

# THE ROLE OF ADULT EDUCATION IN DIABETES COMPLIANCE

by

SUSAN R. LAYTON

(Under the direction of BRADLEY C. COURTENAY)

## ABSTRACT

The number of people being diagnosed with Diabetes is growing rapidly, however approximately 70 percent of those suffering with Diabetes go undiagnosed. It has been well documented that Diabetes education is an essential component to managing the sequelae of the disease. The American Diabetes Association (ADA) offers the certification for the educational classes in Diabetes which is required for reimbursement. Therefore, the ADA regulates the offerings in these classes and is directly influential in the control/compliance of these individuals. The purpose of this study was to understand how an educational intervention leads to compliance in an American Diabetes Association (ADA) group class. Though many studies have been done quantitatively in the United States concerning Diabetes control, little is known about what factors in an educational program assist the diabetic to maintain compliance.

Using a qualitative methodology consisting of semi-structured in-depth interviewing, data was collected from seven participants. These participants met all criteria set for this study which included participation in an ADA class, being under the care of a health practitioner, and being in compliance with treatment instructions.

Every interview was audio-taped and transcribed. Transcripts were then analyzed by the constant comparative method. Upon analysis, the results demonstrated that the participants felt

that they were able to successfully transfer the information from the classroom to their every day life. Factors the participants identified as important to their compliance included an educational experience with a comfortable environment, the attributes of the educator, and useful content. An involved support person and intrinsic motivation were two other factors that complemented the educational experience.

Three conclusions were made based upon the results from the study. First, education programs that influence compliance have appealing and supportive climates, are taught by pleasant and knowledgeable educators, and offer useful content. Second, involvement of a supportive friend or family member heightens the influence of an educational program on compliance. Third, the presence of intrinsic motivation in the participant reinforces the determination to be compliant.

INDEX WORDS:     Transfer of learning, Diabetes, American Diabetes Association class,  
                          Compliance, Adult Education

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SUSAN R. LAYTON

B.S.N., The Medical College of Georgia, 1985

M.S.N., The Medical College of Georgia, 1988

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by

SUSAN R. LAYTON

Major Professor: Bradley C. Courtenay

Committee: Ronald Cervero  
Richard Kiely  
John Schell

Electronic Version Approved:

Maureen Grasso  
Dean of Graduate School  
The University of Georgia  
August 2006

## DEDICATION

This dissertation is dedicated to Emma S. and Joseph L. Layton, my parents, without their  
support this would not have been possible;

and,

I would also like to thank Bradley C. Courtenay, EdD, my outstanding Chair, who without his  
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## CHAPTER 1

### INTRODUCTION

#### Background of the Study

The ability to cure acute diseases and manage chronic diseases has improved over time with the increase in skills and availability of new medications (Cohen, 1978). Along with the medication and treatments that are prescribed, these disease processes that are treatable and at times controllable/curable also rely on patient compliance as a method of treatment. In the past, medically based professions have socialized patients to be passive recipients of care and treatment, especially with regard to acute illnesses (Cohen, 1978). It is of recent advent that these professions have begun to expect and require patients to be active participants in their care and treatments. As active participants, patients have been encouraged to utilize educational resources to increase their knowledge base thus increasing their understanding and participation in their own care.

This active participation is vital to the prevention and control of the sequelae (subsequent outcomes) associated with the disease processes, such as Diabetes. Diabetes or Diabetes Mellitus is a chronic disease process that can be both familial and genetic, meaning that the gene can be passed through family relationships and through genetic encoding. Diabetes is a complex array of physiologic changes, though to the layperson it is a “sugar” disease. Actually, diabetes is

a disease of carbohydrate (CHO) metabolism. This disease process is best characterized by long term hyperglycemia ( high blood sugar) which causes other metabolic changes in response to this high blood sugar ( McCance & Huether, 1990) .

Old characterizations of diabetes were termed as Type I and Type II. Now, pathophysiologists and endocrinologists characterize diabetes as to whether they are insulin dependent (IDDM) or non-insulin dependent (NIDDM). Complications of diabetes are numerous and debilitating to the structure and function of the human body. Some common complications include: hyperglycemia (high blood sugar), Diabetic Ketoacidosis (muscle used for glucose especially the heart muscle), Diabetic Coma, Hyperosmolar hyperglycemia (HHNC), hypoglycemia (low blood sugar), Diabetic Neuropathies (neuron death), microvascular disease (decreased tissue perfusion), retinopathy (retinal damage leads to blindness), nephropathy (kidney disease leading to dialysis), macrovascular disease (atherosclerosis), coronary artery disease, stroke (CVA), peripheral vascular disease (amputations), infection, and numerous other sequelae (the resultant process). The good news is that these complications, when the diabetic is compliant, are preventable. Many diabetics since childhood live full and complete lives without any complications.

### Compliance

Researchers have long acknowledged that recognition of the problem of non-compliance is the easiest step in the process of the treatment regimen of the patient. Complicating this acknowledgment by the research community of the recognition of non-compliance is the varied definitions of compliance. Some researchers have recently rebelled at using the term compliance

because of the perceived paternalistic tone of the term. Terms such as therapeutic alliance, treatment participation, or adherence have been suggested to counter the paternalism issue. The term compliance spans many fields and professions. Attorneys write and talk about the legal costs of noncompliance. Economists discuss the economic costs. Law enforcement personnel talk of the legal consequences of non-compliance to our freedom. Organizations and educational institutions relate to cultures of compliance.

Early in the study of compliance, in the field of sociology, a topology of justifications and excuses was developed as a thematic classification to attempt description of the pharmacotherapeutic compliance phenomenon (Scott & Lyman, 1968). This topology delineates intentional and unintentional noncompliance and the excuses and justifications used for this non-compliant behavior. The four most commonly stated excuses in this topology include issues with the side effects, busy lives, the inconvenience of food, and the need to conceal medication use. The three most commonly stated justifications for non-compliance include the need for flexibility, strict “adherence” is unattainable, and who will know (Scott & Lyman, 1968). Terms such as compliance, adherence and treatment participation are all used in these discussions. Definitions, when used, are as varied as each individual study and each individual term used to describe this phenomenon (Littell, Alexander, & Reynolds, 2001). By simple definition, the verb to comply is an implicit guarantee to fall in with or cooperate with “the will of others” (O’Connell & Labson, 2000, p. 12).

Quantitatively one can measure compliance as a ratio or percentage. This measurement encompasses the degree to which the pharmacotherapeutic regimen is followed as either good, poor, or noncomplier. The studies done by physicians either do not define compliance or use

definitions with an arbitrary and high criteria to measure the concept of compliance “which may apply to some conditions and not others” (Rietveld & Koomen, 2002, p. 2). The majority of the existing studies about compliance use the quantitative paradigm. Of these majority of quantitative studies, many researchers have suggested that there must be objective criteria interjected into the measurement of the concept of compliance. Most would also agree that there is not a universal endpoint to compliance because of the absence of the standard of what compliance entails (Corda, Burke, & Horowitz, 2000).

For the purpose of this study, the term compliance was used to represent the terms adherence, therapeutic alliance, treatment participation and any other term used interchangeably in the literature to represent this concept. Compliance is a common and easily recognized term in the many professions that study this phenomena and thus, with this recognition, a larger audience may be possible and allow these professionals a comfort level of understanding as they apply their prior knowledge base to the study of compliance as it relates to Diabetes and the standardized American Diabetes Association (ADA) group education program. In this study, participants were deemed compliant if they met the following criteria: HbA1c results less than 6.0, longitudinal blood sugar results (downloaded from their blood sugar monitors) with in normal limits, and a physical examination to determine systemic changes associated with Diabetes. According to the ADA (2002), these procedure are indicative of compliance.

As compliance relates to pharmacotherapeutics, O’Brien and Petrie (1992) state that there are several differing ways that compliance is affected by medications. First, the patient or family may not take the prescription to the pharmacy to be filled; second, the patient may fill the medication and then not take it, or not complete the prescription; and third, the patient may or

may not be able to accurately follow the prescription. Negatively based sequelae, the resultant activity of a process, can include psychological, medical, monetary, and spiritual damage to an individual, process, or nation. In just monetary terms, The American Public Health Association (APHA) study (Allen, 2000) estimated that in the year 2000, the cost for pharmacotherapeutic non-compliance totaled approximately \$173 billion, \$73 billion direct costs and \$100 billion indirect costs. The APHA reports that persons who are not pharmacotherapeutically compliant have been found to be “five times more likely to misinterpret prescriptions” (Allen, 2000, p. 1). It is this mainly quantitative finding of the spectacular costs of non-compliance that has impelled the changes in many educational processes.

Responsive to the increasing costs of non-compliance, the industries that regulate the funding of education have taken notice of this trend and have placed emphasis on many types of specialized education. This windfall has touched many educational programs but none so much as the funding for programs that impact Diabetics. There are extensive educational programs/offering, resources, and company-based assistance with procurement of supplies and tools aimed directly at the diabetic. Factually, resources are available and the funding for this education is in place from the insurance industry and from Medicare/Medicaid. The increasing availability of these resources makes one wonder why, after extensive educational preparation, some patients with Diabetes transfer the information derived from the class and are able to incorporate it into their daily lives and others demonstrate serial non-compliance. This serial non-compliance ignores the human and dollar cost to the patients physical, emotional, mental, and monetary well-being.



## Assumptions of Transfer

Transfer refers to the ability to digest then integrate learned knowledge into everyday use, whether old or new. Transfer allows us to use knowledge, for, without transfer, all knowledge learned would be restricted to situationally specific knowledge (Schunk, 2000). As early as 1961, transfer was identified as an ability to take learning from one context to another and is a major reason for education. The ability of the students in the class to take their learning to their life contexts and apply it, a situation unlike a classroom, is termed far transfer. Much has been written throughout the intervening years to support the contention that transfer is vital to the application of what is learned to subsequent contexts (Ceci & Ruiz, 1993; Cree & Macaulay, 2000; Detterman & Sternberg, 1993; McKeough, Lupart, & Marini, 1995; Schell, 2001).

There are multiple theoretical backgrounds that assist in the understanding of transfer. Behaviorists define transfer as depending upon the commonalities between situations and features of the learning. They stress that similar or identical features are necessary for transfer to occur. According to Thorndike (1901), "transfer occurs when situations have identical stimuli (elements) and call for similar responses. A clear and known relation must exist between the original and transfer tasks, as is often the case in such school tasks as drill and practice and homework" (Schunk, 2000, p. 206). Behaviorism allows teachers to follow fixed standards and thus predict outcomes and control human behaviors (Elias & Merriam, 1995). Though a form of adult education, behaviorism is organizationally based and, the term transfer of training is more commonly used than transfer of learning. This type of transfer of training which is offered

is usually based on improving or enhancing job performance (Elias & Merriam, 1995) and the behaviorally based objectives and the need to measure efficacy or outcomes is central to the training concept seen in these programs.

Cognitive theorists define transfer with the term understanding. It is the use of understanding by the cognitive theorists that centers the learning on the learner. Understanding allows the learner the ability to demonstrate comprehension and apply knowledge in different settings (Schunk, 2000). It is the application of this knowledge that compliance seeks, whatever the profession or desired outcome. It is this cognitive based theory, the activation in memory theory, which assists in this understanding. In this cognitive based theory, situational commonalities are not pertinent to the understanding and application.

Transfer is critical and complex. Theorists theorize that transfer is a test, this test investigates modes of effective learning and performance. One of the most reoccurring questions found in the transfer literature asks if learning is permanent and transferable (Barnett & Ceci, 2002; Singley & Anderson, 1989). The transfer debate began in the early 1900's and demonstrates no abatement in the 21<sup>st</sup> century. Detterman and Sternberg, (1993), writing about the transfer debate, refers to transfer as an epiphenomena. Many transfer opponents write that transfer either does not exist or if it exists, it is uncommon (Detterman & Sternberg, 1993). Transfer involves cognitive processes that are complex and as with anything complex, there are differing opinions as to its existence and worth. Cognitive theorists state that transfer does not just concern the application of knowledge in new ways but also how the use of previous learning affects the new application of learning. Sternberg and Frensch (1991) state that the ongoing debate about teaching for thinking and its integration into schools was meaningless. They suggest that a

separate course to teach students how to apply what they have learned in school to life could be beneficial or useless. This skill must teach the student how to make the connection between skill and content.

The activation knowledge in memory theory is a cognitive theory that involves accessing knowledge already stored in the memory. As the cognitive bridge is built, the more links in the cognitive bridge to activate increases or allows more cuing of information in memory. Cognitive psychologists believe that where more long term memory links are available, there will be more of an opportunity to access this information in the memory (Schunk, 2000). For the purpose of this study, an example of transfer would entail a student exiting the class and then taking information about insulin usage and applying it when they are ill. This would entail the diabetic taking the information given about the usage of insulin and combine it with the information given about how to control their disease process when ill.

#### Diabetes Related Education

Education, as it relates to Diabetes, is a well established and most recently a well funded entity with national certification usually required for programs to gain reimbursement from Medicare, Medicaid, and Insurance companies. This training is an important piece to the care system in lessening or negating damages due to sequelae from this disease. How to insure that what is learned in patient education programs is carried over into practice has challenged educators for decades. This is what we mean by transfer.

Knowing this, if the educator can discover what factors influence the compliance/non-compliance of the learners, this knowledge could revolutionize the classes which are well subsidized by all payment sources in the medical industry. Thus, when intended outcomes are

planned for classes, there may be better offerings within the healthcare industry. This better program planning centering on the learner, not just the training, can result in lower or decreasing health care costs of the nation. Another added benefit to this better program planning is a subsequent decrease in sequelae from the disease process. This lower sequelae will lead to better patient outcomes and quality of life for patients and families.

Even though the standardized group program for diabetes education is the most commonly utilized tool in the diabetes arsenal to promote and/or increase compliance, it may not be equipped with the best ammunition. Some studies do validate knowledge gain with these standardized programs but compliance remains a major problem in Diabetes management. Basic to adult learning is the premise that we should produce adult learners who are able to make their newly acquired knowledge potable thus we must integrate to a greater extent the principles of adult education into whatever type of program we are endorsing for our patients. Many recommendations have come from the majority quantitatively-based research community and from the diabetic patient community for these four to five day programs. Flack (1990) found, after studying the ADA group concentrated education program, that these programs were not as effective as once thought when compliance to the care regimens was measured. The recommendation was that educational programs be of a longer time period to allow the patient the ability to build upon their knowledge base. This allows the diabetic to integrate her day to day lifestyle into the learning “goal” and formulate questions after living with the pertinent learning. This extended learning period may allow diabetics to personalize the information and thus make it a meaningful learning experience to them thus impacting their compliance.

Another strong finding from Flack's (1990) study was the recommendation that the program coordinators need to focus on who is teaching in these programs and if they actually teach, does transfer occur. If transfer does occur, how will the measurement of transfer of knowledge be measured, and the subsequent presumed compliance (Flack, 1990). Brown (1988) studied the educational training and compliance in two groups of newly diagnosed diabetics. The purpose of this study was to investigate whether a four week delay would effect a diabetic's compliance. One group was placed immediately in an education program and one group of diabetics had their education delayed for four weeks. Four weeks post-class for the first group, results showed significant differences in knowledge and blood sugar control between the two groups. The group receiving the first class demonstrated greater knowledge and blood sugar control. When each group was four weeks post-class and the HbA1c (long term hemoglobin measured blood sugars) results were compared, there was no statistically significant differences found in the groups compliance to the care regimens as measured quantitatively.

