NUTRITION EDUCATION PRACTICES EMPLOYED BY THE FAMILY PRACTICE PHYSICIAN AND ARKANSAS DIETITIAN IN EDUCATING THE DIABETES MELLITUS PATIENTS

By

DETRI MCCLELLAN BRECH

Bachelor of Science
Ouachita Baptist University
Arkadelphia, Arkansas
1984

Master of Science
Louisiana Tech University
Ruston, Louisiana
1985

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Thesis Approved:

Lee L. Ebro
Thesis Adviser

Bernice Kopel

Elaine Jorgenson

W. M. Sands

Thomas C. Collins
Dean of the Graduate College

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CHAPTER I

THE RESEARCH PROBLEM

Introduction

Diabetes mellitus is a syndrome resulting from variable interactions of hereditary and environmental factors. The disease is characterized by abnormal insulin secretion, elevated blood glucose levels, and a variety of organ complications which include neuropathy, retinopathy, and accelerated atherosclerosis (Berkow, R., 1987).

Approximately 650,000 new cases of diabetes mellitus are identified each year. In May 1991, the Centers for Disease Control estimated that seven million people in the United States have the disease and that 10 percent of all Americans 65 years of age and older have been diagnosed with diabetes mellitus. Hospitalizations of an estimated 1.5 million citizens over age 65 - and about $5.2 billion of that group's direct medical costs - are diabetes related (Centers for Disease Control, 1991).

The complications of diabetes mellitus with the associated financial costs are avoidable. Management of the disease can delay the development of long-term complications and can reduce hospitalization (American Diabetes Association, 1986). Patient education is the key to management.

Leichter (1986) reports that only 10 percent of American hospitals offer diabetes education programs. Gestational diabetes mellitus is one type of diabetes mellitus resulting from hormonal changes that occur during pregnancy. Estimates of gestational diabetes mellitus in the general population range between 25-50 per 1,000 births. Currently, women are screened for diabetes mellitus during the 24th to 28th week of the gestation period. Screening is important in preventing perinatal complications and possible mortality (O'Sullivan, Harris, and Smith, 1984).

Format of Dissertation

The chapters of the dissertation will be as follows: Chapter I - Introduction; Chapter II - Review of Literature for Chapters III and IV Research; Chapter III - pilot study on Nutrition Education of Gestational Diabetes Mellitus Patients; Chapter IV - research study on Nutrition Education of Diabetes Mellitus Patients; and Chapter V - Summary. Chapter III was a pilot study surveying registered dietitians in Arkansas to determine the sources of nutrition education used and needed to educate gestational diabetes patients. Chapter III is written according to the Guidelines for Authors of the Diabetes Care Journal (Appendix A).

At the time of the survey, the focus of the research project was development of educational materials. The results of the survey and in-put from dietitians across the United States who are active in diabetes nutrition education

led the research project to focus on surveying family practice physicians. This project is reported in Chapter IV following the Guidelines for Authors of the Journal of Nutrition Education (Appendix B).

Study I

Purposes

The purposes of the pilot study were to survey Arkansas dietitians about their current nutritional education practices of educating gestational diabetes mellitus patients and their needs for educational materials to enhance the education sessions. In addition to finding out this information, the study focused on determining if the number of gestational diabetes mellitus patients counseled by a dietitian in the last 10 years has increased.

Objectives

The objectives identified for this research investigation are:

1. To determine the educational materials used of Arkansas dietitians for gestational diabetes mellitus patients.

2. To determine the need for gestational diabetes mellitus nutrition education materials by Arkansas dietitians.

3. To determine if there has been an increase in the number of gestational diabetes mellitus patients counseled

by Arkansas dietitians in the last 10 years.

Questions and Hypotheses

The research questions and hypothesis tested were as follows:

1. What are the nutrition education practices used by Arkansas dietitians to educate gestational diabetes mellitus patients?
2. What are the nutritional education materials needed by Arkansas dietitians to counsel gestational diabetes mellitus patients?
3. There will be no significant association between an in crease in the number of gestational diabetes mellitus patients counseled by an Arkansas dietitian in the last 10 years and years of dietetic practice.

Assumptions and Limitations

Dietitians participating in the survey will provide the actual strategies/materials used rather than what they perceive as "ideal" for the situation. The dietitians surveyed were limited to the members of the Arkansas Dietetic Association who were listed on the mailing label list in August 1991.

Family Practice Physician Study

Purposes

Who is responsible for educating the diabetes mellitus patient about nutritional requirements for blood glucose control? Where are these patients receiving nutrition education since only 10% of the hospitals provide diabetes education? Are patients taught in the doctor's clinic, outpatient clinics, or the dietitian's office? The need to educate the diabetes mellitus patients may be the responsibility of dietitians and/or diabetes educators, however, physicians and other health care professionals are also striving to meet the challenge (Fondiller, 1991).

The purposes of this research are to determine:

1. What are the sources of nutrition education for the family practice physician?

2. What strategies of nutrition education are utilized by the family practice physician for the diabetes mellitus patient?

3. Who is conducting the nutrition education of the family practice physician's diabetes mellitus patient?

Objectives

The objectives identified for this research investigation are:

1. To determine the source of nutrition education for the family practice physician.

2. To determine the method employed by the family practice physician to educate diabetes mellitus patients about nutrition.

3. To determine if the family practice physician is conducting the nutrition education of the diabetes mellitus patient or referring the patient to another health care individual.

Hypotheses

The hypotheses tested were as follows:

H1. There will be no significant association in the response the family practice physician chooses for the source of nutrition education based on gender and years of medical practice.

H2. There will be no significant association in the strategies employed by the family practice physician to educate diabetes mellitus patients based on gender and years of medical practice.

H3. There will be no significant association in whether the family practice physician is educating the diabetes mellitus patients or referring the patients to another health care individual based on gender and years of medical practice.

Assumptions

The following assumptions were made for the study:

1. The family practice physicians responding to the survey are more interested in nutrition education of the diabetes mellitus patients than the physicians not responding.

2. The family practice physicians' responses truly represent the strategies employed by all family practice physicians to educate diabetes mellitus patients.

Limitations

In conducting the study, the following limitation was taken into consideration:

1. The family practice physicians surveyed were limited to 500 members of the American Academy of Family Physicians.

Definition of Terms

The major terms used in the dissertation are defined as follows:

1. Diabetes mellitus - a disease characterized by abnormal insulin secretion, elevated blood glucose levels, and a variety of end organ complications which include neuropathy, retinopathy, and accelerated atherosclerosis (Berkow, 1987).

2. Gestational diabetes mellitus - a disease resulting from hormonal changes that occur during pregnancy (Bergeman, 1987).

3. Family practice physician - a member of the American Academy of Family Physicians in the United States.

CHAPTER II

REVIEW OF LITERATURE

The review of literature was conducted to synthesize information about previous studies and applications in the area of diabetes mellitus. This literature review will encompass the following major areas: (a) dietary management of diabetes mellitus, (b) gestational diabetes mellitus (c) nutrition education, (d) team approach to educating the diabetes mellitus patient, (e) current practices of dietitians in diabetes mellitus education and (f) the physicians role in educating the diabetes mellitus patient.

Dietary Management of Diabetes Mellitus

As with any chronic illness, diabetes mellitus requires that daily decision making and management be the responsibility of the individual and not the primary care giver. Nonadherence is viewed as a major issue in the attainment of diabetes management goals. Medication administration, diet, glucose monitoring, and body care require absolute adherence. Adherence involves the quality of provider interaction as reflected in patient satisfaction effectiveness in following the prescription (D'Eramo-Melkus and Demas, 1989).

High-carbohydrate diets providing 60 percent of energy as carbohydrate, 15 percent as protein, and 25 percent as fat are recommended for the individual with diabetes mellitus. Also, the diet most widely recommended contains approximately 50 grams of fiber (Anderson, Gustafson, Bryant, and Tietyen-Clark, 1987). The most significant improvements in metabolic control were obtained with the high-carbohydrate, high-fiber and low-fat diet (O'Dea, Traianedes, Ireland, Niall, Sadler, Hopper, and De Luise, 1989). Other treatment approaches would include low kcalorie plans for individuals requiring weight reduction and fatty acid composition change for those in the high risk group for heart disease (Hagan and Wylie-Rosett, 1989).

In addition to the recommendations for the energy nutrients, guidelines are given to the diabetic about alcohol consumption. Alcohol is only to be consumed in moderation by the diabetic who is well-controlled and knowledgeable about the effects of alcohol on blood glucose levels. Moderation is defined as two equivalents of alcohol per day. One equivalent is contained in the following: (a) 1.5 oz distilled beverage - whiskey, Scotch, rye, vodka, gin, cognac, rum, or dry brandy; (b) 4 oz dry wine; (c) 3 oz dry sherry; or (d) 12 oz beer. One equivalent of alcohol is equal to two fat exchanges. Alcohol is never to be consumed on an empty stomach. Alcohol should be consumed shortly before and after meals. Avoidance of drinks that contain large amounts of sugar is recommended. Alcohol consumption

should be discussed with the primary care physician in the case of contraindications. Pregnancy is a contraindication for alcohol consumption (Franz, 1983).

Gestational Diabetes Mellitus

Gestational diabetes mellitus is defined as carbohydrate intolerance of variable severity with onset or first recognition during pregnancy. The definition applies whether insulin is used for treatment or the condition persists after pregnancy (Diabetes Care, 1990).

All pregnant women should be screened for glucose intolerance because selective screening based on clinical attributes or past obstetric history have been inadequate. The screening glucose load is administered between the 24th and the 28th week of pregnancy. Fifty grams of oral glucose is given without regard to time of the last meal or time of day. Venous plasma glucose is measured one hour later. A value of or greater than 140 mg/dl is recommended as a threshold to indicate the need for a full diagnostic glucose tolerance test. If the value is 140 mg/dl or greater a 100 gram load of oral glucose is given. A definitive diagnosis requires that two or more of the venous plasma glucose concentrations be met or exceeded: fasting, 105 mg/dl; one hour, 190 mg/dl; two hours, 165 mg/dl; and three hours, 145 mg/dl (Diabetes Care, 1990).

Various diets have been successfully utilized by pregnant women with diabetes (Ney and Hollingsworth, 1981).

These have included diets low in fat and high in unrefined carbohydrate, high-fiber diets, diets that restrict kcalories (Albert, Shragg, and Hollingsworth, 1985), and unrestricted diets (Roversi, Gagiulo, Nicolini, 1979). A recommendation of 24 percent of the daily kcaloric allotment is consumed at breakfast, 30 percent at the midday meal, 33 percent at dinner, and 13 percent as one or more snacks. Protein needs during pregnancy are 125 grams daily (500 kcalories). Total daily kcaloric prescriptions are for 30-35 kcalories/kilogram of ideal body weight. Adjustments in the kcaloric intake are made if the patient is gaining or losing weight.

The most important part of the diet is the patient's consistency in following the plan throughout the pregnancy. The use of a diet based upon patient preference that is flexible to lifestyle was found to be adhered to more closely than a strict diet plan (Roversi, et. al., 1979)

Nutrition Education

Elements present in the teaching-learning process include the following: (a) teacher characteristics - including the teacher's existing knowledge base of the subject matter, (b) teaching strategies - including the teacher's performance of presenting material, (c) learner characteristics - including the learner's existing knowledge of facts about the subject, (d) learning strategies - including behaviors that the learner engages in during learning that

affect cognitive processing during encoding, (e) encoding process - including internal cognitive processes of how the learner selects, organizes, and integrates new information, (f) learning outcome - including the newly acquired knowledge, and (g) performance - including behavior on tests of retention and transfer (Weinstein and Mayer, 1986).

