

DIABETES EDUCATOR'S PERCEPTION OF
SELF-EFFICACY IN THEIR DIABETES
EDUCATION PROGRAMS

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1994

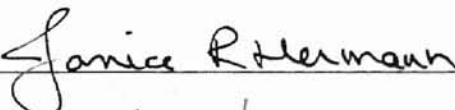
Submitted to the Faculty of the
Graduate College of the
Oklahoma State University
in partial fulfillment of
the requirements for
the Degree of
MASTERS OF SCIENCE
July, 2000


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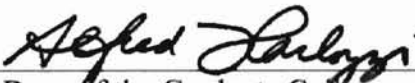
Thesis Approved:



Thesis Advisor







Dean of the Graduate College

ACKNOWLEDGEMENTS

I would like to express my gratitude to all who have supported and encouraged me throughout this project. I would like to thank my husband for being so understanding of my demanding schedule and my family for their continued support. I would like to thank Dr. Lea Ebro for her constant assistance and flexibility throughout my research and completion of my master's degree. I greatly appreciate Dr. Bill Warde for all of his assistance with the data analysis for my project. Thank you to Dr. Janice Hermann for accepting the invitation to be a part of my committee and for her valuable input. I would like to give a special thank you to Jim Hawke at the American Association of Diabetes Educators for providing his time and expertise in determining those to participate in the project. I greatly appreciate the grants provided by Novo-Nordisk Pharmaceuticals via Jack Lukenbaugh and by Bayer Corporation via Tom O'Leary. The grants enabled the research to be completed. Thank you to the diabetes educators who participated in this study. Lastly but not least, I would like to say thank you to my co-workers for being so supportive and for tolerating me during my times of stress. I am blessed with you all and will always be appreciative for your contributions.

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CHAPTER I

Introduction

Self-perceived efficacy is an important tool that is often forgotten when program evaluations are reviewed. Most diabetes education programs are evaluated based on both patient feedback and specific clinical outcomes determined after completion of the educational program. The diabetes educator's perceptions of their performance in a teaching session are based on a variety of components, including comfort with presentation of the topic, past experience with the topic, and actual time of teaching sessions. Self-efficacy is defined as "the perception or judgment of one's ability to perform a certain action successfully to control one's circumstances," by *Survey of Social Science* (Magil, 1993).

Bandura and Jourden (1991) found that perceived self-efficacy enhances performance directly and indirectly throughout its effects on personal goals, self-reactions, and on the use of analytic strategies (Young & Kline 1996). Pajares (1992) found that there was a "strong relationship between teachers' educational beliefs and their planning, instructional decisions, and classroom practices" (p. 326) (Albion 1999) and that "educational beliefs of pre-service teachers play a pivotal role in their acquisition and interpretation of knowledge and subsequent teaching behavior" (p. 328) (Albion, 1999). Continuing education of the educator can only ensure that a client will receive the most current diabetes information and will achieve more success with diabetes self-management.

In order to improve the presentation of education in a diabetes program, diabetes educators must also evaluate self-efficacy to improve their teaching strategies and skills. This must be done by determining items having a **barrier** since there is no use in asking for self-efficacy expectancies for actions that are not difficult to perform or that might just be routine (Schwarzer et al 1999-#16). By determining these specific barriers, diabetes educators can begin working toward solutions to overcome the barriers.

Self-perceived efficacy of diabetes educators is a topic of which limited published research is available. Most self-efficacy studies have been related to the educator in general, but not in the specific educational realm of diabetes. The evaluation techniques used for previously surveyed groups will be employed to evaluate this specific population of educators. Hopefully others will be motivated to further research self-perceived efficacy of dietitian and nurse educators with varied specialty areas based on this study.

Purpose and Objectives

The purpose of this study was to evaluate self-perceived efficacy of diabetes educators participating in diabetes education programs. The specific objectives were:

1. To determine if diabetes educator's self-perceived efficacy is associated with specific barriers in education of clients in individual education sessions and group education sessions. Self-perceived efficacy will be evaluated by educators in the four content areas of perceived effectiveness of communication, personal stress management job related experience and potential job skill improvement.

2. To determine if differing educational backgrounds, and other related demographic variables, will affect self-perceived efficacy in the established content areas. The two educational backgrounds to be evaluated will be Registered Dietitians and Registered Nurses from the American Association of Diabetes Educators.

Hypotheses

Ho1- There will be no significant association between self-perceived efficacy of diabetes educators (RD vs. RN) in the following four dimensions:

1. Effectiveness of communication
2. Personal stress management
3. Job related experience
4. Potential job skill improvement

Ho2- There will be no significant associations between diabetes educator's self-perceived efficacy and selected personal variables.

1. Educational Background: RD or RN
2. Age
3. Ethnic Background
4. Educational Level
5. Employment Status
6. Years of Employment

Assumptions and Limitations

Assumptions accepted for the study include:

1. Respondents are diabetes educators belonging to the national organization the American Association of Diabetes Educators.
2. Respondents will complete the questionnaires based on their self-perceived efficacy and not in relation to job and/or class evaluations.

A limitation identified in this study is that the sample encompassed only Registered Dietitians and Registered Nurses who live in the United States and are members of the professional organization the American Association of Diabetes Educators. Results of this study can therefore only be generalized to diabetes educators within the United States of America. Only one mailing will be sent to the sample.

Definitions

AADE – American Association of Diabetes Educators: A professional organization with purposes including: providing educational opportunities for the professional growth and development of diabetes educators; promoting and aiding in the growth and development of quality diabetes education for the person with diabetes; and fostering communication and cooperation among individuals and organizations involved in diabetes education (AADE 1998-#2).

Registered Dietitian (RD): A person who has received a Bachelor of Science degree in Nutritional Sciences or related major from an approved/accredited Didactic

program in dietetics(DPD), completed an American Dietetic Association accredited internship and successfully passed the Registration Examination for Dietitians.

Registered Nurse (RN): A person who has completed the required educational degree of an Associates in Nursing or a Bachelor of Science in Nursing, completed the appropriate educational nursing rotations and has passed the National Registration Examination for Nurses.

Self-Efficacy – the perception or judgment of one’s ability to perform a certain action successfully to control one’s circumstances according to the *Survey of Social Sciences* (Magil 1993).

Effectiveness – having the intended or expected effect; serving the purpose. Producing or adapted to produce the desired impression or response (American Heritage Dictionary 1980).

CHAPTER II

Review of Literature

Introduction

This chapter will be devoted to a review of the literature pertaining to the self-perceived efficacy of educators. The educational background, areas of expertise, settings of practice, and the history of diabetes educators will be explored. The review of literature will also include self-perceived efficacy studies for comparison to the responses collected from the survey. The purpose of self-perceived efficacy research will also be reviewed.

Educational Background of Diabetes Educators

A specific educational background is required for most diabetes educators to ensure that patients educated are receiving appropriate information. The two groups evaluated in this study, Registered Dietitians and Registered Nurses, must at least have the educational foundation of an associate or baccalaureate. The college degree requirements vary between these groups, but are both very rigorous and demanding.

A Registered Dietitian must first obtain a bachelor's degree in Nutritional Sciences or a related degree with dietetics emphasis or focus. The Nutritional Sciences student then has two options to obtain the required educational and supervised practice requirements prior to the registration exam. First, the graduate may participate in a Coordinated Undergraduate Program (CUP), which requires two years of supervised

experience during the last two years of the bachelor's degree studies. Also, the student may complete a didactic program in dietetics (DPD), then apply to an accredited internship program for the supervised practice component. The length of the internship programs vary between nine and twelve months (or 18 months with a masters program) according to the program site and the candidate must complete all rotations of the internship, as evaluated by the working preceptors, in order to pass the entire internship. If any section of the program is failed, the candidate must repeat and successfully complete that portion of the internship.

Once the internship is completed, the candidate is then eligible to apply for the Registration Examination for Dietitians. This exam is given any time by computer and is the final step in achieving the status of a Registered Dietitian (CDR 2000). After successfully passing the Registration exam, some states will require licensure to be obtained by the Registered Dietitian to ensure that all necessary credentials are maintained. The Registered Dietitian may then pursue the requirements and acquisition of a Certified Diabetes Educator's certificate for the specialization in diabetes education.

A Registered Nurse must obtain a minimum of an associate's degree in nursing and a minimum of two years or four semesters of clinical experience to be eligible to take the Nursing Board examination to become a Registered Nurse. The same guidelines apply to a nursing candidate as to a dietitian candidate. The nursing candidate must successfully complete all clinical rotations, as evaluated by practicing preceptors, to be eligible to take the necessary examination. A Registered Nurse must also be licensed in the state he/she chooses to practice within (OUHSC 2000).

A Registered Nurse may also advance his/her clinical education with both a Bachelor's of Science in Nursing or a Master's of Science in Nursing to be eligible for a Nurse Practitioner's license. Many other advanced degrees are obtainable to aid Registered Nurses in specialization in their areas of practice. After obtaining the base of a college degree, usually an Associates Degree, and passing the Nursing Board examination, a Registered Nurse may then pursue the requirements and acquisition of a Certified Diabetes Educator's certificate.

Currently, not all diabetes' educators are Certified Diabetes Educators (CDE) and therefore, the participants of this study do not have to meet the requirement of being a CDE. The necessary requirements for becoming a CDE are as follows:

1. The applicant must be licensed as a registered nurse, pharmacist, physician, physician's assistant, podiatrist, physical therapist, occupational therapist, a registered dietitian, or be a health care professional with the minimum of a master's degree from a United States college or University in one of the following areas of health care practice: nutrition, social work, clinical psychology, exercise physiology, health education or specified areas of study in public health.
2. The applicant must have a minimum of 2 calendar years experience in diabetes patient and self-management education.
3. Within those two years, or up to five calendar years prior to the date of application for the examination, the applicant must have worked a

minimum of 1000 hours in diabetes patient and self-management education.

4. The applicant must be engaged in the practice of diabetes patient and self-management education at the time of the application for the Certification Examination.
5. The applicant must complete and submit a current application for the *Certification Examination for Diabetes Educators* and pay the examination fee.
6. The applicant must pass the *Certification Examination for Diabetes Educators* (NCBDE 2000).