In a study done in Wisconsin to evaluate the influence of the educator in the ADA group classes, Franz, Etzweiler, Joynes, & Hollander (1991) found that only 30 percent of the offered classes had a skilled professional teaching them though all met the standards for certification. They found that the quality, knowledge base, and skill of the instructor influenced the learning gained by the diabetics which in turn influences terminal compliance.

#### Statement of the Problem

Compliance is a common issue found in the control of many diseases. All healthcare workers tend to rely upon education as a cure or fix for this issue. As it relates to Diabetes, the medically-based professions are no different from other professions. The reliance upon Diabetic education

to assist in negating non-compliant behaviors to increase compliant behaviors of the Diabetic patient is a baseline of treatment. As educators have delved more deeply into the compliance issue, one fact emerged, the current educational modalities, though well funded, are not as efficacious as once hoped. Moreover, the majority of research has been quantitative in character. Additional studies need to be done to interpret the patient's own thoughts and experiences as they encounter, and then transfer (or not), the information provided in the classes to their everyday practices (far transfer). Though non-compliance is a large and expensive issue, we do know that some patients are successfully compliant after classes are completed. Though we recognize this phenomenon, we lack an understanding of the role education plays in the compliance of the individual in transferring this knowledge/learning into their everyday practices or life contexts. Listening to these individual's experiences in the educational program can supply a large fount of knowledge which will contribute to better designed educational programs to ensure for compliance.

### Purpose of the Study

The purpose of this study was to understand how an educational intervention led to compliance in an American Diabetes Association (ADA) group class. Research questions for the study were:

1. How do the participants describe their knowledge of Diabetes Mellitus before they entered the ADA class?
2. What factors in this class influence the process of compliance?
3. What other contextual factors influence transfer?

## Significance

This study, investigating how educational interventions led to compliance in the chronically ill Diabetic, provided additional theoretical input on the relationship between the components of educational offerings, the facilitation of transfer in this adult learning environment, and this relationship's effect on compliance. The research studies surrounding patient compliance, though numerous, are in majority quantitative in nature and fail to identify specific components of the adult education activity that facilitates or detracts from transfer. Coincidentally, qualitative research surrounding transfer as it relates to the education of adult learners is sparse and fails to delineate clearly the relationship between education, transfer, and compliance. This research broadens other areas of practical understanding. One main area was that of adult education. This study assists adult educators in understanding the processes involved when patients and their families obtain information and then transfer it into their everyday life processes. Such findings will result in improved American Diabetic Association (ADA) group course planning. This ADA group course planning is the most utilized course to educate diabetics about their disease process. Understanding how transfer and compliance are improved can ultimately result in the compliance of the patient/family to the chronic disease plan of care and the necessitated life changes.

A second area is medical education. There is an obvious issue concerning compliance in many professions and in the medical profession specifically. Many differing avenues have been and are being offered to compel and or influence compliance but the success rates have not risen. Factually, we have a larger compliance problem in the United States now, as it relates to the medical field broadly and Diabetes specifically, than ever before in our nation's history.

Promoting the learning and facilitation of transfer when classes are planned and taught is an important concept when applied to the current educational curriculums utilized. This introduction to and or increase in the understanding of the medical community may assist in decreasing non-compliant based sequelae. Also, this study contributes to understanding the relationship between educational program components and transfer which has wide application beyond health care and compliance.



## CHAPTER 2

### LITERATURE REVIEW

The importance of the use of compliance as a treatment modality, much less a way of life, has gained ascendance in the medical and educational communities. The purpose of this study was to understand how an educational intervention led to compliance in an American Diabetes Association group class. The research was guided by the questions concerning the process of coming to compliance and the factors that were identified in the process. When gathering the research and literature for this study, many resources were used. The resources included the disciplines of cognitive psychology, medicine, Nursing, sociology, social work, education and human resources. How this literature was obtained was as varied as the topics. The methods used in gathering information included online searches such as GALILEO at the University of Georgia and the general internet available to every internet users. Other avenues used to obtain information included emails, books, articles, research studies, classes and faculty. Descriptors for this study include compliance, adult education, Diabetes, adherence, American Diabetes Association (ADA), and group class.

#### Historical Overview of Diabetes and the American Diabetes Association

Diabetes has been chronicled as early as 1500 B.C. in Egypt. In 100 A.D. Diabetes is named for the Greek term for siphon, the name that is generated secondary to the most common symptom seen in Diabetes, polyuria (frequent and copious urination) (Dinsmoor, 1996). It was

not until 1889 that two researchers, after removing a dog's pancreas, discovered that insulin is made by the pancreas. When the dog began to experience polyuria and flies were drawn to the glycosuria (sugar in the urine), it was hypothesized by these two researchers that the pancreas was the home of the disease (Dinsmoor, 1996). Diet was the only way to treat Diabetes until the 1920's. Before the 1920's, people diagnosed with Diabetes lived an average of two to three months. In 1921, two researchers took an unknown fluid from the pancreas of an animal and found that this purified injection in humans assisted them in living a longer life (Dinsmoor, 1996). Though living longer, the patients with Diabetes developed life altering sequelae so patients were now dying a slower death from renal failure, heart disease and the other life threatening sequelae of Diabetes. It was not until the early 1980's that there was common use of portable blood testing equipment. This blood glucose testing equipment's purpose is to allow the patient to keep a tight control of their blood sugars, thus decreasing the likelihood of sequelae/consequences from the disease and has become more accessible and more of the norm for diabetics (Dinsmoor, 1996).

#### The American Diabetes Association

Motivated by the severity of the consequences of the disease Diabetes, it is in 1940 that the ADA was founded as the nations leading voluntary health organization (ADA, 2002) dedicated to Diabetes, diabetics, and the complications of the disease. All fifty states and the District of Columbia rely upon the assistance of the ADA for the care, research, and education of diabetics. In 1955, the ADA began funding research on education, prevention, and control of Diabetes (ADA, 2002). The mission of the ADA is "to prevent and cure Diabetes and to improve the lives of all people affected with Diabetes" (ADA, 2002, p. 1). The ADA works with researchers,

laypersons and legislators in the hope that, in the future, we will be able to prevent the consequences of Diabetes by either preventing the onset or controlling the life of the disease by access to care and education.

The certified ADA educational program has ten standards that must be met to qualify for certification. This proof must be in writing and sent to the ADA with the application either for initial certification or re-certification. The standards are: the need for structure to the organization offering classes; determine a target population and an assessment of educational need; a planning board must exist and meet; the coordinator must have program management expertise; a multi-professional team must be available including Registered Dietitians, Registered Nurses, and psychosocial professionals. Additionally the ADA requires that the team must have regular continuing education; there must be a written curriculum; an individualized assessment must be done of the patients; and Continuous Quality Improvement must be done to evaluate effectiveness (Mensing, Boucher, Cypress, Weinger, Mulcahy, Barta, Hosey, Kopher, Lasichak, Lamb, Mangan, Norman, Tanja, Yauk, Wisdom, & Adams, 2000) .

#### Standardized Group Education Program

At the inception of this educational practice, the Diabetes group educational program, it was revolutionary and thought to be complete in and of itself. These programs allowed physicians to abrogate the responsibility for teaching about Diabetes to an accredited program. Slowly though, as quantitative measurements have been assessed on their patients after classes, the physicians have noticed that many diabetics have compliance issues, even after the class. Though these

classes have not produced the “boom” transfer phenomena which Detterman and Sternberg (1993) discuss in their book concerning transfer of knowledge, there is evidence that these classes have some efficacy.

Along with their program accrediting duties, the ADA wields a great amount of influence upon legislatures and legislation, the medical and Nursing establishment, and laypersons. The number of diabetics in the United States is currently seventeen million diagnosed. It is a generally accepted estimate that approximately 70 percent of diabetics are undiagnosed. A proliferation of certified/accredited ADA group education programs has occurred in the last five years. The rationale for the increase in frequency and quality of Diabetes education programs and their reimbursement has been credited to consumers (Peddicord, Lyons, Tobin, & Vinicor, 1990). The certification of these programs is critical for reimbursement and regulation of the profession. With the ADA acknowledging the need for quality education, this regulatory activity is one avenue that is designed to assist/encourage programs to evaluate themselves so as to produce strong learning environments where patient compliance to the treatment plan is a positive outcome.

### Research Studies in Health Compliance

The research contained in the field of compliance is extensive especially as it relates to health related matters. Some of the first research that involves compliance is derived from the health providers point of view. Hayes, Taylor, and Sackett (1980) and DiMatteo (1994) found 250 compliance reasons used by the subjects in their compliance research. These 250 reasons were then categorized into eight primary factors including abilities, beliefs, difficulties, social support, culture, age and/or developmental status, and the existence or the formation of a relationship with

their health-care provider (Johnson & Williams, 1999). Du Pasquier-Fediaevsky and Tubiana-Rufi (1999) found a discordance between the physicians' perception of adherence and the patients' perception of adherence. They found that physicians rely on objective data without consistently involving the patients perception of their compliance behaviors. Thus, many of the subjects perceived themselves as compliant which diametrically opposed the view of the physician and his routine documentation. This discordance was initially documented as early as 1964 by Revans. In the early 1960's, it was unheard of to write or study how physicians and hospital staff can communicate better with patients. Revans (1964) found that the faulty attitudes towards informing patients and families of medical and prescription information could be corrected easily by professionals willing to learn a differing style of communication. In 1989, Stewart and Roter found that while patients placed a high value on the communication between doctor and patient, the resistance to the concept of advanced or improved communication has been from the medical profession. This finding also illuminated the educational processes with which physicians are subjected. They found that the previous and current medical education does not teach or demonstrate the importance of patient communication (Korsch, 1989).

Another aspect of compliance appears to be gender differences. Navuluri (2000) found, in a study investigating correlations of hardiness and self-efficacy, that gender is an important issue where compliance is concerned. Women in the study demonstrated a positive correlation between attitudes around self care and compliance whereas for the men in the study there was no significant correlation between self care and compliance. The researchers, Roberts and Mann (2000), in a study done focusing on women and HIV drug compliance, discovered that the reminders from the physicians enhanced the level of trust between the patient and physician.

This enhanced level of trust was further positively correlated to the level of compliance. Also, the realization of gender as an issue in compliance can assist an educator to improve compliance. Small factors such as phone call reminders and consistency of care and interaction have been identified as trust promoting. This promotion of trust has been found to increase the patients' level of compliance. The above studies, especially the early and physician-based studies, are characterized by absent and/or inconsistent definitions of compliance, lack of a consistent conceptual framework, and inconsistent conclusions.

With the move to increase the use of the qualitative method of research in exploring the phenomenon of compliance, more attention has been given to patients' perceptions. This new approach to the phenomena of compliance has focused on the concepts of comprehension, self-efficacy, culture, developmental stage (age), and belief systems (Coates & Boore, 1998; Ott, Greening, Palardy, Holderby, & DeBell, 2000; Griva, Myers, & Newman, 2000).

Palardy, Greening, Ott, and Atchison (1998) studied 101 adolescents with an average age of 14 years and the relationship between compliance and the teaching of the consequences of non-compliance. The researchers discovered that the adolescents were less likely to react to information concerning the consequences of non-compliance and instead demonstrated the trait of living in the now. Scare tactics were not an effective educational modality with these adolescents. Additional findings were that if the adolescent perceived herself as proficient and, if the embarrassment, pain, and inconvenience of the disease process and treatments could be kept to a minimum, compliance was high.

Another avenue of research pursued was the impact of peer/partner relationships on their compliance. The researchers found that compliance was more likely when a peer or partner was afflicted with the disease and complied with the treatment regimen. As a follow up to their research in 1998, Ott, Greening, Palardy, Holderby, and DeBell (2000) studied 143 adolescents to evaluate perceived self-efficacy and the effect of this concept on compliance when partnered with parental support. Findings demonstrated that adolescents and parents demonstrated a high correlation on their perceptions of compliance to treatment. Also of note is that compliance is enhanced with supportive parental behaviors and that their level of self-efficacy is a strong predictor of compliance in adolescents, especially if they are hospitalized. The concept of health belief emerged as a predictor in compliance also. Interesting and common is the absence of a definition for compliance in both studies.

Johnson and Williams (1999) utilized a qualitative method to study the elderly and their adherence with their hypertensive (high blood pressure) pharmacotherapeutics. The researchers studied health belief as indicators of compliance. Differing from many other studies, these researchers defined the concept of adherence, though very narrowly, for the purposes of the study. As with the adolescents, Johnson and Williams (1999) found that positive health beliefs were strong indicators of compliance. Ryan and Chambers (2000) also investigated compliance factors influencing the elderly utilizing questionnaires administered before and after an individualized program centered around information about their medications. The factors evaluated the medication knowledge and the influence of self-administration on the subject's compliance. The most significant finding was the benefit for the elderly patients to have individually tailored education programs that they could transfer (far transfer) to their everyday

lifestyle which would then meet their ongoing information needs . This research challenged the value of standardized programs, especially as it relates to medication compliance. An obvious limitation of this research is the use of a self report method to identify their compliance state. Johnson and Williams acknowledged the possibility that some self reports could have been perceptually challenged thus limiting the number of participants and/or may have placed them in the wrong category of compliant/non-compliant (may or may not actually have met the study definition of adherence/non-adherence).

Christensen, Moran, and Wiebe (1999) studied Diabetics in a mixed qualitative/quantitative study. Using the Irrational Health Belief tool, developed from the Health Belief Model, the researchers studied how these beliefs affected their compliance to their diabetic regimens. There were a total of 499 subjects in 2 studies. Their subjectively obtained personal health belief scores were compared to their HbA1c or glycosylated hemoglobin results (demonstrates control of blood sugars), an objective measurement of control. The results demonstrated that when diabetics scored higher on the health belief tool utilized, their objective measurement (HbA1c) also demonstrated tight compliance and control. In concert with the findings of Christensen et al (1999), Palardy, Greening, Ott, and Atchison (1998) and Ott, Greening, Palardy, Holderby, DeBell (2000) also found that when the health beliefs of the adolescents studied were high, compliance to the medical regimen was tight.

The Health Belief Model was developed from the phenomenological theory of life space; its origin was to determine why patients were non compliant to preventive health measures even when this health care is supplied free of charge. It was found that if the patient views health practices as positive, the patient will gravitate towards those health practices and conversely,



negatively viewed health issues will repel patients' compliance (DiMatteo & DiNicola, 1982). Also found to be very important in this health belief model is the positive correlation found between the patients perception of a positive relationship between their health professional and . compliance (DiMatteo & DiNicola, 1982)

Another issue identified pertaining to compliance is culture. Roberts and Mann (2000) studied HIV infected women between the age of 25 - 45 who had self reported issues with medication compliance. Fifty percent of the women were Hispanic and 35 percent African American. Utilizing reflective journaling, the patients were asked to write in a journal at least once a day with a payment of five dollars made for each entry. The results of the study indicated that physical, emotional, and psychological factors were complications to compliance. Further findings indicated that the importance that the patients culture places on compliance to medical care is essential to the compliance index.

