a study done by McCulloch and associates(39), the hemoglobin A1C, which can provide an assessment of the degree of hyperglycemia over prolonged periods of time was used to

assess dietary compliance in three different groups of diabetic adults. Group one was given instructions with a diet sheet, group two with a lunchtime demonstration of what and how much to eat and group three with a videotape(39, 51). In both the lunchtime demonstration and the videotape groups, hemoglobin A1C dropped significantly and knowledge of diet increased(39). The results from these studies demonstrated that using innovative teaching methods can influence control and knowledge of the diet(39).

Mashock and Walters(19) also looked at application of knowledge by having their clients attend a luncheon. They found that this method was an effective means of educating and that the dietary compliance of the subjects improved(19).

Another innovative method of educating the individual with diabetes is an autotutorial method(21). Heidecker and Teuscher(21) used the autotutor teaching machine to teach the diabetic diet. They found this method effective in increasing the knowledge of participants significantly(21). Color-coded posters are another approach to teaching meal planning(26). The posters were illustrated with individual foods(26). The researcher indicated that the posters were an effective means of increasing the selection of foods in some of the groups(26).

When initially counseling the newly diagnosed diabetic,

including the elderly, six to 12 hours of instructions divided into 15 to 30 minute intervals are suggested(40). This prevents too much information from being introduced too rapidly(40). Return demonstrations of knowledge are necessary to clarify and reinforce previously given instructions(8). Each individual being counseled about a diet should have his food preferences, intolerances, and life-style taken into consideration, since adherence to a pre-printed diet sheet with a sample menu is poor(5, 7-8, 40-41).

The educator should determine the appropriate level of instruction for each individual with diabetes. Diabetics may be at the level where only basic survival skills should be taught or they may be ready for home management instructions(5, 42). Home management skills may include teaching the clients how to adjust their own insulin needs based on results from home blood glucose monitoring. To determine the level of instruction to be addressed with clients, the educator must foster open communication by focusing on the feelings of the clients and summarizing what they have said(42). The educator should allow the client to negotiate and set treatment goals(42). To accomplish the goals set for treatment, a firm foundation of trust and understanding should be established between the educator and client.

Dietitians frequently rely on the Exchange Lists for Meal Planning when instructing diabetics(24). However, one particular diet has not been scientifically proven to be better than others when treating diabetics(8). Maryniuk(37, 40) has suggested that the Type II diabetic can be controlled successfully with a dietary approach alone. An individual with Type II diabetes is commonly characterized as a middle-aged, obese individual with a genetic predisposition to diabetes mellitus(14).

Giving simple instructions like restricting sucrose and foods with a high concentration of sucrose or restricting Calories for weight reduction, if necessary was found to have success in decreasing weight and fasting blood glucose(14). Wilson and his associates(14, 24) advocated a basic and simple approach to educating those with diabetes as opposed to using the Exchange Lists for Meal Planning. They stressed the importance of regular follow-up by a dietitian to increase adherence to the diet(14). It appeared that allowing flexibility with food selections improved adherence to a diet(43). The Exchange Lists for Meal Planning do allow some flexibility, but not as much as Calorie counting(24). For example, the Guidelines Section of the Exchange Lists for Meal Planning do not include fried foods or foods with a high concentration of sucrose(24). With Calorie counting, both of these types of foods could be counted as part of the

individual's Calorie allotment for that day. A slightly better mean compliance to Calorie counting was found when compared to the Exchange Lists for Meal Planning using obese subjects with diabetes(18). However, a comparison was not made of fasting blood glucose or hemoglobin A1C(18).

The Exchange Lists for Meal Planning have few pictures and are basically for those who can read(24). Using the concept of exchanges with a color-coding system illustrating individual foods aided both readers and non-readers in accurately planning a sample menu(26). A color-coded teaching tool, the Good Health Eating Guide, was developed by the Canadian Diabetes Association Task Force(44). The Good Health Eating Guide was tested with 593 people. Sixty-eight percent of the readers and 21% of the non-readers could accurately plan a sample menu(26). The wording on the poster aided the readers in understanding the exchange concept(26). Non-readers required more extensive teaching to plan a meal accurately(26).

