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Needs assessment for expanded diabetes education in north Santa Cruz county

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**Needs assessment for expanded diabetes education in north
Santa Cruz County**

Holman, Sandra, M.S.

San Jose State University, 1989

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NEEDS ASSESSMENT FOR
EXPANDED DIABETES EDUCATION IN
NORTH SANTA CRUZ COUNTY

A Thesis

Presented to

The Faculty of the Department of Nursing

San Jose State University

In Partial Fulfillment

of the Requirements for the Degree

Master of Science

By

Sandra Holman

August, 1989

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APPROVED FOR THE UNIVERSITY

ABSTRACT

NEEDS ASSESSMENT FOR EXPANDED DIABETES EDUCATION

IN NORTH SANTA CRUZ COUNTY

by Sandra Holman

This thesis is a descriptive study to obtain information about the current status of diabetes in a county in northern California from the perspective of health educators, physicians, and consumers. It utilized previously collected data from the American Diabetes Association (ADA) which had not been analyzed. A total of 172 questionnaires were analyzed (120 ADA members, 32 physicians, and 20 diabetes education providers). The study questions included: (a) Are diabetes education consumers aware of available diabetes resources? (b) Who utilizes diabetes resources within the county? and, (c) Do diabetes education consumers desire or require expanded resources?

Results indicate that all respondents were aware of available resources and that education would reduce the incidence of diabetes related problems. But physicians reported that they do not refer their clients to education providers. Education providers indicated a need for increased coordination of care and communication between providers and physicians.

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Chapter 1

INTRODUCTION

Diabetes mellitus is a serious, chronic disease which affects nearly 6 million Americans. Over the past 40 years the prevalence of diabetes has increased more than six-fold. According to the National Commission on Diabetes, this disease now affects approximately 11 million people, or 5% of the population of this country. It is probable that a similar number of cases remain undiagnosed. Projecting the figures, it appears that if the incidence of diabetes continues at the present rate, an American born today and living an average life span of 70 years has a one-in-five chance of developing diabetes (American Diabetes Association [ADA], 1987).

The economic and medical effects of diabetes are profound. Extreme morbidity and severe disability are common to diabetes. Premature death from diabetes can occur in people of all ages. Treatment with medication, diet, and exercise will extend the life expectancy and quality of life for people with diabetes; but there is still no known cure for the disease. In addition to being both life-threatening and lifelong in nature, diabetes typically results in chronic complications that affect the kidneys, heart, circulatory system, eyes, nerves, and among pregnant women, the fetus.

Diabetes has a tremendous impact not only on the health of individuals but also on the health care system in the United States. The total cost of diabetes mellitus to the U. S. economy in 1987 was estimated at more \$20.4 billion. Nearly eleven billion (\$10.8) of that total was from lost productivity and \$9.6 billion was from direct medical expenses (ADA,1988).

Diabetes is an important health problem in California. The American Diabetes Association estimates one in five Californians born in 1980 will develop diabetes. In addition, California has a large number of people who belong to groups at increased risk for development of diabetes: (a) over 2.4 million people 65 years of age or older; (b) over 200,000 Native Americans; and (c) a large migrant and medically indigent population, all of whom may have poor access to health care services such as diabetes screening and management programs (State of California, 1983). Annual costs of medical care, disability, and premature mortality attributed to diabetes in California were estimated at \$1 billion in 1983. This figure increases yearly and does not include intangible social costs.

Diabetes requires substantial adjustment in lifestyle and adherence to a strict treatment regimen to prevent or delay complications. Blood glucose control is closely related to the complications and euglycemia (normal blood glucose) may actually reverse sequelae in diabetes (Peterson, 1982). Constant attention is required for the person with diabetes to maintain a normal blood glucose by balancing the diet, exercising, and taking medication.

Knowledge, self-care skills, and access to up-to-date medical support are critical for the person who has diabetes. A lack of understanding can contribute to problems of detection and treatment of undiagnosed diabetes and inadequate social support for the diabetic. Patient education is regarded as an essential component of diabetes managements.

The overall five-year mission of the California State Plan for Diabetes Control is to reduce mortality, morbidity, complications, disabilities, and costs associated with diabetes, thereby improving the health status and quality of life of California's diabetic

population (State of California, 1983). The program's implementation is based on strategies for prevention, improved treatment, and education about diabetes.

Problem Statement

In 7 years between 1980 and 1987, the population of the surveyed county in California has grown from 188,000 to an estimated 220,000 (Williams, 1987). Although diabetes is not a reportable disease, use of the 5% figure suggests that the number of people who have been diagnosed with diabetes has jumped from 9,000 to at least 11,000 during the same time period.

Diabetes education resources are available locally, provided by various health professionals and agencies. But there have been no coordinated efforts to determine (a) if the consumers are aware of these resources, (b) if the consumers utilize these resources, (c) if the physicians are aware of these resources for their clients, and (d) if physicians refer their clients to these resources. Also, it is not known whether these resources are adequate in meeting the increased needs of clients with diabetes.

Research Questions

The following questions were posed for this study:

1. Are diabetes education consumers aware of diabetes education resources within the county?
2. Who utilizes diabetes resources within the county?
3. Do diabetes education consumers desire or require expanded resources?

Purpose and need

Lack of coordination among elements of the health care system results in underutilization of available resources. Many health professionals, institutions, and agencies are conducting diabetes education programs, activities, and/or research, but few

have joined together or exchanged information on a regular basis. Cooperation among resources is required to obtain data to identify problem areas and plan appropriate strategies. An evaluation of the results of this study will be utilized as a means for determining if full use is being made of existing diabetic education resources and if there is a need for expanded diabetes education resources in the county.

Definition of Terms

For the purpose of this study, the following definitions apply:

1. Areas of diabetes health education are the following ten topics of importance to the person with diabetes: (a) general diabetes information, (b) psychological factors, (c) nutrition/meal planning, (d) exercise, (e) medication, (f) monitoring of blood and urine, (g) hyper and hypoglycemia, and (h) illness. The areas were modified from the categories presented in the American Diabetes Association's booklet entitled Goals for Diabetes Education, 1986.
2. Diabetes refers to diabetes mellitus, a disorder of carbohydrate metabolism characterized by the presence of the classical symptoms, polyuria, polydypsia, and polyphasia and high blood glucose levels (National Diabetes Data Group, 1985).
3. Health is the state of wholeness or integrity of human beings. Persons are said to be healthy when they are structurally and functionally whole or sound, when they possess full vigor and strength and do not have any signs of disease or morbidity (Orem, 1985).

Research Design

This descriptive study utilized previously collected but unanalyzed data to obtain information about the current status of diabetes from the perspective of health educators,

physicians, and consumers. The investigation described the frequency with which various health resources are utilized and those education areas which are deemed important as reported by the physician, provider, and consumer. The data were analyzed using measures of central tendency.

Setting and Target Population

This study was conducted in a county in northern California. There were three groups of participants. The first group consisted of diabetes education providers. For the purpose of the study, this group included the following categories: (a) nurses, (b) patient and health educators, (c) dietitians and nutritionists, and (d) agencies which advertised related education services.

The second group consisted of physicians who were likely to be the primary diabetes care providers for people with diabetes. Included in this group were endocrinologists, internists, family practitioners, and pediatricians.

The third group consisted of diabetes education consumers. Members of the American Diabetes Association who were on the mailing list of the surveyed chapter and had zip codes in the northern portion of the county were selected to be in this study.

Scope and Limitations

This study was limited to the area of nine zip codes in a county in northern California. Generalizations to the entire population of the county should be made with caution. The northern portion of the county has a large stable, Caucasian, English-speaking population while the southern portion of the county has a large migrant, Spanish-speaking population.

The diabetes education consumers surveyed were limited to members of the American Diabetes Association. Membership in the association, however, presumes a

desire on the member's part for additional information and education. This population was selected because it offered access to a large number of people with an interest in diabetes. Those people who have diabetes and are not members of the Association were not reached with this survey and generalizations regarding their desires and requirements for diabetes education must be made with caution.

Chapter 2

CONCEPTUAL FRAMEWORK AND REVIEW OF RELATED LITERATURE

This chapter provides a discussion of the conceptual framework for this study. A review of related literature is also included.

Conceptual Framework

The framework for this study is based on the concept of self-care. The relationship between increased knowledge, increased control, and decreased complications of diabetes will be discussed from an education perspective.

Dorothea Orem is the originator of the self-care model of nursing. Her theory states that the relationship between the nurse and people under nursing care occurs when the latter are unable to provide care for themselves. She writes that self-care is the practice of activities that individuals initiate and perform on their own behalf in maintaining life, health and well-being (Orem, 1985). Orem's model is based on the generalization that not all health care consumers are under nursing care, nor should they be. All things being equal, people have the potential to develop their intellectual and practical skills and the motivation essential for self-care (Orem, 1985).

Self-care is self-management. When self-management is not maintained, illness, disease, or death will occur. The ability to engage in self-care is conditioned by age, developmental state, health state, experiences, socio-cultural orientation, and availability of resources (Orem, 1985).

Nursing is the creative effort of one human being to help another. Orem's position is that the nurse's special interest is the individual's need for self-care on a continuous basis (Orem, 1985). People can benefit from nursing because they are subject to

health-related or health-derived limitations that hinder their self-care abilities.

Nurses estimate the potential of patients (a) to refrain from engaging in self-care for therapeutic purposes or (b) to develop or refine abilities to engage in care now or in the future. Nurses and patients act together to allocate the roles of each in the production of the patient's self-care and in the regulation of the patient's self-care capabilities (Orem, 1985).

Since 1958, Orem has been refining her description of nursing. To her target audience of nursing scholars and practitioners, she speaks of the "art of nursing." She writes that the goal of nursing has three components: (1) helping the patient accomplish therapeutic self-care activities, (2) helping the patient move toward responsible self-care, and (3) helping members of the patient's family become competent in providing and managing the patient's care, using appropriate consultation (Orem, 1985).

When discussing preventive health systems, Orem describes three levels of prevention: primary, secondary, and tertiary. Primary prevention is appropriate before the onset of disease. Secondary prevention is appropriate after the onset of disease and is directed to the prevention of complications and of sequelae. Tertiary prevention is appropriate when there is disability with a demand to function in society with limited human capacities, and is directed toward bringing about effective and satisfying functioning. All three levels can easily be related to diabetes, but this study is concerned with the secondary level of prevention which includes prevention of complications and adverse effects of diabetes.