Further research by Philis-Tsimikas and Walker (2001) yielded an understanding of underserved populations with diabetes. In this study, minority populations, primarily Latino, were studied at a clinical project called Project Dulce. The majority of these patients were without health insurance and access to consistent quality health care. Project Dulce is a project committed to providing this care by removing cultural, language and other various barriers to care. This study was populated with non compliant individuals demonstrating HbA1c's of greater than 9.5 percent (normal less than 6). These individuals are considered high risk and were entered into an individual case management approach. A control or similar group of diabetics were treated as per the routine diabetic treatments which consists of classroom teaching

approved by the American Diabetic Association (ADA). This similar group of diabetics demonstrated no change in their non compliance. The diabetics receiving individualized education and a case management approach demonstrated significant improvement in their regimen compliance.

One issue inherent to the study of compliance was the lack of a consistent way of defining and measuring compliance. Many researchers have found that compliance is no respecter of age (Schatz, 1988; Palardy, Greening, Ott, & Atchison, 1998; Du Pasquier-Fediaevsky & Tubiana-Rufi, 1999; Griva, Myers, & Newman, 2000; Ott, Greening, Palardy, Holderby, & DeBell, 2000; Ryan & Chambers, 2000) . The need to integrate age and development into health education and planning can assist not only the patient but the practitioner in promoting compliance. If the healthcare educator uses understandable language as an educator or case manager, and then validates understanding and comprehension, studies have demonstrated a remarkable increase in compliance ( Philis-Tsimikas & Walker, 2001).

Health beliefs have also emerged as important in compliance. The identification of what patients believe or perceive as issues or barriers to compliance, as well as their cultural mores, can help the patient in complying to their medication regimen. Family and social support was especially an issue with chronic diseases and adolescents. The integration of culture and perceptions partnered with the simplification and individualization of treatment plans and of the educational process was also predicted to increase compliance behaviors ( O'Brien & Petrie, 1992; DiMatteo & DiNicola, 1982).

## Transfer of Learning

Transfer of learning is a critical learning process that applies to the transfer of knowledge into new situations, new locations, new content and how the prior learning interacts with the new learning. In many ways, this is the beauty of transfer if it happens. Many contributors to the transfer literature have presented many differing terms that they relate to transfer. Transfer is complex and has many differing types identified. Every book and article identifies multiple and differing types of transfer for example positive transfer, negative transfer, zero transfer, near transfer, far transfer, specific and nonspecific/general transfer, deep and surface structure transfer (Detterman & Sternberg, 1993; Schunk, 2000). Some of the terms overlap and others are unique. The terms important to the proposed research are near and far transfer.

The terms near and far transfer are the most common transfer terms seen in the transfer literature. Near transfer is applying knowledge between similar situations, contexts are similar and easily transferable. An example of this would be going to a class for diabetics to get the daily Insulin injection without having to transfer any of the skills to another setting, same class, same injection, and same support (Haskell, 2001; McKeough, Lupart, & Marini, 1995). Far transfer is applying knowledge between differing situations in different contexts. It is this type of transfer that causes the most debates when discussing transfer of learning (Haskell, 2001; Schunk, 2000; Detterman & Sternberg, 1993). An example of this is learning the technique of injecting Insulin and the rotation of sites then transferring this learning to the home and other pertinent environments successfully. This type of transfer is defined by different situations and differing contexts which the learner demonstrates by their transfer of their learning (Schunk, 2000; Foxon, 1993).

A common issue concerning transfer is how to optimize it. One of the first challenges is deciding what is to be taught. McKeough, et al (1995) write that for transfer to succeed, some basic requirements must be met. These requirements are content knowledge (basic knowledge), procedural knowledge (steps needed to successfully complete), and an appropriate disposition of the knowledge (self confidence and desire to perform optimally) for the patient or student to demonstrate compliance. Optimally, for transfer to occur, a variety of knowledge bases, whether content, procedural, or dispositional, serves the learner best but McKeough, et al (1995) stress that educators tend to teach one type of knowledge over and above the others thus impeding compliance by not optimally teaching from each knowledge base. Haskell (2001) a cognitive psychologist, stresses that transfer failures are profound and that any successes are in majority near transfer successes. Detterman and Sternberg (1993) bemoan a total lack of general transfer seen in past and current learning and that significant transfer is rare and bears very little responsibility for present human behaviors. One of the only concrete recommendations made to promote transfer is the use of examples when teaching for transfer (Haskell, 2001).

One of the most important points to make about the transfer of learning was the fact that, whether it is psychology, social work or adult education, the centrality of this learning is the learner, not the task or skill to be learned (Cree & Macaulay, 2000; Detterman, & Sternberg, 1993; Foxon, 1994; Foxon, 1993; Cervero, 1988). Many adult educators have embraced a humanistic philosophy in their practice (Elias & Merriam, 1995). This philosophy supplies the majority of adult education with their theoretical and practice outcomes or tasks (Elias & Merriam, 1995). Adult educators center their concern and practice around individuals and their

learning needs. As transfer is the ultimate aim of teaching and learning in adult education (Cree & Macaulay, 2000; McKeough, et al, 1995), placing the learner as the central person in the equation instead of the training as the center assists this outcome task.

### Variables That Influence Transfer

The recognition of the lack of transfer as an issue is being acknowledged with greater frequency but it is not enough to acknowledge an issue ( Schell, 2001; Detterman & Sternberg, 1993). Transfer is linked positively to quality outcomes (Leahy, 2002; Caffarella, 2002), but experts conclude that there is an ongoing issue related to the demonstration of the efficacy of transfer (Caffarella, 2002; Schunk, 2000; Detterman & Sternberg, 1993). Caffarella (2002) states that there are “numerous reasons to explain why participants either do or do not apply what they have learned as a result of attending education and training programs” (p. 210). Of these numerous reasons that explain why learning does or does not occur, Caffarella (2002) has found it useful to form six categories to explain them. Cognitive theorists Singley and Anderson (1989) have highlighted cognitive skills in their study of “potential restrictions” to transfer. Additionally, Cervero (1985; 1988) has put forth a model of training transfer citing four sets of variables that he suggests would impact the process of transfer of training. These four sets of variables tend to lean heavily on the use of analysis of characteristics of each set of variables.

The three differing theoretical frameworks, Caffarella, Singley and Anderson, and Cervero have similarities. A major similarity is that all three acknowledge that the process of transfer is complex and successful transfer is dependent on multiple variables. Caffarella (2002) entitles

her reasons as categories. She has enumerated six categories. These categories include program participant, program design and execution, program content, changes required to apply learning, organizational content , and the community and societal forces.

The first category is centered around the program participant. Participants, especially adults, seek education that is meaningful to them (Knowles, Holton, & Swanson, 1998) and then to apply this meaningful education to their lives. Along with needing meaning and application of the learning, the characteristics of the learner are important. Learners bring to every learning opportunity their own “personal experiences, diverse backgrounds, and varying motivational attitudes”. (Caffarella, 2002, p. 210) Also, adult learners will bring their culture, ethics, values, and attitudes to the learning (Caffarella, 2002; Knowles, et al., 1998). Ellis (1965) suggests that the level of anxiety may also be a serious consideration to the participant.

Along with what the program participants bring to the educational process, the second category deals with the strategies brought to the program design and execution (Caffarella, 2002). As the program planner begins to design the program around the characteristics of the learner, planning for transfer and subsequent application is an important strategy (Caffarella, 2002) that the program planner hopes that this facilitates the learners near and far application of the learning. These strategies should be used when planning the program, executing the program, and for follow up after the program has been completed.

The third category is program content (Caffarella, 2002). Caffarella (2002) states “the knowledge, skills, and/or attitudes and beliefs that are addressed through the program activities make up the program content” (p. 7). Careful investigation of the roles of the learners and the restriction of over teaching, the use of too much content in the program are also very influential

to the transfer process. The fourth category reflects the changes required to apply the learning (Caffarella, 2002). Change is complex. When asked to change, especially when it is a habit that would be beneficial to our health, people may recognize the need for change but may not be able to produce discernable changes. Recognizing the complexity of change and who is responsible for the change is an important piece to the application of the learning.

The fifth category is organizational content. This category includes the societal, cultural, structural, and political issues which encompass the program and how these issues may effect the transfer of learning (Caffarella, 2002). If the sponsor of the program places high importance upon the learning and provides support for the learning and the use of this learning, then transfer is thought to be high.

The community and societal factors faced by the learner in the program comprise the sixth category. The role of the learner as it is seen in the community or the society they inhabit and the support they receive for the learning is crucial to the transfer process.

The above six factors are key to the transfer process as it relates to a program. Caffarella (2002) makes the point that these factors can be barriers or enhancers associated with the program. One other important consideration is that not all programs will have all six categories associated with the program and learner and, though these do not occur in isolation, usually there will be a mix of two or more of the factors.

Singley and Anderson (1989) add to Caffarella's variables by emphasizing restrictions to the transfer of cognitive skills and term these potential restrictions. They argue strongly for lesson

sequencing for four reasons: the limits students have on their attention and motivation; difficulties with credit-blame assignment; meaningful encoding of examples; and the reduction of working memory load.

When teaching students new skills or information, the instructor must take into consideration the limits these students may have on their attention and motivation, especially when teaching complex information. As the complexity increases with the learning, the patience to work through problems along with lack of frequent positive reinforcement has been found to effect transfer (Singley & Anderson, 1989). Also the minimization of the credit-blame assignment can assist the learner in their transfer. When skills can be broken down to their lowest common denominator and, with these understood, then this learning can be built upon with increasingly complex information. This allows the learner to feel more victorious and receive positive feedback as the information is learned incrementally.

The meaningful encoding of information is another important part of the transfer process. One, if not the most, important action that occurs after the activation of prior knowledge is the enabling of the learner to “encode declarative knowledge, or examples, meaningfully” (Singley & Anderson, 1989, p. 228). Declarative knowledge refers to the “knowledge we know about ourselves as learners and what factors influence our performance” (Bruning, Schraw, & Ronning, 1999, p. 95). This encoding of the declarative knowledge will allow the learner a broad application basis of the learned knowledge. The last reason given is the reduction of working memory load. The concept of working memory (WM) was conceptualized in the 1970's when researchers began to question the idea of short term memory (STM). It is conceptualized that WM is more complex than the previous idea of STM and that WM has subsystems which control



many differing functions. So, if information is distributed among two or more of these subsystems, then the ability to learn and encode is markedly increased, thus the ability to retrieve information is increased. When this information is retrieved, it does not have to be relearned and stored in WM, thus reducing WM load. This reduced load allows for greater and more complex learning to occur. It is through the consideration of not only Caffarellas' (2002) six categories but also of the four reasons that cognitively based educators have found that will allow the transfer of learning in programs to be more effective than has been reported in the past.

The third framework is Cervero's model of training transfer (Cervero,1985). Cervero (1985) has suggested that there are four variables in his model of training transfer. Cervero's model relies heavily on characteristics of these variables. The first variable includes the characteristics of the training program. The second is the characteristic of the proposed change as it interacts with the training process. The third variable takes into account learners and their individual characteristics. The fourth and last variable for this framework is specific to the training in a work related environment. This fourth variable entails the characteristics of the learner's work environment and the barriers or the support which it gives the trainee.

Upon comparison of the three models, there are more similarities than differences. Though Caffarella (2002) lists six differing factors pertaining to the variables that influence transfer, many of these variables are addressed in the two other models: cognitive model and Cervero's model of training transfer. All three models place the learner or participant as very important to the transfer equation. All three promote the individual strategies brought to the education effort. All three relate the environment of the learner and the learning as an important aspect in transfer. Cervero (1988) maintains that the characteristics of the training program are important, that the

importance of the learning be placed into an adult context. This could relate to the overload or overteaching variable found in the cognitive model or the importance placed on the education and the ability to translate the education into an adult learning context.

### Research Studies in Transfer

The research into the transfer of learning is broad and contains many differing views of transfer. The majority of the transfer studies have been done in the area of technology looking at transfer of training. Many more transfer studies are in the medical field. These quantitative studies may not be credited to transfer directly but their outcome is the same, the measurement of transfer of learning. When evaluating the current transfer literature, it is delineated into categories evaluating the educator, the class or educational training which is being offered and the support she receives when integrating that training into her everyday life experiences, and the participant and what she brings to the learning..

### Educational Training

One of the more common ways of educational training seen in the medical profession is done in the physician's office. Feder, Griffiths, Highton, Eldridge, Spence, and Southgate (1995) conducted a study of 390 patients in 29 practices supervised by 39 physicians. Of the 390 patients in this randomized trial, half were in the control group that received no special training. The intervention group received physician and Nursing education in the office and follow-up appointments also conducted in the office. The training for the intervention group consisted of the dispersion of educational materials, educational outreach visits, and reminders done by professionals trained with post-graduate education. All of the intervention and control groups were based in a primary care physician office. Findings demonstrate that the addition of the

educational outreach and the reminders sent to the intervention group led to positive glycemic (blood sugar regulation) control, lower blood pressures, lower weights, and improved microvascular circulation.

Ward, Kamien, Mansfield, and Fatovich (1996) studied 386 patients in 139 primary care providers. These primary care provider practices were fee-for-service with small capitation payments (determining extent of intervention and payment). Of the 386 patients, half were in the interventionary group and half in the control group. The interventionary group training consisted of the use of educational materials, educational outreach visits, audits and feedback from the education done by interview. The control group consisted of educational materials and postal feedback. Results demonstrated that the interventionary group demonstrated increased glycemic control, decreased cholesterol level, decreased weight, and a decrease in microvascular damage.

Kinmoth, Woodcock, Griffin, Spiegel, and Campbell (1998), acknowledging the importance of extended education in Diabetes care, studied 250 patients in 41 differing practices. These practices had 43 doctors and 63 Nurses. The setting was primary care offices with high capitation and item of service rates. This study sought to differentiate between patient centered approaches and guideline approaches. The intervention group was educated with patient centered educational materials and group meetings. The control group also had educational meetings and materials but these focused on set guidelines for the diabetic. The results reported that the extra time spent with the interventionary and control groups each elicited positive results. When the researchers compared groups, there was no significant difference between the groups except where the interventionary group stated that they felt a greater amount of “wellness” and reported less sequelae.

In all of the studies, the educator was identified as an important aspect of the education process. One aspect that was identified in the successes was the majority of the educators had postgraduate education which assisted in transferring the complex information. This postgraduate educator was seen as assistive in the identification of performance issues and in changing their performance as necessary to transfer the information. Also, the post intervention follow up was found to be vital in the improvement of the care of the disease process. It is generally understood by the medical profession that, with any disease process, the loss of contact with the patient to follow up increases the risk of sequelae. This is especially true with Diabetes.

#### Participant

Feder, et al. (1995), Ward, et al. (1996), and Kinmoth, et al. (1998) found that the participant was an important factor in the improvement of patient outcomes. They surmise that the improvement of outcomes was related to the patient wanting to be more involved in their care. Additionally, they felt that this desire to become involved would help with compliance and the subsequent change in their lifestyle habits which will lead to glycemic control.

