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Body Image Perception of Adolescents with Diabetes

Cathleen E. Kessler
Grand Valley State University

BODY IMAGE PERCEPTION OF ADOLESCENTS WITH DIABETES

By

Cathleen E. Kessler

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Thesis Committee Members:

Linda Nicholson Grinstead, Ph.D., R.N.

Cynthia Coviak, Ph.D., R.N.

Donna Henderson-King Ph.D.

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ABSTRACT

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The purpose of this study was to compare body image of adolescents with diabetes to adolescents without diabetes in order to increase the awareness of the psychological, emotional, and spiritual effects that diabetes may have on an adolescent's consistently evolving body image. Neuman's systems model was applied as the theoretical framework.

A Body Image Questionnaire was completed by two groups of adolescents, one group with diabetes and one group without diabetes. Both groups completed a 100 item Body Image Questionnaire (What I Think About Me). The questionnaire consisted of 45 physical traits and 55 factors that influence or correlate to body image perception. Due to the uneven distribution of participants, (8 diabetic subjects and 34 non-diabetic subjects) the study was limited in the statistical analysis that could be performed, resulting in a descriptive analysis being done. Total mean scores were compiled for each group. The diabetic adolescent's total mean score was 3.9428, (SD = .2086) and the non-diabetic adolescent's total mean score equaled 3.8229, (SD = .4507), indicating both groups have more positive body image perceptions than negative.

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Chapter 1

INTRODUCTION

The American culture places a great deal of emphasis on physical attractiveness. In 1972, Psychology Today published a Body Image Questionnaire in their magazine and received 62,000 responses from readers. Results from this study showed that in the process of developing body image most adolescents refer to the cultural body ideal which in our society is a slim shapely woman and tall muscular man. From this study, the researchers also concluded that body image is strongly related to self esteem (Berscheid, Walster, & Bohrnstedt, 1973).

Body image develops and changes over the life span. Infants learn about their bodies through sensory stimulation and self exploration. Toddlers become adept at identifying body parts and preschoolers become aware of the wholeness of their bodies and discover their genitals. During the early school years children learn about the internal functioning of their body and begin to discriminate between body sizes and abnormalities. It is during adolescence that children become the most preoccupied with their bodies. The body they are familiar with changes and they must incorporate their new body into their identity (Wong, 1995).

Adolescence is a crucial period in the evolution of body image due to the many physical and emotional changes an individual experiences during this developmental stage (Berger, 1987). During puberty, most adolescents experience a growth spurt and these physical changes can create preoccupation with their physical body in terms of cultural and social norm and attractiveness.

Insulin dependent diabetes mellitus, (IDDM), is a chronic illness that usually manifests itself in the first 30 years of life. Diabetes is a major health phenomenon affecting approximately 100,000 American children and adolescents (Grey, Lipman, Cameron, & Thurber, 1997). The incidence of IDDM in children and adolescents is 1.6 per 1,000 (Amer, 1999). Diabetes management is complex involving daily injections, a highly structured diet, consistent monitoring of blood glucose levels and regular exercise (Reid, Dubow, Carey, & Dura, 1994). This chronic illness causes major disruptions in life style and poses life threatening or disabling possibilities. The average life expectancy for a 10 year old child with IDDM is 44 years compared to 72 years in a 10 year old without diabetes (Grey, et al. 1997).

Diabetes mellitus does not visibly distinguish one person from another, but it requires alterations in lifestyle and constant vigilance to maintain control between hypoglycemia and hyperglycemia (Tattersall, 1987). Children with diabetes may view their illness as a threat to their security or self image. They may feel they are different from their peers and resent these differences particularly since peer conformity is perceived as valuable at this stage of development (Saucier, 1984). Peer groups are prominent in an adolescent's life; they assist in identity formation and may serve as a sounding board or self help group during difficult times (Berger, 1987). Delayed sexual maturation, which may be common in adolescents with poor diabetic control may lead to feelings of inferiority or reinforce the feeling of defectiveness (Tattersall, 1987). Adolescents who view diabetes as a defect in their bodies may view themselves as unworthy and incapable of adequately managing their own care (Saucier, 1984).