People with diabetes can manage their own disease, and many do it exceptionally well. A problem for people with diabetes is how best to achieve and maintain such management. Lack of knowledge about diabetes and an inadequate management program

frequently result in anger, frustration, and a sense of isolation for the person with diabetes. While the benefits of excellent management of one's diabetes can result in long-term health and freedom from life-threatening complications, the short-term realities of the same management program are considered inconvenient and unpleasant by many. These realities include a tightly controlled life-style requiring continuous attention, frequent (7 times a day is not unusual) finger-sticks for blood glucose monitoring and several (3-5 times a day) insulin injections.

Modern technology and research can provide individuals with the knowledge and ability to control their diabetes and improve their lives. Nurses and other health educators can teach the principles and practices of good diabetes management. Nurses can promote self-care measures which regulate and prevent adverse effects of the disease.

Review of Related Literature

The volume of literature about diabetes is extensive, even when limited to the role which education plays in the prevention of complications. Therefore, the review of the literature for this study is confined to the following areas as they relate to diabetes: the history of diabetes, sequelae, management, and education programs.

The History of Diabetes

The disease called diabetes mellitus has been known to humankind for thousands of years. Egyptian scribes alluded to the disease and its classical symptoms in the famed Ebers Papyrus around 1500 B. C. Dietary and exercise prescriptions exist in writings from Bombay, India, 500 B. C. These prescriptions probably referred to Type I and Type II diabetes (Vranic, Hollenberg, & Stiener, 1985).

In the second century A. D., the Greek physician, Aretaeus, described diabetes as ". . . a wonderful affliction not very frequent among men, being a melting down of the flesh

and limbs into urine" (ADA, 1987). The name "diabetes mellitus" comes from Greek and Latin words meaning "siphon" and "honey" describing the major symptom, sugar in the urine.

In 1700 Matthew Dobson demonstrated that the urine of a person with diabetes actually contained sugar or glucose. The question then remained: where did this glucose come from and why did it accumulate in the urine of people with diabetes? Today it is known that the accumulation results from a buildup of glucose in the blood, or hyperglycemia. When the body cannot use or store glucose properly, unused amounts remain in the bloodstream. Eventually this level exceeds a point which the body accepts as normal, and "spills over" into the urine.

Although methods for measuring blood and urine glucose were developed in the nineteenth century, little could be done for people with diabetes until 1921, when Drs. Frederick Banting and Charles Best isolated the body's glucose regulating hormone, insulin. Their discovery dramatically changed the concept of diabetes treatment, which had been limited to near-starvation diets in an attempt to decrease the body's need for insulin. With insulin injections, people with diabetes would live longer, eat more normally, and gain some control of their disease (Vranic et al., 1985).

The Sequelae of Diabetes

Human bodies need energy for everything they do. Diabetes affects the way bodies convert food to energy. Normally, food which is eaten is changed to glucose, which the body uses for fuel. The glucose is then carried by the bloodstream to the cells. With the help of insulin (a hormone produced by the pancreas), glucose is changed into energy and utilized or stored for later use. In diabetes, this process is interrupted because either the body does not produce enough insulin or the insulin is not used effectively. Glucose is

unable to enter the cells and stays in the bloodstream, leading to a state of high blood sugar (hyperglycemia) (Aloia, Donohue-Porter, & Schussel, 1984).

Hyperglycemia and its metabolic abnormalities cause the complications of diabetes. Capillary basement membrane thickening which results from chronic hyperglycemia is the underlying disorder responsible for microangiopathy. The duration and intensity of hyperglycemia seem to be the factors that determine the risk for microvascular and macrovascular changes which lead to degenerative complications (Olson, 1988).

The use of insulin prolongs life, but as people with diabetes live longer, it has become clear that vascular disease in that population appears at an earlier age than in the general public. The likelihood of a person with diabetes having an amputated limb is 15 times higher than in the non-diabetic population (Vranic et al., 1985). In 1987, 40,000 deaths in the United States were directly attributable to diabetes mellitus. It is estimated that vascular complications are so common in people with diabetes, that it is responsible for 150,000 deaths annually--a figure which makes diabetes the third leading cause of death in the United States (National Diabetes Data Group, 1985).

Diabetes is the leading cause of new cases of blindness in this country. Compared with nondiabetics, people with diabetes are 25 times more likely to develop blindness, 17 times more likely to develop renal disease, and 20 times more likely to develop heart disease or suffer a stroke. Over 80% of the major amputations performed in the United States occur in diabetics. Fourteen percent of the people with diabetes (usually the elderly) are bedridden for an average of 6 weeks per year. (National Diabetes Data Group, 1985). Descriptions of the biologic and physiologic changes which precede the

microvascular changes leading to these complications of diabetes underscore the pressing need for maintenance of long-term euglycemia (Cohen, 1987).

There are two major types of diabetes as well as some rarer forms. The two major types are called Type I and Type II. They also have descriptive names. Type I is also known as Insulin Dependent Diabetes Mellitus (IDDM), because the person with this type must have insulin injections in order to live. Type II is known as Non Insulin Dependent Diabetes Mellitus (NIDDM). The person with this type may be able to control the diabetes with exercise, diet, and oral agents, although many do require insulin to maintain a normal blood glucose level.

Although diabetes has been recognized for over 2000 years, and in spite of the fact that it has emerged as one of the most common chronic diseases, it is in only a minority of cases that the etiology can be stated as known (Vranic et al., 1985). The tendency for all forms of diabetes is believed to be present at birth (ADA, 1986). In Type I (IDDM) a viral infection may trigger the disease by attacking the insulin-producing cells in the pancreas, or maybe the attack is by the individual's own immune system. It could also be a combination of the two. In Type II (NIDDM) a family history of diabetes, inactivity, and obesity are usually present (ADA, 1986). There is evidence of a nutritional component in the etiology of NIDDM (Rose, 1982).

It is possible for individuals to maintain blood glucose levels within the normal range (Subak-Sharpe, 1985). One drop of blood on a chemical reagent strip can tell a person's blood glucose level in just a few minutes. The blood can be taken from a small prick of the finger or earlobe, and the test can be performed anywhere and anytime. Insulin, activity, and diet can be adjusted until euglycemia is achieved.

Diabetes Management and Education Programs

Recent awareness of the cost-benefits of sustained euglycemia has demonstrated the importance of the role of self-management of diabetes. People with diabetes must be taught about diabetes in order to make the required lifestyle changes which prevent the complications of diabetes. The ability of people to maintain control of their diabetes (and therefore euglycemia) is associated with their increased knowledge about diabetes.

Rolf Luft, MD, the former president of the International Diabetes Foundation, states that maintaining tight blood glucose control can only be accomplished through improved diabetes education. "I have traveled to more than 50 countries. I lectured and I learned that the traditional three cornerstones for diabetes control, (medication, diet and exercise), are no longer sufficient" (Luft, 1980). Luft insists that a foundation built on three stones is unstable and that the fourth cornerstone must be education. Education and instruction make the foundation for diabetes care solid (Luft, 1980).

People with diabetes are asked to make extraordinarily complex behavior changes involving the proper use of medications, diet, blood glucose monitoring, foot care, eye exams, exercise and stress management. Simply informing people of the need to make these changes is inadequate education. Edward Bartlett, DrPH, an educational consultant from Maryland, stresses that a broad range of educational and behavioral techniques is necessary to assist people in making the lifestyle changes required by chronic diseases such as diabetes. Such techniques may include counseling, instructional aids, patient support groups, contracting, stimulus control, and others (Bartlett, 1988).

Knowledge, healthy self-care behaviors, and improved metabolic control are positive outcomes of effective patient teaching in diabetes care (Brown, 1988). Diabetes knowledge and blood glucose of thirty clients with diabetes were tested before and after a

diabetes education program in a United Kingdom clinic. Significant improvement of knowledge and blood glucose control was demonstrated after the program of 6 monthly educational meetings. The improvement was sustained for the next 12 months. A well-matched control group of 30 clients showed no improvement (Jennings, Morgan, & Barnett, 1987).

The Diabetes Knowledge Assessment (DKN) scales were developed in the early 1980's to fulfill a need for reliable knowledge assessment of clients with diabetes. When the DKN was given to 219 clients attending a 2-day diabetes education program in a Canadian hospital-based diabetes clinic, an overall score improvement from 51% to 75% was attained (Dunn, et al., 1984).

The effectiveness of a diabetes education program in the south was demonstrated when client's scores on questionnaires improved significantly (23.7%) after completion of a week-long course in diabetes management. When tested three months later, the improvement in knowledge was maintained. The frequency of admissions to the community hospital for diabetic ketoacidosis decreased markedly (from over 500 to less than 100 cases per year) with the establishment of the diabetes day care center (Graber, Christman, Alongna, & Davidson, 1977).

Management instruction often is limited in both scope and effectiveness. A hospital in a southern metropolitan area surveyed 251 of its previously hospitalized clients regarding their diabetes management instruction. The results indicated that there were gaps in their instruction apparently due to: (a) the failure of physicians to encourage participation in diabetes training; (b) competing hospital services interrupting instruction and classes; (c) comprehensive instruction limited to the

Diabetes/Endocrine Unit; and (d) shortened hospital stays combined with more acute illness states (Reyle, Thomas, & Dew, 1989).

James W. Pichert, PhD, editor of The Diabetes Educator, has found that there are gaps in diabetes education. Instead of well-organized, carefully negotiated and prioritized teaching plans based on comprehensive assessments, experienced health care professionals violate many principles of patient teaching (Pichert, 1989). Techniques for providing education to people with diabetes have varied from piecemeal instruction by physicians, nurses, and dietitians in physician's offices, hospitals, clinics, and in health departments, to comprehensive patient-education programs (Graber, Christman, Alongna, & Davidson, 1977).

Many large clinics and hospitals have provided a systematic education program for diabetic patients. Examples of these are the Joslin Clinic in Boston, Massachusetts and the Virginia Mason Clinic in Seattle, Washington. Diabetes education programs have also been developed in numerous communities in response to local needs. Most of these programs operate through a team approach in which physicians, nurses, dietitians and other health professionals collaborate in a formal curriculum.

The use of a team approach to the management of diabetes has been supported by both the American Association of Diabetes Educators and the American Diabetes Association. The development of the team and a patient care delivery system enables formulation of the minimum level of skills necessary for diabetes management (Mazze & Engel, 1986). A course designed and taught by a research team in the northwest was offered to 18 multidisciplinary health care teams (102 participants) desiring information about initiating diabetes programs. Course outcomes demonstrated positive responses to the team approach for education (Flavin & White, 1989).

Needs assessments of the consumers of diabetes education are required prior to initiating an education program. People have different backgrounds and life experiences, different prior exposure to diabetes education, different capacities to learn and, most of all, different ends to be achieved by an educational program (Teza, De Vito, & Hiss, 1987).