#### Chapter Summary

This chapter has reviewed the literature surrounding compliance, transfer of learning, and the variables that influence transfer. The literature ably demonstrates that compliance is a serious issue in many professions. As noted in the literature, the medical professions do a poor job of educating patients which then leads many to the serial non-compliance we are experiencing at this time. Sadly, scholars have documented that the medical professions are poorly equipped to affect the transfer of learning which relates directly to their predicted level of compliance.

When evaluating factors that have been found to be important with compliance, age/developmental status, gender, health beliefs, patient's perception, peer or support relationships, and culture have been identified as important issues in the compliance literature. These factors have been studied in a majority quantitative method.

Education is another avenue that has been documented as an important issue in the transfer and compliance literature. Research surrounding the factors important to transfer and compliance have documented the importance of education when used as a strategy to assist patients in their medical compliance. It has long been recognized by hospitals/clinics, organizations, and universities that education is a key ingredient to compliance in whatever learning activity is proposed. The stance that has defined the American Diabetes Association (ADA) education is that they have, since the inception of their educational program, strongly emphasized to the medical community and consumers that this education will make their Diabetes easier to handle and their lives easier to live. Though the ADA has subsequently marketed their program as the program to undertake when the disease Diabetes is diagnosed, the compliance rates in the United States continue to decline. It is with this realization that researchers have begun to study why a large percentage of patients can not transfer the learning from the class to their everyday lives (far transfer) but may be able to demonstrate in class some of the learning transfer (near transfer), but some patients do demonstrate far transfer and these patients have not been studied.

The literature concerning transfer is useful because the existing literature is clear about the connection between successful near and far transfer and their link to compliance. The task of optimizing this transfer of learning is the central feature of transfer debates and the centrality of

the issue has to be the learner. Though medical professionals are responsible for life altering education, it has been found in multiple studies that these professionals are not trained in communicating or educating their patients or to promote transfer of learning.

## CHAPTER 3

### METHODOLOGY

The purpose of this study was to understand how an educational intervention influences compliance in an American Diabetes Association (ADA) group class. This chapter includes six sections that contain the proposed methodology for the research study. The sections are: the design of the study, the sample selection, the data collection technique, the data analysis, the validity and reliability, and the researcher bias and assumptions.

Research is the careful, diligent, and systematic search for information (Merriam & Caffarella, 1999; Glesne, 1999). Qualitative research is a science which allows formulation of in-depth or naturalistic descriptions of events, people, and phenomena (Bogdan & Biklen, 1998; Miller, 2002; Schiller, 2002). Bogdan and Biklen (1998) explain that the term soft is meant to denote a type of richness of data characterized by description of the event or the person in a manner such that statistical analysis would not reflect the vital meaning. The term naturalistic evolved from the process with which data is obtained. Here, with qualitative research, the data are the words and the researcher is the instrument. The data generated by qualitative researchers focuses on themes and is open to interpretation. Qualitative research is a very complex, interconnected discipline that shares many terms and attributes with other research styles. It is a research style that is involved in perspectives, feelings, phenomenas, and interpretations as opposed to statistics, numbers, or objective representations. Qualitative research has been

used for over a century by anthropologists and sociologists as their most typical type of research. It was not until the late 1960's that the social sciences began to explore the use of qualitative research with any regularity (Bogdan & Biklen, 1998).

### Design of the Study

The qualitative research design was best suited for the purpose of the study. Though this topic has been well studied quantitatively, it is relatively untouched by qualitative methods. Researchers are now well aware that there is a compliance issue. This knowledge has emerged from quantitative studies. As this problem is acknowledged quantitatively, it is left to study why the desired results have or have not occurred. In this case, why are some patients who complete the ADA program compliant and some are not. The existing quantitative studies have not addressed this question.

In our society today, compliance can be adequately termed an overfamiliar problem, no matter what context is meant. Studying this problem qualitatively is an avenue of defining a fresh way to look into this issue (Merriam, 2001) and this further study of the phenomena for context and meaning is best analyzed by humans (Merriam, 2001). This study focuses on the perceptions and perspectives of compliant diabetics who have attended the American Diabetes Association group class. It is their perceptions of how they have come to be compliant. In this research, the meaning constructed by the participants is vital to understanding the phenomena being studied. It is the use of the qualitative interviewing technique which allowed the collection



of rich and in-depth data concerning this phenomena. The interviews allowed this rich and in-depth data to be collected around the subjects experiences as a diabetic and as they became compliant diabetics.

### Philosophical Assumption

As in quantitative research, certain assumptions bolster qualitative research. One of the basic assumptions about qualitative research is that “ reality is constructed by individuals interacting with their social worlds” (Merriam, 2001, p 6). Meanings are contained in the sociocultural world of the person experiencing the phenomena. The subject is viewed holistically and any information obtained is linked to the experiences of the subject (Denzin & Lincoln, 1994). Cause will never be able to be distinguished from effect. The researcher as the instrument and the subject as the data influence one another during the study. This effects the results making them value bound not only to the subject but through the interpretations of the researcher making the findings unique as opposed to general. These value bound results are heavily influenced by the theories driving the study, the choice of methodology and any values which the researcher brings to the inquiry/study (Miller, 2002). Containing multiple methodologies for the researcher to choose to use, the qualitative method is generally a field research technique (Patton, 2002) that involves interacting with other human beings to collect data.

The purpose of this study was to understand how an educational intervention leads to compliance in an American Diabetes Association (ADA) group class. It was my hope that the qualitative investigation of how the students of an ADA group class come to compliance would have elicited an abundance of data. Though quantitatively well studied, this coming to

compliance has not been studied from the patients/students perception. The qualitative investigation of this phenomena added important additional theoretical and practical information between the components of educational offerings, the facilitation of transfer in this adult learning environment, and this relationship's effect on compliance. This design was the most appropriate because the purpose of this study was to elicit the perceptions or feelings about how their educational intervention led them to compliance.

### Sample Selection

Patton (1990) writes that “nothing better captures the difference between quantitative and qualitative methods than the different logics that undergrid sampling approaches” (p. 169). Qualitative research uses a typically small sample size which contains information rich cases (Patton, 1990). When I chose a sampling type, it was important to select cases that “illuminate the questions under study” (Patton, 1990, p. 169). This required the sampling technique to be a purposeful sample. Merriam (2001) writes that “purposeful sampling is based on the assumption that the investigator wants to discover, understand, and gain insight and, therefore must select a sample from which the most can be learned” (p 61). Patton (1990) writes that “ the logic and power of purposeful sampling lies in selecting information-rich cases for studies indepth” (p 169).

Since one of the goals of a purposeful sample was to provide a rich description of the phenomena being studied, the patients which I chose to participate in this study were able to supply actual descriptions of their living with their disease process and their compliance issues.

Descriptions such as these demonstrated the lived meanings of this phenomena and provided a median in which “ these experiences may be unveiled, examined, and understood” (Merriam, 2002, p. 98).

The decision concerning who was accepted into the ADA study was made after a brief phone interview so as to take advantage of circumstances as they unfolded (Patton, 1990). Brief questions were concerned with whether potential participants attended an ADA class, if they felt they were compliant with their diabetic regimen, if they currently take medication, and if they consented to my speaking with their physician about their care. Further information about their compliance was obtained through the HbA1c results, the blood sugar readings, and the physicians verification of compliance.

The sample for the study was comprised of diabetics having completed an ADA group program and were patients who were compliant. The subjects were adults, alert and oriented, and were currently on medication. Criteria for the study was designed so that the selection of subjects was optimal for the information desired. There were six criteria used to select subjects for this study. First, the participants had to be compliant. As explained in Chapter one, compliance in this study is defined as the participants having met the following criteria: HbA1c results less than 6.0, longitudinal blood sugar results (downloaded from their blood sugar monitors) within normal limits, and a physical examination to determine systemic changes associated with Diabetes. The three indications of compliance were determined by the medical practitioner (physician, Nurse Practitioner) who referred the participant to me. The source of the information for making the determination of the participant’s compliance was their medical record. Additionally, I validated the determination of compliance by reviewing the findings in

the medical records (when available) and through a pre-study interview with the participants.

This interview consisted of validating their blood sugar results, their HbA1c's (when available and known by the participant), and asking them their perception of their compliant state.

Second, the participants had attended an American Diabetes Association (ADA) class. Third, they had to be adults between the age of 18 and 85. Children under 18 years of age receive individual counseling from their diabetic expert leaving only adults to attend the ADA group class. The physicians that I recruited for this study were all adult health physicians so they only interacted with adult patients. Also, the adults were able to give informed consent for themselves and better understood, in general, the aims of the research study.

Fourth, the participants in this study needed to be alert and oriented and were able to sit for at least 1 hour during the interview. The subjects were alert and oriented to give informed consent and were able to answer questions adequately. The status of being alert and oriented was determined in a typically medical way. They were assessed for their ability to respond to stimulus and whether they were able to respond to simple questions such as where they were, what the date was, and were they oriented to self.

Fifth, participants had a health practitioner's diagnosis of Diabetes and were taking medications for the disease. A phenomena particular to Diabetes is the patient who feels they are a borderline Diabetic. These are undiagnosed patients who may not actually have had the disease diagnosed as yet.

The sixth criterion was that the patients consented to the researcher speaking with or obtaining health information from the physician treating the Diabetes. This criterion enabled the discovery of the compliance state.

The subjects were obtained through private physician's who distributed the information about the study. Also approached to participate in the study was one Home Health Agency, a medical insurance company, a hospice, two pharmacies, and Diabetes support groups. The physicians and any other participating agency or group received a letter explaining the study and its parameters. Along with the letter, a flyer was sent that was given to the participant so that the participant could have called if they were interested in the study. I obtained some of the patient contacts from the physicians because it was perceived through conversations with ADA instructors that an evaluation utilizing the ADA course might not be welcomed by the ADA. Many of these instructors are dependent on the approval of the ADA to receive recompense from insurance, Medicaid, and Medicare. I have also perceived a reluctance when speaking with the staff of the educational component of the ADA.

There was some difficulty in gaining participants for this study. I found that, though many physicians and a Diabetic Educator and others participated in this study, two issues arose. One was that the Nurse Practitioners refused to distribute my fliers to their patients. No rationale was ever supplied for this refusal except that distributing flyers was not their job. The second issue was that the Diabetic Educator spoke with multiple clients and gave them the flier but, upon her follow-up, they were uninterested in making the initial call. Upon reflection, I approached physicians whom I had a personal relationship and spoke with them about the study. Upon gaining their cooperation, they perused their patient list and chose patients specifically fitted for this study. Then, they directed their non-medical professional office staff to call them and offer

them the opportunity to participate in this “outstanding” study. The patients cooperated to the person. One additional patient was a referral from a friend. I identified and interviewed seven individuals who met the criteria for this study.

### Data Collection

In qualitative research, there are three major sources of data collection. These three sources are interviews, observations, and documents (Merriam, 2002). The data collection method is determined by choosing the best source available which will yield the richest and most in-depth data and this is coupled with the amount of the structure needed to be used (Merriam, 2001). Though some research uses only one source of data collection, most often, multiple sources are used (Merriam, 2001).

Interviewing is a necessary tool when the aim is to learn the way people react to the world around them (Merriam, 2001). There are three types of interview structure: Highly structured, semistructured, and unstructured (Merriam, 2001). Highly structured interview questions have rigidly enforced questions that do not vary, in fact, Merriam (2001) has compared the highly structured interview format to “an oral form of a written survey” (p. 74). This type of interview has predetermined questions that do not allow perceptions to impede the outcome (Merriam, 2001). Additionally, a common failing of this type of interview is the assumption that everyone interviewed will share a common culture and vocabulary. This type of interview was used to gather static information from my subjects, such as age, socioeconomic status, history of their disease process, and their educational level.

The second type of interview is the unstructured or informal interview. Merriam (2001) writes that this format of interviewing is best utilized when the knowledge base surrounding the

phenomena is limited and there is difficulty in pre-determining relevance to the questions. This type of interview is best for exploratory type of research where learning is ongoing during the interviews and questions may change from interview to interview.

The third type of interview is semi-structured. This type of interview is best selected when the researcher feels that each subject will have individual viewpoints and perceptions unique to themselves. These questions will be more open ended than found in the structured interviews but more purposeful than the unstructured. In this interview type, there is usually a section of structured questions to elicit information desired such as age or socioeconomic status. It will mix open ended questions with some structure unlike the above two types. This interview technique is a hybrid of the structured and the unstructured.

The best source of data for my study was gained by using an in-depth, semi-structured interview technique. This was the best technique because of the need to find out what is in or on the minds of the Diabetic students, to obtain their perspectives on the American Diabetes Association (ADA) group class, and how this educational intervention assisted them in compliance (Patton, 1990). The participants age, socioeconomic status, length of time as a Diabetic, and level of completed education was asked along with open ended questions that were designed to elicit perceptions and experiences.

Another source of data for the study was documents. Merriam (2001) writes that documents vary widely and can be anything written, visual, or physical which influences the study. There is a wide range of ways to present documentation data: personal papers (diaries, journals, letters), videos, emails(to and from other persons about the disease process), pictures, and any other source that represents the person in this way (Merriam, 2001). This data collection by document

review is also led by questions, and data could be unexpectedly uncovered which adds to the clarity of the study (Merriam, 2001). Documents in this study consisted of laboratory reports shared by the participants to demonstrate A1c's, physician office documents about the patients (after consent), which mainly consisted of addresses and phone numbers, and emails used to do member checks. As explained in the sample selection section, the laboratory reports from the participants and the office documents from the physicians were used to determine the participants compliance.

### Data Analysis

The method of data analysis that was used in this study is the constant comparative. The discovery of this method is credited to Glaser and Strauss (Strauss & Corbin, 1998). The strategy of the constant comparative method is to constantly compare the responses to the current interview with the preceeding interview responses (Merriam, 2001). Thus, I was able to constantly compare these responses for emerging themes and any expansion needed in the interviews. After laying out, side by side, the responses of the seven participants I then began to compare similar responses and group this similar data together. For example, as I analyzed the data collected and grouped the responses, when comparing all seven interviews, I noted the emphasis all seven placed on the importance of the educator in the class.

When using this method, the researcher groups responses to the questions asked (thematic) and then analyzes the differing perceptions on the centrally found issues (Patton, 1990). Goetz and LeCompte (1981) write that the use of this method combines “ inductive category coding with a simultaneous comparison of all social incidents observed” (p. 58). These categories were then classified and compared. These initial observations were analyzed by the comparison of responses and basic relationships were found. The data then continued to undergo continuous



comparisons “within and between levels until a theory can be formulated” (Merriam, 2001, p. 159). Data was collected and as it was collected, analysis continuously occurred. As the analysis occurred themes emerged. As I gained a greater skill at interviewing, the questions were modified to elicit a greater range of desired information. I also met with Drs. Courtenay and Kiely to review the transcripts and obtain assistance in techniques to garner more data. This assistance was very successful and is demonstrated by the greater depths of information obtained during the remaining interviews.

### Validity/Trustworthiness and Reliability

Patton (1990) writes that the credibility of qualitative inquiry relies upon three elements: the quality of the data gathering technique emphasizing validity and reliability; the researcher’s credibility in their field and in previous research; and the acceptance and appreciation of qualitative inquiry. Validity or trustworthiness, simply defined, is the comparison of the findings to the reality of the situation. As a translator of the data, the acknowledgment that reality is not a fixed value is important to the trustworthiness of the reporting of the data (Merriam, 2001). In the effort to maintain the validity of this study, member checks, peer debriefing, and the investigation of researcher bias were utilized.