The turmoil of puberty coupled with the diagnosis of diabetes may increase an adolescent's potential for altered body image (Siegel, Golden, Gough, Lashley, & Sacker, 1990). Adolescents with chronic illness are more tuned in to their bodies than their healthy counterparts and have higher potential for increased rates of body dissatisfaction (Neumark-Sztainer, et al., 1996). Diabetic adolescents in poor metabolic control have reported higher levels of anxiety and conflict with lower self concepts than diabetic adolescents in good control. Stress and anxiety can affect blood glucose control by disturbing the neuroendocrine regulatory mechanisms which activate the release of cortisol and epinephrine, causing increased levels of blood glucose and impairing glucose tolerance (Karlsson, Holmes, & Lang, 1988).

Body image is an important facet of adolescence. Changes during this developmental period are profound and encompass physiological maturation, cognitive development, expanding autonomy, and the potential for altering of support structures and social groups. Health care professionals may only become aware of the implications of body image when it is disturbed (Anderson, Janes, Ziemer, & Phillips, 1997).

Aims / Purpose

The purpose of this study was to determine if there is a difference in body image perception between adolescents with diabetes and adolescents without diabetes. Perception of body image of adolescents with diabetes was compared to perception of body image of adolescents without diabetes. Research has demonstrated that childhood and adolescent attractiveness correspond to levels of happiness. An unattractive child or teenager may be unhappy and this unhappiness can carry over into adulthood (Berscheid, Walster, & Bohrnstedt, 1973). Coping and adaptation skills differ between children,

adolescents, and adults. Adolescence is a development period characterized by change and uncertainty, as the adolescent strives to discover himself or herself and develop independence. It is a time associated with identity formation, independence and developing social skills (Berger, 1987). Poor metabolic control, low self esteem and difficulties with ego development are more common in adolescents than in prepubertal children with diabetes (Grey, Cameron, & Thurber, 1991).

The turmoil of puberty coupled with a diagnosis of diabetes increases the potential for altered body image. In Rosenbaum and Carty (1996) adolescents strive for and value being like their peers. Adolescents with a diagnosis of diabetes are at a greater risk for negative perceptions of body image because they discern that their bodies are different from their peers (Neumark-Sztainer, et al., 1996).

Problem Statement

The presence of diabetes alone may not sufficiently influence an adolescent's body image, but it may increase the risk for negative perceptions. Children with diabetes have been found to have lower self esteem, increased anxiety levels, a higher risk for depression and social withdrawal, and the potential for unhealthy weight control practices or eating disorders (Brown, Cash, Mikula, 1990, Neumark-Sztainer, et al., 1996). The consequences of body image can negatively or positively affect an individual. A positive body image may result in an adolescent who can interact positively with others, with the capacity to adapt to change (Price, 1990) and the ability to exercise self-care and maintain control over his or her illness (Grey, et al., 1997). Negative perceptions of body image may result in feelings of worthlessness, social withdrawal, poor metabolic control, and unhealthy eating practices (Neumark-Sztainer et al., 1996).

Nurses can help adolescents understand their disease and the life changes necessary to maintain control over their chronic illness. Education can provide the means by which an individual can own his or her health care (Price, 1990). Thorough nursing assessment and active listening can help identify the potential for altered body image perception, identify existing coping behaviors and support systems, uncover potentially dangerous eating habits and discover learning needs and patient goals.

Chapter 2

CONCEPTUAL FRAMEWORK AND LITERATURE REVIEW

Conceptual Framework

Betty Neuman developed a conceptual model based on a wellness oriented or holistic systems perspective (Neuman, 1995). This model focuses on an individual and her or his interactions with stressors within the environment. It provides a framework for collecting data and identifies pertinent areas of assessment. The Neuman systems model encompasses five interacting variables of the client system. These variables are (1) physiological, body structure and functioning, (2) psychological, mental processes and relationships, (3) sociocultural, combined social and cultural factors, (4) developmental, life stage, developmental processes, and (5) spiritual influence (Neuman, 1995).

In applying Neuman's theory to the perception of body image in adolescents with diabetes, the five variables interrelate and determine how protective mechanisms, (boundaries), function to protect the core, (body image), from stressors. Each client system is a unique combination of common known factors and innate characteristics (Fawcett, 1995). The client, (adolescent), has various boundaries that protect the core, (body image), from stressors. Stressors are defined as "tension-producing stimuli with the potential for causing system instability" (Neuman, 1995).