A need for systematic planning toward patient and family education was recognized by a joint committee of the American Dietetic Association of Diabetes Educators and the American Diabetes Association who developed the "Guidelines for Education of Individuals with Diabetes Mellitus" (Prater, 1983). These guidelines provide a framework for educational program planning. The model describes three levels of education: survival, home management, and life style. These are not considered to be discrete and finite categories, yet they do allow for a systematic method for developing educational programs in a variety of health care and community settings (Prater, 1983).

Education about the importance of diet as a part of total self-care is available for gestational diabetics. Major problems in education and implementation of programs for this population continue. Health care individuals are better informed to make decisions in evaluating current educational methods to increase the transfer of knowledge (Prater, 1983).

Wood (1989) evaluates hospital-based education programs for patients with diabetes mellitus. Two educational ap-

proaches exist in teaching of diabetes: knowledge-based educational interventions and behavioral-based interventions. Both types assume a causal path from learning to changing performance (Mazze, 1986).

Many education approaches stress only knowledge-based intervention with no focus on behavior. Speers and Turk (1982) stated that actual practice of information obtained in knowledge-based intervention has been given insufficient attention by providers. Patients often acknowledge that they understand what to do after receiving information, but in actual practice err and report differently. A combined education approach of knowledge and self-help skills gained in an instructional program appear to have a positive influence on the management of diabetes mellitus.

The Diabetes Care and Education Dietetic Practice Group of the American Dietetic Association reviewed nutrition management for individuals with noninsulin-dependent diabetes mellitus in the 1990s and reported that the process of teaching nutrition and meal planning involves developing a cooperative alliance, gathering information, setting realistic goals, intervention, and maintaining change. The dietitian's responsibility is to promote continuity of learning by introducing new ideas and concepts and altering the learning environment (Beebe, Pastors, Powers, and Rosett, 1991).

Marynuik (1990) reported in Diabetes Care that it is important for most patients with diabetes to gain a broad

background in nutrition information. This is a long-range goal. Guidelines for dietitians are that they not be in such a hurry to teach so much that the patient's interest is lost and the patient ends up confused with too much knowledge and information.

Team Approach To Educating The Diabetes Mellitus Patient

The nutrition education plan for the diabetes mellitus patient should be designed by the dietitian with input from other health care team members. The coordinated team usually consists of a dietitian, physician, nurse, social worker, exercise physiologist, and patient and significant others. Effective communication is essential among the health care team and between each team member and the patient and significant others (Nutrition Guide, 1988).

A survey was conducted in Illinois in 1985 by Powers, Hammett, and Bauer. A questionnaire was mailed to 1600 physicians in Illinois to determine their nutritional management profile, attitudes toward diet management, diabetes nutritional education, and the effects on in-patients and out-patients. The study examined physicians process of nutritional management including the use of dietitians and nurses in endocrinology, internal medicine, pediatrics, general practice, and family practice.

The data indicated that only one half of the 1600

physicians felt that diet is fairly or very useful in controlling blood glucose. Physicians collected nearly twice as much data on out-patients as in-patients and see themselves as the primary diet counselor as frequently as nurses. Registered dietitians were viewed by a high percentage of endocrinologists as the primary diet counselor. Hospitalized patients were found to be more likely to receive nutrition education and more likely to receive an exchange diet plan. Out-patients received preprinted material, exchange list material, and verbal information about diet. The physicians viewed food preparation techniques as the least covered area in nutrition assessment; and viewed motivation, family support and access to food to be the most important problems with diet management. To correct these areas, physicians suggested: home teaching, available registered dietitians, and support groups.

Eighty percent of the members of the American Association of Diabetes Educators are registered nurses. Nurses, also, contribute their expertise to the care of patients with diabetes mellitus. Patient's learning needs and the management strategies to be followed are assessed by nursing staff. A plan to teach essentials such as insulin monitoring, nutrition, exercise and stress is developed and nursing staff implements the education in many facilities in the United States (Fondiller, 1991).

Current Practice of Dietitians in Diabetes Mellitus Education

During the 69th annual meeting of the American Dietetic Association, the Diabetes Care and Education Practice Group held a workshop on alternative meal planning approaches. The 200 participants were given a survey at the beginning of the workshop which asked for their opinions about and the use of various meal planning methods. The participants evaluated the workshop when it was completed and were mailed a follow-up survey six months later to determine if any changes had occurred in their practice behaviors as a result of participating in the workshop. The surveys revealed that the most widely used method of meal planning was the food exchange system.

Those conducting the workshop listed the following explanations for the responses:

1. Dietitians follow the guidelines of the American Diabetes Association and the American Dietetic Association which promote the food exchange system.
2. Dietitians are hesitant to use approaches that are not currently being used.
3. Dietitians are often unaware of materials available.

The survey also reveals that dietitians are only modestly satisfied with their teaching programs and ability to provide follow-up care (Diabetes Care and Education Practice Group, 1987).

Another study conducted in 1984 investigated the dietitian's role in the care of diabetic patients. Questionnaires were mailed to 25 percent (N = 248) of the members of the Diabetes Care and Education Practice Group. Of the 218 respondents, 88 percent answered teaching behavior modification, 80 percent responded teaching physical activity, 66 percent answered teaching pathophysiology, 98 percent stated using the food exchange system, and 89% stated preparing handout sheets and other education materials. The respondents responded as being only moderately satisfied with their diabetes teaching programs and are least satisfied with follow-up. Also, the survey found that most dietitians work in hospitals that employ only one or two clinical dietitians and lack the time for follow-up teaching (Cohen and Powers, 1985).

The third study was the collaborative research of several dietitians employed by the Diabetes Research and Training Centers in 1985. One-third of the total membership of 2700 were randomly selected to complete the survey. Forty-four percent (408) of the surveys were completed and returned for analysis. The results suggested that the food exchange system is the most widely used method for meal planning. Alternative meal plans are used infrequently, and the food exchange system is used in combination with another system of educating the patient about meal planning (Green, Wheeler, and Rossett, 1986).

The sequence for education of the diabetes mellitus

patient is assessment, goal setting, intervention, and evaluation and follow-up. These steps consider not only the content of information to be presented to the individual but also the learning process required for adoption and practice to occur.

Rapport must always be the first thing established with a patient. This begins in the assessment stage. The purpose of the assessment is to gather information to make a decision about an appropriate action plan. The two components of an assessment are the physical data and the nutrition history. The physical data consist of height, body frame, desirable body weight, blood glucose, blood cholesterol and triglycerides, hemoglobin A1C, and medications used (insulin and oral hypoglycemic agents). The nutrition history consist of usual food intake, food habits, food preferences, attitudes toward nutrition and health, daily calorie needs, success or failure of past diets, social situation, and available resources (Diabetes Care and Education Practice Group, 1987).

The second step in the education process is goal setting. The nutrition recommendations for people with diabetes are that sufficient calories be obtained to achieve and maintain reasonable weight, that carbohydrates compose 55 - 60 percent of total kcalories, that protein compose 20 percent of total calories, that fat compose less than 30 percent of total calories, that fiber intake be up to 40 grams per day, that alternative sweeteners be used, and that

alcohol consumption not exceed 3,000 milligrams per day (occasional use; not more than 1 to 2 alcohol equivalents 1 to 2 times per week) (Green, 1987).

Intervention is the third step in the patient's education process. Activities that enable, facilitate, or support the patient's self-care plan are types of interventions. These interventions consist of providing information about nutrition, helping the patient understand the link between diabetes and nutrition, and selecting a meal-plan approach that is best for the patient (Diabetes Care and Education Practice Group, 1987).

Evaluation and follow-up are the final steps in the education process. These are on-going parts of the process. Periodic evaluation of the patient should be made to determine the patient's success with the meal plan and with control of diabetes.

The Physician's Role in Educating the Diabetes Mellitus Patient

Nutrition education in medical schools is still far from an established part of the curriculum. The major difficulty in establishing nutrition as an integral part of the curriculum is a failure by many educators and people in the health professions to recognize the subject as a science. Although aspects of nutrition are taught in some medical schools, these principles go unlearned because the importance is not stressed in light of the multitude of other facts that must

be assimilated (Cardullo, 1982).

In the 1980s, a definite movement to include of nutrition in the medical education curriculum was reported (Young, 1983). One survey contacted 90 medical schools and 241 universities believed to offer human nutrition in their physicians educational program. Seventy-two of the medical schools described an existing or planned clinical fellowship program. In 40 of these programs, nutrition was a major clinical and research focus. Between 1976 and 1981, 470 physicians completed one of these programs. Fifty-two of the universities described graduate degree courses (PhD, MPH, MS) in human nutrition. Between 1976 and 1981, 24 of these schools had graduated 152 physicians (Howard and Bigaouette, 1983).

Murphy (1989) reported the effects of completing a comprehensive nutrition curriculum on the nutrition counseling practices of family physicians trained at the University of Manitoba. A questionnaire was sent to the physicians who completed the nutrition curriculum and to a group of family practice physicians who had not. The 48 responding family practice physicians who had completed the nutrition curriculum and the 41 responding family practice physicians who had not completed the curriculum reported counseling practices that were not significantly different.

Jack, Lasswell, McQuade, and Culpepper (1990) reported that 42 family practice physicians completed a questionnaire about 33 nutrition topic areas. These physicians were among

71 physicians who completed an identical questionnaire upon entry to the first postgraduate year in the family practice residency program at Brown University/Memorial Hospital of Rhode Island. Topic areas were grouped. Perceived knowledge of these topics significantly increased in all areas except nutritional biochemistry. There was significantly less interest in learning more about nutrition. Major exceptions were that the physicians wanted to learn more about nutrition counseling and nutrition in the lifecycle.

Merritt, Heymsfield, Howard, and Rombeau (1988) surveyed physicians' clinical nutrition training programs. Most training programs are not as broad in scope of exposure to the less clinical aspects of nutrition nor to all the illnesses and age groups. Recommendations are made that a program-certifying agency may be helpful in identifying programs achieving certain minimal standards of nutrition education.

Shils (1990) reported that there continues to be a need for more adequate instruction of clinical nutrition to physicians in training and in practice. A major problem found is the failure of medical schools to provide patient oriented, case-related, nutrition teaching in the clinical years to all students.

Summary

Nutrition education is an important component in the management of diabetes mellitus and gestational diabetes

mellitus. Health care providers, specifically, dietitians, physicians, and nurses are providing nutrition information to patients with diabetes.

Dietitians are trained in nutrition education at the undergraduate and graduate levels. The Diabetes Care and Education Practice Group of the American Dietetic Association specializes in providing educational materials to the dietitian for nutrition education, in reporting current practices in the nutritional care of the patient, and in providing information about current research in nutritional care.

The Diabetes Educators group consists of health care professionals from various areas (physicians, nurses, dietitians). These professionals are crossing over professional boundaries and are educating patients about nutrition. Often, they are the only provider of nutrition information in the physician's office. Education and training in nutrition are limited for these professionals at the undergraduate and graduate levels. Assessments of need reveal an increasing awareness for nutrition education to be included in the educational preparation of physicians and nurses.

Hopefully, physicians and nurses are receiving the nutrition information they need to counsel patients. If they are not prepared to educate patients about nutrition, they need to refer the patients to the registered dietitian.

CHAPTER III

NUTRITION EDUCATION PRACTICES EMPLOYED BY ARKANSAS DIETITIANS TO EDUCATE GESTATIONAL DIABETES MELLITUS PATIENTS

Detri M. Brech, MS,RD,LD; Lea L. Ebro, Ph.D.,RD,LD
Bernice H. Kopel, Ed.D., RD, LD; Elaine Jorgenson, Ed.D.,
William Warde,Ph.D.

Nutritional Sciences Department,
College of Human Environmental Sciences,
Oklahoma State University, Stillwater, OK, 74078

Detri McClellan Brech, P.O. Box 1232,
Conway, AR 72032, (501) 327-2153.