The member checks determined the accuracy of the findings that I perceived (internal validity or credibility) and were done periodically throughout the study and after the study (Creswell, 2002). The process to determine this accuracy was to validate that the participants felt that the category themes were accurate or, simply put, it was taking the tentative findings back to the participants and asking them their opinion of what I thought (Merriam, 2002). During the progression of the study, member checks were done by choosing willing participants to participate in reviewing the themes from their interviews. Email communications were used with the participant/s who were willing to do member checks. A copy of Chapter 4 was sent to the willing participants and they either called me, emailed me, or both

Peer debriefing or examination is the process of asking colleagues to comment upon or make recommendations about the study (Creswell, 2002; Merriam, 2001). According to Merriam (2001), when a dissertation is involved, the Chair is especially important in the peer debriefing of the data collected by the student. This element serves to enhance accuracy. Drs. Courtenay and Kiely interacted with the data and me to review and inquire about the on-going study so that “the account will resonate with people other than the researcher” (Creswell, 2002, p. 196).

Researcher bias was an important ingredient in this study as it relates to validity and reliability. This is a statement of my experiences, assumptions, and biases (Merriam, 2001). I act as the instrument in a qualitative inquiry so it is important that there was a knowledge base of the myself (Patton, 1990), this position being important as it did impact how I saw things. This process of acknowledging researcher bias helped me in clarifying my assumptions. My process of self reflection assisted in the honesty found in the perceptions of the data analyzed (Creswell, 2002). My biases and assumptions are explained in the next section.

Other efforts were made to increase the internal validity of the proposed study. A pilot study was conducted Spring 2003 investigating how an educational intervention leads to compliance in an American Diabetes Association (ADA) group class. It was felt to be a good idea that a pilot study was conducted so that The University of Georgia Human Research application for consent to do research was completed and approved. Data collection consisted of two interviews after informed consent was obtained. Cases were selected purposefully and opportunistically secondary to the need to identify compliance or non-compliance. The compliant state was volunteered by the participants in this pilot study. There were two subjects recruited for the study. Both interviewees were adult females who identified themselves as Caucasian, aged 50 and 46. Both subjects had attended the ADA group class, were alert and oriented, and were on medications for their Diabetes. The interviews were taped and transcribed. Denzin and Lincoln (1994) recommend that researchers conduct a pilot study. Pilot studies are one strategy that

researcher use to improve internal validity. A pilot study allows the researcher to investigate areas that need clarification prior to the actual study and to test questions for use in the larger study. Other positive outcomes from the use of a pilot study are the decisions made about the effective use of the time spent in pursuit of the study outcomes, and the issues faced by the participants and researchers.

Data analysis demonstrated a discordance in perceptions of educational preparation and of compliance state between the physician, educator, and patient. Additional findings included the identification of the lack of specificity in the education offered in the class and most specifically, the lack of follow up after the class. Both subjects stated they were unable, without additional assistance, to transfer most of the learning from the class to their everyday lives though some transfer did occur secondary to the educational program and their own and their support person's search for further education. In the aftermath of this pilot study, it was obvious that better and more open questions were needed to garner the maximum amount of qualitative data. For example, when the participants opened another topic in their answers, the failure to follow up on this new avenue of inquiry was frequent. It was also apparent that better leadership or herding of the discussion was necessary to elicit the information desired. In one interview, the subject began to speak of information not associated with the study and instead of transitioning back to the subject smoothly, there was an awkwardness associated with getting the interview back on the topical track.

The reliability (consistency or dependability) of data collected using the qualitative method "depends to a great extent on the methodological skill, sensitivity, and integrity of the researcher" (Patton, 1990, p. 11). Merriam (2001) writes that reliability refers to the extent that, if the study is replicated, it will yield near identical results. Reliability recently has begun to receive a great amount of attention from both research communities, quantitative and qualitative. Human behavior is ever changing; though this fact is undisputed, Merriam (2001) and Strauss and

Corbin (1998) both refer to the term consistency as a more appropriate term for qualitative research. Merriam (2001) writes that “ the question then is not whether findings will be found again but whether the results are consistent with the data collected” (p. 206). The techniques that were utilized in this study to promote credibility were acknowledging the investigators position and an audit trail. An audit trail is an authenticator allowing an independent judge to track the process of the study. In this research, an effort was made to describe in detail how the data was collected (Merriam, 2001). During the interviews, notes were taken and the interviews were, in majority, recorded on a cassette tape. These transcripts were reviewed by Drs. Courtenay and Kiely at a mid stage of data collection and, at a later stage, by Dr. Courtenay.

External validity (generalization or transferability) is concerned with the ability to generalize research findings. External validity is thought to be a quantitative term and Trochim (2002) writes that a more appropriate term would be transferability. Transferability is the extent that the results of a qualitative research study can be transferred contextually (Trochim, 2002). “The qualitative researcher can enhance transferability by doing a thorough job of describing the research context and the assumptions that were central to the research. The person who wishes to “transfer” the results to a different context is then responsible for making the judgment of how sensible the transfer is” (Trochim, 2002, p.1). Examples supplied by Merriam (2001) that enhance transferability are to make modest speculations, to use concrete universals, and to allow the reader or user of the research make their own generalizations. Concrete universals are described as having the general lie in the particular. We live by applying what we learn in one situation to other situations (Merriam, 2001). Within this study, strategies used to increase the transferability of the results were using rich descriptions of the data from the study. Thus, according to Merriam (2002), this will allow other researchers to determine if the results are transferable.

## Researcher Bias and Assumptions

I have been a Registered Nurse for over 20 years with an Advanced Practice status for 15 years. As I have developed my professional practice from novice to expert, I constantly wondered why patients could not do as they were told. Having been socialized when the medical model was in its ascendancy, I viewed the patients as people who needed to comply. As I aged through experience in my profession and through education, I began to discern that compliance was a major issue in the medical profession. I began, at this point, to realize how important education was to the compliance state of my patients. Though I noted the need for education, it was years later that I realized the need for good education. Upon my specialization in Diabetes, I began to become deeply involved in the education of diabetics. It was at this time that I began to note the cookbook type education diabetics were exposed to in the group education class. This style is in direct opposition to the style that is used on diabetics less than 18 years of age. As Diabetic Educators and the education surrounding the disease evolved, more individualized counseling began to become available. This individualized counseling, taught in the same style as pediatric diabetic, began to demonstrate a high compliance rate. It was at this time I began investigating the actual group classes and the research surrounding them. I, as a Diabetic Educator, began to wonder why some students in the American Diabetes Association (ADA) group classes demonstrated compliance and others did not. I believe that the majority of diabetics can control their disease process and prevent the resultant sequelae if they are able to have access to excellent education. I believe that transfer of learning is possible if we teach for transfer and not for quantity or profit solely. Finally, I believe that anyone capable of learning can learn if the education provided is centered around the learner.

I am aware that there are several biases that can arise from my beliefs. As a qualitative researcher, I have had to accept that this type of qualitative research is ideologically driven (Denzin and Lincoln, 1994). By identifying my biases early, in an effort to control the influence

these biases have on the research that I conducted, my doctoral committee chairperson and other committee members interacted with the data assisting in my interpretation of the data. This interaction consisted of a review of my data and my interpretations of this data.

## CHAPTER 4

### FINDINGS

The purpose of this study was to understand how an educational intervention led to compliance in an American Diabetes Association (ADA) group class. Diabetes Mellitus (DM) is the fastest growing health problem in the United States (USA) (Foreyt, 2005). Acknowledging the importance of compliant behaviors by Diabetics, there was a need to examine how these compliant diabetics were able to stay compliant and how this educational intervention may have led to this compliant state.

I utilized a qualitative design and relied on data collected by semi-structured interviews from participants who had met criteria set before the study began. I interviewed seven participants who had attended an American Diabetes Association (ADA) class, were adults between the ages of 18 and 85, were alert and oriented and were able to sit for at least 1 hour during the interview, had a health practitioner's diagnosis of Diabetes, were taking medications for the disease, consented to the researcher speaking with or obtaining health information from the physician treating the Diabetes, and were compliant. The interviews were audio-taped after appropriate consents obtained. Interviews were then transcribed by the researcher. After multiple reviews of these transcripts, they were analyzed by the constant comparative method. Categories then emerged which indicated trends and insights as to how an educational intervention leads to compliance in an ADA group class.

There are two sections contained in this chapter. The first section will introduce the participants to the reader and the context with which they took the class. Second, the categories that were detected by the use of the constant comparative method will be presented and

discussed. These findings were supported by the information taken from the transcripts from which the emerging categories were derived. Below is a brief description of the participants of the study.

### The Participants

Table one below contains selected information about the participants. Of the seven participants, six were female and one was male. All but one participant had post high school education with three having proceeded to a technical college and two having received an associate degree. The self identified ethnicity of the participants was five Caucasian, one Jamaican, and one African American. The majority of the participants were retired with three still currently working in their chosen profession. All participants were diagnosed with Diabetes as an adult with the average age of diagnosis being at 46 years of age. The average age of the participants was 55 years of age.

Table 1

#### *Participant Information*

<b>Pseudonym</b>	<b>Age/Sex</b>	<b>Ethnicity</b>	<b>Job</b>	<b>Years Diabetes</b>	<b>Education</b>
Ramona	47/Female	Caucasian	Nurse	9 years	ASN
Sue Ellen	36/Female	Caucasian	Nurse	2 years	ASN
John	68/Male	Caucasian	Retired	14 years	Technical Certificate
Susie	62/Female	Caucasian	Retired	10 years	High School Diploma
Lucy	60/Female	Jamaican	Secretary	5.5 years	Technical College Classes



Mary Jane	62/Female	Caucasian	Retired	15 years	Some college
Brandy	54/Female	African American	Retired	10 years	Technical College Degree

Seven participants were interviewed in this study. The participants were either directly referred by their physician, a clinic, a pharmacy, or were recruited by the researcher or friends who were aware of the study. All participants had to be identified as compliant, have taken the American Diabetes Association (ADA) class, be 18 - 85 years of age, had to be alert and oriented, have a diagnosis of Diabetes, and gave informed consent for the researcher to be able to speak with the health practitioner or be able to obtain information from the physician treating the disease process. Four private physicians screened their patients and obtained their consent to refer them for the study. Two pharmacies, one local and one national also participated through their pharmacist. These pharmacists displayed fliers and answered questions about the study. There were no viable referrals from the pharmacists. One large indigent clinic and one community clinic participated. Their referral process was identical to the private physician referral process. An additional way participants were obtained was through word of mouth and colleague referrals.

Important characteristics about the participants are provided in the following section. Pseudonyms are used instead of the participants' real name; participants chose their own pseudonym.

*Ramona* - Ramona is a 47 year old Caucasian female. She has three years of college and has an Associate Degree in Nursing. She is currently practicing as a Nurse at a national hospice. She has had Diabetes for nine years. She was compliant at the beginning of the diagnosis but

subsequently became non-compliant for the next seven years. One year before this study, secondary to high blood sugars, ballooning weight, and visual disturbances, she then retook an educational program about Diabetes and has been compliant for the last year. She has been referred for the study by her private physician and his Diabetic Educator. They have identified her as compliant in response to her HbA1c results, weight loss, blood sugars longitudinally, and the decreasing evidence of negative sequelae which had preciously been identified, for example, her vision had stabilized secondary to the lens in her eyes re-assuming a near normal shape. She is divorced with four sons who are adults but live with her. She is computer literate and uses this as a tool for some of her information. She reports that she reads and interacts with a Clinical Specialist in Diabetes to gain further information about her Diabetes. Along with her ADA classes, she has had private classes with a Diabetic Clinical Specialist which she said helped her greatly update her knowledge base about Diabetes and maintain her diet and medication regimen. She states her previous knowledge about Diabetes was that it “ate you piece by piece” and that she would have to give up the foods she loved. She credits the class with allowing her to see the regimen about her Diabetes with an “open mind” instead of a death sentence. She states she was not aware of the extent CHO played in the disease management and was made aware of how to read and assess labels for CHO and fats. She states she now realizes she has a lot to do with how well she does with managing her disease and its sequelae.

*Sue Ellen* - Sue Ellen is a 36 year old Caucasian female. She has two years of college and has an Associate Degree in Nursing. She is currently practicing as a Nurse at a large university medical center as a unit manager. She has had Diabetes for less than a year. She has been compliant since her diagnosis. She has been referred to me through the Diabetic Educator who taught her class and also though a colleague of mine. They have identified her as compliant through her HbA1c results, weight loss, and blood sugars longitudinally. She is married with two sons. Her husband is an Emergency Room Nurse and is identified by her as a great well of support and information. She is work computer literate, but though able to use the internet for information,

she interacts frequently with a Diabetic Educator to keep her current about new information concerning Diabetes. Along with her ADA class, she has had private classes with a Diabetic Educator. She states her previous knowledge about Diabetes was very limited but the one thing she was sure of was that Diabetes “ate you alive.” She credits the class educator with her increased understanding and ability to be helped when follow-up is needed. She stated she was not aware of the extent CHO played in Diabetes before the class and came to realize that she could prevent much of the side effects of the disease.

*John* - John is a 68 year old Caucasian male. He has a High School Diploma and a technical college degree as an Air Service Engineer. He is currently retired. He has had Diabetes for 14 years. He has been compliant since his diagnosis. He has been referred for the study by his private physician. He identified her as compliant in response to his HbA1c results, blood sugars longitudinally, and the decreasing evidence of negative sequelae which had previously been identified, for example, his peripheral neuropathy had stabilized secondary to his normoglycemic control. He is married with two children. His wife is a homemaker and he credits her support and knowledge about the disease in helping maintain his compliance. He states he does not use the internet for informational purposes but goes to the doctor and reads articles in lay magazines about Diabetes to stay current. He is very active in altruistic clubs in the area. He states his previous knowledge about Diabetes was the death of a loved one and the lifestyle changes that had to occur. He credits the class educator for teaching him the basics of the disease and then helping him put the information all together so he could live with the disease.

*Susie* - Susie is a 62 year old Caucasian female. She has a High School Diploma and worked for the Civil Service as a logistics expert for 30 years. She is currently retired. She has been a diabetic for six years. She attended an ADA class after her diagnosis and has been compliant since her diagnosis. She has been referred to me through her private physician. He identified her as compliant through her HbA1c results and blood sugars longitudinally. She is widowed with a

daughter who has had blood sugar issues in the past during her pregnancy. She credits her daughter with assisting her in gaining knowledge and helping her stay compliant. She does not use a computer routinely to gain knowledge about her Diabetes but she relies upon her doctor and reading for information. She is active in the community. She states that her previous knowledge was that you had to be “very careful” with this disease and that it would restrict her diet somehow. She credits the educator with teaching her how to use the devices needed to control her disease (her blood sugar monitor) and what to do with the results.