The first protective mechanism is the flexible line of defense. The flexible line of defense is rapidly changeable, and it expands and contracts to moderate the impact of stressors. The flexible line of defense is comprised of composites from the five variables that change rapidly in response to environmental stressors. The function of the flexible line of defense is to protect the normal line of defense.

The normal line of defense represents an individual's usual wellness level. It encompasses the individual's normal range of response to a stressor. The normal line of defense develops over the lifetime of the individual and changes slowly. It can be compromised when the flexible line of defense cannot withstand the stressor. Stressors differ in their potential for disturbing a client's normal line of defense or usual wellness level. The interrelationships of the five client variables: physiological, psychological, developmental, spiritual, and sociocultural affect the protection afforded by the flexible and normal lines of defense and the internal lines of resistance (Fawcett, 1995).

The final protective mechanisms are the internal lines of resistance. The internal lines of resistance act to preserve the human system. Their function is to stabilize the normal line of defense and return the core to a state of wellness and possibly increase the level of stability. For the purpose of the phenomenon of body image of the adolescent with diabetes, the core represents body image. There is a reciprocal exchange of energy between the core and the environment.

Body image is an individual's consistently evolving discernment of his or her physical body and its physiologic functioning. It is influenced by spiritual beliefs, sociocultural factors, growth and development, psychological stability, physiological functioning and physical appearance, and is consistently reinforced by other's responses towards the individual (Price, 1990). Research findings by Brown, Cash, and Mikula (1990) support the appropriateness of a multidimensional perspective in defining body image. It includes cognitive behavioral factors as well as affective elements. Adaptation to chronic illness in childhood is a complex process that involves internal and external

mechanisms that influence an individual's responses and ability to adapt to the disease process (Grey, et al. 1991).

According to Neuman's model, health is defined as the stable internal functioning of the client in relation to internal, external, and created environmental stressors (Mcholm & Geib, 1998). The Neuman systems model focuses on the reactions of individuals to stress and on the conditions that influence the reduction of stress and the restoration of health (Neuman, 1995). The client and the environment interact and adjust to each other with varying degrees of balance. Environmental stressors may cause positive, negative or neutral responses in clients. The amount and type of impact is determined by natural and learned resistance which is evident in the strength of the flexible and normal lines of defense and the internal lines of resistance. The available resistance to stressors is based upon the strengths and weaknesses of the five interacting client system variables.

Neuman (1995) describes three levels of nursing intervention as primary, secondary, and tertiary. The goal of primary prevention is to deter the stressor from penetrating the flexible line of defense by eliminating the stressor or strengthening the defense. Secondary prevention is appropriate after a reaction has occurred. Nursing interventions are aimed at strengthening the lines of defense. Tertiary prevention occurs following treatment of a stressor or reaction. This includes adaptation, rehabilitation and education.

In developing body image perception an individual utilizes Neuman's five variables: physiological, psychological, spiritual, developmental, and sociocultural. This model works well in describing and explaining the dynamic evolving nature of an individual's development of body image. The interactions of the five client variables in

Neuman's model constitute the amount of protection available from the flexible and normal lines of defense and the internal lines of resistance. These interactions affect the response of the adolescent to stressors. The adolescent must expend energy to deal with these stressors and the impact may be positive, negative, or neutral. Adaptation to a chronic illness in adolescence is a difficult process involving internal and external stressors that influence an adolescent's responses, reactions, and stability level.

An intact normal line of defense, according to Neuman's systems model, would indicate a state of wellness or positive body image. A disrupted normal line of defense would indicate a decrease in stability, or a negative body image. Stressors involved in body image can be internal, such as a change in blood glucose levels; external, such as support group involvement; created, such as the adolescent's perception of how others see him or her.

Adolescents identify health as well-being, absence of illness, being fit, dealing with problems, and taking responsibility (Rosenbaum & Carty, 1996). Adolescents with a new diagnosis of diabetes will be more receptive to learning about their illness and incorporating the lifestyle changes necessary to effectively maintain control if peer group involvement is available. The changes due to puberty place an adolescent at greater risk for body image alteration, but with culturally congruent education and support, adolescents can be active participants in the management of their disease and gain a sense of control and empowerment in their lives.

Review of the Literature

Adolescence is a crucial period in the development of body image because of the vast physical and emotional changes an individual experiences (Seigel, Golden, Gough, Lashley, & Sacker, 1990). Many research studies focusing on psychological stability, age, gender, family and peer relationships, and eating disorders have been conducted with adolescents who have insulin dependent diabetes mellitus.