Community based education programs for people with diabetes have been successful in improving compliance with their regimen and decreasing blood glucose levels. The success of a community based diabetes education program, however, is influenced by a variety of factors, including the willingness of local physicians to participate (through patient referral) and to view the program as an integral part of the care of the diabetic individual (Sprafka, Kurth, Crozier, Whipple, & Bishop, 1988). One Washington State Diabetes Control Program survey of 228 physicians and 64 clients with diabetes, indicates that physicians are the most frequent source of information about diabetes education programs, but the physicians' survey responses showed that 91% knew about local education programs but that only 36% routinely referred their patients (Chapko, Norman, Bell-Hart, Nagusky, & Connell, 1987).

Nursing helps to serve society's interests in the area of health. The nursing profession has made, and continues to make, a substantial contribution toward the evolution of a health-oriented system of care. Nursing throughout its history has provided health teaching by sharing expertise with the public (American Nurses' Association, 1980). Nurses possess the education and experience to meet the needs of diabetes education consumers. One of Orem's six methods of helping patients is by teaching. The nurse's role is as a teacher of knowledge and "methods of managing self-care" (Orem, 1985, p. 151). Independent nurse consultants have opened practices

to try to meet the consumer need for quality care and education (Braddock & Sawyer, 1985). Continuing education courses for nurses and other health professionals increase understanding of the psychosocial aspects of diabetes and associated compliance problems, as well as an increased personal satisfaction from their diabetes patient care (Knopf, Kittel, Funnell, & Wolf, 1988).

Summary

Diabetes has been known to humankind for thousands of years, but little could be done for people with diabetes until insulin was discovered in 1921. In the past 10 years, substantial progress has been made in the understanding of diabetes. It has become clear that high blood glucose levels are toxic to the body and that maintenance of normal blood glucose levels requires adherence to a strict regimen balancing diet, exercise and medication.

Euglycemia is the the goal of diabetes management. Diabetes management is the responsibility of the people who live with it. Diabetes can be managed well. People have the potential to develop their intellectual and practical skills and the motivation for self-care. People who have knowledge and access to information about diabetes are best able to provide the self-care to maintain glucose control which will decrease the likelihood of developing the complications of diabetes. Knowledge, healthy self-care behaviors, and improved metabolic control are positive outcomes of effective patient teaching in diabetes care (Brown, 1988). The consequences of uncontrolled diabetes have a tremendous impact on individuals, families, and society. The social costs of diabetes are high and rising.

The diabetes educator, who may be a nurse, physician or other health professional, helps the consumer set realistic self-management goals. Diabetes education

programs range from formal and planned to informal and unplanned. Standards for Diabetes Patient Education Programs have been developed by the National Diabetes Advisory Board. Consumer needs must be considered when forming a diabetes education program.

Physician support is essential if diabetes education programs are going to make an impact in the self-management of diabetes. Such support is demonstrated by the referral of patients to these programs. The availability of home blood glucose monitoring devices and improved insulins have made the prospect of tight self-management of diabetes a possibility. Increased availability and utilization of patient education programs can make those goals a reality.

Chapter 3

DESIGN AND METHODOLOGY

This chapter is a discussion on the design and methodology of the study. The design and methodology portions are each divided into two parts: (a) the original survey, and (b) the current use of previously collected data. The sample and data collection instruments are described and explained.

Research Design

Original Study

Survey methodology was used by a northern California chapter of the American Diabetes Association (ADA) to collect data. The original study was non-experimental. The purpose was to obtain specific information which would assist in determining characteristics and health education requirements of the ADA members in the northern portion of the county. In addition, the survey sought to determine (a) which areas of diabetes education the providers believed was most important and (b) if providers actually provided the education which consumers indicated that they require.

Present Study

The present study was designed to answer three questions:

1. Are diabetes education consumers aware of available diabetes education resources?
2. Who utilizes diabetes resources within the county?
3. Do diabetes education consumers desire or require expanded resources?

The research design used for the present study was both descriptive and exploratory. According to Polit and Hungler (1983), in a descriptive design the main objective of the research is the accurate portrayal of the characteristics of persons,

situations and frequency with which certain phenomena occur. Exploratory design is a preliminary study aimed at developing potential hypotheses and refining the data collection methods for further study.

Methodology

Original Study

Survey methodology was used to collect the original data and the study was approached from the perspectives of three samples: (a) the ADA member, (b) the diabetes education provider, and (c) the physician. Questionnaires for each sample were designed and mailed by the American Diabetes Association.

Present Study

The investigator for the present study was granted permission from the area director of a northern California chapter of the American Diabetes Association to analyze the data that had previously been collected by the organization. The permission letter is in Appendix B.

Questionnaires were sent to 101 physicians, 32% responded ($n=32$); 25 were sent to providers, 80% responded ($n=20$); and 270 were sent to consumers, 44% responded ($n=120$). All of the questionnaires which were returned to the ADA were included in the present study. Data from a total of 172 questionnaires were analyzed. The data included 120 ADA members, 32 physicians, and 20 providers of diabetes education.

Frequencies and measures of central tendency were utilized to illustrate the general characteristics of consumers and to rate the importance of each category or area of diabetes health education. Consumers were categorized by age, gender, ethnic origin, and type of diabetes control used.

Data Collection Instruments

The data collection instruments were questionnaires designed to obtain specific information related to diabetes education in a city in northern California from three perspectives: (a) the ADA member, (b) the diabetes educator, and (c) the physician. The instruments were designed by the ADA. They had not been used previously and they have not been tested for validity or reliability.

The consumer questionnaire (Appendix C) was designed to obtain information from the north county's diabetic population. It was divided into three sections: (a) consumer characteristics, (b) diabetes education resources, and (c) categories of diabetes health education. The first section requested personal information about age group, gender, ethnic origin, and type of diabetes control used. The second section listed selected diabetes education resources and asked the consumers to indicate those of which they were aware and those which they utilized. The consumers were also requested to indicate if they sought diabetes care or education outside of the county. The third section asked the consumer to rate the importance of selected areas of diabetes education, list their diabetes related problems, and list areas in which they would like expanded diabetes education.

The provider questionnaire (Appendix D) was designed to obtain information about the diabetes education consumer and use of resources from the providers' perspective. It was divided into four sections: (a) numbers of clients with diabetes in their practice, (b) characteristics of their clients with diabetes, (c) diabetes education resources, and (d) categories of diabetes health education. The first section asked if the practice served people with diabetes and if so, to indicate the number. The second section requested an indication of the most common age group, gender, ethnic origin, and type of diabetes control used by people served by their practice. The third section listed selected diabetes

education resources and asked the providers to indicate those of which they were aware and those to which they referred their clients. The providers were also requested to indicate if they referred their clients outside of the county for diabetes care or education. The fourth section asked the provider to rate the importance of selected areas of diabetes education, list the diabetes related problems most frequently seen, and list areas in which they would like expanded diabetes education.

The physician questionnaire (Appendix E) was designed to obtain information about the diabetes health care consumer and use of resources from the physicians' perspective. It was divided into four sections: (a) numbers of clients with diabetes in their practice, (b) characteristics of their patients with diabetes, (c) diabetes education resources, and (d) categories of diabetes health education. The first section asked if their practice served people with diabetes and if so, to indicate the number. The second section requested an indication of the most common age group, gender, ethnic origin, and type of diabetes control used by people served by their practice. The third section listed selected diabetes education resources and asked the physicians to indicate those of which they were aware and those to which they referred their clients. The physicians were requested to indicate if they referred their clients outside of the county for diabetes care or education. A request for specific information relating to physician's diabetes education programs, the target population and the provider was included in this section. The fourth section asked the physician to rate the importance of selected areas of diabetes education, list the diabetes related problems most frequently seen, and list areas in which they would like expanded diabetes education.

Summary

A descriptive exploratory design was used for the present study of diabetes education consumers, providers and physicians. The data had been previously collected, but unanalyzed. Frequencies and measures of central tendency were used to illustrate the importance of selected areas of diabetes health education from three perspectives. Consumers were categorized by age group, gender, ethnic origin, and type of diabetes control used. The data collection instruments were questionnaires designed by the American Diabetes Association. Only cautious generalizations can be made.

Chapter 4

ANALYSIS OF DATA

Introduction

This chapter describes the analysis of data previously collected by the American Diabetes Association (ADA) in a county in northern California. The purpose of the study was to determine whether the three sample groups were aware of the current diabetes resources in the county and whether these resources were utilized by the three sample groups.

During November, 1988, the ADA mailed 396 questionnaires to selected physicians, diabetes educators and diabetes education consumers. One hundred and seventy-two questionnaires were returned. Of the questionnaires returned, providers of diabetes education accounted for the highest response rate at 80% ($n=20$) and consumers were next at 44% ($n=120$). Physicians had the lowest return rate at 32% ($n=32$).

Data were analyzed using frequencies and other descriptive measures. The subjects were physicians, diabetes education providers, and consumers. Their perceptions regarding the use of selected diabetes health education resources and the relative importance of ten selected areas of diabetes health education were the focus of this study.

Two scaling problems were found in consumer and provider Question 11 (see Appendices C and D) and physician Question 14 (see Appendix E) related to areas of health education. Three questions asked the respondent to rate the importance of selected areas of education on a scale from 1-5. Most consumers rated all areas of education as being of highest importance (5), therefore making comparisons impossible. The second problem

was respondent confusion over the meaning of the scale. A few ratings of "1" (least important) were marked, however it was clear from their responses to other questions that "1" signified highest importance to them.

The data were analyzed using four major categories: (a) analysis of consumer data, (b) analysis of provider data, (c) analysis of physician data, (d), and analysis of comparative data for consumers, providers, and physicians. Each category will be discussed in the following text.

Analysis of Consumer Data

Consumer data were subdivided into seven sections: (a) consumer demographics, (b) awareness of selected diabetes resources, (c) utilization of selected diabetes resources, (d) importance of selected areas of diabetes education, (e) characteristics of consumers who seek diabetes care outside of the county, (f) diabetes-related problems, and (f) the need for expanded diabetes education resources.

Analysis of Consumer Demographics

Demographic data for consumers were analyzed according to ethnicity, type of diabetes control used, age, and gender. Types of diabetes control were categorized as "using insulin" and "not using insulin". There were three age categories: "0-35", "36-50", and "over 50" years.

The first question asked the consumers if they had diabetes. Of the 120 respondents, 109 indicated that they had diabetes. Eleven respondents indicated they did not have diabetes and returned their questionnaires unanswered, as directed. The following analysis of respondent data includes those 109 people who completed the questionnaire, and excludes the 11 people who indicated that they did not have diabetes.