GESTATIONAL DIABETES MELLITUS

Abstract

This study determined the nutrition education strategies employed by dietitians in Arkansas to educate gestational diabetes mellitus patients. A survey questionnaire was sent to all members (N=276) of the Arkansas Dietetic Association and a 67% (N=184) response rate was obtained. Of the 184 respondents, only 47 (26%) counseled gestational diabetes mellitus patients.

Frequencies and Chi square statistical testing were used to analyze the data. The number of gestational diabetes mellitus patients counseled by a dietitian in the last 10 years has not increased significantly ($X = 17.54$, d.f. = 16, $p = 0.35$).

Strategies used in counseling gestational diabetes mellitus patients varied from discussions using handouts and transparencies (N=45, 96%), to straight lecture (N=19, 40%) and discussion using audiovisual materials (N=5, 11%). A limited number of dietitians indicated the effective use of food models, video tapes, transparencies and low literacy materials. To enhance the learning process, 36 dietitians (77%) suggested the provision of free and inexpensive handouts, 26 (55%) asked for audio-visual materials and 25 (53%) suggested a teaching guide for dietitians. Other suggestions included client-oriented learning activities, inservice education for dietitians, supermarket tours, and transparencies.

Estimates of gestational diabetes mellitus in the

general population range between 25-50 per 1,000 births. Diet is an integral part of the control of this disease. Although dietitians are providing effective nutrition education for the gestational diabetes mellitus patients in Arkansas, there is a need for more educational materials and information to enhance the learning of diabetic patients regarding their diets and control of blood glucose.

Introduction

Diabetes mellitus is a disease of absolute or relative insulin lack resulting in significant abnormalities in the metabolism of carbohydrate, protein, and fat. Gestational diabetes is a result of hormonal changes that occur during pregnancy. Currently, women are screened for diabetes mellitus during the 24th to 28th week gestation. The test requires the oral administration of a 50-gram load of glucose to the woman and the measurement of glucose in the plasma one hour later. A threshold value of 130 mg/dl identifies the majority of women with gestational diabetes (Bergeman, 1987).

A value of 130 mg/dl or above requires a 100-gram, 3-hour oral glucose tolerance test. A diagnosis of gestational diabetes requires two or more values to be greater than the following blood glucose levels: (a) fasting - 105 mg/dl, (b) one-hour after consumption of the glucose - 190 mg/dl, (c) two-hours after consumption of the glucose - 165 mg/dl, and (d) three-hours after consumption of the glucose - 145

mg/dl (O'Sullivan, Harris, and Mills, 1984).

Gestational diabetes occurs in women with other diabetic family members or who are overweight, over age 30, show urine glucose, or have had slightly elevated blood glucose levels. Estimates of gestational diabetes mellitus in the general population range between 25 - 50 per 1,000 births. Screening is important in preventing perinatal complications and possible mortality (O'Sullivan, et. al., 1984).

The goal of diabetes treatment is to achieve blood glucose control. To achieve control blood glucose levels are tested four times daily: fasting, two hours after breakfast, lunch, and dinner. Control is defined as a blood glucose level of 60 to 100 mg/dl (Krall and Beaser, 1989).

Diet is, also, an integral part of control. The diet plan consists of 60 percent of kcalories from carbohydrate, 15 percent of kcalories from protein, and 25 percent of kcalories from fat. Adherence rates to the diabetic diet usually falls below 50 percent (Rainwater and Giordano, 1984).

Individuals with diabetes have complicated prescriptions with multiple and complex instructions. Anderson and Gustafson (1989) reported that when leaving the doctor's, nurse's, or dietitian's office, individuals with diabetes could recall less than 50 percent of instructions given. Poor adherence to the diabetic diet is attributed to poor teaching practices of health care professionals (Anderson and Gustafson, 1989).

Research Design and Methods

The research design used in this study is the status quo survey. Survey research attempts to determine the incidence, distribution and interrelation among various variables (Joseph and Joseph, 1986).

A questionnaire was developed and revised by the researcher and approved for content validity, clarity and format by her graduate committee made up of researchers in the College of Human Environmental Sciences and the Department of Statistics at Oklahoma State University.

The instrument consisted of 15 multiple choice questions. Directions were to choose one option or to circle all items in the question that applied or were appropriate answers. A cover letter (Appendix C) accompanied the questionnaire (Appendix D) and a self-addressed stamped envelope was provided.

Registered dietitians who were members of the Arkansas Dietetic Association (N=276) were surveyed in August 1991. Since the response rate was 67% (N=184), a second mailing was not deemed necessary.

Results

Of the 137 Arkansas dietitians who responded to the study, only 47 (26% of the total membership of 276) were involved in counseling gestational diabetes mellitus patients. Thirty (64% of 137) counseled 1-3 gestational

diabetes mellitus patients each month, 13 (28%) counseled 4-10 per month and only four (8%) had 10 or more patients per month.

It was postulated in this study that there will be a significant increase in number of gestational diabetes mellitus patients counseled by a dietitian in the last 10 years. Chi square determination revealed a significant association ($X = 17.53$, d.f. = 16, $p < 0.35$) between number of patients and years of practice (Table 1).

Of the 47 respondents, only two spent more than 50% of their time in counseling gestational diabetes mellitus patients, while six counseled patients from 25-50% of their time. The predominant number of dietitians (N=39, 83%) were involved in counseling gestational diabetes mellitus patients for less than 25% of their time. About half (N=25) of the respondents have practiced dietetics less than 10 years, 11 had 11-15 years experience, and 11 others have worked 16 or more years.

The 47 Arkansas dietitians who were gestational diabetes mellitus counselors reported their positions as clinical dietitians (N=30, 64%) or community dietitians (N=12, 25%). Only 5 (11%) were administrative dietitians (Table 2). Seventy-nine percent (N=37) of the respondents worked full time while 21% (N=10) worked less than 35 hours per week. Gestational diabetes mellitus patients were generally counseled in out-patient clinics or in a combination of in-patient/out-patient situations (Table 3). Laboratory values

reviewed by Arkansas dietitians prior to counseling the gestational diabetes mellitus patient included: (a) fasting blood glucose (N=42, 89%); (b) weight (N=42, 89%); (c) blood pressure (N=17, 36%); and (d) glycosylated hemoglobin (N=10, 21%) (Table 4).

Counseling sessions spent with each gestational diabetes mellitus patient varied. More than half (51%) of the respondents counseled gestational diabetic patients only once. About a fourth of the dietitians (N=11) counseled their patients twice, while the remaining scheduled from three to five or more sessions with their patients. The length of each counseling session also varied. Twelve dietitians (26%) spent 30 minutes or less, while 25 (53%) responded that they spent 30-60 minutes with their patients. Only 10 dietitians (21%) spent 61-90 minutes with their patients. Only one-third of the dietitians (N=16) conducted one follow-up session with their patients, while 13 respondents did follow-up sessions twice or more than four times with their patients.

Arkansas dietitians were also asked if there were enough educational materials available to meet their needs in counseling gestational diabetes mellitus patients. Sixty-four percent (N=30) reported no, while 15 (32%) answered yes and 2 (4%) answered do not know. The most predominant type of materials and/or educational strategy used were written materials and lecture (Table 5). Other answers were audio-visual materials, and transparencies.

To effectively counsel gestational diabetes mellitus patients respondents felt that they needed more audio-visual equipment, more time, better space and newer food models. They also specified needing more materials appropriately developed for gestational diabetes mellitus patients, more time for follow-up sessions, group classes, general information on diabetes mellitus as a disease, more referrals from OB-GYN physicians, and better patient compliance.

To enhance gestational diabetes mellitus patient counseling, respondents in this study reported that they need free/inexpensive handouts, audio-visual materials, and teaching guides. Client oriented learning activities as well as in-service education for dietitians, especially for counseling gestational diabetes mellitus patients were also reported by about half of the respondents (Table 6).

Summary

Gestational diabetes mellitus occurs in pregnant women with other diabetic family members or who are overweight, over age 30, show urine glucose, or have had slightly elevated blood glucose levels. Estimates of gestational diabetes mellitus in the general population range between 25 - 50 per 1,000 births (O'Sullivan, et. al., 1984). Diet is an integral part of the control of the patient with gestational diabetes.

The results of the survey revealed that dietitians in Arkansas are educating the gestational diabetes mellitus

patients about their nutritional needs by using lectures, written materials, audio-visual materials, transparencies, and food models. Materials suggested by the dietitians that would enhance the educational sessions were transparencies, teaching guide, client-oriented learning activities, video teaching materials, supermarket tour guide, free or inexpensive client handouts, inservice education on how to teach the gestational diabetes mellitus client, and low-literacy and Hispanic materials.

Results of this research indicate that there is a need by Arkansas dietitians for educational materials specific to the gestational diabetes mellitus patient. Financial constraints limit the type of and variety of educational materials used in counseling patients. Networking with colleagues in other states or with members of the American Dietetic Association's Diabetes Care and Education Practice Group or the Diabetes Educators Group may provide resources to tap. Perhaps networking via electronic mail, voice mail and other means will provide dietitians with information that otherwise would not be available to them in their place of work. Also, the American Diabetes Association provides grants for research to develop educational materials. Dietitians need to be creative in identifying available resources.

Acknowledgments

Assistance for this research was obtained from the Arkansas Dietetic Association members for response to the questionnaire, from Data Processing at the University of Central Arkansas for analysis of the data, and to the dissertation project committee for support of this project.

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TABLE

Table 1 - *Years of practice of dietitians (N=47) against number of gestational diabetes patients counseled

Number of Patients Counseled	Years of Practice by Dietitian				
	0 - 5	6 - 10	11 - 15	16-20	>20
None		1			2
1-3/month	7	7	9	2	3
4-6/month	1	2	2		1
7-10/month	3	3		1	
over 10/month	1	1			2

*X = 17.53, d.f. = 16, p = 0.35

Table 2 - Dietitian's (N = 47) professional practice position

Position	Number in Position	Percent
Clinical Dietitian	30	64
Community Dietitian	25	12
Administrative Dietitian	5	11
Education Dietitian	0	0

Table 3 - Place where gestational diabetes patients are counseled

Place	Number	Percent
Out-patient	26	55
Combination	20	43
In-patient	1	2

Table 4 - Most frequent laboratory values reviewed by dietitians (N = 47) prior to counseling gestational diabetes mellitus patients*

Lab Values	Number	Percent
Fasting Blood Glucose	42	89
Weight	42	89
Blood Pressure	17	36
Glycosylated Hemoglobin	10	21

* Multiple answers were allowed.

Table 5 - Educational materials used by dietitians in counseling gestational diabetes mellitus patients*

Educational Materials	Number	Percent
Written Materials	45	96
Lecture	19	40
Audio-visual Materials	5	11
Transparencies	1	2

* Multiple answers were allowed.

Table 6 - Educational materials needed to enhance gestational diabetes mellitus patient counseling*

Educational Materials	Number	Percent
Free/Inexpensive Handouts	36	77
Audio-visual Materials	26	55
Teaching Guide	25	53
Client-oriented Learning Activities	24	51
Inservice Education for Dietitians	22	47
Supermarket Tours	9	19
Transparencies	2	4

* Multiple answers were allowed.