*Lucy* - Lucy is a 60 year old Jamaican female. She has a High School Diploma and has been to a technical college but never finished the degree. She is currently a secretary at a metropolitan technical college. She has been a Diabetic for five years and six months. She has been compliant since her diagnosis. She was referred to me by one of her health practitioners. She identified her as compliant through her HbA1c results, blood sugars longitudinally, weight loss, and absence of negative sequelae. She is married and her husband is retired. She uses a computer with her work but relies on her husband and her sister, who is a Nurse, to gather data from a home/personal computer about Diabetes and meeting/classes. She relates that her husband is the person in her life that gathers information about Diabetes and attends monthly Diabetes meetings with her. She states he is very involved and knowledgeable about her Diabetes and the treatment. She is very religious and travels extensively out of the country on church related missions. She states that, though she had relatives with Diabetes, her knowledge was limited the destruction the disease causes and the changes in the lifestyle of the afflicted. She credits the class with teaching her the basic information which allows her to live with the disease. For example, she states the class taught her how to check her blood sugars and what to do with the results when she obtains them.

*Mary Jane* - Mary Jane is a 62 year old Caucasian female. She has a High School Diploma and some college but no degree. She has worked in many positions but all involved health care of

some sort. She is currently retired. She has been a diabetic for 15 years. She has been compliant intermittently during these years and most recently has been compliant for the last five years. She was referred to me by her health practitioner. He identified her as compliant through her HbA1c results, blood sugars longitudinally, weight loss, and absence of negative sequelae. She is currently unmarried but is well supported by family and friends. Though retired, she volunteers there three times a week at a Community Health Center that services the aged with cardiovascular issues. Though an avid reader about Diabetes and the advancements for treatments and a cure, she does not routinely use a computer for information gathering about her disease. She enjoys her work in the community and socializing with friends. She states her previous knowledge about Diabetes consisted of knowing there were lifestyle changes like “giving up sugars” and that you can go into a coma when and die. She credits the class with giving her “a lot of information specifically geared for her needs” and that it gave her a lot of information about how to eat “healthy.”

*Brandy* - Brandy is a 54 year old African American female. She has a High School Diploma and has a technical college degree. She is on disability from being exposed to chemicals in the workplace. She was a Chemical Inspector. She has been a diabetic for 10 years. She attended her first class after the initial diagnosis 10 years ago. She has been compliant since her diagnosis. She was referred to me by her health practitioner. He identified her as compliant through her HbA1c results, blood sugars longitudinally, and the improvement of her peripheral neuropathy. She is married with grown children. She reports that her family support by her husband and children is very important in her management of the disease. She does not routinely use a computer but prefers reading and watching educational programs about her Diabetes. Though retired, she is active in her church and with her grandchildren. She states her previous knowledge about Diabetes consisted of that you would lose your limbs and it would change the way you live your life. She credits the class helping lead her to a better diet and how to manage her blood sugars which helps her live longer and “keep her limbs.”

## Results

This qualitative study produced data that assists in the understanding of how an educational intervention influences compliance in an American Diabetes Association (ADA) group class. Insights were gained concerning how participants transfer learning gained from the ADA class to their everyday struggle with compliance. The three research questions were how these learners describe their knowledge prior to the class, what factors in the class influenced their compliance, and what other contextual factors influenced this transfer.

The findings for this study are summarized in Table 2. The first category helps us understand what the participants knew before the classes. It was important to have the participants' knowledge about Diabetes before the classes so that I would be able to see what new learning resulted from the class that might have influenced their compliance. The participants spoke about two topics about which they had knowledge related to their Diabetes and their compliance: harmful physical effects and the need for a lifestyle change. The second category reflects the factors in the educational experience. It includes factors found to be important in the participant's compliance: comfortable learning atmosphere, attributes of the educator, and content that the adult learners found useful in their search for a compliant state. The third category includes factors that complement the educational experience. This third category included two factors: an involved support person and an intrinsic motivation some described or named as discipline.

Table 2

### *How Education Influences Compliance In Adult Diabetics*

#### Knowledge of Diabetes at Matriculation

- Harmful Physical Effects
- Need for Lifestyle Changes

### Important Factors in the Educational Experience

- Comfortable Environment
- Attributes of the Educator
- Useful Content

### Factors that Complement the Educational Experience

- Involved Support Person
- Intrinsic Motivation

### Knowledge of Diabetes at Matriculation

The influence of education on compliance begins before the class. The reason this question is asked is that I wanted to be sure that the participants learned something new, that previous learning was not the sole influential factor, and that previous knowledge was relearned in the class. The two areas that the participants had the most knowledge about before entering the class were harmful physical effects about Diabetes and life-style changes caused by Diabetes.

#### *Harmful Physical Effects*

Many participants stated that having a friend or loved one diagnosed was knowledge they had before entering the class. In particular, the participants identified many memories of the experience sequelae that can include blindness, loss of limb, parasthesias (loss of sensations), wounds, infections and death. It was this pre-class knowledge that the seven participants identified in their interviews. Brandy described her perception of the sequelae of the disease as:

Nothing except, you can lose your limbs, if you have Diabetes. I have friends who were diabetics, and I also had an aunt with Diabetes, and oh also heard (about loss of limbs) from just people. My aunt had Diabetes.....I had just heard of people losing limbs. I knew you had to watch your sugar. I knew you could lose your legs and stuff if you didn't take care of yourself.

Sue Ellen, a Nurse, described the devastation of the loss of a family member and her first reaction to the blow of being diagnosed with Diabetes. As a Nurse, she described herself as well versed in the pathophysiology of the disease but was unprepared for her diagnosis. She reaches back to her previous knowledge about her father's experiences with Diabetes when remembering his struggles with the disease and how that struggle impacts her future expectations of health. Her description was:

I thought I am doomed, I'm doomed. I saw my dad suffer so much. I can't even imagine what someone would feel like if told they had cancer but all I thought about was I am going to end up losing my leg, my toes, I am going to end up on dialysis like my father was facing. I remember.....he had multiple eye surgeries, he was legally blind by the time he passes away. He actually died from complications of surgery, he had a BKA (below knee amputation) and threw an embolus (blood clot that travels).It was just one of those things and I knew it was just complications of Diabetes. He was very brittle and I remember him going into four comas and ending up in ICU's. That is all I could think about, my poor children, what is going to happen to them. It's pretty scary, really scary.

John talked about the death of his father from Diabetes, meaning that he associated Diabetes with death before enrolling in the ADA class. He relates that the diagnosis and death of his father occurred almost simultaneously and that now he believes he had Diabetes for quite a while



though it went undiagnosed. This relationship between Diabetes and death was a correlation he made upon his diagnosis of Diabetes. John stated:

We didn't understand what Diabetes was. My father became quite ill, in his 50s, ahh he got pretty sick one day and he was under the care of my older brother and his wife. We were told on a Thursday to come down there, that he was getting pretty sick. He just suddenly got Diabetes at his age, though maybe it wasn't so sudden. I think he knew he had Diabetes, but just didn't tell anyone. Pretty much my previous experience with Diabetes is that you got it and you died.

#### *Need for Lifestyle Changes*

The participants also admitted that before enrolling in the American Diabetes Association (ADA) class, they knew Diabetes affects lifestyles. Although all of the participants knew that lifestyle changes were inevitable and had the right idea about the control of the disease, the quote below will illustrate that they had negative beliefs about the coming lifestyle changes. Types of reported thoughts about Diabetes before the class centered around “living with it” and Diabetes being a “horror story.” Though diabetics must change their diet, many find that other parts of their day to day existence changes also. Mary Jane knew this prior to the course as a consequence of experiences with diabetic friends:

I have several friends.....I had a friend years ago that was a childhood diabetic, but was about 18 or 19 years old when I knew her. She used to come and give herself the injections and had to eat fruit and keep things around like that so I had knowledge of that. I knew you could live with it, I didn't think about death.

John spoke about his knowledge of life style change before entering the course by stating:

I knew it was a disease that could really give you trouble. I knew you had to pay attention to that (the disease) the rest of your life. With Diabetes, basically it was a horror story, it killed him (my friend). That's what's going to happen to anyone else who thinks they don't have to pay attention to their Diabetes. They think they don't have to play by the rules. They think they can do as they darn well please. They don't realize that moderation is the key.

Brandy expressed her previous knowledge about the lifestyle change as involving diet, weight control, and the fear of the sequelae that Diabetes brings:

I thought it was the worst thing in the world to be diagnosed with Diabetes and not be able to eat what I want. Also to have the possibility of losing my legs and my sight and other things. I wasn't really happy when I got diagnosed. I knew it would never go away, I hoped at first they could just give me some medicine, and I wouldn't be stuck with it for ever. I know I was being a bit ridiculous. And there's a weight problem too, you have to keep your weight down so you have to watch it all the time. And you got to learn about and eat all these foods with low sugars and low salts, laughs.

Susie described her previous knowledge about Diabetes as lacking. She emphasized that most of what she knew about Diabetes was the need to monitor sugar intake:

I have friends with DM but they didn't really talk to me a lot about it. I learned by just watching. A lot of them were sugar restricted. A lot of us don't realize how much sugar we take. We think it is only candy and sweet things. I thought for a long time if you

were a DM, you had to avoid all sweets but I learned from them that you just have to be careful. It is..well..be reasonable with things. My friends taught me a lot which helped me with my diagnosis.

The two types of knowledge described by the participants were harmful physical effects and lifestyle changes. The participants all described reasons for fearing the diagnosis of Diabetes. Stories about family members and significant others were shared by the participants. The participants described their previous knowledge in a negative manner using descriptors like “doomed” and statements like “the worst thing in the world.” Lifestyle changes were described with statements like “not being able to eat what I want” and that the lifestyle was “restricted.” Although the participants previous knowledge about Diabetes reflected negative consequences, these facts were essentially correct, though limited.

#### Important Factors in the Educational Experience

The purpose of the study was to understand how an educational intervention leads to compliance in an American Diabetes Association (ADA) group class. The factors in the educational experience emerged from questions in the interview that began with determining whether the participant felt the educational experience as a whole was important to their compliance. All seven participants admitted that it was. One example of this is from Mary Jane who spoke about the importance of the class. She stated “we had instruction then a snack break with healthy things, they showed us how to eat, what to eat. She had a lot of charts and diagrams for us. We got a lot of information specifically geared for my needs.” Another example of this is

from Sue Ellen. She stated “I remember her, she did a great job. I thought I couldn’t do this but she helped plan and maintain a low CHO lifestyle..it is helping me come off of insulin.”

There were three topics about the educational experience that the participants identified as important to their learning. The three topics were a comfortable environment, attributes of the educator, and useful content.

### *Comfortable Environment*

After asking participants to identify aspects of the class that made their learning easier, most of the participants felt the pleasant, welcoming atmosphere was conducive to their learning. Brandy characterized the environment of the class as important, including the ability to bring a support person and have room for them to sit and learn along with her. She stated that the environment was:

Pleasant. I was able to bring a friend to the hospital, other people brought people too.

The seats were comfortable and the people were nice enough, we all had this disease. I just felt like everything in the class was about my disease and me, all of us. It was nice.

Mary Jane spoke more about the comfort of the room:

The class was comfortable enough, sighs....and... I liked being with other people because you heard other peoples reactions, though many were more advanced than I was.

When discussing the comfort of the class, Susie includes the actual physical layout of the educational materials adding to the comfort she felt in the classroom environment:

There were a lot of handouts, educational materials in the class. It was a comfortable classroom but I had a hard chair, laughs, I remember the hard chair. I really liked the heavy....emphasis on education in the classroom, the computer sites and the handouts we could pick up.

John discussed the comfortable atmosphere of the class that he and his wife attended:

But the very best thing ever was. We were lucky, we won a gift. It was a testing machine. Then they fed us a lovely lunch. My memory was that it was pleasant, comfortable, we enjoyed the two hours. If they had another class, we'd pick up and go to it, just to see what else we could learn. It was a pleasant thing that we did, something we experienced that involved diabetes.

#### *Attributes of the Educator*

The person who led the educational effort was also identified as important to the participants' learning. Specifically, there were three attributes of the educator that were important to their learning in the class: knowledge of the educator, pleasant demeanor of the educator, and the educator's presentation skills. In some instances, the participants talked about all three attributes as part of their descriptions of the educator. For example, John talked about his perceptions of the instructor's pleasant nature, her knowledge of Diabetes, and her presentation of the knowledge of Diabetes:

I remember her as being a very pleasant lady. A good speaker, she seemed natural and normal when she spoke. It's the presentation. How well it's done, how it's prepared. Someone providing you with a presentation of something you wanted to know, not

reading out of a can. This is something that should interest someone and they should be someone who really knows what they're talking about. She really knew how to talk to me, and she knew how to present it so I can understand it. You should have a look around and see that everyone's enjoying it. I think the person that teaches this should be motivational. She knew diabetes, and she knew how to talk about it. Pretty much everything I said above I really meant it about her. No class can do everything, but a short class, can just gave you the basic facts, nothing more. She kind of put everything together, the standard questions that you would hear every day. She presented it to the people there in such a way that it seemed to work okay.

Mary Jane talked also about how knowledgeable her educator was about reading labels and shopping for food. Mary Jane felt that this type of education in the class was important to her success in maintaining her compliance in her daily life. She described it as:

It was led by one instructor. She was great, I got a lot more information specifically geared for my needs. She taught you how to shop, to read the labels. I don't remember her telling us about the testing. We had a lot of samples, pamphlets and brochures. I don't think a dietician spoke with us. We only had one instructor. I don't remember much but I thought she seemed knowledgeable.

Brandy also spoke about the need for the educator to be knowledgeable and willing to teach the things that she needed to know but had not been able to learn from her private MD. She emphasized how pleasant the educator was and the variety of topics she covered:

The person that taught me was nice enough. She taught me about my monitor, or more about the monitor that I had. She talked a lot about calorie intake. A dietitianist also talked to us about our diet. I saw some in the hospital too. Every time I was in the hospital with that diet it is so hard to follow. She made recommendations about what to eat and what not to eat. The nurse talked about how much insulin to use, how to use a syringe, and other things. She was very nice. She spoke to me, very nice when she came to speak to us. She was really very pleasant.

Susie spoke about her educator:

She spoke very clearly. The Nurse mainly talked about measuring, she mentioned I had to watch my blood sugars. My doctor hadn't even given me one, a machine to check my BS's. I think it was very good. As for the nurse or the educator, I'm sure she knew what she was talking about.

The participants all strongly identified the educator as being extremely important. The perception of competence, interest, and pleasant demeanor was demonstrated in the recall of the participants. Many of the participants agreed that their feelings that the educator was nice or pleasant was important to their learning. Other perceptions were that the presentation was professional and knowledge which led the participants to perceive that they had the most qualified educator available.

### *Useful Content*

Along with the environment of the class and the educator, the participants identified content as an important aspect for their transfer of learning and their compliance. The participants explained

that they were getting information that was important to the maintenance of their health and their disease and how this was important to their compliant state. Mary Jane stated:

I got a lot more information specifically geared for my needs. They gave me a better understanding of what to do .....how food is processed. They didn't really get into carbohydrates, just sugars. They taught you how to shop, to read the labels. We had a lot of samples, pamphlets and brochures. You get scared. The things that this disease can do to you was drummed into my head by the instructor, it seemed real. It was like gee I had better take this seriously.