As mentioned previously, the educators surveyed were not required to be a CDE, but many have achieved this certification and requirements for obtaining the CDE were provided.

Areas of Expertise

Diabetes educators practice in a multitude of areas. This requires the educators to remain updated on the most current information in the varying sectors of diabetes. Educators must be able to teach in the basic areas of Type 1, Type 2 and gestational diabetes. Insulin pump therapies are also rapidly becoming an area for educators to specialize in. Without knowledge in these basic fields of diabetes, the educator cannot build on their knowledge base and provide the essential education their clients need for successful diabetes self-management.

Type 1 diabetes is a disease process commonly diagnosed in, but not limited to, young children. This process is brought about by the complete deficiency of insulin production by the pancreas of the individual (AADE 1998-#4). This can occur for various reasons now being explored such as the genetic or hereditary contribution from the parent to the child, a potential autoimmune response and the combination of both of these factors. Type 1 diabetes can also technically occur when an individual is required to have excision of the beta cells which produce insulin or if there is injury or disease to the pancreas requiring its removal. Insulin replacement is the only solution to this problem and comes in the form of insulin injections ranging from 2 to 4 times per day in most cases. Insulin is necessary to aid the body in appropriate usage of glucose, the body's primary energy source. This requires the educator to be able to teach the patient techniques to appropriately integrate meal planning, blood glucose monitoring, insulin adjustment, and activity to achieve desirable blood glucose control and aid in prevention of potential long-term complications.

Type 2 diabetes is a disease process more commonly found in, but not limited to, adults. Type 2 diabetes is often caused by multiple problems, separate from one another or combined. The first problem is usually insulin resistance. This process occurs when the beta cells responsible for producing insulin begin overproduction of insulin. This problem can occur due to cellular resistance often brought about when an individual is overweight. If the individual is not treated for insulin resistance with the appropriate measures, the individual then risks developing the second problem with Type 2 which is gradual decline in insulin production leading to insulin deficiency. After long-term insulin overproduction, the beta cells risk losing capability of producing adequate insulin

to regulate blood glucose levels. The individual may also experience problems with the liver's over-release of stored glucose into the blood stream elevating blood glucose levels. Stress hormones can also complicate blood glucose control as these hormones compete for the same cell receptor sites as insulin (AADE 1998-#4). This is a fraction of the information diabetes educators must know to provide their clients with the necessary skills for successful self-management. Meal planning and activity are the initial treatments for individuals with Type 2 diabetes with the later addition of oral hypoglycemic or insulin sensitizing agents if blood glucose is not well controlled.

Gestational diabetes is yet another area in which an educator must be able to teach individuals to increase the chances of healthy outcomes during pregnancy. Gestational diabetes only occurs during pregnancy and is usually diagnosed during the 24th to 28th week of pregnancy using an oral glucose tolerance test (AADE Core Curriculum 1998). Insulin resistance during pregnancy is the main cause to elevated blood glucose and can occur for two main reasons. First, there is increased weight gain during the second and third trimesters of pregnancy and second, there are hormones that support and keep the pregnancy viable. Just as stress hormones can affect blood glucose, growth hormones can produce the same result. The primary treatment for gestational diabetes is a structured meal plan avoiding concentrated sugars and including smaller, frequent meals daily. Approximately 10 % of women who develop gestational diabetes require insulin during pregnancy. Again educators rely on their knowledge of meal planning, non-stressful activity and possibly insulin to aid in improved blood glucose control for the patient and better pregnancy outcomes.

There are other emerging areas of expertise practiced by diabetes educators. One area is that of intensified insulin therapies and continuous subcutaneous insulin infusion (CSII), or insulin pump therapy. An educator is required to know the very specific actions of rapid acting and very rapid acting insulin as well as carbohydrate counting and the physiologic affects of foods when they are digested. All of the other aforementioned criteria for successful blood glucose management also apply when using multiple daily insulin injections (MDI plan) or CSII. An educator must know the correct working physiology of a non-diabetic individual to be able to integrate all of the necessary components of insulin, food, activity, stress, infection, etc. along with one of these intensified insulin therapies to replicate the desired result of these therapies. An educator is not only required to communicate effectively to ensure the best possible outcomes, but an educator is also required to be able to accurately assess if an individual is a good candidate to begin an intensified insulin therapy program. If an individual is unwilling to manage basic self-care requirements such as appropriate food choices and adequate blood glucose monitoring, an intensified insulin therapy regimen is not always an option.

No matter what the educational needs of an individual with diabetes are, the educator must be able to provide appropriate information related to the newest established guidelines and technologies. An educator must be capable of locating the latest information pertaining to the field of diabetes if he/she is not already aware of this information. A diabetes educator must be a resourceful person, an excellent communicator and listener, an individual based in both prevention and intervention and someone who can remain compassionate to the daily demands placed on individuals living with diabetes.

Settings of Practice

The physical locations of practice and the standards of practice (SOP) vary for many diabetes educators depending on number of patients seen and institutional program requirements. These factors can change the delivery of the information given to the patient in order to achieve the best educational results. Practice settings may range anywhere from hospital inpatient, to outpatient centers, physician's offices and diabetes clinics. An educator must be able to adapt to each of these settings and provide the appropriate information to the individual with diabetes.

Inpatient education in major medical centers is a very challenging setting for diabetes educators. Most of the time, these patients are acutely ill and have a limited span of attention. It is also difficult coordinating schedules with family members who will be participating in the care of the patient once they have returned home. In an ideal situation, a patient education should occur within the last two days of the hospitalization before the patient returns home. This is not always possible due to multiple patient therapies and shortened hospital stays. For this reason, many educators have resorted to "survival skill" education. This refers to teaching a patients and/or family members the necessary information to keep them healthy until they can return to an outpatient or class setting to receive more detailed information for the long term self-management of their diabetes. Outpatient appointments should be set up prior to the patient's discharge from the inpatient setting.

The outpatient education setting is much more comprehensive in the information it provides to patients, their families and caregivers. Diabetes educators can educate

individuals in a much more relaxed environment allowing patients to participate in either group classes or one-on-one individual appointments. The learner readiness component is essential for maximum learning and is much more pronounced with a patient in the outpatient setting. Educators can use a combination of verbal instruction, visual reinforcement with audiovisual equipment and in-class demonstration to allow patients to recreate tasks and be evaluated for effectiveness while asking questions. Outpatient centers can also provide follow up classes as well as phone follow up to ensure that the individual client educated continues to be successful in his/her diabetes management.

Physician's offices can be another setting for diabetes education. Physicians and nurses in these offices usually provide the education, as dietitians' services are not yet approved as a reimbursable service. These educational settings are often similar to that of an inpatient hospital education, since some individuals are not admitted to the hospital for blood glucose control after diagnosis. The information is basic and again takes more of the "survival skill" method. Many of the recipients of this basic diabetes education are referred to either a diabetes outpatient program or a diabetes clinic for long term management and follow-up programs.

Diabetes clinics are the most comprehensive of diabetes education and management settings. In most cases, a diabetes clinic will have at least one endocrinologist, nurses, dietitians and other health professionals to treat diabetes holistically. Education and medical management of diabetes can be an ongoing process. Patients can be educated as well as screened on an annual basis for the potential onset of problems associated with diabetes. Patients can also be re-educated with updated information pertaining to diabetes and the changing stages of their lives. For example:

gestational diabetes, pre-existing diabetes and pregnancy, progression from oral hypoglycemic and insulin sensitizing agents to insulin injections, etc. Diabetes clinics not only continue to educate so patients can better self-manage, but they also supply a site for ongoing medical follow-up and prevention of any chronic problems associated with diabetes.

Diabetes educators must face the challenge of remaining updated on the new technologies and treatments to better educate their patients no matter what setting they choose to educate within. All settings are equally challenging and educators must strive daily to evolve the educational process in order to educate their patients in the most effective way. The way a diabetes educator perceives his/her capabilities will fall directly into how effective this educator will actually be in educating the patient and will help to improve educational techniques.

Professional Organizations or Resources for Diabetes Educators

Today diabetes educators are supported by many different organizations existing to empower diabetes educators as experts in their chosen field. One of these organizations is the American Association of Diabetes Educators (AADE). The organization was established in 1974 as a multidisciplinary organization of health professionals who teach people with diabetes (AADE 1998-#3). The mission of the American Association of Diabetes Educators is: As a professional organization, AADE has a responsibility to foster high professional standards of diabetes education and practice, and to identify for the consumer competencies and excellence in practice

(AADE 1998-#2). The AADE also has its own code of ethics which is presented as follows:

1. The diabetes educator provides services with respect for the uniqueness, dignity, and autonomy of each individual as stated in the AADE Scope of Practice for Diabetes Educators.
2. The diabetes educator will conduct himself/herself in a manner that demonstrates honesty, integrity, and fairness.
3. The diabetes educator will avoid conflict of interest and maintain the integrity of the profession.
4. The diabetes educator will accept responsibility and accountability for personal competence in accordance with the AADE Scope of Practice and Standards of Practice for Diabetes Educators (AADE 1998-#4).

Another organization very supportive of the diabetes educator is the American Diabetes Association (ADA). This organization has been in existence since 1940 and reaches more than 800 communities. The mission of this organization is to prevent and cure diabetes, and to improve the lives of all people affected by diabetes. To fulfill this mission, the American Diabetes Association funds research, publishes scientific findings, provides information and other services to people with diabetes, their families, health care professionals and the public and advocates for scientific research and for the rights of people with diabetes (ADA 2000). The ADA has been a continuous reliable source of information to health professionals trying to improve the education given to individuals with diabetes to improve their self-management skills. The ADA is among the strongest supporters for the diabetes educator.

The National Certification Board for Diabetes Educators is another supporting organization of the diabetes educator. This program was established in 1986 as a means to improve awareness of diabetes educators. The mission of the National Certification Board for Diabetes Educators is to promote excellence in the profession of diabetes education through the development, maintenance, and protection of the Certified Diabetes Educator (CDE) credential and certification process (NCBDE 2000). Obtaining this certification is meant to boost the stature of a diabetes educator to that of a “diabetes expert”.