Psychological Stability

According to Seigel and colleagues (1990), adolescents with chronic illnesses scored higher on the Beck Depression Inventory, ($p < 0.001$) and scored lower on the Rosenberg Scale of Self Esteem than their healthy counterparts when matched for age groups and socioeconomic status. The study group consisted of 80 adolescents with a chronic illness, (20 with sickle cell anemia, 40 with asthma, and 20 with diabetes). The control group contained 100 healthy adolescents. The mean depression score in the study group, (adolescents with a chronic illness) was 15.4, (SD = 8.6), which was nearly twice as high as the control group (healthy adolescents), with mean scores of 8.7, (SD = 7.2). The study group was more likely to have low self esteem, (79%), than the control group, (19%). Evidence from this study supports the theory that the turmoil of puberty coupled with the diagnosis of a chronic illness increases the possibility of decreased self esteem and the potential for altered body image.

Cadman and colleagues (1987) investigated the mental and social well-being in chronically ill, disabled, and healthy children between the ages of 4 and 16. The children with chronic illness coupled with a disability had three times the risk for psychiatric and social adjustment difficulties than healthy children.

A 1991 study by Newacheck, McManus and Fox found that adolescents with chronic conditions are more likely than adolescents without chronic illness to experience behavioral problems. Examining data based on the Behavioral Problems Index, adolescents ages 12 to 17 years with one or more chronic illnesses had 35% more behavioral problems than adolescents without chronic conditions ($p < .01$). The behavioral problems identified included trouble getting along with other children, not being liked by other children, being withdrawn, and feeling that others are out to get him/her. The sample population for this study came from the 1988 National Health Interview Survey on Child Health and included 7,465 children between the ages of 10

and 17.

Family / Peer Relationships

The purpose of a research study by Rosenbaum and Carty (1996) was to explain the meanings and experiences of adolescents in relation to their own health care within their peer subculture and family relationships. Four major themes particular to adolescents were defined: (1) care meant "being there", listening in confidence, helping, gift giving, humor, and demonstrating love in time of need; (2) health meant well-being, absence of illness, being physically fit dealing with problems, and acting responsibly; (3) adolescents value family, friends, education, money, sports, and honesty; (4) clothes, hair and music were metaphors for adolescent's developing identities. This study supports the evidence that adolescents strive for and value being like their peers. The dietary demands, consistent monitoring of blood glucose levels and the need for regular exercise do not always coincide with the typical adolescent's schedule and increase the diabetic adolescent's feelings of being different from his/her peers.

Research on diabetic adolescents by Hanson, Henggeler, and Burghen (1987) indicated that high adherence to the diabetic regimen, positive family relationships, and low life stress were associated with good metabolic control ($p < .001$). This study of 93 adolescents examined the contributions of psychosocial variables as they related to health outcomes of adolescents with insulin dependent diabetes mellitus. Health outcome measures included adherence and metabolic control as indicated by glycosylated hemoglobin (Hgb A1c) levels. HgbA1c is a blood test that indicates the average level of blood sugar over a two to three month period. As red blood cells circulate through the body, hemoglobin and glucose combine to form glycohemoglobin. The amount of glycohemoglobin formed depends on how much glucose is available in the blood stream over the 120 day life span of the red blood cells.

The psychosocial variables of Hanson, et al.'s (1987) study included age, chronic life stress, social competence, family relations, and knowledge about IDDM. The zero order correlation matrix for the seven variables showed that HgbA1c was significantly correlated with adherence ($r = -.30$, $p < .002$), stress ($r = .24$, $p < .010$), and family relations ($r = -.22$, $p < .017$). High adherence, positive family relationships, and low life stress were associated with good metabolic control. Psychosocial variables that were significantly and positively associated with adherence included social competence ($r = .25$, $p < .008$), family relations ($r = .31$, $p < .001$), and family knowledge about IDDM ($r = .26$, $p < .007$). Adolescent age was negatively correlated with adherence ($r = -.21$, $p < .022$). Good adherence was associated with social competence, positive family relationships, the family's knowledge regarding IDDM, and younger adolescent age. Correlations among the psychosocial variables that were significant included family

relationships and social competence ($r = .31$, $p < .001$)), family relationships and chronic stress ($r = -.33$, $p < .001$), family relationships and adolescent age ($r = -.36$, $p < .001$), and family knowledge about IDDM and social competence ($r = .26$, $p < .007$). Limitations of this study include; (1) the sample population was predominately middle class, based on a four factor index of socioeconomic status; (2) the study lacked ethnic diversity, 88% of the participants in the study were white, 12% were black, other ethnic groups were not included in the sample.