When responding to the second question "which type of diabetes do you have?", 60 indicated Type I (insulin dependent), 15 indicated Type II (non insulin dependent) using insulin, 30 indicated Type II using diet and/or oral agents, and 4 indicated "other." Table 1 represents the consumer reporting of the type of diabetes and diabetes control used.

Table 1

Number and Percent of Type of Diabetes And Diabetes Control Used (N=109)

Type and Control Used	n	%
Type I	60	55.0
Type II, using insulin	15	13.8
Type II, using oral agents/diet	30	27.5
Other	<u>4</u>	<u>3.7</u>
Total	109	100.0

In response to Questions 3 and 4, 16 respondents indicated they were diagnosed with diabetes between the ages of 0-12 years of age, 5 between the ages of 13-18 years, 20 between the ages of 19-35 years, 20 between 36-50 years, and 48 over 50 years. When asked about their present age group, 5 indicated 0-12 years, 6 indicated 13-18 years, 8 indicated 19-35 years, 19 indicated 36-50 years, and 71 indicated over 50 years of age. Table 2 represents the consumer's present age and consumer's age at the time of diagnosis with diabetes.

Table 2

Number and Percent of Present Age and Age When Diagnosed with Diabetes (N=109)

Age Range (years)	<u>Present</u>		<u>Diagnosis</u>	
	n	%	n	%
0-12	5	(5)	16	(15)
13-18	6	(6)	5	(5)
19-35	8	(7)	20	(18)
36-50	19	(17)	20	(18)
Over 50	<u>71</u>	(65)	<u>48</u>	(44)
Total	109	(100)	109	(100)

Questions 5 and 6 requested consumer characteristics regarding gender and ethnic identity. Forty-six respondents reported being female, 63 being male. There was minimal variability in ethnicity, with only 2 respondents indicating serving an ethnic group other than Caucasian. One respondent indicated being Black and one Hispanic.

Analysis of Consumer Awareness Data

The consumer questionnaire sequenced information gathering items regarding awareness and utilization of resources. Questions 7 and 9 relate to resources within the county. Questions 8 and 10 relate to resources outside of the county.

Question 7 sought information about consumer's knowledge of selected diabetes education resources. Over 50% of the consumers reported that they were aware of the

following resources: (a) the American Diabetes Association (ADA), (b) a hospital run by a religious order (Hosp A), (c) private physicians, and (d) dietitians and nutritionists.

The resources least known were: (a) 2 community hospitals (Hosp B and C), (b) Public Health Department (PHD), (d) a visiting nurses organization (VN), (e) home health care agencies, and (f) private diabetes educators.

Analysis of Consumer Utilization Data Within the County

Question 9 sought information regarding the utilization of diabetes information resources within the county. Of the 11 resource choices offered, the private physician was the only resource which was reported utilized by more than 50% of the consumers. The resources reported as least utilized by consumers were (a) the American Diabetes Association (ADA), (b) a hospital run by a religious order (Hosp A), (c) 2 community hospitals (Hosp B and C), (d) the Public Health Department (PHD), (e) private diabetes educators, and (f) dietitians and nutritionists. An additional 22.9% ($n=25$) reported that they seek information outside of the county. No consumer reported utilizing the visiting nurses organization (VN) or home health care agencies. Figure 1 is a comparison the awareness of resources by consumers with their utilization of those resources.

Analysis of Consumer Utilization Data Outside of the County

Questions 8 and 10 sought information regarding consumers who go outside of the county for education or medical care of their diabetes. Thirty-nine (35.8%) consumers indicated that they sought information outside of the county and 70 (64.2%) indicated that they did not. More insulin users (28.8%) than non insulin users (6.7%) indicated that they seek diabetes education outside of the county. A higher proportion of people over the age of 50 (19.2%) sought diabetes education outside of the county than those under the age of 50 (16.3%). Forty-three (39.5%) consumers indicated that they sought medical care of their diabetes outside of the county, and 66 (60.5%) consumers indicated that they did not. A higher proportion of people who use insulin (31.4%) reported seeking medical care for their diabetes outside of the county than people who did

not use insulin (7.6%). People who did not use insulin to control their diabetes were more likely to seek medical care within the county.

Analysis of Consumer Data Regarding the Importance of Selected Areas of Health Education

Question 11 was designed to obtain information regarding the consumers' perception of the importance of selected areas of diabetes health education. Consumers were asked to rate each subject area for their opinion of its importance to the well-being of people with diabetes by circling the appropriate answer following each heading using the scale 1 = least important to 5 = very important. Consumers tended to rate all areas of diabetes education as important (N=109).

Over 81% of the responding consumers rated the following categories as moderately important to very important: (a) general diabetes information; (b) nutrition and meal planning; (c) exercise; (d) medication; (e) monitoring, blood and urine; and (f) hyper- and hypoglycemia. Between 60 and 80% of the consumers indicated the following areas as moderately important to very important: (a) psychological factors, (b) illness, (c) benefits and responsibilities of care, and (d) community resources. A higher proportion of insulin users (36.8%) than people who do not use insulin (20.0%) indicated that the area regarding the effects which illness has on diabetes is a highly important area for expanded health education. People over 50 years (42.1%) tended to rate illness associated with diabetes as most important more frequently than people of 36-50 years (38.9%) or 0-35 years (7.4%). A higher proportion of insulin users (22.8%) than people who do not use insulin (9.8%) felt the area listed as community resources was highly important.

Question 12 stated that the above list may not contain all of the important subject areas of diabetes health education and asked if there were other subject areas in which

consumers would like to see services provided. Of the 78 people who responded to this item, 46 responded no and 32 responded yes. Examples of areas in which consumers indicated they would like services are: (a) a resource hotline, support groups, and community activities; (b) basic information, where to obtain supplies, interactions between medications and diabetes; (c) new research, pregnancy and diabetes, management for people with flexible lifestyles and travel; and (d) legislation and political action groups.

Analysis of Consumer Data for Diabetes Related Problems

Question 13 asked the respondents to select three areas of diabetes education in which they have diabetes-related problems. Of the 85 consumers who responded to this item, 49% ($n=42$) indicated that they have diabetes related problems related to nutrition. The consumers were allowed to select three areas. Their other choices ranged from 8% ($n=7$) to 32% ($n=28$) in the other areas. The following areas were selected in the order of frequency with the most first: (a) glycemic states, (b) exercise, (c) general information, (d) monitoring, (e) psychological factors, (f) medication, (g) illness, (h) responsibilities, and (i) community resources. A higher proportion of insulin users (13.7%) than non insulin users (11.2%) indicated that their diabetes-related problems fall under the category labeled "general information."

Analysis of Consumer Data Regarding the Need for Expanded Diabetes Education Resources

Question 14 asked the consumers to indicate three of the selected areas of diabetes education in which they felt further education would reduce the incidence of diabetes-related problems. The respondents were allowed to indicate three subject areas.

Of the 85 consumers who responded to this question, 34% ($n=29$) reported that nutrition was the subject area in which expanded education would reduce diabetes related

problems. The range of their other choices was from 5% ($n=5$) to 31% ($n=27$) and included in descending order: (a) general information, (b) exercise, (c) monitoring, (d) responsibilities, (e) medication, (f) glycemic states, (g) psychological factors, (h) community resources, and (i) illness. Consumers responded that diabetes related problems could be reduced by expanding diabetes education. Examples of their suggestions were: (a) develop updated and standardized diabetes education programs by health professionals/educators; (b) explain how to balance nutrition, exercise, and glucose monitoring; (c) share new research on medications and the effect of high glucose levels on cells; and (d) discuss prevention of long term complications of diabetes.

Question 15 asked the consumers to indicate three areas in which they would like to see diabetes education services expanded or made available within their county. The three most frequently named areas were: (a) community resources, (b) general information, and (c) nutrition. Least frequently named areas were: (a) psychological factors, (b) exercise, (c) medication, (d) monitoring, (e) glycemic states, (f) illness, and (g) responsibilities. A higher proportion of insulin users (24.6%) than non insulin users (15.3%) indicated that they felt there is a need for expanded education resources relating to general information about diabetes. A higher proportion of people whose age was over 50 years (20.0%) than 36-50 years (15.4%) or 0-35 years (0.0%) indicated that they would like to have further education available in the area of exercise and diabetes. Consumer comments indicated that there is a desire for expanded diabetes education resources, such as: (a) educators to teach newly diagnosed people both in the hospital and at home; (b) classes, support groups, people with long-term diabetes to tell new diabetics what they would have done differently; (c) a hotline for answers to the everyday problems, including utilization of monitoring and injecting equipment;

(d) community resources, a library with new literature staffed by people who know about diabetes who could provide on-going education and information to people interested in diabetes; and (e) a variety of outreach methods and educational information which address the complex nature of diabetes.

Analysis of Provider Data

The provider questionnaire was developed for the purpose of gathering information on currently available health education resources for people with diabetes and to assess the need for expanded diabetes health education services in the county. Provider data were subdivided into 5 sections: (a) analysis of data regarding demographics of their clients with diabetes, (b) analysis of provider data regarding their services, (c) analysis of provider data regarding the importance of selected areas of health education, (d) analysis of provider data for diabetes related problems, and (e) analysis of provider data regarding the need for expanded diabetes education resources.

Question 1 asked if the respondent provided diabetes health teaching and/or education programs? Thirteen responded yes, 7 responded no. The respondents who answered no were removed from this study.

Question 2 asked providers to indicate how many people with diabetes use their education program. The 13 providers who answered this question responded as follows: (a) 38.5% ($n=5$) serve less than 10 people, (b) 7.7% ($n=1$) serves 10-19 clients, (c) 23.0% ($n=3$) serve 20-49 clients, (d) none serve between 50-100, (e) 23.0% ($n=3$) serve more than 100 clients, and 7.7% ($n=1$) did not know how many people with diabetes they served. Table 3 represents the numbers of clients using the diabetes education resources surveyed.

Table 3

Number and Percent of the Number of Clients Who Utilize Their Diabetes Education Service (N=13)

Range	n	%
Less than 10	5	38
10-19	1	7
20-49	3	23
50-100	0	0
More than 100	3	23
Did not know	<u>1</u>	<u>7</u>
Total	13	98

Note: Percent does not add up to 100% due to rounding.

Analysis of Provider Data Regarding Demographics of Their Clients

Question 3 was designed to obtain information about the age range of consumers served by the provider's diabetes education program. All but one of the responding providers reported serving consumers over 36 years of age, 1 indicated not knowing the age range of people served by their resource.

Provider Questions 4 and 5 were designed to provide information regarding the gender and ethnic groups served by diabetes education providers. Of the 13 providers who responded to this item, over 77% (n=10) reported that most of their diabetic

population were female or an equal mix of male and female. All but three providers indicated that their clients are mostly Caucasian, 2 reported serving Hispanic clients, and 1 reported serving Black clients.