Other organizations have also been very instrumental in the history of the diabetes educator. Some of these organizations include The National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) and the American Dietetic Association (ADA). All of these organizations have contributed to the history of the diabetes educator. These organizations continue to support educators by providing updated research information for educators and they continue to promote the importance of the diabetes educator to deliver the newest information to individuals with diabetes to improve their care.

Research Purpose of Self-Perceived Efficacy Studies

Self-perceived efficacy studies have been created as a way of determining how people evaluate themselves on how they have performed in certain situations. In one study, self-efficacy was defined as “the perception or judgment of one’s ability to perform a certain action successfully or to control one’s circumstances” (Walkley 1997). With so many studies being created to evaluate a person’s performance based on how

others have perceived it, not often do educators take the time to evaluate themselves to see if there may be improvements they can make to strengthen the way in which they present information in their classes.

The self-efficacy evaluations not only provide direct feedback to an educator on the areas that he/she needs to improve, but they also allow the educator to receive the opinion from themselves instead of the groups they are teaching. This gives an educator a point of reference where they can compare the suggestions of others to their own perceptions of the areas they exhibit weaknesses in when it comes to teaching or presenting information. In certain situations, educators become defensive if they feel they are being evaluated unfairly by a group who is unfamiliar with the processes of their profession or the information they typically educate others about. If an individual feels he/she has been evaluated fairly, the results can become much more motivating for that individual.

In order for any individual to improve himself/herself, they must have feedback on how they are currently performing in his/her chosen field. Some of the benefits obtained from self-perceived efficacy evaluations are to help people not only identify potential areas for improvement, but also to help individuals deal with their feelings associated with these areas needing improvement. In many self-efficacy studies there are several areas in which an individual is asked to evaluate himself/herself.

In one study, the areas of “job accomplishment, skill development on the job, social interaction with students, parents, and colleagues, and coping with job stress” were used as indicators of the levels of self-perceived efficacy (Schwarzer et al 1999-#16). These are a few of the areas in which an educator could evaluate himself/herself to

determine potential problems to be improved upon. The category of job accomplishment could include evaluation topics of how confident the educator feels about past accomplishments and the possibility for continued growth and career accomplishments. Skill development could relate to feeling related to cross training and furthering of job duties to improve educator perceived self-worth. The category of skill development could also aid in telling the educator how he/she feels in relation to the development of his/her work-related skills. Social interaction could help the educator recognize their level of comfort when dealing with class participants and other health care providers participating in the patient's educational and medical care. The final category of job stress can help the educator be aware of issue such as taking work relations home with them and integrating these frustrations into the more personal aspects of his/her life. Information from this category can also aid the educator in being aware of this transfer of stress into the home life and prevent the burn out often associated with feelings of being overworked. It is very apparent that educators could further themselves in many ways by using the results and information relayed in self-efficacy studies and contribute to their personal well being.

Previous Self-Efficacy Studies

Many self-efficacy studies have been performed in various areas to determine the effectiveness of teaching and the potential barriers experienced by educators. Areas such as teaching in the secondary educational setting, in-patient and out-patient hospital settings, and in the situation of mentoring other emerging health care professionals, are a

few in which self-perceived efficacy evaluation has been instituted. These previous studies create the basis for pursuing the creation of new self-efficacy studies in areas where this detailed information has not been pursued. Research with self-perceived efficacy in relation to diabetes education can only allow educators to improve educational strategies and improve patient education.

Self-efficacy is a belief that one “has what it takes” to successfully perform a behavior in a situation-specific context. However, high self-efficacy does not ensure an individual will perform better. If the individual does not have the skills, or does not value the outcomes of the performance, they may not be able or willing to attain the expected level of performance, will become frustrated, and may give up (Bandura, 1982) (Young & Kline 1996). One study in which these parameters occur is “Perceived Self-Efficacy, Outcome Efficacy and Feedback: Their Effects on Professors’ Teaching Development Motivation” (Young & Kline 1996). In this study, the primary purpose was to assess whether the concepts of perceived 1) self-efficacy, 2) outcome efficacy, 3) feedback, and 4) the present reward system were related to the professors’ motivation to improve their teaching. In this particular study, the relationship between self-efficacy and motivation was positive and significantly related for the current practicing professors (Young & Kline 1996). This particular study can be directly related to the category of potential job skill improvement. A person will work to improve his/her teaching methods if they feel it will improve the educational presentation and benefit the participant in increased learning.

Another efficacy study titled “Managing Classroom Discipline: Preservice Teachers’ Perceptions of Their Abilities and Those of Inservice Teachers” can be used

for comparison. The purpose of this study was to determine preservice teachers' (1) perceptions of their own ability to deal with student problems in school, (2) perceptions of teachers' ability to deal with student problems in school, and (3) awareness of existing approaches to student problems in school (Bailey & Kazelskis 1996). The results of this particular study stated that preservice teachers had confidence in their own abilities to manage problems in school, but they did not generally perceive that current teachers were able to manage student's problems adequately (Bailey & Kazelskis 1996). This could be related to the experience the preservice teachers gained in their student-teaching internships. The preservice teachers may have also perceived their personal educational experiences to be more advanced allowing them to better deal with student problems in the classroom setting. The combination of advanced education and job-related experience often increase an educator's self-perceived efficacy of effectiveness when dealing with most situations. The educators evaluated in this study could either have been well prepared to deal with student problems based on education and simulated laboratory experiences or the educators may have been naïve about their capabilities when dealing with students problems in the classroom setting.

The perception of effective communication is a topic often evaluated. The study titled "Self-Efficacy Beliefs as an Indicator of Teachers' Preparedness for Teaching with Technology" places communication in the context of information technology and/or audiovisual equipment utilization. Many educators not only have to evaluate themselves on their verbal communication today, but also have to continuously evaluate themselves on the appropriate and effective usage of technology. Decisions made by teachers about the use of computers in their classrooms are likely to be influenced by multiple factors

including the accessibility of hardware and relevant software, the nature of the curriculum, personal capabilities and constraints such as time (Albion 1999).

Also, research suggests that teacher's self-efficacy beliefs about using technology for teaching are directly related to their practice (Albion 1999). Technology is a necessity for future communication. Currently, college classes are taught in multiple locations simultaneously by one instructor using audiovisual and computer-linked technology. The World Wide Web is quickly becoming the most chosen source of researched information. Educators must not only know of these technologies but also know how to actively participate in the utilization and even the improvement of these technologies to provide better educational opportunities to students, clients and patients.

Another area often explored when researching self-efficacy perceptions, is that of personal stress management. Educators can find it difficult to prevent the frustrations experienced while at work from being carried into their personal lives or personal experiences from manifesting themselves in the individual's work. Depending on the level of care provided by the educator, the client sometimes has access to the educator at home for questions and treatment modifications which also makes it difficult for an educator to separate home and work life. In one self-efficacy study, questions such as "I am confident in my ability to be responsive to my student's needs even if I am having a bad day" (Schwarzer et al 1999-#16) help an individual to assess perceptions of how they will react in situations related to personal stress management. Self-efficacy questionnaires are an effective way an individual can become aware that personal stress is presenting itself in areas where it is not appropriate. With this awareness, educators can work toward solutions for the current stresses in their lives and institute practices to

aid in the prevention of other stressful situations in both their home and work-related lives.

Educator Recognition of Self-Perceived Efficacy

It is important to provide an educator with feedback not only from others but also from himself/herself. When an educator is made aware of self-perceived shortcomings or areas needing improvement, the educator can begin to devise the tools necessary to meet the goal of improving teaching strategies. Drawing attention to areas such as personal stress management, effectiveness in communication, job related experience, and potential job skill improvement, aid an educator in determining improvements needed to not only improve teaching strategies but also to aid the educator in separating home and work related stresses. In one instance, the time teachers spent voluntarily with their students was strongly associated with their Teacher Self-Efficacy (Schwarzer et al 1999-#15). Again, this indicates the more comfortable an educator feels with his/her own capabilities as an educator, the more the patient, student, or client will benefit.

Findings in Self-Efficacy Studies

The results of the self-efficacy studies varied depending on the aspects of the studies reviewed. One study dealing with educator's issues in dealing with violence and/or discipline in the classroom related to the category of potential job skill improvement and job -related experience. The findings in this study stated the preservice

teachers' sense of efficacy increased with their knowledge of the techniques for dealing with behavior problems within the school. On the other hand, the correlation between sense of teacher efficacy and knowledge of the techniques, though significant, was relatively weak, suggesting that increased knowledge was not nearly as strongly related to the preservice teachers' sense of teacher efficacy as it was to their personal sense of efficacy (Bailey & Kazelskis 1996). This result can suggest that the knowledge of discipline techniques help the preservice teachers to feel confident on how they might deal with behavior problems. It also clearly shows the need for job skill improvement to increase the educator's effectiveness when dealing with disciplinary situations and job-related experience to allow the educator to feel more comfortable as more and more disciplinary situations are dealt with and successfully completed.

Another study evaluated many differing categories associated with self-perceived efficacy of educators. It was found that the more *specific* instrument of Teacher Self-Efficacy yielded higher associations with several other personal attitudes than the *General* Self-Efficacy Scale when evaluating self-perceived efficacy in conjunction with personal stress management (Schwarzer et al 1999-#16). It is important for an educator to be provided with an accurate evaluation of his/her self-perceived efficacy. This allows appropriate options to be explored to help the educator deal with personal job and home-related stresses.

When evaluating self-efficacy beliefs related to preparedness for teaching with technology, one study found that in the context of a teacher education program, enactive experience and resultant increases in self-efficacy might be achieved through successful experiences with the use of computers during field experience (Albion 1999). The use of

self-perceived efficacy results to better prepare an educator in effective communication using current technologies is yet another way of improving the educational experience of those being educated. If an educator feels more comfortable with the technology used to communicate or educator his/her students, the educational outcome for the participants are more likely to be successful.

Self-perceived efficacy of any educator is a vital and ongoing component that enables an educator to evaluate what he/she feels in terms of strengths and weaknesses related to job performance. Determination and evaluation of self-perceived efficacy allows an educator to not only improve his/her personal performance but also provides information for future educators on how to improve their methods and avoid potential problems when teaching before the problems arise. Evaluation of self-perceived efficacy can also improve an educator's self confidence which can help those being educated to feel more comfortable and confident in the information being presented to them. With ongoing evaluation in this area, educators of all background, including diabetes educators, will improve in both their confidences of how they educate and the effectiveness of how they educate their students, clients, and participants.