Multiple regression analysis showed that adherence, stress, social competence, family relationships, knowledge about IDDM, and adolescent age accounted for 14.5% of the variance in predicting metabolic control ($p < .031$). Adherence ($p < .029$) and stress ($p < .052$) were the only variables directly associated with metabolic control. Good metabolic control was predicted by high adherence and low stress. Stress, social competence, family relationships, knowledge about IDDM, and adolescent age accounted for 18.5% of the variance in predicting adherence ($p < .003$). Family knowledge about IDDM was the only variable significantly associated with adherence when the other variables were controlled ($p < .029$). Family relationships ($p < .099$) and adolescent age ($p < .086$) were marginally associated with adherence. Good adherence was predicted directly by high family knowledge concerning IDDM, positive family relationships, and young adolescent age (Hanson, et al., 1987).

Age

In a longitudinal study by Jacobson, et al. (1987) it was found that adolescents, (ages 13 to 15 years) were less compliant with the diabetic regimen than their preadolescent, (ages 9 to 12 years) counterparts with diabetes. The developmental

milestones for preadolescence and adolescence vary, with adolescence characterized by intensified feelings about body functioning, sexuality, and independence from parents. Preadolescent children tended to be more tied to parental values, were less concerned about independence and were more compliant with the requirements of diabetes.

Age significantly influenced compliance with diet ($p < 0.04$) and metabolic monitoring ($p < 0.01$). Preadolescents had higher compliance scores than did adolescents. The adolescents in the group aged 13 to 15 years, were less compliant in adherence to a diabetic regimen than preadolescents aged 9 to 12 years. The mean time from diagnosis of diabetes to participation in the study within the groups was 5.5 months, (SD = 3.1 months). Hgb A1c levels were used to assess metabolic control. The mean HgbA1c level during the first nine months of the study was 8.6 (SD = 1.94). During the second nine month period HgbA1c levels were at a mean of 9.1 (SD = 1.75). As time progressed metabolic control lessened and HgbA1c levels rose.

Eating Behaviors / Gender

Adolescents with a diagnosis of diabetes are at a greater risk for negative perceptions of body image because they discern that their bodies are different from their peers (Neumark-Sztainer, et al., 1996). The study population consisted of 310 adolescents (158 female and 152 male) with diabetes and 850 (409 female and 441 male) adolescents without a chronic illness. The mean age of the sample population in the 1996 study was 14.9 years, (SD = 1.8) and the range between 12 and 18 years.

Pearson's Chi-square tests were used to compare binge eating and purging activities among index and control groups by gender. Chi-square and student's t-tests were used in comparing categoric and continuous key predictor variables, respectively,

among males and females with and without diabetes. Stepwise multiple regression analyses using a backwards method of model selection, in which all variables are entered in the first step and insignificant predictor variables are subsequently removed from the model, were used to identify significant predictors of problematic eating behaviors among adolescents with and without diabetes. Binge eating and purging behaviors were more prevalent among females and males with diabetes than among the comparison group. Frequent dieting for weight loss (more than five times per year) was also more prevalent among adolescents with diabetes than the comparison group. Adolescents with diabetes demonstrated more concern over their weight than non-diabetic adolescents.

An earlier study by Neumark-Sztainer, et al. (1995) linked body dissatisfaction to unhealthy weight control practice in adolescents. In this 1995 study the sample population consisted of 2149 adolescents with a chronic illness and 1381 adolescents without; the mean age was 14.9 years, (SD = 1.8). Ethnic breakdown included 88.6% white, 6.5% black, 1.1% Hispanic, 1.3% American Indian, and 2.5% Asian or Pacific Islander. There were no significant differences between index and control groups for age, socioeconomic status, race, and body mass index. Adolescent females without chronic illness (17%) demonstrated consistently lower rates of body dissatisfaction than those with diabetes (25.2%), asthma (22.3%), attention deficit disorder (23.6), and seizure disorders (20.6%). A similar pattern was noted for male adolescents. Males without chronic illness (14.7%) reported less body dissatisfaction than those with diabetes (24.5%), asthma (23.2%), attention deficit disorder (24.8%), and seizure disorders (23.9%). A high percentage of adolescent females reported binge eating (30.6%), vomiting (22.5%), using laxatives or diuretics (7.2%) and dieting more than five times per year (22.5%). Odds ratios were

calculated to compare each category of chronic illness. The odds ratios were calculated above 1.0 indicating a similar pattern to that found in bivariate analyses, indicating that adolescents with chronic illness are more likely to be dissatisfied with their bodies and engage in unhealthy weight control practices than adolescents without chronic illness.