CHAPTER IV

NUTRITION EDUCATION PRACTICES EMPLOYED BY FAMILY PRACTICE PHYSICIANS IN EDUCATING THE DIABETES MELLITUS PATIENT

Detri M. Brech, MS, RD, LD; Lea L. Ebro, PhD, RD, LD, Bernice H. Kopel, EdD, RD, LD; Elaine Jorgenson, EdD, William Warde, PhD

Department of Nutritional Sciences,
College of Human Environmental Sciences,
Oklahoma State University, Stillwater, OK 74078

Detri M. Brech, MS, RD, LD;
P.O. Box 1232; Conway, AR 72032;
(501) 327-2153

Abstract

Diabetes mellitus is a disease caused by insufficient or lack of production of insulin. Control of diabetes mellitus focuses on diet, medication and exercise. In this study, the focus was on diet. The objectives of the study were to determine the family practice physician's source of nutrition education, to determine if nutrition counseling was conducted for the diabetes mellitus patient, and to determine who was responsible for educating the diabetes mellitus patient about his/her diet.

A research questionnaire was mailed to a stratified, random sample of 500 family practice physicians in the United States. The response rate for the survey was 40 percent (N=198).

Analysis revealed that 105 (54%) physicians have practiced less than 10 years and all but three have and some type of nutrition education; 44 (23%) have practiced 11 to 20 years and all have had some type of nutrition education; 15 (8%) have practiced 21 to 30 years and all have had some type of nutrition education; 24 (12%) have practiced 31 to 40 years and all but one have had some type of nutrition education; and six (3%) have practiced more than 40 years and all have had some type of nutrition education.

Seventy-five percent (N = 147) of the physicians believed that their source of nutrition education was useful, while thirty (15%) felt their source of nutrition education was not very useful (p = 0.03). More of the younger and

female physicians responded that their nutrition education was useful. Approximately 60% of the physicians attended continuing education programs about nutrition for the diabetes mellitus patient in the last five years.

In educating patients, physicians are more often using verbal guidelines to instruct patients in the office and the exchange system to instruct patients in the hospital. On the average about 50% of the physicians are conducting between one and three initial teaching sessions about the diabetes mellitus diet with newly diagnosed diabetes patients in the office and the hospital. As for follow-up visits, only 40% of the physicians are conducting some type of follow-up nutrition education with the diabetes mellitus patients.

Explanation of the diabetes mellitus diet to patients in the physicians office is most often given by the physician. The physicians also reported being the one who most often collects information on their patients nutrition and eating habits in the office. As for the physicians' hospitalized patients, over 50% of the physicians stated that the dietitian explains the diabetes mellitus diet to the patients and collects information from the patients regarding nutrition and eating habits.

INTRODUCTION

Diabetes mellitus is a syndrome resulting from a variable interaction of hereditary and environmental factors. The

disease is characterized by abnormal insulin secretion, elevated blood glucose levels, and a variety of end organ complications which include neuropathy, retinopathy, and accelerated atherosclerosis (1).

Approximately 650,000 new cases of diabetes mellitus are identified each year. In May 1991, the Centers for Disease Control estimated that seven million people in the United States have the disease and that 10 percent of all Americans 65 years of age and older have been diagnosed with diabetes mellitus. Hospitalizations of an estimated 1.5 million citizens over age 65 - and about $5.2 billion of that group's direct medical costs - are diabetes related (2).

The complications of diabetes mellitus with the associated financial costs are avoidable. Management of the disease can delay the development of long-term complications and can reduce hospitalization (3). Patient education is the key to management.

Leichter (1986) (4) reported that only 10 percent of American hospitals offer diabetes education programs. A question arises then as to who will educate the diabetes mellitus patient about his nutritional requirements for blood glucose control(5).

This research project was based upon the initial research of Powers, Hammett, and Bauer (1985) (6) in Illinois. The objectives of this study were to determine the source of nutrition education for the family practice physician, to determine the strategies employed by the family practice

physician to educate diabetes mellitus patients about nutrition, and to determine who is educating the family practice physician's diabetes mellitus patients about nutrition.

METHODS

Research design.

The research design was a status quo survey. Survey research attempts to determine the incidence, distribution and interrelation among various variables (7). The questionnaire (Appendix F) was developed by the researcher utilizing some of the questions in the Powers study (1985) (6). The independent variables were the selected demographics (number of years in medical practice and gender). The dependent variables were the source of nutrition education for the family practice physician, educational methods employed by the family practice physician to teach diabetes mellitus about nutrition, and who was conducting the nutrition education of the diabetes mellitus patient.

Subjects.

The subjects consisted of a stratified, random sample of 500 family practice physicians in the United States. Mailing labels were purchased from the American Academy of Family Physicians.

The questionnaire was sent with a cover letter (Appendix E) explaining the research project and a self-addressed,

stamped envelope for returning the survey. The physicians were given a two week deadline for returning the questionaire.

Data analysis.

The Statistical Package for the Social Sciences (SPSSX) (8) was used to perform the statistical analyses. Chi square was used to determine if the hypotheses were significant. A probability of $p \leq 0.05$ was considered statistically significant for a statistical procedures.

RESULTS AND DISCUSSION

The response rate for the survey was 40 percent (N=198). Of the 198 respondents, 37 were female (33 white, 2 black, and 2 Asian) and 158 were male (152 white, 1 black, 1 American Indian, and 4 Asian). Seventy-three practice in a rural area, 75 practice in a suburban area and 50 practice in an urban area. Three of the respondents were either re tired or do not see diabetes mellitus patients, hence their responses were not included in the data analysis.

Chi square analysis was used to test the three hypotheses:

(1) There will be no significant association in the response family practice physicians choose for the source of nutrition education based on years of medical practice and gender. (2) There will be no significant association in the strategies employed by family practice physicians to educate

diabetes mellitus patients based on years of medical practice and gender. (3) There will be no significant association in whether family practice physicians are educating the diabetes mellitus patients or referring the patients to another health care individual based on years of medical practice and gender.

The majority (N=105, 54%) have practiced less than 10 years and all but three have had some type of nutrition education; 44 (23%) have practiced 11 to 20 years and all have had some type of nutrition education; 15 (8%) have practiced 21 to 30 years and all have had some type of nutrition education; 24 (12%) have practiced 31 to 40 years and all but one have had some type of nutrition education; and six (3%) have practiced more than 40 years and all have had some type of nutrition education.

The only significant source of nutrition education for the physicians was continuing education ($x = 9.91$; d.f. = 4; $p = 0.04$). Seventy-five percent (N = 147) of the physicians felt their source of nutrition education was useful. Thirty (15%) felt their source of nutrition education was not very useful which was significant at the $p = 0.03$ level. Approximately 60% of the physicians attended continuing education programs about nutrition for the diabetes mellitus patient in the last five years.

Analysis of the information collected from the diabetes mellitus patients by the physicians found that more of the male and female physicians were collecting nutrition informa-

tion in both the office and the hospital than were not collecting nutrition information. In fact, it was significant ($p = 0.05$) that information was collected by the physicians in the office and hospital about food likes and dislikes, daily kcaloric intake, time meals are eaten, methods of preparing food, pattern of daily activity, compliance to past diets and knowledge of the diabetes diet.

Physicians are more often using verbal guidelines to instruct patients in the office and the exchnage system to instruct patients in the hospital. Pre-printed diet sheets were used by 140 (72%) of physicians in the office which is significant ($p = 0.05$) compared to the number of physicians not using pre-printed diet sheets. In the hospital 98 (50%) of physicians used pre-printed diet sheets to educate dia betes mellitus patients. The exchange system plan was used by 148 (76%) of physicians in the office which is significant ($p = 0.004$) compared to the number of physicians not using the exchange system. In the hospital, 109 (56%) of physicians were using the exchange system which is significant ($p = 0.0009$) compared to the number of physicians not using the exchange system. Verbal guidelines were given by 153 (78%) of physicians in the office which is significant ($p = 0.003$) compared to the physicians not using verbal guidelines to educate diabetes mellitus patients in the office. In the hospital, 106 (54%) of physicians used verbal guidelines to educate patients which is significant ($p = 0.002$) compared to the number of physicains not using

verbal guidelines (Appendix G).

On the average about 50% of the physicians are conducting between one and three initial teaching sessions about the diabetes mellitus diet with newly diagnosed diabetes patients in the office and the hospital. In contrast, only 40% of the physicians are conducting some type of folow-up nutrition education with the diabetes mellitus patients.

There is a significant association between who is conducting the nutrition education counseling sessions and collecting the patients nutrition information and the place this is occuring (physician's office or the hospital). Explanation of the diabetes mellitus diet to patients in the physicians office is most often given by the physician (Appendix H). Fifty-nine percent (115) of the physicians in the study stated that they are responsible for explaining the diet to the patients which is significant ($p = 0.00$) different from those who are not explaining the diet to their patients in the office. The physicians also reported that they collect information on their patients nutrition and eating habits in their offices.

Fifty percent of the physicians indicated that their hospitalized patients are referred to the dietitians for nutrition counseling, diet history and eating patterns (Appendix H). In the hospital the registered dietitians do the counseling and collecting of nutrition information from the diabetes mellitus patients, while only a few physicians and nurses do it. The difference is significant ($p = 0.01$).

SUMMARY AND CONSLUSIONS

The results of this study support the assumptions of the researcher and others in the dietetics profession that physicians are counseling diabetes mellitus patients. The family practice physician is conducting the nutrition education of the diabetic patient in the office while the dietitian is conducting the nutrition education in the hospital.

The study backs up other studies on how physicians feel about dietitians and how dietitians view themselves. Krause and Fox (1977) study found that 97% of the physicians surveyed agreed that dietitians are important members of healthcare teams, however, 40% of the physicians disagreed that given the diagnosis, a dietitian is capable to prescribe the appropriate dietary modifications required by any disease (9). Rosen's study revealed that physicians view dietitians as contributing members of the healthcare team (10). Another study by Ryan, Foltz, and Finn (1988) revealed that the self-image of the dietitian has greatly improved (11). Also, revealed in the study by Geare, Maillet, King, and Gilbride (1990) is that dietitians see themselves as the primary decision makers more than half of the time in all circumstances, however, physicians perceive dietitians as the primary decision makers about nutrition in any area except selection of kcaloric supplements (12).

Based on the results of this study, the researcher

recommends that additional studies be conducted to survey all physicians and other healthcare professionals nationwide to discover their source of nutrition education, what type of nutrition education is presented to their diabetes mellitus patients, and who actually educates their diabetes mellitus patients in the office or at the hospital. Although the registered dietitian is the most qualified professional to educate patients about their nutritional needs, physicians and other health care professionals are counseling diabetes mellitus patients.

The researcher recommends that the American Dietetic Association's Diabetes Care and Education Practice Group, the American Diabetes Association and the Diabetes Educators Group work collaboratively to produce diabetes mellitus nutrition education material and to function as a clearinghouse to disseminate research-based information. In addition, members of the Diabetes Care and Education Practice Group of the American Dietetic Association should initiate legislation making the registered dietitian the only licensed professional to provide nutrition information to their patients.

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Table 1. Physicians' source of nutrition education

Source	Number	Percent
Continuing education	60	31
Medical school course	59	30
Medical school class	37	19
Other	25	13
College course	10	5
None	4	2

Table 2. Diet plan given by physicians to diabetes mellitus patients in the office

Diet Plan	Number	Percent
Verbal guidelines	142	73
Exchange system	136	60
Pre-printed diet sheet	128	67

Table 3. Diet plan given by physicians to diabetes mellitus patients in the hospital

Diet Plan	Number	Percent
Exchange system	109	56
Verbal guidelines	106	54
Pre-printed diet sheet	98	50

Table 4. Physician's response to who is mainly responsible for teaching the diabetic diet to patients at the office

Health Care Individual	Number	Percent
Self	115	59
Nurse	70	36
Dietitian	62	37
Another physician	16	8

Table 5. Physician's response to who is responsible for collecting nutrition information in the office

Health Care Individual	Number	Percent
Self	132	68
Nurse	55	28
Dietitian	45	23
Another physician	6	3

Table 6. Physician's response to who is mainly responsible for teaching the diabetes diet to patients at the hospital

Health Care Individual	Number	Percent
Dietitian	107	55
Nurse	68	35
Self	25	13
Another physician	5	3

Table 7. Physician's response to who is responsible for collecting nutrition information in the hospital

Health Care Individual	Number	Percent
Dietitian	92	47
Nurse	59	30
Self	36	18
Another physician	3	2

CHAPTER V

SUMMARY, RECOMMENDATIONS, AND IMPLICATIONS

Summary

A brief summary of the study on the nutrition education practices by Arkansas Dietitians is in pages 35 - 36 of this dissertation. Results of the study on Family Practice Physicians are summarized in pages 54 - 55.