Question 6 was designed to determine which type of diabetes control is most typically used by the provider's clients. Nearly one-half ($n=6$) of the 13 providers who answered this question reported that most of their clients are Type II (Non-insulin dependent) who are using diet and/or oral agents; 2 providers reported that most of their clients have Type I (insulin dependent) diabetes; 2 reported their clients were primarily Type II (Non-insulin dependent) and are using insulin; and 3 providers responded other and did not indicate what "other" was. Figure 2 represents the type of diabetes and diabetes control reportedly used by the clients of the providers.

Analysis of Provider Data Regarding Their Services

Question 7 sought information about provider's knowledge of the selected diabetes education resources. Of the 13 providers who answered this question, over 50% indicated that they had knowledge about all of the resources which were listed in the questionnaire.

Question 8 asked providers if they refer their clients with diabetes outside of the county. Thirteen providers answered this question. One provider indicated referring clients outside of the county for medical care, 3 for diabetes education, 9 did not refer their clients outside of the county at all.

Question 9 asked providers if they consult community resources when they work with people with diabetes. All providers indicated that they did consult community resources.

Question 10 was designed to determine which community resources were consulted by providers. Of the 13 providers who answered this question, over 50% indicated that they utilized the following resources: (a) the American Diabetes Association of Santa Cruz County, (b) private physicians, and (c) dietitians and nutritionists.

The diabetes education resources least utilized by responding providers were: (a) a community hospital (Hosp B), (b) a hospital run by a religious order (Hosp A), (c) the Public Health Department (PHD), (d) a visiting nurses organization (VN), (e) home health care agencies, and (f) private diabetes educators. The provider questionnaire did not include one community hospital (Hosp C) as a choice in this question. Figure 3 on page 37 represents the provider reporting on the awareness and utilization of the selected resources.

Analysis of Provider Data Regarding the Importance of Selected Areas of Health Education

Question 11 was designed to obtain information regarding the provider's perception of selected areas of diabetes education. Providers were asked to rate each subject area for their belief of its importance to the well-being of people with diabetes. They were directed to use the scale of 1 = least important to 5 = very important. Over 81% of the providers rated all subject areas as moderately important to very important ($n=11$).

Question 12 stated that the list may not contain all of the important subject areas of diabetes health education and asked if there were other subject areas in which they would like to see services provided. Of the 11 providers who answered this question,

over 54% ($n=6$) responded that there were not, 45% ($n=5$) indicated that there were.

No examples of their comments to this question were available.

Analysis of Provider Data for Diabetes Related Problems

Question 13 requested that the provider select the three subject areas that most closely reflect the diabetes-related problems they encounter most frequently with their clients with diabetes. All 11 providers who responded to this question reported that their clients have problems related to nutrition and 45% ($n=5$) of the providers indicated their clients have problems with their glycemic states.

Providers reported least frequently that their clients have diabetes related problems in the following areas: (a) general information, (b) psychological factors, (c) exercise, (d) medication, (e) monitoring, (f) illness, and (g) responsibilities. No provider indicated that their clients had problems with the area labeled community resources. Written provider comments to this item were related to: (a) glucose monitoring, exercise, diet; (b) dealing with common long-term complications of diabetes, especially eye sight, neuropathy, and vascular disorders; (c) compliance, depression, frustration, and motivation; and (d) basic information about diabetes, anatomy and physiology, and medications.

Analysis of Provider Data Regarding the Need for Expanded Diabetes Education Resources

Question 14 asked the providers to indicate areas of diabetes education in which they felt further education would reduce the incidence of diabetes-related problems. Of the 11 responding providers, 72 % ($n=8$) indicated nutrition, and 55% ($n=6$) blood glucose monitoring as the areas in which their clients have the most diabetes related problems. The areas reported least frequently were: (a) general information, (b) psychological factors, (c) exercise, (d) glycemic states, (e) illness,

(f) responsibilities, and (g) community resources. No provider listed the areas labeled medication as being an area in which clients had diabetes related problems.

Providers responded that diabetes related problems could be reduced by expanding diabetes education in the following areas: (a) avoidance of long-term complications by balancing diet, exercise, medication, and glucose monitoring; (b) management of sick days, stress management techniques; and (c) assuming responsibility for ongoing treatment, use of community resources to continue their own education.

Question 15 asked the providers to indicate areas in which they would like to see diabetes education services expanded or made available within the county. Of the 11 responding providers, 63% ($n=7$) reported that they would like to see the areas of nutrition and community resources expanded. The areas indicated least frequently were: (a) general information, (b) psychological factors, (c) nutrition, (d) exercise, (e) glycemic states, and (f) responsibilities. No provider listed medication, monitoring, or illness.

Written provider comments indicated that they would like to see diabetes education resources expanded. Examples of their suggestions were: (a) development of a hospital-based education program to improve the patient's understanding of the illness, provide continuity between education programs, and obtain medical support for them; (b) education programs to deal with issues associated with living with diabetes, and include visiting of diabetics by other diabetics; and (c) organization of support groups with regular meetings, newsletters, workshops, and a library. "I think education is the key to controlling this deadly disease", wrote one diabetes education provider.

Analysis of Physician Data

The physician questionnaire was developed for the purpose of gathering information from the physician's perspective on currently available health education resources for people with diabetes and to assess the need for expanded diabetes education services in the county. One hundred and one questionnaires were mailed, 32 (32%) were returned after follow-up calls were made by an ADA volunteer. Physician data were subdivided into 5 sections: (a) analysis of physician data regarding their patients, (b) analysis of physician data regarding their services, (c) analysis of physician data regarding the importance of selected areas of health education, (d) analysis of data for diabetes related problems, and (e) analysis of data regarding the need for expanded diabetes education resources.

Questions 1 and 2 were designed to determine if the physician treated people with diabetes, and if so how many. Of the 32 responding physicians, 27 reported that they did treat people with diabetes in their practice, 5 reported that they did not and returned their questionnaires as directed. The following data reflect answers of the 27 who continued with the questionnaire. Six physicians reported that they treated less than 10 patients with diabetes, 6 treated from 10-19 patients, 7 treated in the range of 22- 49 patients, 6 treated in the range of 50-100 patients, and 2 treated more than 100 patients with diabetes.

Analysis of Physician Data Regarding Their Patients

Question 3 was designed to obtain information about the age groups of people treated for diabetes. Of the 27 responding physicians, over 81% (22) reported that their clients were 36 years of age or older. No physician reported clients in the 13-18 year age group.

Questions 4, 5, and 6 were designed to determine the gender, ethnic group, and type of diabetes control used most frequently. Of the 27 physicians who answered these questions, over 80% (22) reported that their clients with diabetes were either primarily female or an equal mix of males and females. All but one physician reported treating only people who were Caucasian, one physician reported treating people who were Hispanic.

Over 77% ($n=21$) of the physicians reported that their patients have Type II diabetes and are using diet or oral agents for control. About 18% ($n=5$) of the physicians indicated treating mostly Type I (insulin dependent) patients. Least frequently reported was Type II (non-insulin dependent) using insulin.

Analysis of Physician Data Regarding Their Services

Questions 7, 8, 9, and 10 were designed to obtain information about the physician's knowledge and utilization of diabetes education resources. Of the 27 responding physicians, 88% ($n=24$) reported that they did not refer their patients outside of the county for diabetes care or education.

Over 50% of the physicians reported being aware of the following resources: (a) the American Diabetes Association (ADA), (b) a hospital run by a religious order (Hosp A), (c) a community hospital (Hosp C), (d) private physicians (MD), (e) a visiting nurses organization (VN), (f) home health care agencies (HHC), and (g) dietitians and nutritionists (D/Nut). The least known resources were: (a) private diabetes educators (DEd), (b) the Public Health Department (PHD), and (c) a community hospital (Hosp B).

Over 77% ($n=21$) of the responding physicians indicated that they did utilize community resources. Of the selected resources, only nutritionists and dietitians were

reported utilized by over 50% of the physicians. Least utilized were: (a) the American Diabetes Association (ADA), (b) a hospital run by a religious order (Hosp A), (c) a community hospital (Hosp C), (d) private physicians (MD), (e) home health care agencies (HHC), and (f) the visiting nurses organization (VN). No physician reported utilizing the Public Health Department (PHD), a community hospital (Hosp B), or private diabetes educators (DEd). Figure 4 represents the physician reporting of awareness and utilization of selected diabetes education resources. No comments were available regarding the definition of "other."

Question 11 asked if the physician provided diabetes health teaching and/or education programs. Of the 27 physicians who had completed the questionnaire to this

point, over 66% ($n=18$) responded that they did provide diabetes education programs, 30% ($n=8$) responded that they did not, and one physician did not answer this question.

The physicians were directed to return the questionnaire at this point if they did not provide diabetes education programs. The following data are based on the answers of the 18 physicians who reported providing diabetes education.

Questions 12 and 13 were designed to obtain information regarding physician programs for diabetes education. Physicians were allowed to select more than one answer. Of the 18 responding physicians, 83% ($n=15$) indicated their programs were aimed at individual patients only, 27% ($n=5$) were available to family members and significant others. No responding physicians reported that their education programs were available for groups or families. The data indicated that the education was provided primarily by the physician in 94% ($n=17$) of the offices.

Analysis of Physician Data Regarding the Importance of Selected Areas of Health Education

Question 14 was designed to obtain information regarding the physician's perception of the importance of selected areas of diabetes health education. Physicians were asked to rate subject areas of diabetes education for their belief of its importance to the well-being of people with diabetes. They were directed to use the scale of 1 = least important to 5 = very important ($N=19$).

All of the responding physicians rated the following categories as moderately important to very important: (a) general diabetes information, (b) psychological factors, (c) nutrition/meal planning, (d) exercise, (e) medication, (f) monitoring of blood and urine, (g) hyper- and hypoglycemia, and (h) illness. Over 89% of the physicians rated the categories of benefits and responsibilities of care, and community resources as moderately important to very important to people with diabetes.

Question 15 advised the physician that the above list may not contain all of the important subject areas of diabetes health education and asked if there were other subject areas in which they would like to see services provided. Of the 19 physicians who responded, 13 indicated no, 6 indicated yes.

Of the 6 physicians who indicated that there were other areas in which they would like to see diabetes education provided, the three subject areas most frequently listed related to: (a) community resources for children with diabetes, and for non hospitalized people at the time of diagnosis; (b) prevention of complications, how and when to see the ophthalmologist, exam and care of feet, the association of diabetes control and peripheral artery disease, and cholesterol lowering; and (c) Spanish language programs.