Adherence to the Diabetic Diet

Knowledge of the diabetic diet however, does not ensure adherence(45). Adherence to diet for many with diabetes is considered their greatest problem(46). To increase adherence to a diabetic regimen, the educator needs to convince the client the diet is important(6, 45). Teaching the rationale for diet therapy allows diabetics to understand how important

their food intake is when trying to obtain good control of their blood glucose(6). It may help those with so called "mild" diabetes to realize the importance of their condition and to increase adherence to the diet(45). Individualizing the diet plan also helps the diabetic to adhere to a diet(6). By demonstrating to individuals how the diet plan will fit their life-style, a positive attitude toward the diet may be created and adherence may be increased(47).

Summary

The dietitian as an educator needs to be cognizant of the special learning needs of the elderly. These needs may include using printed materials with larger, darker print in an easy-to-comprehend format may be helpful. Awareness of any hearing impediment so that words are enunciated and spoken more slowly increase the ease of comprehension. Individuals with diabetes, including the elderly, should have their diet plan individualized to their life-style. This should increase satisfaction with the dietary regimen and promote adherence. Explaining why the diet is necessary for good control also should help motivate individuals to follow their diet plans. Allowing their input in goal setting as part of the medical team involves them in the decision making process which should further motivate individuals and increase compliant behavior.

Dietitians, when educating the elderly, should use a

variety of tools. Assessment tools may be necessary to determine how well they can read, how well they can see, and if they have a hearing deficiency. After assessing these parameters, the proper teaching tool can be selected to maximize learning on the part of the client. When educating the elderly with diabetes, one teaching technique may facilitate learning better than another. Teaching tools such as Healthy Food Choices provide an alternative to the more complex Exchange List for Meal Planning. Once the tool is selected, an innovative method like a videotape may enhance learning.

CHAPTER III

METHODOLOGY

Recruitment of Participants

Thirty 55 to 70 year old women with Type II diabetes mellitus who were referred to the Clinical Nutrition Department of Portsmouth Naval Hospital were instructed on a diabetic diet by the investigator, a registered dietitian. All instructions were done on an outpatient basis. To be eligible for the study the women had to have a reading level of seventh grade or below. This study was designed to determine if those with lower levels of reading skills can follow simple instructions given by two different methods. Healthy Food Choices, the tool used to instruct participants, is written at the sixth to seventh grade level. The Wide Range Achievement Test-Revised(WRAT-R) Level 2(Appendix B) was used to test for this ability(49). Results from this test were used to determine if the patient were a candidate for the use of either the Exchange Lists for Meal Planning or Healthy Food Choices(24-25). The WRAT-R had many desirable features making it an ideal choice for this study. The design is simple. Time and cost were an important consideration in choosing a tool to assess reading ability. The cost to purchase this test was minimal. Administration time for the WRAT-R is five to ten minutes. Excluded from

this study were women who had been instructed on their diet in the past year, who demonstrated recall of their meal plan, and who were legally blind, deaf, or could not read at all. Women who demonstrated recall of their meal plan or who had been instructed on their diet in the past year might have biased the results of this study because of better than average knowledge of meal planning. Women who were legally blind, deaf, or could not read at all were excluded since they could not read or hear the information being provided. After a written and a verbal explanation of the study, informed consent of the subjects was obtained(Appendix C).

Research Protocol

During the first visit the dietitian interviewed the patient about food preferences, eating habits, and lifestyle. The Diet History Form(Appendix D) was developed by the investigator and was used to record the data. These data aided the dietitian in individualizing the meal plan and in determining an appropriate Calorie level to prescribe(48). During this initial visit, the dietitian asked the clients when they were last instructed on their diabetic diet and assessed the approximate reading ability of each patient using the WRAT-R(49). To administer this test, the investigator pointed to the first word "milk" of the Reading List Level Two(Appendix B) and said:

Look at each word carefully and say it aloud. Begin here and read the words across the page so I can hear you. When you finish the first line, go on to the next line, and then the next, etc(49).

The first time a reading error was made, the individual was asked to repeat the word again(49). The response was scored correct if the individual said the word correctly(49). From then on the response was either scored right or wrong unless the individual corrected themselves spontaneously(49). When the individual had mispronounced ten words, the test was stopped since the top ability level had been reached(49). The raw score was converted to the grade level of the individual's reading ability(49). Those scoring at the eighth grade level or above were given the Exchange Lists for Meal Planning and therefore, excluded from the study(24). Those scoring below at the seventh grade level or below on the WRAT-R test were assigned to one of two groups: Group 1 had the diet explained on a one-on-one basis by the dietitian and Group 2 had the diet explained by the same dietitian using a videotape. The seventh grade was used as a cut off because Healthy Food Choices was tested at the sixth to seventh grade level(52).