Spiritual Beliefs

A 1993 study by Resnick, Harris, and Blum (1993) involving 36,254 7th to 12th grade students examined protective factors against quietly disturbed and acting out behaviors. Multivariate models demonstrated the protective function of caring and connectedness to family and school in the lives of the adolescents. A sense of spirituality and low family stress also functioned as protective mechanisms. Acting out behaviors were identified as drug use, school absenteeism, risk of unintentional injury, pregnancy risk, and delinquency risk. Quietly disturbed behaviors were identified as poor body image, disordered eating, emotional stress, and suicidal involvement.

Among the adolescents the most powerful protective factor against quietly disturbed behaviors was family connectedness, referring to adolescents who indicated they enjoyed, felt close to, and cared for by family members. This variable explained 12.5% of the variance in group classification. School connectedness, the second explanatory variable, referred to students who experienced a sense of belonging and connectedness to school. Family stress, the third variable, was a mix of parental unemployment, domestic violence, poverty, parental substance abuse, with low family stress functioning as a protective factor. Spiritual connectedness referred to adolescents identifying themselves as spiritual or religious individuals. The importance of religious or spiritual connectedness in

this multivariate assessment demonstrates that adolescents who describe themselves as religious are less likely to engage in high risk behaviors than their counterparts.

Implications for Study

Nurses need to be aware of the risks and problems that adolescents may encounter when adapting to their illness. Adolescence is often a turbulent time with emphasis on physical bodily changes, sexual development, and self image. The research supports evidence that adolescents with insulin dependent diabetes mellitus are at risk for depression, anxiety, low self esteem, poor adaptation, and unhealthy eating practices. Nurses have the potential to screen their adolescent clients for coping skills and adaptation to their illness. Early recognition and treatment of problems may increase adherence, help metabolic control, and improve long-term outcomes.

Research Question

Research question: Is there a significant difference in body image perception between adolescents with diabetes and adolescents without diabetes?

Definition of Terms

Body image is an individual's consistently evolving concept of his/her physical body and its physiologic functioning. It is influenced by spiritual beliefs, culture, growth and development, psychological stability, physiological functioning and physical appearance, and other's responses towards the individual (Price, 1990).

Adolescence is the period of development between childhood and adulthood. Changes during adolescence are profound and encompass physiologic maturation, cognitive development, psychological development, exploration of autonomy, and restructuring of social groups (Berger, 1987).

Chapter 3

METHODS

Design

The primary purpose of this nonexperimental, correlational, cross sectional study is to determine if there is a significant difference in body image perception between adolescents with diabetes and adolescents without diabetes. The independent variable is adolescent diabetes present or absent. The dependent variable is body image. This study is based upon an adolescent population, ages 13 to 16. Factors that may influence the dependent variable could be family history of diabetes, length of time since initial diagnosis, amount of control over their illness, confidence in self care ability, recent problems with peer relationships, blood sugar levels during the data collection, other chronic illnesses or disabilities, and attitude at the moment.

Benefits of a non-experimental form of research include: (a) minimal risks to participants due to the absence of invasive procedures, (b) the convenience of collecting data over short periods of time, (c) minimal education or training required for participants or those involved in the data collection process, (d) limited financial expense associated with conducting the research (Polit & Hungler, 1999). Problems anticipated while conducting the research include: (a) obtaining an adequate sample size, (b) participant's ability to understand the instructions, (c) lack of experimental control, participants may respond to items on the questionnaire in an inconsistent manner depending on external influences such as time constraints, distractions, or lack of interest.