Analysis of Physician Data for Diabetes Related Problems

Question 16 requested physicians to select the three subject areas that most closely reflect the diabetes-related problems they encounter most frequently with their patients with diabetes. The most frequently listed subject areas were: (a) nutrition ($n=11$), (b) general information ($n=7$), and (c) exercise ($n=5$). Other subject areas were listed less frequently.

Physicians commented that their patients' diabetes related problems were primarily in the following categories: (a) prevention of long-term complications by balancing diet, exercise, and medication, relating exercise to nutritional needs, planning meals for the family, and eating out; (b) understanding of the disease process, home blood glucose monitoring, continued use of alcohol and nicotine, failure to return to consultants (such as ophthalmologists) for follow up; and (c) lack of uniform recommendations for dealing with illness, changing blood sugar levels and the need for change in medication.

Analysis of Physician Data Regarding the Need for Expanded Diabetes Education Resources

Question 17 asked the physicians to indicate which of the selected areas of diabetes education they felt further education would reduce the incidence of diabetes related problems. Of the 19 responding physicians, 31% (6) indicated the area of nutrition and 26% (5) indicated general information. Ten percent or less indicated that further education in the following areas would reduce the incidence of diabetes related problems: (a) psychological factors, (b) exercise, (c) medication, (d) monitoring, (e) glycemic states, (f) illness, (g) responsibilities, and (h) community resources.

The physician comments to Question 17 were grouped into the following categories: (a) general health care, diet, exercise, weight control, nutrition, and practical cooking classes; (b) general education about diabetes, simple physiology course in glucose metabolism, and the importance of maintaining normal blood glucose levels; and (c) crisis phone numbers and advice nurse.

Question 18 asked the physicians to indicate the areas in which they would like to see diabetes education services expanded or made available within the county. Of the 19 responding physicians, 26% ($n=5$) indicated that they would like to see services expanded in the areas of nutrition and general diabetes information. From 5% (1) to 21% (4) of the physicians indicated a desire for expanded resources in the diabetes education areas of: (a) responsibilities, (b) community resources, (c) exercise, (d) medication, and (e) monitoring. No physician reported a desire for expanded education services in the areas of psychological factors, illness, or glycemic states.

Examples of specific areas in which physicians would like to see services expanded were: (a) coordinated education programs on nutrition, exercise, home blood glucose testing, and for new diabetics on insulin; (b) services for Spanish speakers; and

(c) access to new research and information, such as maintaining control by utilizing long-acting insulin preparation and multiple injections over a 24 hour period.

Comparison of Data Between Groups Presented in Percents

This section will display the results of comparative data from the consumer, provider, and physician questionnaires. Three sets of data were compared. Data set one compared the importance for selected areas of health education. Data set two compared the reporting of diabetes related problems in selected areas of health education, and data set three compared the need for expanded diabetes resources.

Comparison of Three Group's Rating of Importance for Selected Areas of Health Education

The first data set compares the ratings of providers, consumers, and physicians in their ratings of the importance of the selected health care areas to the well-being of people with diabetes. Over 80% of physicians and providers rated most areas of health education as important, with responsibility of care (life goals) and community resources being indicated less frequently. Although fewer consumers than physicians or providers rated psychological factors and community resources as important areas, over 60% of responding consumers did rate them as important.

Figure 5 represents the comparison of consumer, provider and physician reports on the importance of selected areas of education to the well being of the person with diabetes.

Comparison of Three Groups' Rating of Diabetes Related Problems in Selected Areas of Health Education

The second data set compares the rating of providers, consumers and physicians in their perception of diabetes related problems associated with the selected health care areas. All three groups indicated that the problems most frequently encountered were related to nutrition. Providers reported that their clients also tend to have problems related to general knowledge about diabetes and maintenance of normal glycemic states. Physicians agreed that their clients also have problems related to general diabetes information as well as exercise. Consumer responses agreed with the physicians' for exercise and reported that they have problems related to monitoring of their blood glucose. Figure 6 represents the comparison of consumers, providers and physician

reported perceptions regarding the importance of selected areas of education associated with diabetes related problems.

Comparison of Three Groups' Rating of the Need for Expanded Diabetes Resources

The third data set compares consumer, provider, and physician ratings of the need for expanded diabetes education resources in selected areas. Diabetes education providers, consumers and physicians most frequently indicated that they would like to see expanded services in the areas of nutrition and general diabetes information. Providers also indicated that they would like to see resources expanded which would assist their clients in the maintenance of normal blood glucose levels. Consumers indicated that they were also interested in expanding service related to exercise. Figure 7 represents a comparison of the consumer, provider and physician reports of their perceptions about the areas of diabetes education they most desired for expansion.

Figure 7. Comparison of Consumers, Providers, and Physicians in Their Reporting of Desire for Expansion of Resources in the Selected Areas of Health Education.

Summary

Members of the American Diabetes Association, physicians and diabetes education providers who responded to the survey indicated that people with diabetes were mostly Caucasian and over 50 years of age. They indicated that diabetes education was most frequently provided by the ADA and private physicians.

A higher proportion of consumers reported using insulin for diabetes control than providers or physicians reported their clients' use of insulin. Providers of education and physicians reported most of their patients used diet or oral medication for diabetes control.

One-third of the consumers sought information and medical care of their diabetes outside of the county surveyed. The majority of consumers who sought care outside of the county reported that they used insulin, were male, and over 50. Twenty-five percent of

the physicians surveyed reported referring their diabetic patients outside of the county for medical care.

Consumers, providers, and physicians were aware of all of the selected diabetes education resources, but not all of the resources were utilized. Over 77% of the physicians reported that they did not utilize community resources for their clients with diabetes. They personally provide the diabetes education to their patients. No physician reported utilizing the Public Health Department, a community hospital (Hosp B) or private diabetes educators.

Consumers reported that they call their personal physician when they have questions about their diabetes. Over 50% of the consumers were aware of the ADA but no resource other than physicians was reported utilized by over 50%. No consumer reported utilizing the visiting nurses organization (VN) or home health care agencies.

All of the selected areas of diabetes education were rated as important by the three populations surveyed. Nutrition was consistently indicated as the area in which most diabetes related problems occurred and where people could benefit from expanded services. Responsibility of care and psychological factors were areas which were also rated as important by the three groups. Community resources was an area rated as important by consumers and physicians, but no provider indicated it as areas in which their clients have diabetes related problems.

Providers indicated that, along with diet, maintenance of normal blood glucose levels and monitoring of blood glucose are areas in which they would like to see expanded resources. No provider indicated a need for expanded services in the area of medication.

Chapter 5

CONCLUSIONS AND RECOMMENDATIONS

This chapter contains the conclusions of this study. Major findings are discussed and recommendations for further study are offered.

This study was the analysis of previously unanalyzed data which were collected by a northern California chapter of the American Diabetes Association. The purpose of the original study was to obtain specific information which would assist in determining (a) if the consumers are aware of selected diabetes education resources, (b) if the consumers utilize these resources, (c) if the physicians are aware of these resources for their clients, (d) if physicians refer their clients to these resources, and (e) if the resources are adequately meeting the increased needs of the clients.

Survey methodology was used for the original study by the American Diabetes Association to collect informative, descriptive, and comparative data about diabetes education in the northern part of the surveyed county. The investigator for the present study was granted permission to analyze the data from the area director of the ADA.

Data collection instruments for the original study were questionnaires designed to obtain information from three perspectives: (a) the ADA member, (b) the diabetes education provider, and (c) the physician. The consumer questionnaire was divided into three sections: (a) consumer characteristics, (b) diabetes education resources, and (c) categories of diabetes health education. The provider and physician questionnaires were designed to obtain information about the diabetes education consumer and diabetes education resources. They were divided into four sections: (a) numbers of clients with

diabetes, (b) characteristics of their clients with diabetes, (c) diabetes education resources, and (d) categories of diabetes education.

Questionnaires were sent to 270 consumers, 44% responded ($n=120$); 25 were sent to providers who had an 80% response rate ($n=20$); and 101 were sent to physicians who had the lowest return rate at 32% ($n=32$). Data from a total of 172 questionnaires were analyzed.

Frequencies and measures of central tendencies were used to illustrate the importance of each category of diabetes health education from three perspectives. Consumer characteristics were categorized by age, gender, ethnic origin, and type of diabetes control used.

Conclusions

Based on the findings of this survey, the following conclusions were made. Consumers of diabetes education who responded to the survey were mostly Caucasian, over 50 years of age and had Type I (insulin dependent) diabetes. They were aware of all the diabetes education providers within the county, but did not make full use of them. Consumers indicated that health education was provided most frequently by the ADA, private physicians, and a hospital run by a religious order (Hosp A). No consumer reported utilizing the visiting nurses organization or home health agencies. When they have questions regarding diabetes, most consumers indicated that they contact their private physician. One-third of the consumers sought information outside of the county. People who sought diabetes resources outside of the county reported that they used insulin to control their diabetes, and were over 50 years of age. People who used diet and/or oral medications to control their diabetes were more likely to seek medical care within the county.

Physicians who responded to the survey indicated that their patients with diabetes were mostly over 50 years of age, Caucasian, and control their diabetes using diet and/or oral agents. Twenty-five percent of the physicians indicated that they refer their patients outside of the county for diabetes education or medical care. Although physicians indicated awareness of all of the diabetes education resources, few of them referred their patients except for nutritional counseling. No physician reported referring their patients to the Public Health Department, a community hospital (Hosp B), or private diabetes educators.

Consumers, physicians, and providers all indicated that they felt further education would reduce the incidence of diabetes related problems in four areas: (a) nutrition, (b) exercise, (c) blood glucose monitoring, and (d) glycemic states. Providers indicated that they would like to see resources in these areas expanded. Consumers' written comments indicate a desire for expanded resources such as libraries, hotlines, support groups, and community activities, however their collective response did not support such a need.

Physician and provider comments indicated a desire for consumers to be more responsible for their health, especially related to weight and exercise. Provider comments indicated a desire for increased coordination of care and communication between providers and physicians.

Most of the responding physicians reported that they did not refer their patients to any outside resource. If, as consumers report, physicians are the primary source of their diabetes education, any attempt at providing expanded diabetes education programs must have the support of those physicians. Educational programs in this community are not likely to be utilized without physician referral.

People, generally, are interested in their own health. People with diabetes can learn about diabetes, nutrition, exercise and medication. They can learn to provide the self-care required to control their glycemic state and they can be proactive in the prevention or forestalling of complications of diabetes and in the maintenance of optimum health. People with diabetes would benefit if diabetes education resources were made more available to those who control their own diet, medications, and activity.