Recommendations

The findings of this dissertation suggest the need for additional research in three areas. First, it is recommended that research be conducted to develop low literacy and Hispanic educational material to enhance the nutritional education of the gestational diabetes mellitus patient. Development, testing, and evaluation of the materials would possibly provide the dietitian with reference and support educational materials.

A second recommendation is to refine the questionnaire sent to the family practice physicians and mail the questionnaire to physicians in other areas of practice. This would increase the body of knowledge about nutrition education practice of physicians in various areas of medical practice.

The third recommendation is to revise the questionnaire so it is appropriate to send other health care professionals (nurses, physical therapists, etc.) to determine the nutrition education practice of these individuals. This information would also increase the body of knowledge about nutrition education practices of health care professionals.

Implications

The following implications are presented as a result of the research:

1. Consortium of three groups to do collaborative work and have a clearinghouse for all research-based materials.
2. The Diabetes Care and Education Practice Group of the American Dietetic Association should initiate legislation making the registered dietitian the nutrition expert.
3. Nutrition educators should be registered dietitians and should take the responsibility to educate their students about how nutrition relates to their daily lives.
4. Continuing education on nutrition should be provided via television and interactive videos for physicians and other healthcare professionals written by registered dietitians with expertise in diabetes care and nutrition.
5. The American Dietetic Association must send a message to the public that the registered dietitian is the nutrition expert.

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APPENDICES

APPENDIX A

JOURNAL OF DIABETES CARE

INSTRUCTION TO AUTHORS

Diabetes Care

INSTRUCTIONS FOR AUTHORS

CONTENT

Diabetes Care publishes original articles of and commentaries about human and clinical research intended to increase knowledge stimulate research and promote better management of people with diabetes mellitus Emphasis is on human studies reporting on the pathophysiology and treatment of diabetes and its complications genetics, epidemiology psychosocial adaptation, education nutrition medical economics, and the development validation and application of accepted and new therapies Topics covered are of interest to clinically oriented physicians researchers epidemiologists, psychologists diabetes educators and other health-care professionals

Diabetes Care beginning with the January 1992 issue will accept the submission of articles on computer diskettes Authors should submit diskettes with the final version of their manuscripts along with the typed *revised* manuscript. All diskettes must be accompanied by 3 accurate double-spaced paper copies of the manuscript. Diskettes must be labeled with the following information 1) author's name 2) article title 3) software and hardware used

Diskettes may be produced on IBM IBM-compatible Apple or Wang computers Authors using Apple computers should not use the "Fast Save" option

The use of data on diskettes will often speed the processing of an author's manuscript. However the advantages of using diskettes are easily lost if authors do not adhere to standard conventions of style and formatting We encourage authors to observe these guidelines

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2 Make sure that any special characters (including Greek and mathematical characters) are clearly marked on the hard copies of the manuscript. If your word processing program has an extended character set offering special characters use these

3 Never type the letter "l" for the numeral "1" and never interchange the letter "O" for the numeral "0 "

4 Do not divide words by manually hyphenating at line endings Let the text wrap If your word processor has automatic hyphenation turn it off to prepare your electronic manuscript.

5 Do *not* place figure captions and tables within the text. The copy-editor will indicate the placement of this material within the text. Put figure legends after the text of your article Put tables after figure legends

6 Prepare references in the style set forth by *Diabetes Care* If references are not in the proper style diskettes may be returned to authors for revision

Original articles report clinical investigation in areas relevant to diabetes Articles should not exceed 5000 words (~20 typewritten double-spaced pages), including tables figure legends and references necessary to support the data and their interpretation The following features are essential. hypothesis testing, suitable controls appropriate statistical methods clear reporting of results and conclusions supported by the results Papers will be judged on their uniqueness and importance

Short reports are succinct case reports observations relating to the practice of diabetology and other brief communications Text should not exceed 1500 words (~6 typewritten double-spaced pages)

Technical articles are descriptions and assessments of material and devices used for the care of patients with diabetes Articles should not exceed 5000 words

Commentaries are short critical articles on topics in diabetes care and on articles that appear elsewhere in the issue Unlike reviews commentaries should not attempt an exhaustive literature review but analyze a few carefully selected findings Text should not exceed 1500 words

Clinical practice observations are based on original clinical findings that tested refined validated or questioned aspects of clinical practice. Text should not exceed 1500 words

Letters to the Editor include

opinions on topics published in the journal or relating to diabetes in general. Letters should not exceed 500 words.

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Conflict of interest or support of private interests must be clearly stated. All human investigations must be conducted according to the principles expressed in the Declaration of Helsinki. All studies involving animals must state that guidelines for the use and care of laboratory animals of the authors' institution or the National Research Council or any national law were followed.

MANUSCRIPT FORMAT AND STYLE

Five copies of the entire manuscript including tables and figure legends (original plus 4 photocopies), must be submitted. If black and white graphs or charts are used, submit 3 sets of glossy prints; the other 2 sets should be photocopies. If photographs are used, 5 glossy sets must be included. Manuscripts must be typewritten, double spaced (including references, tables, and figure legends) on one side of 8 1/2 × 11-inch (21.6 × 27.9-cm) nonerasable white bond paper. Provide margins of at least 1 inch at top, bottom and both sides of each page. The manuscript should be arranged in the following order: title page, abstract, introduction (no heading), research design and methods, results, conclusions, acknowledgments, references, tables, and figure legends. Number pages consecutively beginning with the title page.

Title page

Titles should be brief. Also include a short running title (<40 characters), first name, middle initial, last name, and highest academic degree of each author; affiliation in English of each author during the study being reported, name and address of author to whom correspondence and reprint request should be addressed, and 3–6 key words for subject indexing of the article (the word *diabetes* is too general).

Abstract

The abstract should not exceed 250 words. It must be self-contained and clear without reference to the text and should be written for a general journal readership. The abstract must be in a structured format. *Objective*: purpose or hypothesis of study; *Research Design and Methods*: basic design, setting, number of participants and selection criteria, treatment or intervention and methods of assessment; *Results*: significant data found; *Conclusions*: validity and clinical applicability.

Text

Terminology and style: Articles should be written in clear, concise English following the recommendations for scientific writing found in the CBE Style Manual (5th ed., 1983, Bethesda, MD: Council of Biology Editors). All accepted manuscripts will be edited according to the CBE Style Manual and The Chicago Manual of Style (12th ed., 1982, Chicago, IL: The University of Chicago Press) by ADA professional publications staff. The authors are responsible for all statements made in their articles or editorials, *including any editing changes made by staff*.

The designations insulin-dependent diabetes mellitus (IDDM or type I) and non-insulin-dependent diabetes mellitus (NIDDM or type II) should be used when referring to the two major forms of diabetes mellitus. The term *diabetic* should not be used as a noun. The terms *men* and *women* are preferable to *males* and *females*.

Abbreviations: Abbreviations should be used only when necessary, e.g., for long chemical (HEPES) or procedure (ELISA) names or terms used throughout the article and must precede at first use by the word for which it stands. Abbreviate units of measure only when used with numbers. Abbreviations may be used in table and figures for space considerations but must be defined in the accompanying legends. The CBE Style Manual contains lists of standard scientific abbreviations.

Units: Measurements should be in Système International (SI) form (see SI table in each issue). Glycosylated hemoglobin should be expressed as percentage of total and as standard deviation from mean control levels.

Materials: Authors should provide the name and location of the source for specified chemicals and other materials only if alternate sources are considered unsatisfactory. *Diabetes Care* uses the spelling *streptozocin*.

Acknowledgments: Acknowledgments should contain brief statements of assistance, financial support, and prior publication of the study in abstract form if needed.

References: References should be listed according to the following examples. All authors must be cited and inclusive

page numbers provided. Journal titles should be abbreviated according to the Serial Sources for the BIOSIS Data Base for unlisted journals complete journal titles should be provided Authors are responsible for the accuracy of the references

Journal articles

Banting FG Best C The internal secretion of the pancreas *J Lab Clin Med* 7 251–66 1922

Books

Allen FM *Studies Concerning Glycosuria and Diabetes* Cambridge MA, Harvard Univ Press 1913

Chapters in books

Stauffacher W Renold AE. Pathophysiology of diabetes mellitus In *Joslin's Diabetes Mellitus* 11th ed. Marble A, White P Bradley RF, Krall LP Eds Philadelphia, PA, Lea & Febiger 1971, p 35–98

Government publications

Fajans SS (Ed.) *Diabetes Mellitus* Washington DC, U S Govt. Printing Office, 1976 (DHEW publ. no NIH 76-854)

Figures Figures should be professionally drawn and photographed Symbols and labels should be clearly visible when figure is reduced to one column in width Figures must be unmounted unstabled and no larger than 5 × 7 inches (12 7 × 7 3 cm) Photographs should be cropped to one or two columns in width. Headings and descriptions should be placed in figure legends rather than on the figures Authors are responsible for figure quality If color figures are used printing costs must be paid by the author and a letter of acceptance of the incurred charges must be received at the editorial office before production begins on the manuscript.

Tables Tables should be double spaced on separate pages with table number and title. Tables with internal divisions (Tables 1A and *B*) should be submitted as individual tables Symbols for units should be confined to column headings Abbreviations should be kept to a minimum and defined in table legend For footnotes use the following symbols consecutively left to right, top to bottom of table. *†‡§‖¶

MANUSCRIPT SUBMISSION

All contributions, including solicited articles and symposia are critically reviewed by the Editors and invited referees Reviewers comments are usually returned to the authors The decision of the Editors is final.

Authors must submit manuscripts with an accompanying cover letter that includes the address and telephone and fax numbers of the person responsible for negotiations concerning the manuscript. Authors are encouraged to suggest six possible reviewers for their manuscript. All communications to the Editors must be in writing

All manuscripts and editorial correspondence should be addressed to Allan L. Drash MD Editor *Diabetes Care* Children's Hospital of Pittsburgh, Rangos Research Center 3705 Fifth Avenue Pittsburgh PA 15213 (phone 412-692-5851 fax 412-692-5960)

SUBMISSION OF SUPPLEMENTS

A proposal for a supplement must first be submitted to ADA The proposal must specify

1 The name of the pharmaceutical firm sponsoring the supplement (not merely the name of the public relations agency handling its publication)

2 If the supplement is based on a symposium indicate where and when the symposium was held and how the speakers and papers were selected

3 Whether authors will be paid and if so how much

If the proposal is approved the sponsor then must submit a proposal to the Editor of *Diabetes Care* Initial approval by ADA does not commit an editor to accept a proposal in whole or part. All manuscripts are subject to the same peer review as other manuscripts in the journal

ACCEPTED MANUSCRIPTS

Accepted manuscripts will be scheduled for publication as soon as possible Authors will receive 2 sets of page proofs one set (master copy) is for making corrections and the duplicate set is for the author's files Master proof original manuscript, artwork, and reprint requests form should be returned within 48 hours of receipt to *Diabetes Care* American Diabetes Association 1660 Duke Street, Alexandria VA 22314 Failure to do so will delay the publication of article to another issue.