Group 1: One-on-One Diet Instructions

During the first visit the diet instruction began with an explanation of the rationale for the diet. Topics

included were the importance of diet in controlling blood glucose levels, the effect of medications on blood glucose levels, the importance of eating at regular times and of measuring foods, and preferred methods of food preparation. The Healthy Food Choices hand-out(Appendix A) was explained to the client. This explanation included an overview of each of the six groups, what foods are in each group and why they are in that group, and a review of the sections entitled "Guidelines" and "Free Foods"(25). Next a meal plan was devised based on information obtained from the Diet History Form(Appendix D). Meal plans consisted of at least three to six feedings a day. Calorie levels ranged from 1000 to 1800. Directions were given on the use of the meal plan including a verbal example for the lunch meal. The dietitian then asked the patient to complete a sample menu including snacks. This menu was checked at the second visit the next week. The clients were asked to complete this menu by themselves, without assistance. The dietitian stressed to the clients the importance of the sample menu being completed only by them.

Group 2: Videotape of the Diet Instructions

The first visit for members of both groups was similar. Only the method of teaching Healthy Food Choices was different for members of Group 2(25). The client was instructed with a videotaped explanation of Healthy Food

Choices instead of a one-on-one verbal instruction(25). This videotape was prepared by the investigator to eliminate bias that might be introduced if another instructor was used. The instruction session began with an overview of rationale for the diabetic diet. Topics included were the importance of diet in controlling blood glucose levels, the effect of medications on blood glucose levels, the importance of eating at regular times and of measuring foods, and preferred methods of food preparation. After the basic information was provided them an explanation of Healthy Food Choices was given(25). This explanation included an overview of each of the six groups, what foods are in each group and why they are in that group, a review of the sections entitled "Guidlelines" and "Free Foods"(25). Then on the videotape the dietitian gave directions on how to use a sample meal plan to plan a meal using a lunch meal as an example. The clients were told that they would have a half an hour to view the videotape. During the viewing of the videotape the dietitian was not present. After allowing a half an hour, to pass the dietitian removed the videotape. At this time she presented the client with their meal plan and answered any questions. The meal plan was devised from information obtained during the assessment process. The dietitian then asked the client to complete a sample menu including snacks without assistance. This sample menu was checked at the second visit

the next week. The dietitian stressed to the clients the importance of the sample menu being completed only by them.

Follow-up Visit

Data from participants who had others assist them in meal planning was obtained during the second visit. These data consisted of items such as who assists them, how often they are assisted, and what their relationship to the assistant was. For both groups, this sample menu was checked by the dietitian at the second visit the next week. Also, a copy of each participants prescribed plan was kept by the dietitian. During the second visit for both groups, the sample menu was assessed for the number of deviations from the meal plan. Additions or deletions were calculated according to the total number of choices in the meal plan(50). Additions or deletions to the meal plan were compared to the total number of choices per day. For example, if a snack should consist of one starch choice and one meat choice and two starches were indicated, then there were two deviations, one for the meat not indicated and the other for the additional starch. Total choice deviations were broken down to addition deviations or deletion deviations(50).

Telephone Follow-up

Further contact was made by telephone with each participant about three weeks after diet instructions were

given. The verbally stated sample menu was recorded on the form entitled Telephone Follow-up(Appendix E). In a pilot study carried out to determine how many individuals kept their diet copies, 22 women age 55 to 80 with Type II diabetes were called two or more weeks after diet instructions were given. Only one of these 22 individuals had not kept her diet instruction materials. To allow for this occurrence during the actual study, the sample size of a minimum of 30 was selected. The main purpose of this final contact was to determine if there was a difference in the amount of knowledge retained between the two groups. The final contact with participants was made when they were at home. The format of the telephone survey was informal as the investigator had established rapport with each client. Areas that the investigator addressed in the telephone survey were problems or questions that they may have had concerning their diet, and she asked them to state a sample menu including snacks. The investigator also asked if they were given assistance from others in their meal planning. The clients were asked to use the prescribed meal plan given by the investigator as the basis for their stated sample menu. The telephone survey lasted no more than ten minutes which minimized the time cost in responding to the survey.