Recommendations

General recommendations are made based upon the findings of this study. A recommendation for further study is to repeat this study and to (a) expand the size of the samples, and (b) modify the questionnaire in order to gather detailed information regarding utilization or lack of utilization of currently existing resources. A survey of the entire county would collect the data required to assess and support the need for a comprehensive diabetes education program.

A future study should include the entire membership of the entire chapter of the ADA. The diabetes education consumer sample was not a random sample, but rather a sample of convenience, drawn from a selected portion of the membership of the American Diabetes Association. From the estimated 11,000 people with diabetes in the county, only 120 of the 305 ADA members were surveyed in this study. Those people surveyed were people who already have demonstrated an awareness of the need to have current information about diabetes by being members of the association. Generalizations about the needs of non-members are difficult to make.

A means for contacting Hispanics with diabetes needs to be determined. The questionnaires should be translated into Spanish for the Spanish speaking population. The

results of this study do not include information about the Spanish-speaking population and the residents in the southern part of the county.

A future survey should include all of the education providers and physicians in the county. The researcher must provide prior personal contact and vigorous follow-up contacts in order to encourage a greater return rate. The physician sample was small ($n=32$) and the return rate was poor (32%). Furthermore, several physicians did not answer all questions. The diabetes education provider sample had an excellent return rate at 80%, but never the less had a small number ($n=20$). Several providers did not answer all of the questions. The provider and physician data collection instruments need to include items which will assist the researcher in determining why there is such a poor utilization rate by physicians for diabetes education resources.

Diabetes education programs need to be tailored to meet the needs of individuals or small groups. In the county surveyed, about 90% of the people with diabetes are adults, therefore the majority of the education programs must be aimed at that population and based on a foundation which includes the needs of people in that age group and adult learning theories.

Diabetes is a complex, chronic disease which can lead to the development of many serious complications. The effects of diabetes management and complications have a tremendous impact on the person with diabetes, their family, and their community.

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APPENDIX A

Approval Letter

Human Subjects Institutional Review Board

SAN JOSE STATE UNIVERSITY FOUNDATION

April 27, 1989

Sandra Holman
451 Fifth Avenue
Santa Cruz, CA 95062

Dear Ms. Holman:

Your human subjects protocol number 7491, entitled "Needs Assessment for Expanded Diabetes Education in North Santa Cruz County," has received final approval from the Human Subjects Institutional Review Board. Attached is a copy of the final approval form with the signatures of the Chairman of the Human Subjects Institutional Review Board, Dr. Toni Campbell, and the Associate Academic Vice President for Graduate Studies and Research, Dr. Serena Stanford.

The Human Subjects Institutional Review Board must be notified in writing of any proposed changes to this approved protocol, and approval must be granted in writing before any change is instituted.

If you have any questions, please contact Dr. Toni Campbell at (408) 924-3725 or myself at (408) 924-1438.

Congratulations and good luck with your research!

Sincerely,

A handwritten signature in cursive script that reads "Jerelyn Cockriel".

Jerelyn Cockriel
Contracts and Grants Coordinator

Attachment

APPENDIX B
Permission Letter

December 1, 1988

Sandra Holman
451 Fifth Avenue
Santa Cruz, Ca 95062

Dear Sandra:

We are happy to give you permission to use the information from our Diabetes Education Survey, and hope that it will be useful for your thesis. If you have need for further information, don't hesitate to contact me.

Sincerely,

Lorna Krkich
Area Director

LK:eb

APPENDIX C

Consumer Cover Letter and Questionnaire

Dear ADA Member,

November is **Diabetes Awareness Month** and we are requesting 15-30 minutes of your time to complete and return this questionnaire. To encourage your response during the month of November, we have included a stamped return envelope.

You are invited to participate in a study by the Santa Cruz Chapter of the American Diabetes Association. The study involves diabetes health education resources in Santa Cruz County. Your name was selected from the membership list of the Santa Cruz Chapter of the American Diabetes Association.

We are gathering information to answer two questions:

1. What are the currently available health education resources for people with diabetes in North Santa Cruz County?
2. Is there a need for expanded diabetes education services in North Santa Cruz County?

The questionnaire has been designed to protect your anonymity. No person or agency will be identified in the study. A code number does appear on the questionnaire. It will be used solely for the purpose of contacting non respondents. A copy of the results of this study will be available in the Santa Cruz ADA office.

Your contribution is essential to the success of this project, and we appreciate your taking the time from your busy schedule to complete and return the questionnaire.

Should you have any questions, please contact the ADA office at 425-7332.

Consumer Questionnaire

This questionnaire has been developed for the purpose of gathering information regarding characteristics of the diabetic population in Northern Santa Cruz County in order to determine if there is a need for expanded diabetes health education services.

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About you:

1. Do you have diabetes mellitus?

☐ yes

☐ no

If you answered "no", you need not continue. Please use the accompanying envelope to return this questionnaire promptly to the ADA. Thank you for your time and consideration.

If you answered "yes", please continue responding to each item as accurately as possible.

2. Which type of diabetes do you have?

☐ Type I (Insulin dependent)

☐ Type II (Non-insulin dependent), using insulin

☐ Type II (Non-insulin dependent), using diet and/or oral agents

☐ Other (specify) _____

3. In which age range were you diagnosed as having diabetes?

☐ 0-12

☐ 13-18

☐ 19-35

☐ 36-50

☐ over 50

4. Which is your age group now?

☐ 0-12

☐ 13-18

☐ 19-35

☐ 36-50

☐ over 50

5. What is your sex?

☐ Male

☐ Female

6. In which of the following ethnic groups would you place yourself? 67
- ☐ Asian
 - ☐ Black
 - ☐ Caucasian
 - ☐ Hispanic
 - ☐ Other (specify) _____

About diabetes education:

7. Diabetes education is provided by many people, places, agencies, organizations here in Santa Cruz County. From the following list please indicate all of the diabetes education providers about which you were aware.
- ☐ The American Diabetes Association of Santa Cruz County
 - ☐ Dominican Santa Cruz Hospital
 - ☐ Watsonville Community Hospital
 - ☐ Santa Cruz Community Hospital (AMI)
 - ☐ Private physicians
 - ☐ Public Health Department
 - ☐ Visiting Nurses Association (VNA)
 - ☐ Home health care agencies
 - ☐ Private Diabetes Educators
 - ☐ Dietitians/Nutritionists
 - ☐ Other (specify) _____
8. Do you seek information outside of Santa Cruz County when you have questions regarding diabetes?
- ☐ yes
 - ☐ no
9. When you have questions regarding diabetes and you seek information within in Santa Cruz County, where do you seek it?
- ☐ The American Diabetes Association of Santa Cruz County
 - ☐ Dominican Santa Cruz Hospital
 - ☐ Watsonville Community Hospital
 - ☐ Santa Cruz Community Hospital
 - ☐ Private physicians
 - ☐ Public Health Department
 - ☐ Visiting Nurses Association (VNA)
 - ☐ Home health care agencies
 - ☐ Private Diabetes Educators
 - ☐ Dietitians/Nutritionists
 - ☐ I seek information outside of Santa Cruz County
 - ☐ Other (specify) _____

10. Do you go outside of Santa Cruz County for medical care of your diabetes?

68

____ No

____ Yes (specify) _____

Areas of diabetes health education:

11. Please rate each subject area for your opinion of its importance to the well-being of people with diabetes. Circle the appropriate answer following each heading using the scale

1 = least important

5 = very important

A. General diabetes information 1 2 3 4 5

Definitions, basic anatomy and physiology, basic metabolism, classifications and complications of diabetes

B. Psychological factors 1 2 3 4 5

Self-assessment, family dynamics, coping techniques, expressing feelings, the patient as part of the health care team

C. Nutrition/meal planning 1 2 3 4 5

Daily diets, exchange system, dietary concepts, weight goals, special occasions, resources.

D. Exercise 1 2 3 4 5

Benefits, methods, precautions, and food/insulin

E. Medication 1 2 3 4 5

Goal of treatment, oral agents, insulins, injection

F. Monitoring, blood and urine 1 2 3 4 5

Goals, types available, strengths and limitations of each, how to use each

G. Hyper- and hypoglycemia 1 2 3 4 5

Definitions, prevention, treatments, when to call the health team

H. Illness 1 2 3 4 5

Effects on diabetes, monitoring blood/urine, sick day guidelines

I. Benefits and responsibilities of care 1 2 3 4 5

Short and long term life goals, Patient-professional care partnership, rights and responsibilities of people with diabetes

J. Community resources**1 2 3 4 5**

**Identifying and using available resources, assuring prompt
referral and coordinated care**

12. The above list may not contain all of the important subject areas of diabetes health education. Are there other subject areas in which you would like to see services provided?

____no

____yes (please list)

13. Please select the three areas that most closely reflect the diabetes-related problems you have.

14. Please indicate three areas in which you feel further education would reduce the incidence of diabetes-related problems.

15. Please indicate three areas in which you would like to see diabetes education services expanded or made available here in Santa Cruz County.

Thank you for your cooperation in completing this questionnaire. If you have further comments please feel free to write on the back of the questionnaire.

APPENDIX D

Provider Cover Letter and Questionnaire

Dear Health Educator,

November is **Diabetes Awareness Month** and we are requesting 15-20 minutes of your time to complete and return this questionnaire. To encourage your response during the month of November, we have included a stamped return envelope.

You are invited to participate in a study by the Santa Cruz Chapter of the American Diabetes Association. The study involves diabetes health education resources in Santa Cruz County. Your name was selected from list of people whose area of practice suggests that they may be likely to be a health education provider for people with diabetes.

We are gathering information to answer two questions:

1. What are the currently available health education resources for people with diabetes in North Santa Cruz County?
2. Is there a need for expanded diabetes education services in North Santa Cruz County?

The questionnaire has been designed to protect your anonymity. No person or agency will be identified in the study. A code number does appear on the questionnaire. It will be used solely for the purpose of contacting non respondents. A copy of the results of this study will be available in the Santa Cruz ADA office.

Your contribution is essential to the success of this project, and we appreciate your taking the time from your busy schedule to complete and return the questionnaire.

Should you have any questions, please contact the ADA office at 425-7332.

Provider Questionnaire

This questionnaire has been developed for the purpose of gathering information on currently available health education resources for people with diabetes and to assess the need for expanded diabetes health education services in Santa Cruz County.

1. Do you provide diabetes health teaching and/or education programs?
- ☐ yes
- ☐ No

If you answered "no", you need not continue. Thank you for your time and energy. Please use the accompanying envelope to return this questionnaire promptly to the ADA.

If you answered "yes", please continue responding to each item as accurately as possible.