John felt that the information given to them in the class should be of a level that it would establish a bridge to transfer the information to their everyday life and provide the participant with the desire to learn more after the class. He liked that there was an abundance of information offered so that his significant other and he could not help but learn something. He also stated that the class and the content taught to his wife and him made them more curious to seek out and learn on their own. John stated:

They talked to us a lot about it. They blanketed us with information. They were so great with information. You must find a way to establish a communication line between the new diabetic and someone who knows what they are doing. The instructor and the information can't scare them to death. The class made us more curious. A lot of what we learned came from the curiosity after the class. We learned more in two hours in the class than from all of our doctors.



Ramona, a Nurse, talked about how she tried to use all of the information that she received in the class and the importance of having her information clarified. She emphasized that a lot of her previously held assumptions were corrected in the class and that it was important to her to relate her learning to her Nursing practice:

I remember the class actually quite clearly, if I am not mistaken it was six weeks long, we met one night for six weeks. I listened to other people talk about their experiences with Diabetes and having some of my misinformation corrected. There was really nothing about the class that was not helpful. What we do in the hospital to somebody who is a Diabetic is a lot different in the outpatient setting. It was really interesting to know that I had a big responsibility in preventing some of the side effects of the disease. That was probably the most profound thing. There was a guy in the class with an insulin pump and it was new to him and us. He started doing silly things to see if it would work. We did two classes. I think, one that we talked about foods and how to get the most out of the meal w/o adding fats or sugars and one we did a shopping spree, reading labels. I always read labels. I now found out when they say low fat, they add CHO.

The participants stated that content that was pertinent to them and their condition and that was useful in their everyday life made the class seem more vital to their compliance. The participants viewed the content as the basic knowledge they all needed to function with Diabetes and some participants credited this presentation of the content, and their interest in it, as promoting their desire to learn further information on their own. Some of the participants credited the content with clarifying and correcting their previously held knowledge.

## Factors that Complement the Educational Experience

In addition to the educational experience, the participants identified two major contextual factors that contributed to their compliant state. The first factor was their support system. Every participant in the study identified the involvement of a significant other as vital to their learning and subsequently, their compliance. The second factor was intrinsic motivation. Each participant identified that they had some internal factor, some actually identifying it as discipline, others as persistence and some just defined an intrinsic motivation in their personality.

### *Involved Support Person*

In every interview, the participants identified the involvement of a support person as vital to their compliance to the restrictions that Diabetes causes. In many cases, the participant reminisces about this person going to the class with the diabetic and then learning as much or more than they did. Many of these support persons also participated in post-class learning activities, monthly meetings, and seminars. Lucy stated:

one important thing..my husband went with me to everything. We now go to the monthly Diabetes group meeting, he is always there for me, then and now, what I don't pick up he gets and vice versa. The class.....I never understood much about the ....things on the labels, that is still difficult for me. My husband is more up about these things. It changed the way he shopped, it is just two of us now, my daughter is gone now. I guess because my husband is always there with me, he helps me find and learn things.

John talks about the support his wife supplies and how important she is to his morale and for his everyday compliance. He emphasizes how they, as a team attended the class. John states:

My wife is wonderful. I always say this, but most people have a wife. I got an angel. It's not a perfect world, but having diabetes isn't the end of it either. There's too many of us people running around the world with diabetes for it to be the end. We just made everything the right way when we cooked. We didn't eat Christmas cookies or any type of cookies really. We didn't use much sugar. We learned how to read packages, especially how much sugar was in everything, and every package especially. You can't bring a package in the house that my wife can't tell you how much sugar is in it. She's got a big stick, and she beats on me. Laughs, points to wife. That's 99% right there, points to wife. She is really important to my success. In the class.....they just gave us about a rough idea about what diabetes was. But the very best thing ever was....we were lucky, we won a gift. It was a testing machine. They did give us a reference list. They said if we wanted to find out more about diabetes we could look up these references.

Sue Ellen talks about how important her husband has been in keeping her compliant. She states that the timing of the ADA class was such that her husband could not attend but that he was there for her after each class to review everything with her. She credits her husband's commitment to her and her health in keeping her, not only compliant, but alive:

I remember when I started on the insulin, my husband and I went out to eat with the children and I remember being in the restaurant and my husband saying you have to take your shot now and I said I can't do that, I can't stick myself with a needle. I can stick anybody else, just not myself. Laughs. My husband is a Nurse also. That was an advantage for me, well an advantage and a disadvantage. He felt comfortable that if

something happened to me he would know what to do uhmmm the other part was that he made me be compliant. Laughs. I had to take my insulin, I had to eat right. Laughs. Once, my BS was 160. I took my insulin. I woke up at 12 mn starving. My stomach woke me up. I went into the kitchen and grabbed a Debbie cake. I went to do my BS and I couldn't. I was aggggh. My husband hears me making all of this noise, it was 46. I eat the cake, it was horrible. My favorite kind, so I thought I will eat peanut butter. I am eating the peanut butter, I couldn't taste it. It scared me, the room was spinning. I hollered for my husband but he didn't get up. I remember thinking I was going to die. I put my head down on the table. I woke up later in my bed, a spoon in my mouth and a towel under my head with my husband saying "you're waking up now huhh" I had icing dripping out of my mouth. [Laughs] He said when he checked my sugar, I was 19.

Ramona, a Nurse, talks about her support person, also a Nurse, as integral to her learning. She talked about how her support person was there for her after the classes, many times helping her understand issues with which she had questions. She states:

I was fortunate that I had a friend who was a Nurse who was a Diabetic Specialist, someone I could call and she would yell at me [smiles], she would help me out. She was important to my learning, the classes, everything.

### *Intrinsic Motivation*

In addition to the involvement of a supportive relative or friend, the participants identified "something" inside themselves that made them able to or want to be compliant. Some participants defined this internal factor but hesitated to name it; others named it "discipline."

Another participant definition was couched as wanting to please her doctor and be a model patient. However the participants defined this second factor, it reflected their intrinsic motivation to be compliant.

Susie spoke about her internal factor as “just the way I am.” She characterized it as a need for knowledge then taking that knowledge and putting action to it. Susie said:

Inside me, it's just the way I am. I need to know, I need to understand, and then I just do it. I check my feet. I have to watch what type of shoes I wear. Things like the way I cut my toenails. The usual stuff about food and sugar. It kind of affects your entire life.

Sometimes you don't realize how much until you sit and think about it. I sometimes have pedicures. I tell them I'm a diabetic, so they'll know. If they cut my nails I make sure they cut them special.

John spoke about his intrinsic motivation as discipline. He characterizes it as his response to the negative factors of the disease. John stated:

The internal thing. You're asking why I stay so close to it. I know how miserable, you can feel if you don't. Discipline is a big part of it, just knowing how devastating it can be.

Well, knowing you can go to the hospital, then have them cut the left foot off, that can be devastating, and it's a fact too. Laughs. To me, I know how rotten I can feel, I know it can run me out of the world, that's enough for me. Discipline, knowing what can happen.

Brandy also characterized her intrinsic motivation as discipline. She cites the sequelae of the disease as an issue as does John but adds an additional insight. Brandy states:

I want to be around to watch my grandchildren grow. I have one right now. My family caring about me, my friends, the education I have gotten and the way I get the information I need. It is really a lot of things.

Lucy talks about herself proudly describing herself as able to follow the rules closely, as just the way she is. She further describes her compliance as coming from inside of her:

It is just the kind of person I am, I just stick to things. That's why I am.....I can not think of the word, I am.....I went out and got a lot of my information, cook books, books, meetings; I don't do internet, my husband does internet. My sister is a Nurse in NY and she helps and explains to me. My doctor says I am his model patient, his poster girl. I just can't think of the word I want to use for myself, what's inside of me..

### Chapter Summary

For this group of participants, an ADA educational process was influential in their compliance. In reply to the interview questions, the participants identified the aspects of the class that were important to their learning and subsequent compliance. Additionally, they explained how two other factors complemented the influences from the class.

Within the educational experience, having a comfortable, safe and inviting environment; the attributes of the educator; and useful content were important to the compliant lifestyle of the participants. But it is evident from the interviews that the educational experience is not the only factor in contributing to their compliance. Having someone who supported them, not only generally, but also who went with them to the educational experience and supported them outside

of the educational experience was also important to the participant's compliance. In addition, for each of these people, there was this internal desire to do the right thing, to be disciplined, an intrinsic motivation to do the right thing.

The findings of this study demonstrate that an educational experience about Diabetes with the support of relatives and friends and intrinsic motivation can influence compliance for individuals diagnosed with Diabetes. The influence of the education in the class began before the actual class was held. The participants all reported that they had loved ones diagnosed with Diabetes and had vivid memories of the negative sequelae that occurred after this diagnosis. All recounted stories about their memories of their afflicted relatives/friends which included death, blindness, amputation and neuralgias. Along with these sequelae, the participants also disclosed their experiences with the lifestyle changes that occurred after diagnosis of Diabetes. Through the previous knowledge being uniformly negative in nature, the participants entered the class evincing that, the outcome had to be negative.

The participants all reported that they had loved ones diagnosed with Diabetes and had vivid memories of the negative sequelae that occurred after this diagnosis. All recounted stories about their memories of their afflicted relatives/friends which included death, blindness, amputation and neuralgias. Along with these sequelae, the participants also disclosed their experiences with the lifestyle changes that occurred after diagnosis of Diabetes. This knowledge of the consequences contributed to their compliance because of their fear of the negative outcomes associated with Diabetes.

Upon entering the class, the participants identified three important factors about the class that were important in their compliance : comfortable and welcoming environment, a pleasant and knowledgeable educator, and content that they found useful. Coming into the class with negative expectations about their future, these factors all combined to provide the participants with the basic information necessary to realize that the disease process and its sequelae can be managed. Not only did they learn about the importance of compliance, they learned concrete ways to sustain their compliance.

The last factors that the participants stated were integral to their successful compliance included an involved support person and some intrinsic factor that they identified about themselves. Each participant and the support person enters the class with trepidation, having experienced Diabetes through family and friends and their expectations colored by these experiences. Though they enter the class through referral from their physician, the instructor of the class has emerged as an integral part of the equation. This instructor sets the climate for the class. The participants have characterized this climate as pleasant, full of information, and that the instructor is knowledgeable and has an expertise in the subjects presented. The information gained in this class is reinforced by the support person and in many instances they are a conduit for gaining more information. One of the last factors is the intrinsic motivation that each participant felt was vital to their compliance, that sometimes unnamed factor that may be



discipline. Whether named discipline or not, it is this factor that the participants credit with giving them the internal fortitude to comply. These factors fit like a puzzle, each piece integral to the outcome of compliance.

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## CHAPTER 5

### SUMMARY, CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS FOR FURTHER RESEARCH

#### Summary

The purpose of this study was to understand how an educational intervention leads to compliance in an American Diabetes Association (ADA) group class. As the diagnosis of Diabetes becomes more common and the cost of non-compliance staggering, this type of education is becoming increasingly attractive to all. Though increasing popularity of these classes has led to more facilities and private classes being offered, I was not able to locate any research that investigated what these aspects of an American Diabetes Association group class contribute to compliance. This research addressed the role education plays in the compliance of the individual in transferring this knowledge/learning into their everyday practices or life contexts.

This study utilized a qualitative method relying on in-depth interviews with the participants. Seven adult learners, who met criteria set before the study began, participated voluntarily in the data collection. Criteria for the study were designed so that the selection of subjects was optimal for the information desired. There were six criteria used to select subjects for this study. First, the participants had to be compliant. Second, they had attended an American Diabetes Association (ADA) class. Third, they were adults between the age of 18 and 85. Fourth, the subjects of this study were alert and oriented and were able to sit for at least one hour during the interview. Fifth, participants must have a health practitioner's diagnosis of Diabetes and be taking medications for the disease. Sixth, participants must have consented to the researcher speaking

with or obtaining health information from the physician treating the Diabetes. The interviews were audio-taped after appropriate consents obtained. The constant comparative method was used to analyze data. Using this method of analyzing the data, descriptive categories were identified. These categories reveal a beginning understanding about how this intervention helped lead the participants to compliance.

Three findings emerged from the analysis of the transcripts. The first finding was education programs that influence compliance have comfortable climates, are taught by friendly and informed educators, and offer useful content. The second finding was the importance of the involvement of a supportive friend or family member. The third finding was the presence of intrinsic motivation in the participant..

This chapter contains a discussion of the conclusions reached in this study based on the three categories found upon analysis of the research. Also contained in this chapter are implications and recommendations for further research.

### Conclusions and Discussion

This chapter presents three conclusions based on the findings of this study: (1) Education programs that influence compliance have appealing and supportive climates, are taught by pleasant and knowledgeable educators, and offer useful content; (2) Involvement of a supportive friend or family member heightens the influence of an educational program on compliance; (3) The presence of an intrinsic factor coupled with an educational program reinforces the determination to be compliant.

*Conclusion 1: Education programs that influence compliance have appealing and supportive climates, are taught by pleasant and knowledgeable educators, and offer useful content.*

The participants identified the learning process experienced in the American Diabetes Association (ADA) class as important to their ability to transfer the learning experienced in the class to their everyday life. The participants' statements were further analyzed and three general factors emerged that were related to the class that influenced their ability to transfer some learning to their everyday life. The three factors were comfortable environment, a pleasant and knowledgeable educator, and useful content. Cervero (1985) wrote about the importance of the characteristics of the program being integral to behavior change and client outcomes/far transfer. He writes that in previous studies, the researchers studied the program offered as a unit, not as processes that interacts and impacts the outcomes. The participants of this study identified three differing aspects of the class as impacting their compliance positively.

One aspect of the class these participants found to be important was the educator. In particular, the participants cited the knowledge and expertise of the educator as vital to their learning in the class. This finding is confirmed in a study done in Wisconsin to evaluate the influence of the educator in the ADA group classes. Franz, Etzweiler, Joynes, & Hollander (1991) found that only 30 percent of the offered classes had a skilled professional teaching them though all met the standards for certification. They found that the quality, knowledge base, and skill of the instructor influenced the learning gained by the diabetics which in turn influences terminal compliance. Caffarella (2002) writes about the importance of the educator in transfer of learning. The educator sets the climate of the classroom, chooses the content, and the transfer vehicle/s for use in the teaching. She also makes the case that in many instances, the educator chooses her

classroom, sets the environment where the learning will be taking place, and can generally manipulate the physical and mental environment of the room. Caffarella (2002) writes that poor environmental/physical factors are a detractor or interfere with the learning that is being presented. She writes that the physical needs of the participants are extremely important and that for learning and transfer to have a chance of success, the physical environment must be addressed.

Caffarella (2002) writes that prior learning is an important asset for the participants and that the teacher should take that into consideration when planning and teaching the class. Along with the previous learning of the participants, the program planning is vital to the transfer and, the subsequent compliance. She emphasizes that the skill of the educator, her ability to transfer her knowledge/expertise to others, instill confidence in the students, and transfer the certainty that the knowledge is “relevant, useful, and practical” is vital to the transfer of learning (Caffarella, 2002, p. 212). Caffarella (2002) also acknowledges the importance of motivation by the educator. She emphasizes that the educator must make the content interesting so as to capture the interests of the participants and must demonstrate the usefulness of the information imparted. In this, she writes that to make this interesting, the educator must demonstrate enthusiasm, knowledge, and energy about the subject/s being presented. The participants in this research all acknowledged relatively correct previous knowledge but the knowledge of the diagnosis of Diabetes affected strongly their feelings of safety.