CHAPTER III

Methodology

The questionnaire designed for this research was formatted after a questionnaire developed by Ralf Schwarzer, Gerdamarie S. Schmitz, & Gary T. Daytner in 1999 to evaluate general teacher self-perceived efficacy (Schwarzer et al 1999-#16). The American Association of Diabetes Educators (AADE) was willing to participate in this study by giving permission to use AADE members as potential participants in the research study. This study was undertaken to determine the perceived efficacy of diabetes educators from their own point of view instead of relying only on patient feedback.

Research Design

The research design is a descriptive status survey. Descriptive statistics refers to a set of concepts and methods used in organizing, summarizing, tabulating, depicting, and describing collections of data. The goal of descriptive statistics is to provide a representation of the data that describes, in tabular, graphical, or numerical form, the results of research (Shavelson 1996). The information received from this survey was collected via mail.

Sample and Population

The population in this study was composed of registered nurses and registered dietitians belonging to the national organization of the American Association of Diabetes Educators. A random sampling of 250 registered nurses and 250 registered dietitians was provided by AADE. AADE also gave permission to distribute questionnaires to their members. There are only a limited number of Certified Diabetes educators in practice; therefore, the educators participating in the study may or may not be Certified Diabetes Educators (CDE) but were selected from this organization to ensure the educators were currently practicing in the field of diabetes education.

Data Collection

Development of Instrument

The questionnaire used in this study was labeled "Self-Perceived Efficacy of Diabetes Educators" and was adapted after a questionnaire developed by Ralf Schwarzer, Gerdamarie S. Schmitz, and Gary T. Daytner in 1999 (Schwarzer et al 1999-#16). Reliability studies were performed on this tool in the following manner: Cronbach's Alpha in the three samples was found to be between .76, and .82, test-retest reliability resulted in .67 (N=158), and .76 (N=193) respectively, for the period of one year. For the period of two years it was found to be .65 (N=161) (Schwarzer et al 1999-#16). This tool was chosen as a guide to determine self-perceived efficacy in the specific population of diabetes educators to further this group's knowledge of potential perceived barriers in

their profession. The questionnaire used in this research study was comprised of 14 questions related to the 4 topic areas of: effectiveness of communication, personal stress management, job-related experience and potential job skill improvement. The questions were equally divided into these categories with the exception of personal stress management, which only contained three questions. The questionnaire was evaluated using the Likert Scale which was very close to the response format used for the pattern questionnaire

The questionnaire format was duplicated due to its previously determined reliability and validity. The Likert-type Scale response format was used for the same reasons.

A sample of the Likert-type Scale is given in Table 1 below:

Table 1 Likert Scale

Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Question of Choice Here
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At the time of the distribution of the study questionnaire, the researcher worked as a registered, licensed dietitian and a Certified Diabetes Educator (CDE) in an interdisciplinary diabetes education program. This professional background is what motivated the initiation of this research study. This professional position also served as the liaison to the AADE.

Procedure

Upon approval from the Oklahoma State University Institutional Review Board and the American Association of Diabetes Educators, the researcher proceeded to collect

data. The questionnaire was distributed via mail with the accompaniment of a cover letter describing the intention of the enclosed questionnaire and the reason for the demographic information collection (Appendixes A, B, & C). An addressed, stamped envelope was provided so the participants could return the completed forms free of charge. The registered nurses and registered dietitians were invited to participate voluntarily and were under no obligation to the AADE organization.

Data Analysis

Standard Statistical procedures (t-test, Analysis of Variance, and Duncan's Multiple Range Test) were used to analyze the data collected from the questionnaire in the previously discussed four content areas (Shavelson 1996). Statistical analysis will also determine if there is a difference in self-perceived efficacy between registered nurses and registered dietitians. Questions on the questionnaire distributed to the participants were categorized as follows: Questions 1, 5, 12 and 14 refer to the content area of job-related experience. Questions 2, 4, 6 and 8 refer to the content area of effectiveness of communication. Questions 3, 7, 10 and 13 refer to the content area of potential job skill improvement. Finally, questions 2, 11 and 15 refer to the content area of personal stress management. Figure 1 on page 32 gives a brief synopsis of this information.

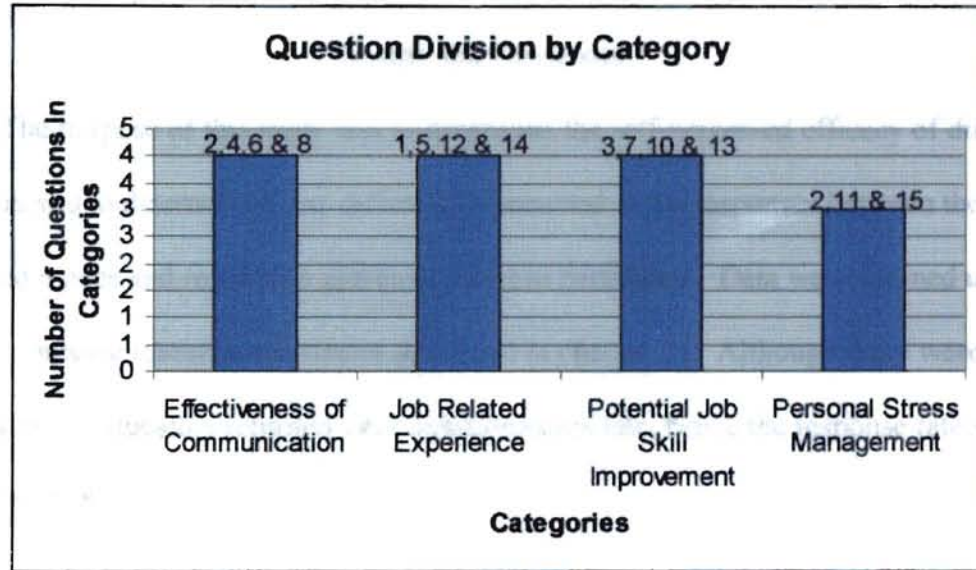


Figure 1. Question Division by Category
(Numbers listed above categories refer to the actual question numbers.)

CHAPTER IV

Results and Discussion

The purpose of this study was to determine the self-perceived efficacy of diabetes educators and to determine if any differences occurred in the responses between the registered nurses and registered dietitians asked to participate. Data was obtained using the questionnaire research instrument described in chapter III. Although there were 163 participants, 5 educators returned their questionnaires late, hence the response rate was 31.6% (N=158).

Characteristics of Participants

Age, Gender, and Educational Status

The gender related characteristics of the sample population are presented in Figure 2. Of the included 158 respondents, 98.7% (N=154) were female and 1.3% (N=2) were male. Two respondents did not provide this information.

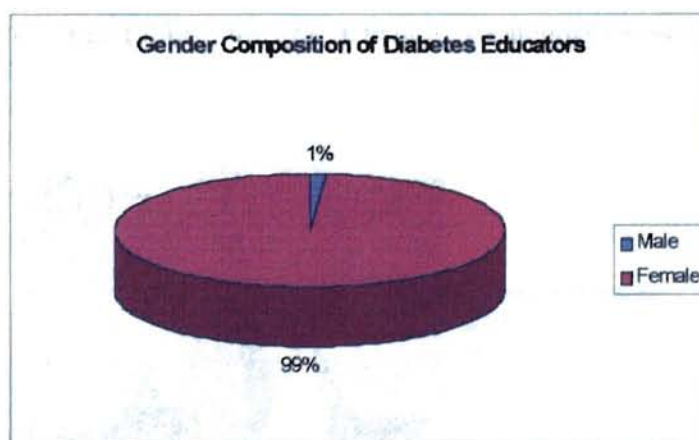


Figure 2. Gender Composition of Diabetes Educators

The age related characteristics of the sample population are presented in Figure 3. The ages ranged from 25 to 65 years of age with the largest number of respondents being 45-54 years of age (N=72) and the least number of respondents being less than 25 years of age (N=0).

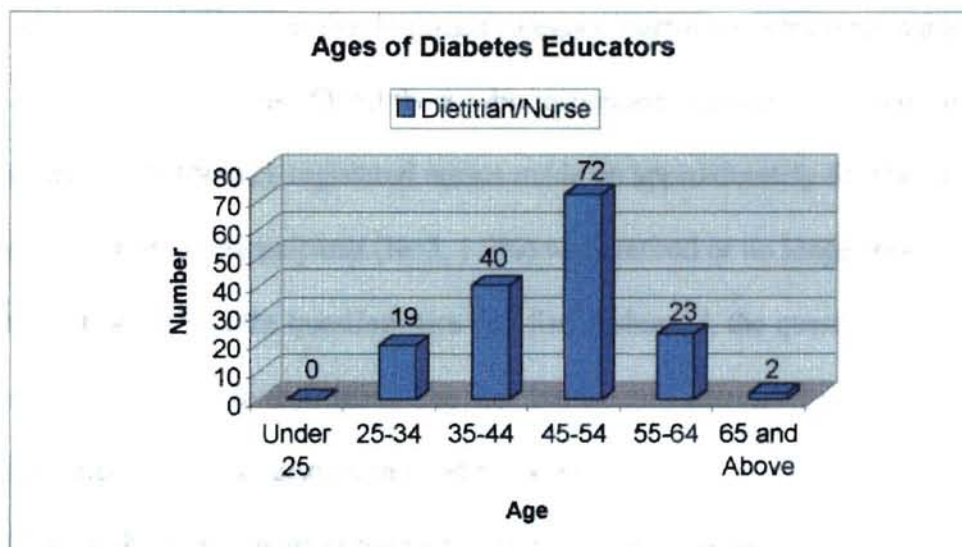


Figure 3. Ages of Diabetes Educators

The educational characteristics of the sample population are presented in Figure 4. The majority of the respondents (N=92, 58.2%) had a BS degree and only 13.9% (N=22) of the respondents had an associates degree in nursing. The categories of Masters degree and Ph.D. were combined to form the graduate degree category (N=41, 25.9%).