Data Analysis

For both groups, the sample menus were assessed for the

number of additions or deletions from the prescribed plan. Additions or deletions were calculated according to the total number of choices in the meal plan(50). The data were analyzed using a one-tailed t-test for independent samples using an alpha level of .05. The t-test was used to compare the difference between the mean additions and deletions made from the prescribed plan to determine if there was a significant difference between the comprehension of Groups 1 and 2. The t-test was used to compare the difference between mean additions and deletions made from the prescribed plan during the telephone follow-up to determine if meal planning knowledge for either Group decreased significantly with time.

CHAPTER IV

RESULTS AND DISCUSSION

Characteristics of the Participants

A total of 30 women ranging in age from 55 to 70 participated in the study. In each group there were four Blacks and 11 Caucasians. All participants completed the study that lasted eight months. A total of 63 women in the 55 to 70 age range were tested for potential inclusion. Thirty-three scored at the eighth grade level or above on the WRAT-R Reading Test, Level Two so were not considered in this study. All participants in the study clustered around the sixth or seventh grade in reading ability. Descriptive characteristics of all participants are shown in Table 1. There are no statistically significant differences between the two groups relative to duration of diabetes($p=0.6$) and the length of time since participants were last instructed($p=0.7$). Three of the participants had assistance from a significant other in their meal planning. Two of them were in the group which received one-on-one instructions(Group 1) and one was in the group that received videotaped instructions(Group 2). Relative to these descriptive parameters, the two groups were essentially equal.

Table 1

Characteristics of the Participants

	Mean	S.D.	Range
GROUP 1 (n=15)			
Age(years)	61.7	4.6	55-69
Duration of diabetes mellitus(months)	67.6	92.3	0-360
Time since last instruction(months)	40.0	37.6	0-120
GROUP 2 (n=15)			
Age(years)	60.8	5.3	56-70
Duration of diabetes mellitus(months)	88.9	116.3	0-348
Time since last instructions(months)	52.0	96.2	0-336

Analysis of Healthy Food Choices

As shown in Table 2, each Group had about the same number of choices prescribed. A comparison was made between the two groups for the number of feedings and Calories allowed per day. Group 1 had an average of 4.1 feedings and 1320 Calories, and Group 2 had an average of 3.9 feedings and 1300 Calories per day. The two groups were compared according to the number of different types of choices per day prescribed from each list; that is, the number of starch, fruit, meat and substitutes, milk, fat, and vegetable choices they were to have daily. The results of this comparison are shown in Table 3. To compare comprehension of instructions, inappropriate choices for each group during the second visit were assessed. The number of deletions and additions were counted separately since these reflect two different types of errors. The mean, standard deviation, and range of choice deletions and choice additions for Groups 1 and 2 on their second visit are presented in Table 4. Since results of a t-test showed no significant differences in choice additions or deletions between Groups 1 and 2, it is concluded that either of these two methods will produce the same results in terms of patient ability to plan a sample menu shortly after instruction in a sample similar to the one used in this study. Each participant was contacted a second time via the

Table 2

Total Food Choices Prescribed per Day for Each Group

	Mean	S.D.	Range
GROUP 1	21.1	3.4	15.3
GROUP 2	21.0	3.0	17.3

Table 3

Average Daily Number of Choices Prescribed from Each List

	Starch	Meat	Fruit	Veg	Milk	Fat
GROUP 1	6.7	4.9	2.7	2.4	1.1	3.3
GROUP 2	6.3	5.0	2.8	2.4	1.2	3.3

Table 4

Inappropriate Choices Found for Each Group during the Second Visit

	Mean	S.D.	Range	Probability
Choice deletions				
GROUP 1	3.6	4.5	0-15.0	0.8
GROUP 2	3.3	2.1	0-6.0	0.8
Choice additions				
GROUP 1	1.5	2.0	0-6.0	0.2
GROUP 2	2.5	2.8	0-9.0	0.2

telephone. The purpose of this contact was to assess longer term comprehension of the prescribed meal plan. Participants were contacted an average of four weeks after their second visit. Choice deletions and additions again were calculated. The mean, standard deviation, and range of choice deletions and additions for Groups 1 and 2 are presented in Table 5. The two groups again showed no significant differences regarding either additions or deletions. Therefore, there was no significant difference in meal planning ability at either short term or long term periods. Insulin, oral agents, or diet control as type of diabetic management might be considered a factor in outcome of meal planning knowledge since individuals maintaining euglycemia with insulin or oral medications may perceive their disease as more severe. However, this factor was not reflected in the results of this study, as confirmed by an analysis of variance (ANOVA) ($p=0.7$).