TABLE 1—Systeme International (SI) units for plasma serum, or blood concentrations

Measurement	Conventional unit	Conversion factor	SI unit	Significant digits	Suggested minimum increments
Acetoacetate	mg/dl	97 95	µmol/L	XXO	10 µmol/L
Acetone	mg/dl	172 2	µmol/L	XXO	10 µmol/L
Adrenocorticotropin	pg/ml	0 2202	pmol/L	XX	1 pmol/L

APPENDIX B

JOURNAL OF NUTRITION EDUCATION

INSTRUCTIONS FOR AUTHOR

JNE Information for Contributors

GENERAL

The *Journal of Nutrition Education* is a refereed bimonthly publication designed to stimulate interest and research in the applied nutritional sciences and to disseminate information about positive nutrition practices and policies Submit manuscripts to Dr Audrey N Maretzki Ruth Bldg 1417 E Calder Way The Pennsylvania State University State College PA 16801-5663

By submitting a manuscript the authors imply that they are reporting original work not previously published and not in press or under consideration for publication elsewhere and that if the editor accepts the paper for publication in the *Journal* the authors will not publish it elsewhere in the same form in English or any other language without the consent of the publisher The Society for Nutrition Education holds the copyright for all *Journal* articles The editor may return a manuscript without review if it does not conform to the following guidelines

RESEARCH The *Journal* welcomes concise reports of original research on any aspect of nutrition education including but not limited to determinants and characteristics of food behavior effectiveness of nutrition education programs strategies and materials and new methodologies in education and evaluation The editor will also consider papers relevant to nutrition education that develop new concepts or review and update topics in the biological or social sciences Notes or papers based only on the results of preliminary research are not acceptable Manuscripts will be peer reviewed by members of the *Journal* Board of Editors and *ad hoc* reviewers

REPORTS The *Journal* also welcomes articles describing innovative and evaluated nutrition education programs or giving historical perspectives on nutrition education The text of reports describing programs should provide the detail necessary to convey how the program functions and give evidence of its strengths and weaknesses Such articles will be peer reviewed and judged on the basis of originality relevance to nutrition education timeliness and succinctness

VIEWPOINTS This section is intended as a forum for opinions on current issues and controversies in the field Although discussions and debate are welcome statements impugning the motives intelligence or character of another author are not appropriate for publication For controversial issues the editor may invite for simultaneous publication responses from others holding alternative opinions Although this section is not peer reviewed the editor will select suitable submissions for publication based on potential reader interest and relevance of the contribution to the field of nutrition education The editor reserves the right to modify submissions to conform with space limitations and *Journal* style but will send major changes to authors for approval

GEMS (Great Educational Materials) This section contains brief descriptions of innovative and useful nutrition education activities that provide nutrition educators with a wide range of instruction aids and ideas that can be easily replicated Descriptions of games models brief plays or demonstrations and short innovative teaching techniques are examples of appropriate contributions Authors should not submit descriptions of curriculum guides and entire programs Contributions should include a brief description of the activity and should specify the objectives intended audience implementation procedures and evidence of usefulness Inclusion of high contrast photographs graphics or other visual material is requested

READERS FORUM The *Journal* welcomes timely and succinct letters expressing responsible criticism or reaction to material published in previous issues and letters calling attention to topics of general interest to nutrition education professionals The editor will consider publishing only original letters written for the *Journal* Correspondents should type letters double-spaced on plain paper should begin with "To the Editor" and should close with their names affiliations and addresses With their letters they should send a cover letter requesting that the editor consider the letter for publication in Readers Forum Letters are not peer reviewed but the editor may send letters to other persons for reaction or rebuttal The editor reserves the right to modify letters and responses to conform with space limitations and *Journal* style but will send major changes to authors for approval

SUPPLEMENTS SNE may consider publishing extensive reports of research monographs compendia, and proceedings of symposia as supplements to the *Journal* however authors must bear the entire cost of publishing a supplement Inquiries regarding supplements should be directed to the Society for Nutrition Education

PREPARATION OF MANUSCRIPTS

GENERAL STYLE AND TYPING. The primary responsibility for preparing the manuscript in a form suitable for publication lies with the authors They should use the past tense to describe and discuss the work on which they base their paper and the present tense to refer to existing knowledge or prevailing concepts and to state conclusions They should use the passive voice (with the exception of "Viewpoints" "GEMS" "Readers Forum") whenever possible avoid jargon and exclude sexist language For specifics of style not covered in the instructions authors should consult *The Chicago Manual of Style* 13th Ed (University of Chicago Press 1982)

Authors should avoid specific identification of an institutional affiliation or the title of a teaching aid or curriculum that may be the subject of the report but they may include in "Notes and References" an address where readers can inquire about purchasing materials The editor will remove the title page purchase references and acknowledgments from the manuscript when it is sent for anonymous review but it is the authors responsibility to remove identification from the text

Contributors should prepare the manuscript in complete and finished form double-spaced on good quality paper (8½ x 11 inches) Margins should measure about one inch at the top bottom and sides of each page *The first time an abbreviation is used it should appear in parentheses following the word or words it represents*

Articles for the Research the Reports and the Viewpoints sections should not exceed 16 10 and 8 pages respectively including references tables and illustrations GEMS submissions should not exceed 4 pages including references tables and illustrations Readers Forum letters should not exceed 2 pages

Authors should submit an original and four copies of both the manuscript and the appropriate test instruments

ORGANIZATION OF MANUSCRIPT Each of the following sections should begin on a new page title page abstract text acknowledgments notes and references figure legends each figure each table

Title page The title page should include

1. The complete title of the paper (title should be descriptive and succinct)
2. The complete names of all authors and their academic degrees/titles
3. The complete address including zip code of the institution at which the work was conducted or that of the first author
4. The name address and telephone number of the author with whom the editor is to correspond
5. Footnotes to the title page if needed (These may include present addresses of authors or institutional affiliations of authors other than the first author)

Abstract Only research articles should include an abstract page The abstract should not exceed 200 words should stand alone as an accurate summary of the paper and should include the objective a statement which explains why that particular issue was deemed to be important and to whom a concise description of the plan or design and the key results and conclusions Authors are encouraged to submit abstracts with translations into Spanish and French.

Text Reports and Research articles should contain an introduction that states the main topic(s) or study objectives a body with logical progression of ideas and concluding statements Authors should insert section headings that reflect the section topic(s)

Research articles should contain the following sections Introduction " Methods "Results and Discussion and Conclusions *Reports need not have these headings but should have headings appropriate to the subtopics of the article* Major section headings should be typed in capitals and centered on the width of the page Allow ½ inch (quadruple spacing) between the concluding sentence of one section and the heading for the next section Subheadings within a section should begin flush with the left margin Only the first letter of the first word should be capitalized and the subhead should be followed by a period Underline all subheadings for clarity Beginning with the introduction authors should number all pages consecutively in the upper right corner

The Introduction should concisely describe the particular issue addressed by the research and explain why that particular issue was deemed to be important and to whom This section should conclude with a clearly stated objective(s)

The Methods section of research articles should describe the study design execution and assessment methods in enough detail to allow for replication of any aspect of the study Additionally this section should specify how the authors established validity and reliability of test results and how they analyzed the data including statistical methods used with references for each method If contributors used a methodology that has been described in detail in previous *Journal* articles they may describe the methodology briefly and refer readers to the previous article

The Results and Discussion section of research articles should reflect the achievement of the objective(s) stated in the introduction Authors should refer to each table and figure but the text should be clear without the illustrations Although the text may briefly summarize the important data in tables and figures it is usually preferable for authors to provide statements about the statistical significance and indications of the level of significance of the results in tables

and figure legends and to limit the use of such statements in the text

The discussion should relate the paper to other reports in the literature Contributors should discuss weaknesses in the experimental design or possible alternative interpretations and should be careful to avoid overextending their data when presenting the implications

Each research paper should contain a section on Conclusions (i e a narrative passage that goes distinctly beyond a mere restatement of the findings as such to discuss *what follows* from the findings) This section should also attempt to explain apparently contradictory results or conclusions and should explain the relationship of the results to issues that are important to nutrition educators

Acknowledgments Authors should not number acknowledgments nor refer to them in the text. The following items are appropriate for inclusion in this section

1 Acknowledge technical assistance or advice (We advise contributors to obtain written permission from individuals identified in this manner)
2. List sources of financial support
3 Identify collaborative arrangements
4 Refer to an institutional article number assigned to the manuscript
5 Identify a thesis or dissertation from which some or all of the data were taken
6 Cite abstracts oral presentations or other preliminary reports of portions of the data in the manuscript

Notes and References References to literature cited or supplemental information should be numbered in the order in which they are cited in the text Reference numbers should appear in the text in consecutive order inside parentheses immediately following either an author s name or reference to a study otherwise contributors should place reference numbers at the end of the first sentence in a paragraph that refers to the information cited

Journal articles References should note the following facts author(s) full title (sentence-style capitalization) complete name of journal (underlined) volume number inclusive pages and year Use the following example as a guide

- Hoover L. and S Pelican Nutrient data bases—Considerations for educators *Journal of Nutrition Education* 16 58–62, 1984

If needed for proper identification a reference should contain the issue or supplement number in parentheses after the volume number—for example 12(3) 2–5 or 7(Supp 2) 12–17

Books and pamphlets References should note the following facts author(s) editor(s) or sponsoring body full title (sentence-style capitalization and underlined) volume number edition if not the original city of publication publisher s name date of publication and either the specific pages to which the reader is referred or if the text is cited as a general reference the text s total number of pages Examples of style and punctuation follow for a book and for a chapter in an edited volume

- Briggs G and D Calloway *Nutrition and physical fitness* 11th ed New York CBS Educational and Professional Publishing 1984 pp 27–31
- Herman C P and J Polivy Is obesity a disease of inactivity? In *Eating and its disorders* A J Stunkard and E Stellar eds New York. Raven Press 1984 pp 131–39

Public documents When possible these references should include government division or body issuing the document subsidiary divisions title (sentence-style capitalization and underlined) individual author if given series bulletin and report names and numbers place of publication publisher if different from issuing body year of publication and pages to which the reader is referred If the document is printed by the Government Printing Office authors may list that body as publisher Some examples follow but when in doubt authors should include possibly excessive information

- U S Bureau of the Census *Some changes in American families* by P C Glick Current Population Reports Special Studies ser P 23 no 32 Washington DC Government Printing Office 1976 pp 5–7
- National Academy of Sciences National Research Council Food and Nutrition Board *Recommended dietary allowances* 9th ed Washington DC 1980 pp 16–30

Supplemental notes These notes present additional information or identify sources of information that are necessary to the article but which would be awkward or inappropriate to include in the text If a manuscript describes research with human subjects there should be a statement of approval from an appropriate ethics committee of the institution responsible for the research Notes also may provide information on how to inquire about materials developed or otherwise referred to in the text, or they may refer to the following

- Personal communication (include the present name and address of the source of the information and the date of the communication)
- An oral presentation testimony or an abstract (include the name of the speaker subject or title of the talk name of the function at which the talk was given, and the city state and date of the reference if an abstract)
- A thesis or dissertation (include the author s name title college or university city, state and date filed)
- A manuscript in preparation or in press or an in-house progress report (include the name(s) of the author(s) title and address to which a reader can write to obtain the information)

Tables Authors should double-space tables and their footnotes If a single table requires more than one page (continued)" should be typed at the bottom of the page and "(Table I continued) at the top of the following page Tables should be numbered in the order of their appearance in the text