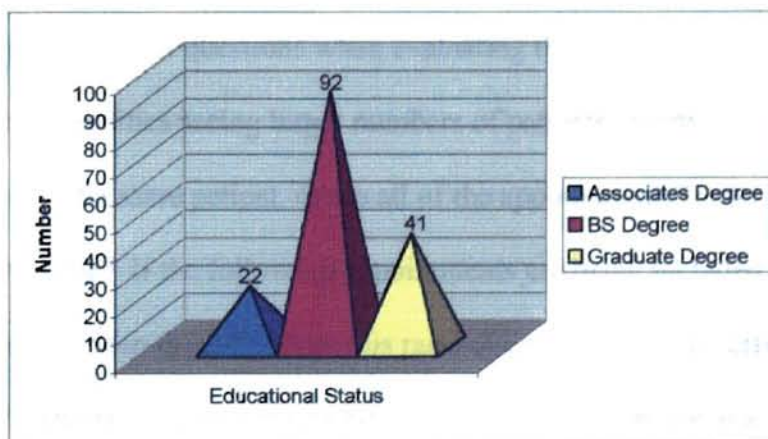


Figure 4. Educational Status of Diabetes Educators

Additional Demographic Information

The remaining demographic characteristics of the sample population are presented in Table 2. The majority of the respondents (N=143, 91.7%) listed their ethnic background as white and listed their current employment status as full-time (N=109, 69.9%). Although full-time was the dominant category, part-time employees made up almost 30% of the participants. Of all those who responded, registered dietitians made up approximately 52.6% (N=82), registered nurses made up approximately 45.5% (N=71) and the remainder of the participants (N=3, 1.9%) were retired or no longer practicing in diabetes education. When the questionnaire was first disbursed, the questionnaires were sent equally to nurses and to dietitians. The fact that the questionnaires were returned with similar percentages was also an interesting point.

Most of the respondents either had worked 0-5 years in the field of diabetes education (N=54, 35.3%) or they had worked 6-10 years in the field (N=51, 33.3%). Even though the respondents indicated most of the educators had been practicing for 10 years or less, it was still very encouraging to see that 6 of the participant were still practicing after 26+ years in the field of diabetes education. The largest percentage of respondents (N=62, 41.3%) indicated that they saw "less than 30 patients per month". This brings up several questions when evaluating the number of patients seen monthly. First, are the facilities seeing larger numbers of patients counting multiple follow-up sessions with the same patient, or are all of the appointments from clients being educated for the first time? If the follow-up appointments are being included in the projection for clients/patients seen monthly, does this raise questions about the efficacy of the education program? Another question might be, how many educators are available within the

clinic/program to educate clients/patients? Also, do the facilities seeing larger numbers of patient have a more substantial budget for marketing to draw in new clientele? These are only a few of the questions, which could provide a more accurate measure of why certain diabetes education programs/clinics see the number of participants seen monthly.

The community size most respondents worked within was listed as "City (Population 25,001-100,000)" (N=47, 31.3%), however, this was very comparable to two other categories. The "small city" category (population 5,000-25,000) made up approximately 27% of the responses and the "large metropolitan area" category (over 100,000) made up 28% of the responses possibly indicating that the larger the population of the surrounding area, the larger the potential diabetes patient population needing education. With regards to "approximate annual salary range", the respondents were well distributed throughout the salary range categories listed. The category containing the most respondents was the \$35,001-\$40,000 salary range (N=34, 22.8%). According to the American Dietetic Association, in 1997 the division of annual gross income for registered dietitians in community nutrition for the year of 1995 showed that 64.4% of the participating community dietitians had an income ranging from \$25,001 to \$40,000 (Bryk 1997). According to Wageweb, the average mean salary for registered nurses in January 2000 was \$44,523 and for registered dietitians, \$40,404 (Wageweb 1/2000). Within this diabetes educator study, 65.7% of the respondents reported annual salaries ranging from \$30,001 to \$50,000. According to the previously listed studies, it is indicated that annual salaries have increased within the past 5 years, however, registered nurses are still averaging slightly higher annual incomes than registered dietitians are.

This could potentially indicate that the larger average salary ranges detected in this diabetes educator study could be due to higher annual salary ranges for registered nurses.

(Table 2)

Table 2. Additional Demographic Information of Respondents

Characteristics	N	%
Ethnicity		
White	143	91.7
Asian	2	1.3
African American	2	1.3
Hispanic American	6	3.8
Indian American	0	0
Other	3	1.9
Status of Employment		
Full Time (35 or more hours per week)	109	69.9
Part Time (34 or less hours per week)	44	28.2
Not employed or retired, or not employed as a diabetes educator	3	1.9
Current Job Title		
Registered Dietitian	82	52.6
Registered Nurse	71	45.5
Other	3	1.9
Number of Years Employed in Diabetes Education		
0-5	54	35.3
6-10	51	33.3
11-15	21	13.7
16-20	12	7.8
21-25	9	5.9
26-30	2	1.3
30 or more	4	2.6
Average Number of Patients Seen Monthly		
Less than 30	62	41.3
31-60	50	33.3
61-90	16	10.7
91-120	6	4.0
121-150	9	6.0
Over 150	7	4.7
Size of Community Facility Located Within		
Town (Population under 5000)	20	13.3
Small City (Population 5,000-25,000)	41	27.3
City (Population 25,001-100,000)	47	31.3
Large Metropolitan Area (Over 100,000)	42	28.0

Table 2. Additional Demographic Information of Respondents (Cont.)

Approximate Annual Salary Range		
Under \$20,000/year	11	7.4
\$20,000-\$25,000/year	8	5.4
&25,001-\$30,000/year	14	9.4
\$30,001-\$35,000/year	24	16.1
\$35,001-\$40,000/year	34	22.8
\$40,001-\$45,000/year	20	13.4
\$45,001-\$50,000/year	20	13.4
Over \$50,000/year	18	12.1

Statistical Analysis

Testing of Ho1

Self-Efficacy in this study encompassed four categories including effectiveness in communication, personal stress management, job related experience and potential job skill improvement. The 15 questions covered all areas with 3-4 questions under each category. Six Likert-type answers were provided for each question ranging from “strongly agree” to “strongly disagree” and a “not applicable” section. Questions 2, 4, 6 and 8 on the questionnaire relate directly to the category of effectiveness in communication (Shown in Appendix C). For each of these questions, respondents answered primarily as strongly agree, agree and neutral. For question 2, the majority of respondents answered “strongly agree” (N=37, 24%) and “agree” (N=91, 59.1%). For question 4, the majority of the respondents answered “strongly agree” (N=60, 38.9%) and “agree” (N=74, 48%). Again for question 6, the majority of the respondents answered “strongly agree” (N=55, 35.7%) and “agree” (N=92, 59.7%). Finally, for question 8, the majority of the respondents answered “strongly agree” (N=68, 44.2%) and “agree” (N=64, 41.6%). Three responses clearly indicate that the diabetes educators in this study perceived themselves as effective communicators when performing diabetes education.

The results found in this analysis were also much like the results found in another communication-based study evaluating self-perceived efficacy. Marcinkiewicz (1994) also reported that teacher's use of computers for teaching was related to their belief in their ability to do so (Albion 1999). Even though the form of communication/education was computer-based in the previous study, it still supports the opinion that an educator will communicate effectively and continue to improve communication capabilities if the educator feels he/she has the capability of making the improvement. Figure 5 shows the results for effectiveness of communication from the self-perceived efficacy questionnaire.

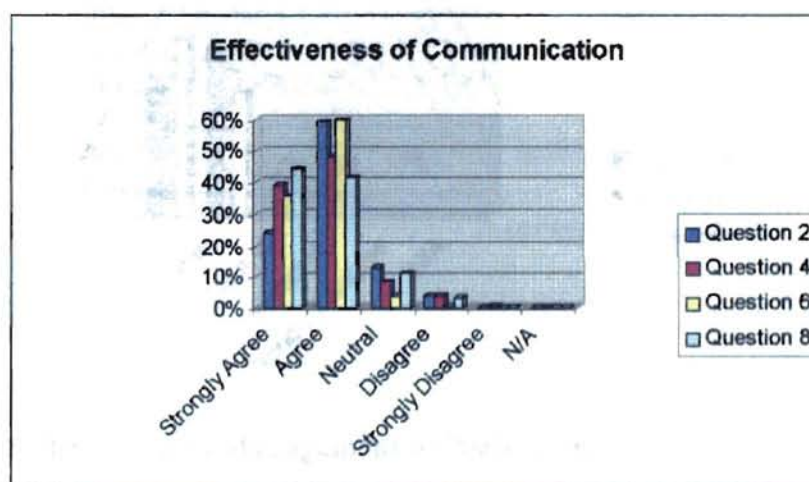


Figure 5. Effectiveness of Communication for Diabetes Educators

The next category of personal stress management was also evaluated in questions 9, 11 and 15 on the self-perceived efficacy questionnaire. For question 9, the majority of the respondents answered “strongly agree” (N=58, 37.7%) and “agree” (N=77, 50%). For question 11, the majority of the respondents again answered “strongly agree” (N=33, 21.9%) and “agree” (N=65, 43.1%). Finally, for question 15, the majority of the respondents answered “strongly agree” (N=80, 53%) and “agree” (N=56, 37.1%). As per

the responses on the self-perceived efficacy questionnaire, these educators feel they are able to deal with personal stress management well. In one study teachers were found to feel confident in the personal stresses they encountered while dealing with problem students. These results, coupled with those for the personal efficacy sub-scale, however, suggest that the pre-service teachers were relatively confident in their abilities to manage disruptive behavior in the classroom (Bailey & Kline 1999). Figure 6 shows the results for personal stress management from the self-perceived efficacy questionnaire.