Table 5
Inappropriate Choices Found for Each Group During the Telephone Follow-up

	Mean	S.D.	Range	Probability
Choice deletions				
GROUP 1	3.9	4.1	0-13.0	0.7
GROUP 2	3.4	2.6	0-7.0	0.7
Choice additions				
GROUP 1	1.0	1.2	0-3.0	0.9
GROUP 2	1.1	1.3	0-5.0	0.9

CHAPTER V

SUMMARY AND CONCLUSIONS

The purpose of this study was to determine if either videotaped or one-on-one diet instructions was a better method of teaching the diabetic diet to elderly female patients with a reading level of seventh grade or below. Thirty females, 55 to 70 years old, participated in the investigation. Participants had diabetes mellitus a mean of 78 months with a standard deviation of 103. Participants were placed in Group 1 which received one-on-one instructions or Group 2 which received videotaped instructions. Each participant was required to return for one follow-up visit. At this visit they brought a sample menu which was compared with the meal plan given at the first visit. This sample menu was assessed for deletions or additions from their meal plan. Each participant was contacted an average of twenty-eight days later via telephone to assess differences in meal planning knowledge between the two groups. During the telephone conversation participants were required to use their meal plans to state a sample menu. The stated sample menu was assessed for deletions or additions from the meal plan. There were no statistically significant differences found between Groups 1 and 2 on knowledge of meal planning at either follow-up period. The total number of choice deletions or additions was not statistically significant.

The average number of choices from the six lists for each group was essentially equal. Type of diabetic management(i.e.; diet, oral agents, or insulin) had no effect on meal planning ability at either follow-up period. Meal planning ability between the two groups did not decrease with time. A mean of 28 days later no statistically significant differences were found between the two groups relative to meal planning ability.

A factor that may have influenced the outcome is motivational level. Participants displayed enough motivation to learn about meal planning as shown by their willingness to visit the dietitian twice and by the fact that none of the participants had misplaced their instructional materials when contacted via telephone. Another factor that may have affected the results found in this study was unintended bias since the researcher was involved in all aspects of the study including group assignment, instruction, and all follow-up contact.

Since no differences were found between one-on-one and videotaped diet instructions in this sample, videotapes may offer a solution for education when resources are short in a similar sample. When resources like staffing are short, the dietitian may not have time to give one-on-one diet instructions.

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Appendix A
Healthy Food Choices

See inside of back cover.

Appendix B

Wide Range Achievement Test-Revised

Reading Level Two

WIDE RANGE ACHIEVEMENT TEST REVISED

PAGE 15

LEVEL 2, LARGE PRINT EDITION

Reading

Subject reads from a separate Reading Word List. Examiner records responses here.

Two letters in name (2)

A B O S E R T H P I U Z Q (13) 15

milk city in tree animal himself between chin split form 25
grunt stretch theory contagious grieve toughen aboard triumph 33
contemporary escape eliminate tranquillity conspiracy image ethics 40
deny rancid humiliate bibliography unanimous predatory alcove 47
scald mosaic municipal decisive contemptuous deteriorate stratagem 54
benign desolate protuberance prevalence regime irascible peculiarity 61
pugilist enigmatic predilection covetousness soliloquize longevity abysmal 68
ingratiating oligarchy coercion vehemence sepulcher emaciated evanescence 75
centrifugal subtlety beatify succinct regicidal schism ebullience 82
misogyny beneficent desuetude egregious heinous internecine synecdoche 89

Test Results:	Raw Score	Standard Score	Percentile	Grade Equivalent
Reading	_____	_____	_____	_____
Spelling	_____	_____	_____	_____
Arithmetic	_____	_____	_____	_____

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Appendix C
Naval Hospital
Portsmouth, Virginia 23708
Consent For Voluntary Participation In A Clinical
Investigation Study

Date:

1. I, _____, have been asked to voluntarily participate in a research study.
2. The project is entitled, "Comparison of Two Methods of Teaching the Diabetic Diet to Elderly Women."
3. The purpose of this research study has been explained to me. I understand that two methods of teaching the diabetic diet will be used to compare if one method is better than the other. One method will be videotaped instructions; the other one-on-one instructions.
4. I will be maintained in this study for a period of two weeks.
5. The procedure for this research study has been explained to me. I understand that I will be given instructions on a diabetic diet and asked to plan a sample days menu. I also understand that I will be contacted two weeks later and again asked to verbally plan a sample menu.