2. How many people with diabetes use your education program?
- ☐ less than 10
- ☐ 10-19
- ☐ 20-49
- ☐ 50-100
- ☐ more than 100
- ☐ I do not know

About the people served by your diabetes education program:

3. What is the most common age group?
- ☐ 0-12
- ☐ 13-18
- ☐ 19-35
- ☐ 36-50
- ☐ over 50
- ☐ I don't know

4. Are your clients mostly
☐ Male
☐ Female
☐ About 50% each
☐ I don't know
5. What is the most common ethnic group?
☐ Asian
☐ Black
☐ Caucasian
☐ Hispanic
☐ Other (specify) _____
☐ I don't know
6. Which type of diabetes does your most typical diabetic have?
☐ Type I (Insulin dependent)
☐ Type II (Non-insulin dependent), using insulin
☐ Type II (Non-insulin dependent), using diet and/or oral agents
☐ Other (specify) _____
☐ I don't know

About your services:

7. Diabetes education is provided by many people, places, agencies, and organizations here in Santa Cruz County. From the following list, please indicate all those providers of which you were aware:
- ☐ The American Diabetes Association of Santa Cruz County
 - ☐ Dominican Santa Cruz Hospital
 - ☐ Watsonville Community Hospital
 - ☐ Santa Cruz Community Hospital (AMI)
 - ☐ Private physicians
 - ☐ Public Health Department
 - ☐ Visiting Nurses Association (VNA)
 - ☐ Home health care agencies

☐ Private Diabetes Educators
☐ Dietitians/Nutritionists
☐ Other (specify) _____

8. Do you refer your diabetics outside of Santa Cruz County for
☐ medical care
☐ diabetes education
☐ neither
☐ other (specify) _____
9. Do you consult community resources when you work with people with diabetes?
☐ yes
☐ no
10. Which of the following community resources do you consult when you work with people with diabetes?
☐ The American Diabetes Association of Santa Cruz County
☐ Dominican Santa Cruz Hospital
☐ Watsonville Community Hospital
☐ Private physicians
☐ Public Health Department
☐ Visiting Nurses Association (VNA)
☐ Home health care agencies
☐ Private Diabetes Educators
☐ Dietitians/Nutritionists
☐ Other (specify) _____
☐ I don't consult other community resources when I work with diabetics.

Areas of diabetes health education:

11. Please rate each subject area of diabetes education for your belief of its importance to the well-being of people with diabetes. Circle the appropriate answer following each heading using the scale
 1 = least important
 5 = very important

A. General diabetes information	1 2 3 4 5
Definitions, basic anatomy and physiology, basic metabolism, classifications and complications of diabetes	
B. Psychological factors	1 2 3 4 5
Self-assessment, family dynamics, coping techniques, expressing feelings, the patient as part of the health care team	
C. Nutrition/meal planning	1 2 3 4 5
Daily diets, exchange system, dietary concepts, weight goals, special occasions, resources.	
D. Exercise	1 2 3 4 5
Benefits, methods, precautions, and food/insulin	
E. Medication	1 2 3 4 5
Goal of treatment, oral agents, insulins, injection	
F. Monitoring, blood and urine	1 2 3 4 5
Goals, types available, strengths and limitations of each, how to use each	
G. Hyper- and hypoglycemia	1 2 3 4 5
Definitions, prevention, treatments, when to call the health team	
H. Illness	1 2 3 4 5
Effects on diabetes, monitoring blood/urine, sick day guidelines	
I. Benefits and responsibilities of care	1 2 3 4 5
Short and long term life goals, Patient-professional care partnership, rights and responsibilities of diabetics	
J. Community resources	1 2 3 4 5
Identifying and using available resources, assuring prompt referral and coordinated care	

12. The above list may not contain all of the important subject areas of diabetes health education. Are there other subject areas in which you would like to see services provided?
- ____no
____yes, (please list)
- _____

13. Please select the three subject areas that most closely reflect the diabetes-related problems you encounter most frequently with your clients with diabetes.
- _____

14. Please indicate three areas in which you feel further education would reduce the incidence of diabetes-related problems.
- _____

15. Please indicate three areas in which you would like to see diabetes education services expanded or made available here in Santa Cruz County.
- _____

Thank you for your cooperation in completing this questionnaire. If you have further comments please feel free to write on the back of the questionnaire.

APPENDIX E

Physician Cover Letter and Questionnaire

Dear Physician,

November is **Diabetes Awareness Month** and we are requesting 15-20 minutes of your time to complete and return this questionnaire. To encourage your response during the month of November, we have included a stamped return envelope.

You are invited to participate in a study by the Santa Cruz Chapter of the American Diabetes Association. The study involves diabetes health education resources in Santa Cruz County. Your name was selected from list of physicians in the North Santa Cruz County area. Included in the list are physicians whose area of practice suggests that they may be likely to be the primary care provider for people with diabetes.

We are gathering information to answer two questions:

1. What are the currently available health education resources for people with diabetes in North Santa Cruz County?
2. Is there a need for expanded diabetes education services in North Santa Cruz County?

The questionnaire has been designed to protect your anonymity. No person or agency will be identified in the study. A code number does appear on the questionnaire. It will be used solely for the purpose of contacting non respondents. A copy of the results of this study will be available in the Santa Cruz ADA office.

Your contribution is essential to the success of this project, and we appreciate your taking the time from your busy schedule to complete and return the questionnaire.

Should you have any questions, please contact the ADA office at 425-7332.

Physician Questionnaire

This questionnaire has been developed for the purpose of gathering information on currently available health education resources for people with diabetes and to assess the need for expanded diabetes health education services in Santa Cruz County.

1. Do you treat people with diabetes in your practice?

_____ Yes

_____ No

If you answered "no" you need not continue. Please return this questionnaire promptly in the accompanying envelope to the ADA. Thank you for your time.

If you answered "yes" to Item #1, please continue. Where possible, please provide actual numbers.

2. How many people with diabetes do you treat in your practice?

_____ less than 10

_____ 10-19

_____ 20-49

_____ 50-100

_____ more than 100

_____ I do not know

About your patients with diabetes:

3. What is the most common age group?

_____ 0-12

_____ 13-18

_____ 19-35

_____ 36-50

_____ over 50

_____ I do not know

4. Are your patients with diabetes mostly
☐ Male
☐ Female
☐ 50% each
☐ I do not know
5. What is the most common ethnic group?
☐ Asian
☐ Black
☐ Caucasian
☐ Hispanic
☐ Other (please specify) _____
☐ I do not know
6. What is your most typical type of patient with diabetes?
☐ Type I (Insulin dependent)
☐ Type II (Non-insulin dependent), using insulin
☐ Type II (Non-insulin dependent), using diet and/or oral agents
☐ Other (specify) _____
☐ I do not know

About your services:

7. Do you refer your patients with diabetes outside of Santa Cruz County for
☐ diabetes medical care
☐ diabetes education
☐ neither
8. Diabetes education is provided by many people, places, agencies, and organizations here in Santa Cruz County. From the following list, please indicate all those providers of which you were aware:
☐ The American Diabetes Association of Santa Cruz County
☐ Dominican Santa Cruz Hospital
☐ Watsonville Community Hospital
☐ Santa Cruz Community Hospital (AMI)

- ☐ Private physicians
- ☐ Public Health Department
- ☐ Visiting Nurses Association (VNA)
- ☐ Home health care agencies
- ☐ Private Diabetes Educators
- ☐ Dietitians/Nutritionists
- ☐ Other (specify) _____

9. Do you consult community resources when you work with people with diabetes?

☐ yes
☐ no

10. Which of the following community resources do you consult when you work with people with diabetes? (Please indicate all).

- ☐ The American Diabetes Association of Santa Cruz County
- ☐ Dominican Santa Cruz Hospital
- ☐ Watsonville Community Hospital
- ☐ Santa Cruz Community Hospital (AMI)
- ☐ Private physicians
- ☐ Public Health Department
- ☐ Visiting Nurses Association (VNA)
- ☐ Home health care agencies
- ☐ Private Diabetes Educators
- ☐ Dietitians/Nutritionists
- ☐ Other (specify) _____
- ☐ I don't consult other community resources when I work with people with diabetes.

11. Do you provide diabetes health teaching and/or education programs?

Yes _____
 No _____

If you answered "No" to question #11, you need not continue. Please return this questionnaire promptly in the accompanying envelope to the ADA. Thank you for your time.

If you answered "yes" to question #11, please select all of the categories which reflect your diabetes education program.

12. The presentation is aimed at
 _____ Individual patients only
 _____ Families/significant others of my patients
 _____ Groups of my patients and/or their families
 _____ Any person who requests attending
13. The education is provided primarily by
 _____ Physician
 _____ Nurse
 _____ Other (specify)_____

Areas of diabetes health education:

14. Please rate each subject area for its importance to the well-being of people with diabetes. Circle the appropriate answer following each heading using the scale
 1 = least important
 5 = very important

A. General diabetes information	1 2 3 4 5
Definitions, basic anatomy and physiology, basic metabolism, classifications and complications of diabetes	
B. Psychological factors	1 2 3 4 5
Self-assessment, family dynamics, coping techniques, expressing feelings, the patient as part of the health care team	
C. Nutrition/meal planning	1 2 3 4 5
Daily diets, exchange system, dietary concepts, weight goals, special occasions, resources.	
D. Exercise	1 2 3 4 5
Benefits, methods, precautions, and food/insulin	

E. Medication	1 2 3 4 5
Goal of treatment, oral agents, insulins, injection	
F. Monitoring, blood and urine	1 2 3 4 5
Goals, types available, strengths and limitations of each, how to use each	
G. Hyper- and hypoglycemia	1 2 3 4 5
Definitions, prevention, treatments, when to call the health team	
H. Illness	1 2 3 4 5
Effects on diabetes, monitoring blood/urine, sick day guidelines	
I. Benefits and responsibilities of care	1 2 3 4 5
Short and long term life goals, Patient-professional care partnership, rights and responsibilities of people with diabetes	
J. Community resources	1 2 3 4 5
Identifying and using available resources, assuring prompt referral and coordinated care	

15. The above list may not contain all of the important subject areas of diabetes health education. Are there other subject areas in which you would like to see services provided?

_____no

_____yes (please list)

16. Please select the three areas that most closely reflect the diabetes-related problems you see in your patients.

17. Please indicate three areas in which you feel further education would reduce the incidence of diabetes-related problems.
- _____
- _____
- _____
18. Please indicate three areas in which you would like to see diabetes education services expanded or made available here in Santa Cruz County.
- _____
- _____
- _____

Thank you for your cooperation in completing this questionnaire. If you have further comments please feel free to write on the back of the questionnaire.