Maslow (1970), in his hierarchy of needs, places a great emphasis on safety. My participants identified their previous knowledge about Diabetes as negative. Many if not all of their friends and relatives with Diabetes have negative sequelae which included the death of close family members. Sue Ellen characterized her feelings as “doomed” and continued on to describe the

death of her father. John also spoke about the death of his father from Diabetes sequelae.

Intersecting this safety theory and their previous knowledge and experiences of Diabetes, the fear that the participants felt upon the diagnosis of Diabetes was very real to them. Thus, the Diabetes program needed to be welcoming and reassuring. After being made to feel safe in the class, the participant's then were able to take the information provided and integrate their plans for their daily life.

The findings from this study represent the participants thoughts and opinions about their ADA class and how the educator assisted in or influenced their compliance. The success of the participants, though a combination of many factors, was in no small part influenced by the educator's pleasant and supportive demeanor, and the perception of the offering of useful content in the class.

*Conclusion 2: Involvement of a supportive friend or family member heightens the influence of an educational program on compliance.*

The few quantitative studies that have been done have elicited the outcome that social support is important in compliance which impacts the health of the diabetic (Garcia & Suarez, 1996). Some of the existing studies have used the term group interventions to characterize family, friends, and medical personnel support (Arseneau, Mason, Bennett-Wood, Schwab, & Green, 1994; Campbell, Barth, Gosper, Gupps, Simon, & Chisholm, 1990; Heller, Clark, & Daly, 1988). As a outcome of my study, it was learned that the involvement of a supportive person impacts compliance positively. The participants in this study all recounted the importance of the supportive person on becoming compliant and maintaining their compliance.

Participants in this study identified that the inclusion of their support person in the class, the involvement in their daily diabetic routines, and in the pursuit for greater understanding of how to live with Diabetes, were vital to their compliance. This finding was supported by Cervero (1985) who reviewed educational frameworks and proposed his own framework for analyzing Continuing Professional Education (CPE) programs and in promoting a more successful outcome for these programs. He also writes that it is the multiple characteristics which includes social support that interact with the particulars of the program/classes that influences the extent of the change or outcomes met.

The first characteristic of the support person identified by all of the participants was their willing involvement in the informal learning about the Diabetes care process contained in the ADA class. This involvement included attending the class when possible and then assisting the participant in planning strategies for transferring this information into their daily lifestyle. In many cases, this transfer of information mandated a modification of the lifestyle of the participant and many of the support persons subsequently also embraced this lifestyle.

Another characteristic identified by the participants was the support person's involvement in ongoing emergency type care of the diabetic. Several participants spoke about having their lives and their limbs saved by their support person/s. This feeling of safety and support bolstered their belief that this disease would not be the end for them, that they had the support to continue through times that may not be smooth. Allowing the participant to feel safe, they can then progress on to learning and transferring that learning to their everyday life (Maslow, 1970).

One last characteristic was the involvement of the support person in gaining additional information. The participants cited their support person/s involvement and sometimes their

spearheading the pursuit for additional information as one of the reasons they are able to stay so up to date on information and thus staying compliant. Siminerio (1980) found that, in a study done with adolescents, social support was an extremely useful tool used to assist the adolescents to manage their disease. He found that this type of program helped the diabetic to interact with their peers better and extend their knowledge, both linked to compliance. Warren-Boulton, Anderson, Schwartz, and Drexler (1981) found that in a study of five inner city black women that included an involved support person, these participants were able to improve their plasma glucose, HbA1c, and also their cholesterol level was lowered.

Leahy (2002), in a study about transfer of learning, found that there were several factors that influenced the transfer of learning in his study of adventure based programs. Like Cervero (1985), he found that support and encouragement facilitated change on their environment. This was most successful when the support persons also felt it was part of their responsibility to be supportive of change. In a juxtaposition, he found that when the support person failed to acknowledge and/or follow through with the supportive activities, the transfer failed and learning did not occur. His research supports this research finding that the earlier the support person was involved, the better outcomes the diabetic experienced.

*Conclusion 3: The presence of intrinsic motivation in the participant coupled with an educational program reinforces the determination to be compliant.*

Intrinsic motivation is an important ingredient in transfer. Knowles, et al. (1998) writes that intrinsic motivation is integral with new learning, that there is little to no hope for retention or transfer if the learners do not have this ingredient. Intrinsic motivation is defined as activities or outcomes in which people engage that gives them no reward except the satisfaction it will bring



them. In this study, the participants all identified some type of internal or intrinsic motivation that made them want to do the right thing. Cervero (1985) writes that “the most well planned program will not induce behavior change in an individual who is not motivated to change”(p 87). He also writes that motivation alone does not produce this change. Along with the motivation, it is the characteristic of the support system in which the person exists that is an important variable as it relates to behavior change and client outcomes. The participants all revived memories of the sequelae that occurred with their significant others who had Diabetes. Though these memories, before their diagnosis, may have been in an inactive state, their new diagnosis of Diabetes seemed to bring back the memories of death and loss of function. It was these memories that so many participants discussed that seemed to strengthen their intrinsic motivation not to become that loved one who died from Diabetes or lost their legs.

Ryan and Deci (2000), in an article about Self-Determination Theory (SDT) and intrinsic motivation, write that in the world of learning, motivation is highly valued by educators because of the outcome, that it will produce changes in behavior. They write that “motivation produces” results (Ryan & Deci, 2000, p. 2). They acknowledge the two types of motivation explaining that external motivation is driven by coercion and/or bribery and internal motivation is driven by value of the activity or outcome desired. They write that they have found, in their study of the articles about SDT in psychology literature, that a sense of personal commitment drives these internally/intrinsically motivated learners to excel. Deci (2000) writes that the phenomena of intrinsic motivation “reflects the positive potential of human nature” (p.70) to learn. It is important to note that in my study, the participants were proud and positive about their internal ability to be “disciplined” or to “do the right thing.” This would tend to support Deci’s (2000)

contention about the “positive potential of human nature” (p.70) effecting the learning and, invariably the outcomes desired. This outcome is supported by Palardy, Greening, Ott, and Atchison (1998) who studied 101 adolescents with an average age of 14 years and the relationship between compliance and the teaching of the consequences of non-compliance. They found that external motivation such as scare tactics were not an effective educational modality with these adolescents. Additional findings were that if the internal motivation of the adolescent led her to perceive herself as proficient and, if the embarrassment, pain, and inconvenience of the disease process and treatments could be kept to a minimum, compliance was high. This study supported the findings in the ADA study that intrinsic motivation is linked to the transfer of learning and compliance.

The findings in this ADA study indicated that the characteristics of the participant were a very important aspect leading to transfer of learning and compliance. In support of these findings, previous research has also demonstrated this phenomena. Feder et al. (1995), Ward, et al. (1996), Kinmoth, et al., (1988) found that the participant was an important factor in the improvement of patient outcomes. They surmise that the improvement of outcomes was related to the patient wanting to be more involved in their care. Additionally, they felt that this desire to become involved would help with compliance and the subsequent change in their lifestyle habits which will lead to glycemic control. Cervero (1985) also writes that the characteristics of the participants in the educational program are very important in behavior change. He writes that, as it concerns program participants in a continuing professional education program, that the characteristics of the participants were very important in changing behaviors. He was investigating frameworks to discover why some programs succeed and some do not. One

important finding was that these characteristics may interact with each other and/or also with the program characteristics to result in the behavior changes desired. He also writes that it is the degree with which these characteristics interact with each other as to the amount of change that will occur.

Though human nature is goal oriented, when it involves internal/intrinsic motivation, this intention to meet this goal/s comes from an internal need, not an external reward. In Diabetes, the need to forge forward and be “disciplined” so that they could do the “right thing” was indicated by each participant. They identified something, sometimes naming it “discipline,” that made them want to be compliant, something inside of them. They felt their ultimate outcome was to take the information that they held from experience and the information from the class and then couple them with the support they received from their significant other. The participants indicate that they then use that intrinsic/internal motivation and combine this motivation with the above experiences to fortify and support their natural inclination towards discipline.

#### Implications for Practice

There are a few implications for practice found with this study. First, the information obtained from this study can benefit Diabetic Educators who plan, within the educational framework of the ADA, for diabetic group classes. This study indicated that the educational framework of the class needed to be acknowledged as multiple pieces making up the class, not as one sole construct. As a Diabetic Educator (DE), this study impacts my practice by having me take into consideration the framework of the class I am offering. As I plan the class, I must take into consideration the physicality of the class. The environment of the class should be rich in information about the

disease process, information that the students can touch, pick up, and take home if necessary.

There should be room enough to walk and a comfortable seat for everyone. I have found, as an educator, many times this class is stashed away in any available room with no thought for comfort, just expediency.

As an educator, I would want to pre-screen for knowledge. This pre-screening can be accomplished as a call before the class to speak with the participants and their support person or can be done in a group setting. This pre-screening can be a very effective way for the adult educator to learn about the participants previous knowledge concerning Diabetes and their understanding surrounding this previous knowledge. Accomplishing this will allow the adult educator to address the issues that are important to the participant before matriculation. For example, harmful physical effects and a lifestyle change were two vital issues for the participants. Lifestyle change could be addressed by taking the participants shopping and then planning a week of menus including diverse foods and tips on how to integrate their favorite foods into this change. If the accommodations allow, the participants could actually prepare a meal from their plan and eat it during the class.

The plan for the class should include more than one day for the class. After the pre-screening, attention to the education of the differing types of diabetic would maximize learning time for each. These adult diabetics are prepared to learn this information since the diagnosis of Diabetes is a life changing event (Knowles, et al., 1998). One of the last points as an educator is that she would need to appear pleasant and approachable, knowledgeable, and as an expert the participants could depend on for assistance. Caffarella (2002) emphasizes that the skill of the educator, her

ability to transfer her knowledge/expertise to others, instill confidence in the students, and transfer the certainty that the knowledge is a vital part to the transfer of learning. Thus, this directly impacts the learning and impacts compliance.

Another implication for practice involves the social support mechanism. The participants in this study identified that the involved support from their significant others was integral in their compliance. Knowing this, the earlier we facilitate this involvement, the better the chance for the diabetic. If the health practitioner could involve the support person from the diagnosis and encourage this support person to go to the classes, this could help many diabetics who show up to the class alone. Belgrave and Lewis (1994) in a quantitative study about social support and compliance found that social support was integral to appointment keeping behaviors and health activities in diabetics.

This being said, we can not teach involved support. This involved support, though it can be encouraged, must come from the personal lives of the diabetics. If this facet of the transfer process can be encouraged in advance and supported throughout by the health practitioner and by the Diabetes Educator, this may increase the likelihood of gains by the diabetics as it relates to decreasing sequelae, thus promoting compliance.

If the health practitioner and the Diabetic Educator could also encourage the support person to become compliant themselves in many of the aspects of the lifestyle of the diabetic, this could also facilitate compliance. Acknowledging the importance of the support person is a key factor in compliance but some diabetic do not have a support person to bring to the classes and support them with the changes they must make to their lifestyles. The adult educator can assist this person in compliance by recruiting compliant diabetic who are willing to be a sponsor or support to these

diabetics. This could mimic the Alcoholics Anonymous (AA) style of sponsorship. Ramona addressed this in her comments about support stating “I feel that like AA, for some diabetics, they could benefit from that whole sponsor system.” John also stated that programs like AA have a great idea concerning sponsorships stating “that would be absolutely great for diabetics. That would help so with diabetes a lot.”

The last implication concerns internal motivation. If the diabetic is highly motivated, she will expect to find the information supplied in the class to be useful and helpful to her. If the intrinsically motivated diabetic comes to the educator in this class expecting the information to be supplied, it is the educator’s responsibility to provide it. Deiss (2006) writes that though you can not force people to be motivated, an educator can create an environment that can bring out the intrinsic/internal motivation of the participants. My study found that intrinsic motivation was a very important aspect of the participants compliance. Intrinsic motivation is a process where rewards come from the activity itself instead of from the result of the activity. This means that the person who is intrinsically motivated can be rewarded for their actions but that, unlike the externally motivated, this reward was not the rationale for complying (Beswick, 2002).

#### Recommendations for Future Research

The results of this study have led to several recommendations for further research. The purpose of this study was to understand how an educational intervention leads to compliance in an American Diabetes Association (ADA) group class.

1. A future study that follows newly diagnosed diabetics through their process of coming to compliance is the first recommendation. This study would look at newly diagnosed diabetics to determine the compliance states vs the relapse states and how education and other variables effects these states of compliance. Examples of variables are social support, intrinsic motivation and previous knowledge. Relapse states are common with newly diagnosed diabetics and, though they occur with experienced diabetics, they are less common than with the newly diagnosed. Even though Diabetic Educators and physicians state that we know these things, little research has been done to determine the rationale for relapse states and what can be done for the adult who relapses and how we can prevent the relapses. This would be a longitudinal, outcome study.
2. A future study proposes an investigation of diabetics that take a particular education class as a cohort and then follow up with these diabetics on their outcomes. The researcher can also follow a particular physician or health providers practice to monitor intervention and the outcomes. We would be looking for any similarity in outcomes to a particular group. Glasgow (1999) suggests that there is a great similarity in outcomes among participants within a group as opposed to randomly selected group participants. My study investigated ADA participants from many differing classes. It would be an interesting study to determine if Glasgow's finding applies to ADA class participants.
3. A future study that investigates relationships between the variables found in this study and their relationship between each other. Though this study has identified variables that the adult learner identified during their interviews, we have not studied their relationship to each other and how this relationship effects the compliance.

4. A future study that investigates compliant diabetics that did not take the ADA class and what variables emerge that effect their compliance and their transfer of learning. We have learned the variables that these diabetics who have completed an ADA class identified as important to their compliance, but what factors explain the compliance of adults who never participated in an ADA class.



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## APPENDIX

### Interview Guide

I want to talk with you about your understanding of how you perceive the disease of Diabetes. I am primarily interested in how your educational process has effected your understanding and ability to meet all the needs of the disease (compliance). Specifically, I mean the education provided by the group ADA DMSE program that you have attended. I am going to divide this interview into three differing areas with which to speak with you. I would like to begin with your diagnosis and existing knowledge of Diabetes, hence your referral. Second, I would like to speak with you about the class itself and the factors which assisted your compliance. Third, I would like to ask you about factors that would have added to your learning in the class you took for you Diabetes.

How do diabetic adult students describe their knowledge of Diabetes Mellitus before they entered the ADA group intervention program?

1. What did you know about Diabetes before you were diagnosed?.
- How did the diagnosis change your daily life?
- How did you feel about the diagnosis Diabetes before your diagnosis?

What factors on this class influence the process of compliance?

2. I would like for you to think about the group Diabetes class that you attended. Thinking about this class, tell me about the class itself and the things that assisted you in your compliance/following the directions that keep the disease under control.

What other contextual factors influenced transfer?

3. What factors would have assisted your compliance/following the directions that keep the disease under control if they had been present/changed/or added in the group class?

Post Questions

Pseudonym \_\_\_\_\_

Age \_\_\_\_\_

Ethnicity \_\_\_\_\_

Sex \_\_\_\_\_