Tables should have four sections

1 The legend includes the word "Table " the table number followed by a period, and the table title in sentence-style capitalization
2 Below the legend there should be a table-width horizontal rule beneath which are column headings with all important words capitalized After the column headings there should be another table-width horizontal rule
3 In the body of the table authors should capitalize only the first letter of the first word of phrases that are in columns Also within the left-hand column subheads such as Total or Average should be indented The table should contain appropriate statistics of variability and the level of statistical significance of differences among the data. Following the main body there should be a table-width horizontal rule beneath which are the footnotes if any
4 Footnotes may be superior numbers ( ) if they refer only to words in the title or headings However in order to avoid confusion if numbers in the body of the table are footnoted, the footnotes should be superior letters ( ) Authors should place footnotes in order reading from left to right and from top to bottom and should begin a new series of footnotes for each table Asterisks * and ** should be reserved to indicate probabilities of .05 and .01 respectively

When preparing the table title headings body and footnotes contributors should consider that the table must be intelligible without reference to the text This consideration may serve as a guide in deciding whether or not an explanatory footnote is necessary

Figure legends Authors should double-space and combine legends for all figures on one or more pages numbering them in consecutive order as they appear in the text Follow the instructions for the preparation of table captions and footnotes

Figures Legible copies of the figures must accompany all four copies of the original manuscript Contributors should enclose figures (whether photographs original line drawings or other illustrative material) accompanying the original manuscript in a separate protective envelope with cardboard backing The following information should be noted *in pencil only* on the back of each figure first author s name figure number and arrow indicating top

Photographs should be high contrast glossy black-and-white prints All line drawings and charts should be drawn in india ink and with mechanical aids not freehand All letters and numbers should be uniform and easy to read even if reduced for the *Journal* If a figure includes transfer or press-on type contributors should send a clean high contrast positive photostat of the figure not the original For charts constructed on graph paper authors should use paper printed in light blue ink only Curves should not extend beyond the experimental points The *Journal* will charge contributors if figures require redrawing

Supplementary material. Authors must provide enough information so that the manuscript referees can judge the usefulness of the problem or the adequacy of the experimental or evaluation design data analysis approach and theoretical basis of the study If the study involves testing instruments or questionnaires authors should provide one copy of these for each copy of the manuscript submitted and when appropriate they should provide in-house reports and manuscripts in press or supporting data for procedures such as multiple regression analysis of variance or co-variance factor analysis path analysis and the like even though the final manuscript may present the data in a streamlined format Contributors should mark supplementary material for review only

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The review process usually takes three to four months Authors receive reviewers comments with the editor s letter of disposition The editor may accept or reject a manuscript or prior to a final decision request additional information If a manuscript is rejected the original manuscript and illustrations but not the additional copies are returned The editorial staff edits an accepted manuscript for style and clarity and sends it to the contributor for approval prior to typesetting Since galley proofs are not sent to contributors this is the only opportunity the author will have to make changes The *Journal* reserves the right to make minor stylistic changes that in the opinion of the editor do not change the meaning of the article or the views of the author Potential contributors may request a copy of Guidelines for Reviewers or Checklist for Authors by writing to the editor

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APPENDIX C

COVER LETTER FOR DIETITIANS QUESTIONNAIRE

OSU

Oklahoma State University

DEPARTMENT OF FOOD, NUTRITION AND INSTITUTION ADMINISTRATION
COLLEGE OF HOME ECONOMICS

STILLWATER OKLAHOMA 74078-0337
HOME ECONOMICS 425
405-744-5040

August 10, 1991

Dear

Please find enclosed a brief survey we are conducting as a part of my doctoral study at Oklahoma State University. The first part of my study is to survey clinical dietitians in Arkansas to gather information about their methods of counseling gestational diabetic patients. This information will be used to develop an educational packet to enhance the methods of counseling gestational diabetic patients. The second part of the study is to test the educational packet to determine if it actually increases the knowledge retained and practiced by individuals with gestational diabetes mellitus.

Your participation in this study will only require a few minutes of your time to complete the survey and return it in the enclosed envelope. Your participation is crucial for me to obtain an accurate picture of the counseling practices used by clinical dietitians in Arkansas in the area of gestational diabetes mellitus. Your name and work place will not be reported in the results. All information will remain confidential. If you would like to know the results of the survey, please note that on the survey and I will mail you a summary of the results.

Thank you for your time and help.

Sincerely,

Detri M Brech

Detri McClellan Brech, M.S., R.D., L.D.
Graduate Student

Lea L Ebro

Lea L. Ebro, Ph.D., R.D., L.D.
Major Advisor

CENTENNIAL
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Celebrating the Past Preparing for the Future

APPENDIX D

QUESTIONNAIRE FOR DIETITIANS

SURVEY OF THE STRATEGIES EMPLOYED BY ARKANSAS DIETITIAN TO EDUCATE GESTATIONAL DIABETES MELLITUS PATIENTS

DIRECTIONS: PLEASE CIRCLE YOUR RESPONSE TO EACH ITEM.

1. How many gestational diabetics do you counsel each month?
   - A. 0 per month
   - B. 1-3 per month
   - C. 4-6 per month
   - D. 7-10 per month
   - E. Over 10 per month

   If your answer to question number 1 is A, do not proceed further. Please return the questionnaire to me in the enclosed envelope.

2. What portion of your responsibilities include counseling gestational diabetes mellitus individuals?

   - A. 50% time or more
   - B. 25 - 50 % time
   - C. Less than 25% time

3. How many years have you been a registered dietitian?

   - A. 0 to 5 years
   - B. 6 to 10 years
   - C. 11 to 15 years
   - D. 16 to 20 years
   - E. Over 20 years

4. How many years have you counseled individuals with gestational diabetes mellitus?

   - A. 0 to 5 years
   - B. 6 to 10 years
   - C. 11 to 15 years
   - D. 16 to 20 years
   - E. Over 20 years

5. What is your position?

   - A. Administrative dietitian
   - B. Clinical dietitian
   - C. Community dietitian
   - D. Dietitian in higher education

6. What is your employment status?

   - A. Full-time
   - B. Part-time

7. The gestational diabetic patients are:

   - A. In-patient
   - B. Out-patient
   - C. Combination of in-patients and out-patients

8. Which lab values do you review before counseling the gestational diabetic? Circle all that apply.

A. Fasting blood glucose
B. Glycosylated hemoglobin
B. Weight
D. Blood pressure
E. Others. Specify _____

9. How many counseling sessions do you spend with each gestational diabetic?

A. 1
B. 2
C. 3
D. 4
E. 5 or more

10. What is the approximate length of each counseling session?

A. 30 minutes or less
B. 30 - 60 minutes
C. 61 - 90 minutes
D. 91 - 120 minutes
E. Over 120 minutes

11. How many follow-up sessions do you conduct?

A. 0
B. 1
C. 2
D. 3
E. 4 or more

12. There are enough educational materials available to meet my needs in dietary counseling of gestational diabetes mellitus clients?

A. Yes
B. No
C. Don't know

13. What type of educational materials do you use in counseling? Circle all that apply.

A. Written materials
B. Audio-visual materials
C. Lecture
D. Transparencies
E. Other. Please specify. _____

14. If you could change anything involved with your counseling of gestational diabetics, what would you change? Circle all that apply.

A. More time
B. More money
C. More equipment
D. More audio-visuals
E. More food models
F. More facility space
G. Other. Please Specify._____

15. If available which of the following would be most helpful in counseling gestational diabetes mellitus patients? Circle all that apply.

A. Transparencies
B. Teaching guide
C. Client-oriented learning activities
D. Video (VCR) teaching material
E. Supermarket tour guide
F. Free or inexpensive client handouts
G. Inservice education on how to teach the gestational diabetes mellitus client
H. Other. Please specify. _____

_____

THANK YOU FOR TAKING TIME TO COMPLETE AND RETURN THIS SURVEY.
PLEASE RETURN BY AUGUST 30, 1991.

APPENDIX E

COVER LETTER FOR PHYSICIANS' QUESTIONNAIRE

OSU

Oklahoma State University

DEPARTMENT OF NUTRITIONAL SCIENCES
COLLEGE OF HOME ECONOMICS

STILLWATER, OKLAHOMA 74078-0337
HOME ECONOMICS 425
405-744-5040

March 23, 1992

Dear Physician:

I am a doctoral student at Oklahoma State University in the area of Nutritional Sciences. The enclosed is a questionnaire to find out what type of nutrition education you are presently using with your Diabetes Mellitus Patients.

The purpose of this research is to discover and document present Diabetes Mellitus Nutrition Education Methods. This information will be a part of my dissertation as well as being submitted for publication in a national journal such as Diabetes Care.

Please take a moment to respond. All information is confidential. There will be no way to identify you in the study's report.

Thank you for your time. You are the medical expert! Your information is invaluable. Your response is appreciated. Please return the questionnaire by April 13, 1992.

Thank you,

Detri Brech
Detri McClellan Brech, MS, RD, LD
Doctoral Student

Lea Ebro
Lea Ebro, PhD, RD, LD
Advisor

APPENDIX F

QUESTIONNAIRE FOR PHYSICIANS

ASSESSMENT OF THE PHYSICIAN'S CURRENT ROLE IN EDUCATING THE DIABETES MELLITUS PATIENT ABOUT DIETARY NEEDS

DIRECTIONS: PLEASE PLACE A CHECK MARK BY THE ITEM CORRESPONDING TO YOUR RESPONSE. PLEASE CHECK ONLY ONE RESPONSE FOR EACH ITEM.

A. DEMOGRAPHIC INFORMATION

1. HOW MANY DIABETES MELLITUS PATIENTS DO YOU SEE MONTHLY?

___ A. 0
___ B. LESS THAN 10
___ C. 10 TO 20
___ D. MORE THAN 20

IF YOUR RESPONSE IS 0, PLEASE DO NOT CONTINUE. PLEASE RETURN THE QUESTIONNAIRE IN THE ENCLOSED ENVELOPE

2. HOW MANY YEARS HAVE YOU BEEN IN MEDICAL PRACTICE?

___ A. 0 TO 10
___ B. 11 TO 20
___ C. 21 TO 30
___ D. 31 TO 40
___ E. MORE THAN 40

3. HOW WOULD YOU DESCRIBE YOURSELF?

___ A. FEMALE
___ B. MALE

4. HOW WOULD YOU DESCRIBE YOURSELF?

___ A. WHITE
___ B. BLACK
___ C. HISPANIC
___ D. AMERICAN INDIAN
___ E. OTHER (SPECIFY)_____

5. WHICH OF THE FOLLOWING BEST DESCRIBES THE COMMUNITY WHERE YOU MAINLY PRACTICE?

___ A. IN A RURAL AREA
___ B. IN A SUBURBAN AREA
___ C. IN AN URBAN AREA

6. WHAT SITUATION BEST DESCRIBES YOUR PRACTICE SETTING?

___ A. PRIVATE OFFICE
___ B. CLINIC
___ C. COMMUNITY HOSPITAL
___ D. TEACHING HOSPITAL
___ E. OTHER (SPECIFY) _____

7. WHAT RACE ARE THE MAJORITY OF YOUR DIABETIC PATIENTS?

___ A. WHITE ___ D. AMERICAN INDIAN
___ B. BLACK ___ E. OTHER (SPECIFY) _____
___ C. HISPANIC

8. HOW WOULD YOU DESCRIBE THE MAJORITY OF YOUR DIABETIC PATIENTS?
___ A. FEMALE ___ B. MALE

B. DIABETES MELLITUS NUTRITION EDUCATION

9. WHAT WAS THE SOURCE OF YOUR NUTRITION EDUCATION?
___ A. COLLEGE COURSE ___ D. CONTINUING EDUCATION
___ B. MEDICAL SCHOOL COURSE ___ E. OTHER (SPECIFY) _____
___ C. MEDICAL SCHOOL CLASS ___ F. NONE

10. FOR YOUR CURRENT PRACTICE, HOW USEFUL WAS THE NUTRITION INSTRUCTION YOU RECEIVED ?
___ A. VERY USEFUL ___ C. NOT USEFUL
___ B. USEFUL ___ D. NOT VERY USEFUL

11. HOW LONG AGO DID YOU ATTEND A CONTINUING EDUCATION PROGRAM ABOUT NUTRITION FOR THE PATIENT WITH DIABETES MELLITUS?
___ A. LESS THAN 1 YEAR ___ C. MORE THAN 5 YEARS
___ B. 1 TO 5 YEARS ___ D. OTHER (SPECIFY) _____

C. MANAGEMENT OF THE DIABETES MELLITUS PATIENT
PLEASE INDICATE IF THIS INFORMATION IS COLLECTED TO USE IN EDUCATING YOUR DIABETES MELLITUS PATIENTS.