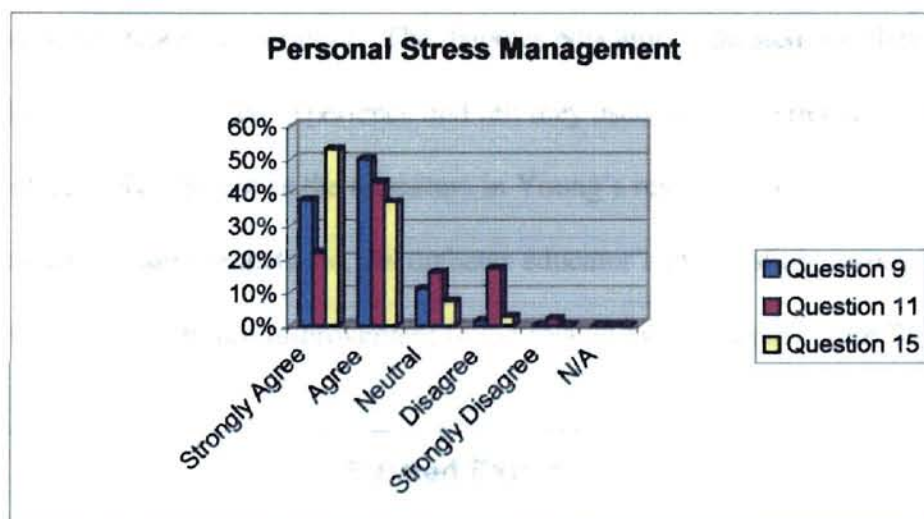


Figure 6. Personal Stress Management of Diabetes Educators

The category of job related experience was evaluated by information collected from questions 1, 5, 12 and 14. For question 1, the majority of the respondents answered “strongly agree” (N=83, 54.3%) and “agree” (N=66, 43.1%). For question 5, the majority of the respondents answered “strongly agree” (N=55, 35.7%) and “agree” (N=64, 41.6%). For question 12, again the respondents primarily chose “strongly agree” (N=100, 65.8%) and “agree” (N=51, 33.6%). Finally, for question 14, the respondents

answered “strongly agree” (N=62, 40.8%) and “agree” (N=80, 52.6%). The responding diabetes educators once again are confident with their job-related experience as per the self-perceived efficacy questionnaire. When looking at job related experiences, one study found that professors believe that after they reach a certain level of teaching proficiency, there is no reason to improve any further as further proficiencies were not rewarded. Therefore, once someone attains a certain level, they are less likely to want to exert the extra effort to attend a seminar (Young 1996). In one aspect, this result is similar to the result found in the self-perceived efficacy of diabetes educator’s study relative to job related experience. The diabetes educators indicated that they felt confident with job related experience and felt they used their experience to allow them to teach effectively. Where as the educators in Young’s research felt no need to increase proficiency in their competence, the diabetes educator’s in this study responded more positively towards future improvement in job related experiences (Figure 7).

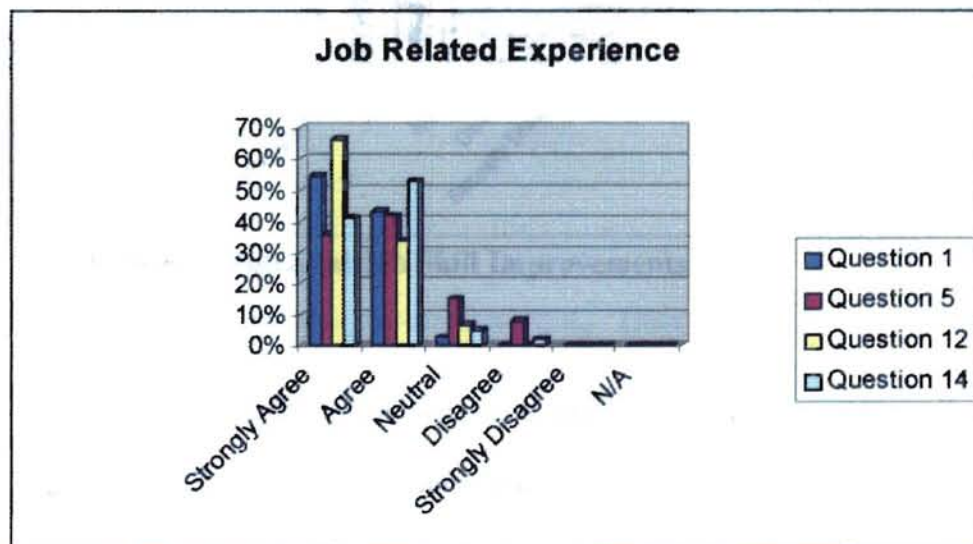


Figure 7. Job Related Experience of Diabetes Educators

The category of potential job skill improvement was evaluated by information collected from questions 3, 7, 10 and 13 (Appendix C). For question 3, most of the respondents answered “strongly agree” (N=68, 44.2%) and “agree” (N=72, 46.8%). For question 7, most respondents answered “strongly agree” (N=104, 68%) and “agree” (N=46, 30.1%). Again for question 10, the majority of respondents answered “strongly agree” (N=83, 54.8%) and “agree” (N=66, 43.7%). Finally, in question 13, most respondents answered “strongly agree” (N=93, 61.2%) and “agree” (N=57, 37.5%). Diabetes educators felt confident with their capabilities when assessing potential job skill improvement. Responses from educators related to potential job skill improvement are found in Figure 8.



Figure 8. Potential Job Skill Improvements

As shown in Table 3, results of t-test analysis indicated no statistically significant findings to show the diabetes educators responding to the questionnaire had negative self-perceptions in relation to efficacy of the four evaluated t-test procedure categories. Since the calculated means vary so little within this t test analysis, again no statistically significant differences occur. All of the analyses show results greater than the

Table 3. t test Analysis for Self-Perceived Efficacy Categories

The TTEST Procedure										
Statistics										
Variable	Class	N	Lower CL		Upper CL		Lower CL		Upper CL	
			Mean	Mean	Mean	Std Dev	Std Dev	Std Dev	Std Err	
effcomm	1	81	6.7353	7.2222	7.7092	1.9076	2.2023	2.6055	0.2447	
effcomm	2	70	6.6995	7.1429	7.5862	1.5943	1.8595	2.2312	0.2222	
stressmg	1	78	5.3493	5.8333	6.3173	1.8546	2.1467	2.5487	0.2431	
stressmg	2	68	5.0919	5.5294	5.967	1.5467	1.8077	2.1755	0.2192	
Jobrelex	1	78	6.1715	6.6154	7.0593	1.701	1.9688	2.3375	0.2229	
Jobrelex	2	69	5.7962	6.2464	6.6966	1.6051	1.874	2.2519	0.2256	
Potjobsi	1	78	5.4114	5.7949	6.1783	1.4694	1.7007	2.0192	0.1926	
Potjobsi	2	69	5.5562	5.9565	6.3569	1.4275	1.6666	2.0027	0.2006	

0.05 probability needed to reject the null hypothesis. It leads to the following decision rule: Reject the null hypothesis if the probability of obtaining a sample mean at or beyond a certain value is less than or equal to .05 (or 0.1); otherwise, do not reject the null hypothesis (Shavelson 1996). Based on this definition, the researcher failed to reject Ho1 as the p value was greater than 0.05 ($p > 0.05$).

Testing of Ho2

When evaluating the second hypothesis, "There will be no significant associations between diabetes educator's self-perceived efficacy and the selected personal variables of the following: educational background, age, ethnic background, educational level, employment status and years of employment", only one category showed a statistically significant difference. The first category of "educational background, RN vs. RD", did not indicate this result. When condensing the second category of "age" to 44 years of age

or less and 45 years of age or greater, there was still no statistically significant differences. When evaluating the third category of “ethnic background”, this category was condensed to the background of white and others with no statistical significance present. The fifth category of “employment status” was condensed into full-time and part-time, showing no statistical significance. The sixth category of “years of employment” also showed no statistical significant differences when the category was condensed to “less than 10 years in diabetes education” and “greater than 10 years in diabetes education”. The Anova Procedure and Duncan’s Multiple Range Test were used to evaluate each of the previous categories. All statistical analyses may be found in Appendix C for Hypothesis 2 testing.

A statistically significant association (0.06) was found between “educational level” and “potential job skill improvement”. The Anova Procedure and Duncan’s Multiple Range Test were used to determine the statistical significance as shown in Table 4.

Table 4. Anova Analysis of Educational Level of Diabetes Educators

The ANOVA Procedure					
Dependent Variable: Potjobsi					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	2	15.4713565	7.7356783	2.85	0.0610
Error	145	393.2583732	2.7121267		
Corrected Total	147	408.7297297			
	R-Square	Coeff Var	Root MSE	Potjobsi Mean	
	0.037852	28.14484	1.646854	5.851351	

Table 4. Continued

The ANOVA Procedure				
Duncan's Multiple Range Test for Potjobsi				
NOTE: This test controls the Type I comparisonwise error rate, not the experimentwise error rate.				
	Alpha			0.05
	Error Degrees of Freedom			145
	Error Mean Square			2.712127
	Harmonic Mean of Cell Sizes			36.08633
NOTE: Cell sizes are not equal.				
Number of Means	2	3		
	Critical Range		.7663	.8065
Means with the same letter are not significantly different.				
	Duncan Grouping	Mean	N	educ
	A	6.5000	22	1
	A			
	B A	5.8636	88	2
	B			
	B	5.4474	38	3

As indicated by the varying letters in the Duncan Grouping in Table 4, there is a statistically significant association between those who have obtained an associates degree (this will be limited to Registered Nurses only) and those who have obtained a graduate degree (this could include both Registered Nurses and Registered Dietitians). When reviewing the first, second, third, fifth and sixth variables under the second hypothesis, the researcher failed to reject the null hypothesis because no statistical significance was found. Those diabetes educators responding to the questionnaire did show some doubt in their confidence to effectively educate clients based on "potential job skill improvement" when only having an Associates Degree in Nursing. "Educational level" and "potential job skill improvement" were statistically significant by association at the $p \leq 0.06$; therefore, the null hypothesis was rejected.

CHAPTER V

Summary, Recommendations, Implications

Summary

This study determined the self-perceived efficacy of diabetes educators using a 15-item questionnaire. The format used for possible answers in relation to the questions followed the Likert Scale ranging from “strongly agree” to “strongly disagree”. The questionnaire was formatted from a previously developed and validated self-efficacy questionnaire developed by Schwarzer (Schwarzer et al 1999-#16). The sample population was randomly selected, including 250 registered nurses and 250 registered dietitians, from the members of the national organization of the American Association of Diabetes Educators (N=500). The study questionnaire was disbursed via mail to the selected participants. Data from 31.6% of the participants (N=158) was analyzed using frequencies, percentages, T-test, ANOVA, and Duncan’s Multiple Range Test to answer the two hypotheses postulated in the study. P value accepted was $p \leq 0.1$.