Patient's Initials

Appendix C (cont.)

6. Specifically, I am aware that there is no experimental part of this study.

7. The investigator has informed me that a total of 30 subjects will be enrolled in this project.

8. There are no risks involved with this study, as the participant must demonstrate comprehension of the diabetic diet with both methods of instructions or an alternative teaching tool will be used.

9. This research may be of direct benefit to me, and the results may aid in the treatment of other patients.

10. I am aware that this study does not involve risk to me.

11. The alternate treatment, should I decline to enroll into this study has been explained to me as follows: group classes on diabetic meal planning.

12. If I have any questions concerning this research or require additional information, I may contact the principal investigator, Lisa Mason, R.D. at 398-5560. Additionally, if I have any questions regarding my rights as a research subject, I may contact CDR. A. Lazarus, Chairman, Committee for the Protection of Human Subjects at 398-5202.

13. Although no compensation is available, any injury as a

Patient's Initials

Appendix C (cont.)

result of my participation will be evaluated and treated inkeeping with the benefits or care to which I am entitled under applicable regulations.

14. I understand that participation is voluntary and, if I do refuse to enroll, no loss of benefits or care to which I am entitled will occur.

15. The investigator may terminate my participation in this study if I am unable to read or see well enough to read.

16. If I should decide to withdraw from this research study, I will notify Lisa Mason, R.D. to ensure an orderly termination process.

17. Any new significant findings developed during the course of the research which may affect my willingness to participate further will be explained to me.

18. In all publications and presentations resulting from this reseach study, my anonymity is guaranteed. I further understand that the Food and Drug Administration may inspect these research records.

19. I understand that the treatment that I will receive will be determined by randomization based on alternating the method of teaching from one subject to the next and that I have an equal chance of receiving either type of treatment. informed consent document. _____

Patient's Initials

Appendix C (cont.)

Patient's signature and date

Witness' signature and date

Patient's health record number

Witness' social security
number

Investigator's signature and date

Investigator's social security number

Appendix D
DIET HISTORY

Name _____ Date _____

Diet Order _____

Actual Height _____ Actual Weight _____

Percentile for Weight _____ Age _____ Sex _____

Employed _____ Non-Employed _____

Have you ever been on a special diet? _____ If yes, when?

Do you remember the meal plan you were given? _____ If so,
what did it consist of? _____

How long have you had diabetes? _____

Are you on medications for diabetes? _____

How would you rate your dietary compliance? Excellent _____

Good _____ Fair _____ Poor _____

Are you allergic to any foods? _____ If yes, what? _____

Do you exercise? _____ Type _____ Frequency _____

Duration _____

Do you usually do the cooking? _____

How many people in your household? _____

Do you have trouble chewing or swallowing food? _____

Do you wear glasses or contact lenses? _____

Appendix D (cont.)

Do you have any difficulty hearing?_____

Have you completed Elementary School?_____ Junior High

School?_____ High School?_____ College?_____

Typical Day

Impressions of interviewer (validity of information,
receptiveness, etc.)_____

Appendix E
Telephone Follow-up

Name _____

Date _____

Diet Order _____

Phone Number _____

1. Actual Meal Plan

Stated Sample Menu

2. Questions/Concerns

3. Assistance From Others

VITA

Lisa Ringhausen Mason was born on December 19, 1956 in Kaoshiung, Taiwan. In June of 1979, she received her B.S. degree in Clinical Dietetics from the University of Illinois Medical Center in Chicago, Illinois. She worked as a clinical dietitian from 1979 to 1982 at Chesapeake General Hospital in Chesapeake, VA. In 1981 she entered Virginia Tech's off-campus graduate program in Human Nutrition and Foods. While pursuing her graduate degree, she has held various positions in the field of dietetics. She is currently employed at Portsmouth Naval Hospital as a civilian dietitian.

A handwritten signature in cursive script, reading "Lisa Ringhausen Mason", is written over a horizontal line.

Lisa Ringhausen Mason