	OFFICE		HOSPITAL	
12. FOOD LIKE AND DISLIKES	___YES	___NO	___YES	___NO
13. DAILY CALORIC INTAKE	___YES	___NO	___YES	___NO
14. TIME MEALS ARE EATEN	___YES	___NO	___YES	___NO
15. METHODS OF PREPARING FOOD	___YES	___NO	___YES	___NO
16. PATTERN OF DAILY ACTIVITY	___YES	___NO	___YES	___NO
17. COMPLIANCE TO PAST DIETS	___YES	___NO	___YES	___NO
18. KNOWLEDGE OF THE DIABETES DIET	___YES	___NO	___YES	___NO

19. HOW WOULD YOU CHARACTERIZE THE DIET PLAN GIVEN TO MOST OF YOUR DIABETES MELLITUS PATIENTS SEEN AT THE:

	OFFICE		HOSPITAL	
A. PRE-PRINTED DIET SHEET	___YES	___NO	___YES	___NO
B. EXCHANGE SYSTEM	___YES	___NO	___YES	___NO
C. VERBAL GUIDELINES	___YES	___NO	___YES	___NO

D. OTHER (SPECIFY) _____

20. ON THE AVERAGE, HOW MANY VISITS ARE INVOLVED WITH INITIAL TEACHING OF THE DIABETES MELLITUS DIET AT THE:

	OFFICE		HOSPITAL	
A. NONE	___YES	___NO	___YES	___NO
B. ONE VISIT	___YES	___NO	___YES	___NO
C. TWO TO THREE VISITS	___YES	___NO	___YES	___NO
D. MORE THAN THREE VISITS	___YES	___NO	___YES	___NO

21. HOW MANY FOLLOW-UP DIET EDUCATIONAL SESSIONS ARE CONDUCTED FOR THE DIABETES MELLITUS PATIENT AT THE:

	OFFICE		HOSPITAL	
A. NONE	___YES	___NO	___YES	___NO
B. ONE	___YES	___NO	___YES	___NO
C. TWO	___YES	___NO	___YES	___NO
D. OTHER (SPECIFY) _____				

22. WHO IS MAINLY RESPONSIBLE FOR EXPLAINING OR TEACHING THE DIABETIC DIET TO YOUR PATIENTS AT THE:

	OFFICE		HOSPITAL	
A. SELF	___YES	___NO	___YES	___NO
B. ANOTHER PHYSICIAN	___YES	___NO	___YES	___NO
C. NURSE	___YES	___NO	___YES	___NO
D. DIETITIAN	___YES	___NO	___YES	___NO
E. OTHER PERSONNEL (SPECIFY) _____				

23. WHO MOST OFTEN COLLECTS INFORMATION ON THE NUTRITION AND EATING HABITS OF YOUR PATIENTS AT THE:

	OFFICE		HOSPITAL	
A. SELF	___YES	___NO	___YES	___NO
B. ANOTHER PHYSICIAN	___YES	___NO	___YES	___NO
C. NURSE	___YES	___NO	___YES	___NO
D. DIETITIAN	___YES	___NO	___YES	___NO
E. OTHER PERSONNEL (SPECIFY) _____				

APPENDIX G

NUMBER OF PHYSICIANS CHOOSING PRE-PRINTED DIET SHEETS, EXCHANGE SYSTEM, AND VERBAL GUIDELINES

*NUMBER OF PHYSICIANS IN MEDICAL PRACTICE USING PRE-PRINTED DIET SHEETS TO EDUCATE DIABETES MELLITUS PATIENTS IN THE OFFICE

Years of Practice	Number		
	Female	Male	Total
0 - 10	21	57	78
11 - 20	4	26	30
21 - 30	1	8	9
31 - 40	0	19	19
> 40	0	4	4

* $X = 9.72$; d.f. = 4; p = 0.05

*NUMBER OF PHYSICIANS IN MEDICAL PRACTICE USING PRE-PRINTED DIET SHEETS TO EDUCATE DIABETES MELLITUS PATIENTS IN THE HOSPITAL

Years of Practice	Number		
	Female	Male	Total
0 - 10	15	40	55
11 - 20	3	20	23
21 - 30	0	7	7
31 - 40	0	11	11
> 40	0	2	2

*$X = 7.84$; d.f. = 4; p = 0.09

***NUMBER OF PHYSICIANS IN MEDICAL PRACTICE USING THE EXCHANGE SYSTEM TO EDUCATE DIABETES MELLITUS PATIENTS IN THE OFFICE**

Years of Practice	Number		
	Female	Male	Total
0 - 10	26	57	83
11 - 20	3	28	31
21 - 30	1	10	11
31 - 40	0	20	20
> 40	0	3	3

*X = 15.13; d.f. = 4; p = 0.004

***NUMBER OF PHYSICIANS IN MEDICAL PRACTICE USING THE EXCHANGE SYSTEM TO EDUCATE DIABETES MELLITUS PATIENTS IN THE HOSPITAL**

Years of Practice	Number		
	Female	Male	Total
0 - 10	24	40	64
11 - 20	1	23	24
21 - 30	0	8	8
31 - 40	0	11	11
> 40	0	2	2

*X = 18.71; d.f. = 4; p = 0.00

***NUMBER OF PHYSICIANS IN MEDICAL PRACTICE USING VERBAL GUIDELINES TO EDUCATE THE DIABETES MELLITUS PATIENT IN THE OFFICE**

Years of Practice	Number		
	Female	Male	Total
0 - 10	28	57	85
11 - 20	4	30	34
21 - 30	1	10	11
31 - 40	0	18	18
> 40	0	5	5

*X = 15.77; d.f. = 4; p = 0.003

***NUMBER OF PHYSICIANS IN MEDICAL PRACTICE USING VERBAL GUIDELINES TO EDUCATE DIABETES MELLITUS PATIENTS IN THE HOSPITAL**

Years of Practice	Number		
	Female	Male	Total
0 - 10	22	36	58
11 - 20	2	22	24
21 - 30	0	8	8
31 - 40	0	13	13
> 40	0	3	3

*X = 17.57; d.f. = 4; p = 0.002

APPENDIX H

HEALTH CARE PROFESSIONAL COUNSELING THE DIABETES MELLITUS PATIENT IN THE OFFICE AND THE HOSPITAL

*NUMBER OF PHYSICIANS COUNSELING DIABETES MELLITUS PATIENTS ABOUT THEIR DIET IN THE OFFICE

Years of Practice	Number		
	Female	Male	Total
0 - 10	17	43	60
11 - 20	3	23	26
21 - 30	1	8	9
31 - 40	0	18	18
> 40	0	2	2

*X = 9.64; d.f. = 4; p = 0.05

*NUMBER OF PHYSICIANS COUNSELING DIABETES MELLITUS PATIENTS ABOUT THEIR DIETS IN THE HOSPITAL

Years of Practice	Number		
	Female	Male	Total
0 - 10	4	11	15
11 - 20	0	4	4
21 - 30	0	2	2
31 - 40	0	3	3
> 40	0	1	1

*X = 3.17; d.f. = 4; p = 0.53

*NUMBER OF PHYSICIANS REPORTING THAT ANOTHER PHYSICIAN IS COUNSELING THEIR DIABETES MELLITUS PATIENTS DIETS IN THE OFFICE

Years of Practice	Number		
	Female	Male	Total
0 - 10	1	6	7
11 - 20	1	4	5
21 - 30	0	1	1
31 - 40	0	2	2
> 40	0	1	1

*X = .85; d.f. = 4; p = 0.93

*NUMBER OF PHYSICIANS REPORTING THAT ANOTHER PHYSICIAN IN COUNSELING THEIR DIABETES MELLITUS PATIENTS IN THE HOSPITAL

Years of Practice	Number		
	Female	Male	Total
0 - 10	0	0	0
11 - 20	0	3	3
21 - 30	0	1	1
31 - 40	0	0	0
> 40	0	1	1

* Statistics cannot be calculated.

*NUMBER OF PHYSICIANS REPORTING THAT A NURSE IS COUNSELING THEIR DIABETES MELLITUS PATIENTS IN THE OFFICE

Years of Practice	Number		
	Female	Male	Total
0 - 10	11	24	35
11 - 20	2	12	14
21 - 30	0	8	8
31 - 40	0	8	8
> 40	0	5	5

*X = 8.79; d.f. = 4; p = 0.07

*NUMBER OF PHYSICIANS REPORTING THAT A NURSE IS COUNSELING THEIR DIABETES MELLITUS PATIENTS IN THE HOSPITAL

Years of Practice	Number		
	Female	Male	Total
0 - 10	12	26	38
11 - 20	1	16	17
21 - 30	0	3	3
31 - 40	0	9	9
> 40	0	1	1

*X = 8.81; d.f. = 4; p = 0.07

***NUMBER OF PHYSICIANS REPORTING THAT A DIETITIAN IS COUNSELING THEIR DIABETES MELLITUS PATIENTS IN THE OFFICE**

Years of Practice	Number		
	Female	Male	Total
0 - 10	13	29	42
11 - 20	1	12	13
21 - 30	0	3	3
31 - 40	0	4	4
> 40	0	0	0

*X = 5.37; d.f. = 3; p = 0.15

***NUMBER OF PHYSICIANS REPORTING THAT A DIETITIAN IS COUNSELING THEIR DIABETES MELLITUS PATIENTS IN THE HOSPITAL**

Years of Practice	Number		
	Female	Male	Total
0 - 10	21	38	59
11 - 20	2	24	26
21 - 30	1	8	9
31 - 40	0	10	10
> 40	0	3	3

*X = 13.54; d.f. =4; p = 0.009

VITA

Detri McClellan Brech

Doctor of Philosophy

Thesis: NUTRITION EDUCATION PRACTICES EMPLOYED BY THE FAMILY PRACTICE PHYSICIAN AND ARKANSAS DIETITIAN IN EDUCATING THE DIABETES MELLITUS PATIENTS

Major Field: Home Economics

Biographical:

Personal Data: Born in Star City, Arkansas, June 5, 1962, the eldest child of John and Sue McClellan. Married to Robert Brech on September 30, 1989.

Education: Graduated from Ouachita Baptist University, Arkadelphia, Arkansas, in 1984, with a Bachelor of Science degree in Home Economics with emphasis in dietetics; received Master of Science degree in Institutional Management from Louisiana Tech University, Ruston, Louisiana, in 1985; completed requirements for the degree of Doctor of Philosophy at Oklahoma State University in July 1992.

Professional Experience: Foods and Nutrition Instructor, Louisiana Tech University, Ruston, Louisiana, 1986; Plan IV Director and Foods and Nutrition Instructor, University of Central Arkansas, Conway, Arkansas, 1987 - 1992; Consultant Dietitian, 1987 - 1992.

Professional Organizations: American Dietetic Association, Arkansas Dietetic Association, Omicron Nu, Phi Upsilon Omicron, Arkansas Dietetic Educators Group, American Dietetic Association's Diabetes Care and Education Practice Group and Dietetic Educators Practice Group.