The majority of the participants were be white (N=143, 91.7%) and female (N=154, 98.7%). The majority of the respondents were between 45-54 years of age(N=72, 45.6%) and most of the responding educators (N=92, 58.2%) had a BS degree. Only a small percentage of the participants completed associates degrees (N=22, 13.9%). The rest had graduate degrees (N=41, 29.5%). The majority of the respondents were found to be working full-time (N=109, 69.9%) and more registered dietitians responded to the questionnaire (N=82, 52.6%) than registered nurses (N=71, 45.5%). When

evaluating the category of number of years employed in diabetes education, the greatest number of the participants stated they had been working in the field for five years or less (N=54, 35.3%) while the least number of participants stated they had been working in the field for 26 to 30 years (N=2, 1.3%). The majority of the respondents indicated that they saw 30 or less patients per month (N=62, 41.3%). The largest percentage of educators worked in a city (population 25,001 to 100,000) (N=47, 31.3%). Finally, the most commonly chosen section for the category of "approximate annual salary range" was \$35,001 to \$40,000/ year (N=34, 22.8%). Thirty-nine percent (N=50) of the respondents, however, earned over \$40,000 annually.

There were no significant associations found between the respondent's self-perceived efficacy and the four categories evaluated: effectiveness of communication, personal stress management, job-related experience and potential job skill improvement. When evaluating all categories, respondents felt they were very effective in educating their patients/clients. There was also no significant association between the diabetes educator's self-perceived efficacy and the selected personal variables of age, ethnic background, educational background, employment status and years of employment. Only one personal variable of educational level showed a significant association ($p \leq 0.1$) with the category of "potential job skill improvement". Using the Duncan's Multiple Range Test, it was shown that educators with an associate's degree feel less effective in areas of potential job skill improvement when evaluating themselves than those educators with graduate degrees. With this being the only category showing a statistical significant association, many other details of educators could be evaluated in the future to determine if there are other self-perceived shortcomings by diabetes educators.

Recommendations

Based on the results of the study, it is evident that many other questions could be asked to get a more accurate evaluation of the self-perceived efficacy of diabetes educators. A more detailed subset of diabetes educators could be evaluated, such as Certified Diabetes Educators (CDE). By engaging this specific group in a self-perceived efficacy questionnaire, it would be possible to determine how the educators who are the most experienced in the field of diabetes education evaluate their strengths and weaknesses. This could be extrapolated to the broader realm of diabetes education to determine how those who don't practice in diabetes education 100% of the time and project the areas in which they feel they have weaknesses as well.

Another area which could be explored, is to repeat this study in approximately 10 years to determine if diabetes educators still perceive their teaching capabilities in the same way. With the continuously progressing technology, educators are going to need to become effective self-educators so they may educate their patients not only with the newest and most accurate information but also with the latest technologies. An educator must constantly improve his/her teaching competencies to be effective.

One more domain which might be evaluated in the future would be that of comparing educators from varying regions of the United States. Since cultural and possibly educational opinions differ in different regions of the U.S., it would be interesting to see how educators perceive their own teaching efficacy. Varying differences could be attributed to the difference in the educator's personal educational background, setting within the educator's workplace, the clientele the educator works

with or even the curriculum the educator is expected to teach. No matter which of these recommendations are chosen, each would contribute a more detailed account of the way in which diabetes educators perceive their personal teaching efficacy.

Implications

The results of this study indicate that the diabetes educator responding to the questionnaires felt very confident and comfortable in educating their clients in the four previous categories of effective communication, job related experience, potential job skill improvement, and personal stress management. It will be important to see how diabetes educators continue to perceive their personal self-efficacy as new research results and new technologies are presented in the future. In order to keep up with the improvement in technology, educators need to maintain adequate knowledge of proper usage of these technologies, such as computers, the World Wide Web, and updated audiovisual equipment, to ensure the best education possible to their patients/clients.

Self-training is not the only avenue for continuous educational improvement of the diabetes educator. Registered dietitians (RD) are currently required to obtain a specific amount of continuing education credits to ensure they receive the most updated information within their scope of practice. As of January 2000, this continuing education system for RDs is being expanded and updated, requiring RDs to provide portfolios meeting specific educational criteria once every five years, again to ensure that RDs have the most updated and accurate information to present to their patients/clients.

Registered nurses also have a continuing education program to aid them in receiving the most updated information, however, each state has varying requirements for

nurses to maintain proof of continuing education credits. The standardization of nursing continuing education requirements in every state could be a potential area of improvement to ensure the best possible education for patients/clients requiring diabetes education, especially since there are more RNs and a large number of them are only required to complete an associates degree.

Another potential area in which more research could be done involves an evaluation of diabetes educators by their administrators to determine if the perceived efficacy of the educators is congruent with what the management point of view is regarding this same topic. Differing issues including compliance of patients/clients could be used to evaluate continuing efficacy. No matter what educational background a diabetes educator may have, the educator must remain current with the most relevant and cutting edge information at all times. The way in which the educator chooses to ensure this will most likely determine the success of the educator and contribute to the success of his/her clients.

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APENDIX A
LETTER OF EXPLANATION

February 27, 2000

Dear Diabetes Educator,

As a diabetes educator, you are aware there are very limited studies on self-perceived efficacy of educators in a specialized area. Previous efficacy studies were conducted mainly from a patient or physician point of view. We believe it is important for diabetes educators to evaluate their self-perceived efficacy when teaching and to use the results to help identify possible solutions for future educational sessions. By helping us to identify self-perceived efficacy now, both you and future educators can share in this benefit.

This survey will be conducted through Oklahoma State University and includes questions in the following content areas related to self-perceived efficacy of a diabetes educator: academic preparedness, effectiveness of communication, personal stress management, job-related experience and potential job skill improvement. The survey will also ask for basic demographic information to aid in identifying any differences among the varying professions practicing as diabetes educators.

A summary of the findings will be made available to the American Association of Diabetes Educators. Results will not identify individuals or specific location from which results have been collected. The questionnaire will take approximately 15 minutes to complete. After completing the questionnaire, please refold with the pre-paid reply visible, seal, and return to us. Please return on or before March 15, 2000. If you have any questions, please call us at (405)744-8294 or call Sharon Bacher, Institutional Review Board Executive Secretary at (405)744-6501.

Thank you for your time and professional assistance,

Christine Sumner-Davis, R.D./L.D., CDE
Graduate Student

Lea L. Ebro, Ph.D., R.D./L.D.
Professor and Dietetic Internship Director

APPENDIX B
DEMOGRAPHIC INFORMATION

SURVEY OF PRACTICING DIABETES EDUCATORS

PART I: DEMOGRAPHIC INFORMATION (Please fill out every question by checking the appropriate answer.)

1. Gender: (1) Male (2) Female
2. Age Group (1) Under 25 (2) 25-34 (3) 35-44 (4) 45-54
(5) 55-64 (6) 65 and above
3. Ethnicity: (1) White (2) Asian (3) African American
(4) Hispanic American (5) Native American
(6) Other; specify _____
4. Highest level of education obtained: (1) Associate Degree
(2) Bachelor of Science (3) Masters of Science (4) Ph.D.
5. Degree Emphasis: (1) Nutritional Sciences (2) Nursing
(3) Other; specify _____
6. Current job title: _____
7. Status of employment: (1) Full time (35 or more hours per week)
(2) Part time (34 or less hours per week)
(3) Not employed or retired, or not employed as a diabetes educator
8. Number of years you have been (or were) employed in the area of diabetes education in relation to your profession: _____
9. In what type of facility do you currently work?
(1) Outpatient Clinic
(2) Hospital/medical center program
(3) Outpatient consulting
(4) Physician's office
(5) Other; specify _____
10. Current educational content areas that you are responsible for teaching (check all areas that apply):
(1) Meal planning/medical nutrition therapy
(2) Medication
(3) Insulin review, patient administration and adjustment
(4) Basic physiology
(5) Initiation of pump management/adjustment with pump management
(6) Other; specify _____
11. Average number of patients seen monthly: (1) Less than 30 (2) 31-60
(3) 61-90 (4) 91-120 (5) 121-150 (6) Over 150

12. In what size community is your facility located?

- (1) ___ Town (population under 5000)
- (2) ___ Small city (population 5,000-25,000)
- (3) ___ City (population 25,00-100,000)
- (4) ___ Large metropolitan area (population over 100,000)

13. What is your approximate annual salary range? (If you are paid by the hour, compute to the closest range.)

- | | |
|--------------------------------|--------------------------------|
| (1) ___ Under \$20,000/year | (5) ___ \$35,001-\$40,000/year |
| (2) ___ \$20,000-\$25,000/year | (6) ___ \$40,001-\$45,000/year |
| (3) ___ \$25,001-\$30,000/year | (7) ___ \$45,001-\$50,000/year |
| (4) ___ \$30,001-\$35,000/year | (8) ___ Over \$50,000/ year |

14. Staffing:

- (1) Number of Registered Dietitians at your facility? _____
- (2) Number of Registered Nurses at your facility? _____

THANK YOU FOR YOUR PARTICIPATION IN THE SURVEY.

APPENDIX C
SELF-PERCEIVED EFFICACY QUESTIONNAIRE

PERCEIVED SELF-EFFICACY QUESTIONS FOR DIABETES EDUCATORS

1. I am prepared to effectively teach clients with diabetes either with a new or uncontrolled diagnosis of diabetes.
 Strongly Agree Agree Neutral Disagree Strongly Disagree N/A
2. I am able to continue an effective teaching session and find alternative teaching approaches when a patient displays hostility and/or resistance to the information given.
 Strongly Agree Agree Neutral Disagree Strongly Disagree N/A
3. I participate to the fullest extent when presented with opportunities to develop or select new educational materials and/or develop or revise teaching strategies for my patients.
 Strongly Agree Agree Neutral Disagree Strongly Disagree N/A
4. I am confident I can communicate with physicians effectively both verbally and in written format to discuss patient medical and educational issues.
 Strongly Agree Agree Neutral Disagree Strongly Disagree N/A
5. I am comfortable in the use of most audiovisual equipment to further my educational session's effectiveness.
 Strongly Agree Agree Neutral Disagree Strongly Disagree N/A
6. I know I am capable of recapturing my clients' attention if a distraction occurs or a non-diabetic related topic is introduced.
 Strongly Agree Agree Neutral Disagree Strongly Disagree N/A
7. I will continue to be motivated to further my knowledge and teaching capabilities to provide my clients with the best possible education.
 Strongly Agree Agree Neutral Disagree Strongly Disagree N/A
8. I know I am a positive role model for clients with diabetes through my lifestyle habits and appearance.
 Strongly Agree Agree Neutral Disagree Strongly Disagree N/A
9. I am confident I do not allow feelings of personal stress to interfere with my presentation in a client educational session.
 Strongly Agree Agree Neutral Disagree Strongly Disagree N/A
10. I know I can learn from mistakes made in an educational session to motivate my pursuit for improvement in my future teaching strategies.
 Strongly Agree Agree Neutral Disagree Strongly Disagree N/A
11. I am able to leave frustrations associated with my job at work and not let them transfer into my personal life.
 Strongly Agree Agree Neutral Disagree Strongly Disagree N/A
12. I feel my knowledge acquired while in the field of diabetes education has allowed me to better educate my patients.
 Strongly Agree Agree Neutral Disagree Strongly Disagree N/A
13. I have utilized knowledge from my continuing education requirement sessions to better educate my patients.
 Strongly Agree Agree Neutral Disagree Strongly Disagree N/A

14. I am confident I can handle unexpected situations when teaching due to my previous training and work.

Strongly Agree Agree Neutral Disagree Strongly Disagree N/A

15. I do not take patient's frustration with diabetes or the educational session as a personal attack against myself.

Strongly Agree Agree Neutral Disagree Strongly Disagree N/A

APPENDIX D
STATISTICAL ANALYSIS

The TTEST Procedure

		Statistics						
Variable	Class N	Mean	Lower CL Mean	Upper CL Mean	Lower CL Std Dev	Upper CL Std Dev	Upper CL Std Err	
effcomm	81	6.7353	7.2222	7.7092	1.9076	2.2023	0.2447	
effcomm	70	6.6995	7.1429	7.5862	1.5943	1.8595	0.2222	
effcomm Diff (1-2)		0.582	0.0794	0.7406	1.8419	2.0507	0.3346	
stressmg	78	5.3493	5.8333	6.3173	1.8546	2.1467	0.2431	
stressmg	68	5.0919	5.5294	5.967	1.5467	1.8077	0.2192	
stressmg Diff (1-2)		-0.351	0.3039	0.9585	1.7898	1.9961	0.3312	
Jobrelex	78	6.1715	6.6154	7.0593	1.701	1.9688	0.2229	
Jobrelex	69	5.7962	6.2464	6.6966	1.6051	1.874	0.2256	
Jobrelex Diff (1-2)		-0.26	0.369	0.9978	1.7266	1.9249	0.3181	
Potjobsi	78	5.4114	5.7949	6.1783	1.4694	1.7007	0.1926	
Potjobsi	69	5.5562	5.9565	6.3569	1.4275	1.6666	0.2006	
Potjobsi Diff (1-2)		-0.712	-0.162	0.3887	1.5112	1.6848	0.2784	

The ANOVA Procedure

Dependent Variable: Potjobsi

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	2	15.4713565	7.7356783	2.85	0.0610
Error	145	393.2583732	2.7121267		
Corrected Total	147	408.7297297			

	R-Square	Coeff Var	Root MSE	Potjobsi Mean
	0.037852	28.14484	1.646854	5.851351

Source	DF	Anova SS	Mean Square	F Value	Pr > F
educ	2	15.47135652	7.73567826	2.85	0.0610

The ANOVA Procedure

Duncan's Multiple Range Test for Potjobsi

NOTE: This test controls the Type I comparisonwise error rate, not the experimentwise error rate.

Alpha	0.05
Error Degrees of Freedom	145
Error Mean Square	2.712127
Harmonic Mean of Cell Sizes	36.08633

NOTE: Cell sizes are not equal.

Number of Means	2	3
		Critical Range
		.7663
		.8065

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	educ
A	6.5000	22	1
A			
B A	5.8636	88	2
B			
B	5.4474	38	3

The FREQ Procedure

gender	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	2	1.28	2	1.28
2	154	98.72	156	100.00

Frequency Missing = 1

age	Frequency	Percent	Cumulative Frequency	Cumulative Percent
2	19	12.18	19	12.18
3	40	25.64	59	37.82
4	72	46.15	131	83.97
5	23	14.74	154	98.72
6	2	1.28	156	100.00

Frequency Missing = 1

ethnic	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	143	91.67	143	91.67
2	2	1.28	145	92.95
3	2	1.28	147	94.23
4	6	3.85	153	98.08

Frequency Missing = 1

educ	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	22	14.19	22	14.19
2	92	59.35	114	73.55
3	40	25.81	154	99.35
4	1	0.65	155	100.00

Frequency Missing = 2

The FREQ Procedure

degree	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	82	53.59	82	53.59
2	71	46.41	153	100.00

Frequency Missing = 4

jobtitle	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	82	52.56	82	52.56
2	71	45.51	153	98.08
3	3	1.92	156	100.00

Frequency Missing = 1

status	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	109	69.87	109	69.87
2	44	28.21	153	98.08
3	3	1.92	156	100.00

Frequency Missing = 1

yrs_emp	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	54	35.29	54	35.29
2	51	33.33	105	68.63
3	21	13.73	126	82.35
4	12	7.84	138	90.20
5	9	5.88	147	96.08
6	2	1.31	149	97.39
7	4	2.61	153	100.00

Frequency Missing = 4

The FREQ Procedure

factyp1	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0	100	65.79	100	65.79
1	52	34.21	152	100.00

Frequency Missing = 5

factyp2	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0	72	47.37	72	47.37
1	80	52.63	152	100.00

Frequency Missing = 5

factyp3	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0	137	90.13	137	90.13
1	15	9.87	152	100.00

Frequency Missing = 5

factyp4	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0	133	87.50	133	87.50
1	19	12.50	152	100.00

Frequency Missing = 5

factyp5	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0	130	86.09	130	86.09
1	21	13.91	151	100.00

Frequency Missing = 6

The FREQ Procedure

edcont1	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0	34	22.08	34	22.08
1	120	77.92	154	100.00

Frequency Missing = 3

edcont2	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0	59	38.31	59	38.31
1	95	61.69	154	100.00

Frequency Missing = 3

edcont3	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0	75	48.70	75	48.70
1	79	51.30	154	100.00

Frequency Missing = 3

edcont4	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0	35	22.73	35	22.73
1	119	77.27	154	100.00

Frequency Missing = 3

edcont5	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0	138	89.61	138	89.61
1	16	10.39	154	100.00

Frequency Missing = 3

The FREQ Procedure

edcont6	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0	117	75.97	117	75.97
1	37	24.03	154	100.00

Frequency Missing = 3

patients	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	62	41.33	62	41.33
2	50	33.33	112	74.67
3	16	10.67	128	85.33
4	6	4.00	134	89.33
5	9	6.00	143	95.33
6	7	4.67	150	100.00

Frequency Missing = 7

cummunit	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	20	13.33	20	13.33
2	41	27.33	61	40.67
3	47	31.33	108	72.00
4	42	28.00	150	100.00

Frequency Missing = 7

salary	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	11	7.38	11	7.38
2	8	5.37	19	12.75
3	14	9.40	33	22.15
4	24	16.11	57	38.26
5	34	22.82	91	61.07
6	20	13.42	111	74.50
7	20	13.42	131	87.92
8	18	12.08	149	100.00

APPENDIX E
INSTITUTIONAL REVIEW BOARD APPROVAL

**OKLAHOMA STATE UNIVERSITY
INSTITUTIONAL REVIEW BOARD**

Date: February 10, 2000 IRB#: HE-00-145

Proposal Title: "DIABETES EDUCATOR'S PERCEPTION OF
SELF-EFFICACY IN THEIR DIABETES EDUCATION
PROGRAMS"

Principal Investigator(s): Lea Ebro
Christine E. Sumner

Reviewed and
Processed as: Exempt

Approval Status Recommended by Reviewer(s): Approved

Signature:



Carol Olsen, Director of University Research Compliance



Date

Approvals are valid for one calendar year, after which time a request for continuation must be submitted. Any modifications to the research project approved by the IRB must be submitted for approval with the advisor's signature. The IRB office MUST be notified in writing when a project is complete. Approved projects are subject to monitoring by the IRB. Expedited and exempt projects may be reviewed by the full Institutional Review Board.

VITA

Christine E. Sumner

Candidate for the Degree of

Master of Science

Thesis: DIABETES EDUCATOR'S PERCEPTIONS OF SELF-EFFICACY IN THEIR DIABETES EDUCATION PROGRAMS

Major Field: Nutritional Sciences

Biographical:

Personal Data: Born in Tulsa, Oklahoma, on October 30, 1971, the daughter of Mitch and Gail Pilgrim.

Education: Graduated from Glenpool High School, Glenpool, Oklahoma in May 1989; received Bachelor of Science degree in Nutrition Sciences and completed Nutritional Sciences Dietetic Internship from Oklahoma State University, Stillwater, Oklahoma in May 1994 and May 1995, respectively. Completed the requirements for the Master of Science degree with a Major in Nutritional Sciences at Oklahoma State University in July 2000.

Experience: Previously employed at Claremore Regional Hospital, Claremore, Oklahoma, as a clinical dietitian (RD/LD) and coordinator of Nutrition Services. Currently employed as a Certified Diabetes Educator at St. John Diabetes Center, Tulsa, Oklahoma.

Professional Memberships: American Dietetic Association, Oklahoma Dietetic Association, American Association of Diabetes Educators, Professional Member of the Juvenile Diabetes Foundation.