Population and Sample

Adolescence is the age when children become most concerned about their physical body, because of the many physical changes occurring. Body image formation during adolescence is crucial in shaping identity. Adolescents were the target population of this study. Data were collected at two sites. Site one was a pediatric endocrinologist office. Site two was a local high school. The high school that was chosen is a Class A school with approximately 1,050 students in grades nine through twelve. Formal letters granting permission to work with the adolescents from the high school and through the pediatric endocrinologist's office were signed and filed with the Human Research Review Committee at Grand Valley State University. Prior to data collection, the study proposal was approved by Grand Valley State University Human Research Review Committee and the Internal Review Board of Spectrum Health (Appendices A and B).

Diabetic subjects were recruited from the physician's office. Inclusion criteria were (a) adolescent between the ages of 13 and 16 with a diagnosis of diabetes, (b) no other disabilities, (c) grade level in school appropriate to age. Non-diabetic subjects were recruited from the local high school. Inclusion criteria were (a) adolescent between the ages of 13 and 16, (b) no history of diabetes or disabilities, (c) grade level in school appropriate to age. Parental consent was obtained for the adolescents to participate in this study. Participation in the study was voluntary.

Thirty-nine participants were recruited from the high school. Five of these were omitted from the study due to incompleteness of the questionnaire, where greater than 50% of the questions were left unanswered. Eleven subjects were recruited from the physician's office and three were omitted because they responded to less than 50% of the

items from the "What I Think About Me" questionnaire and demographic information sheet. A total of 42 subjects met the criteria for data analysis.

The ages of the final sample population (N = 42) ranged from 14 to 16 years of age with the mean age 14.79 years (SD = .68). The sample included 22 females (52.4%) and 20 males (47.6%). The majority of the students were in the ninth grade for the school year 2000/2001, N = 39 (92.9%), followed by tenth grade with two adolescents (4.8%) and one participant in the eleventh grade (2.4%).

Of the sample population 34 adolescents (81%) do not have diabetes and 8 (19%) are diabetic. Of the eight adolescents with diabetes one has an insulin pump (12.5%). The adolescents with diabetes have had the disease for an average of 1.88 years (SD =.35). Other chronic illnesses were identified in 8 of the adolescents (19%) one from the diabetic group and seven from the non-diabetic group.

The participants in this study were primarily Caucasian. The racial breakdown of the sample population is as follows: white 81% (n=34), African American 9.5% (n=4), Hispanic 2.4% (n=1), Asian 4.8% (n=2), and other 2.4% (n=1). Table 1 provides a summary of the demographic characteristics of the sample population.

Table 1

Demographic Characteristics of Adolescents Completing the "What I Think About Me Questionnaire".

Characteristics	Groups		
	Diabetic (n=8)	Non-Diabetic (n=34)	Total (n=42)
Gender (frequency)			
Female	3 (37.5%)	19 (55.9%)	22 (52.4%)
Male	5 (62.5%)	15 (44.1%)	20 (47.6%)
Age in years (mean)	14.75 (SD=.89)	14.79 (SD=.64)	14.79 (SD=.68)
Grade (frequency)			
9th grade	5 (62.5%)	34 (100%)	39 (92.9%)
10th grade	2 (25.0%)		2 (4.8%)
11th grade	1 (12.5%)		1 (2.4%)
Other Chronic Illnesses (frequency)	1 (12.5%)	7 (20.6%)	8 (19%)
Race (frequency)			
White	7 (87.5%)	27 (79.4%)	34 (81.0%)
African American	1 (12.5%)	3 (8.8%)	4 (9.5%)
Hispanic		1 (2.9%	1 (2.4%)
Asian		2 (5.9%)	2 (2.8%)
Other		1 (2.9%)	1 (2.4%)

Instrument

There are many instruments available to measure body image. Body image is a complex phenomenon. It focuses on an individual's feelings and attitudes towards his or her own body and encompasses much more than physical attributes (Fawcett & Frye, 1980). In 1953, Secord and Jourard developed a scale to measure satisfaction with ones own body, the body cathexis scale. They also developed a self cathexis scale to determine general self satisfaction. Secord and Jourard believed that body perception is intertwined with self concept. In their 1953 study they tested the hypothesis that (1) feelings concerning the body are commensurate with feelings about the self, (2) negative feelings about the body are associated with anxiety, (3) negative feelings about the body are associated with feelings of insecurity involving the self. The items used to measure body cathexis and self cathexis were refined using college students. Items from the original scales were eliminated that were difficult to understand, difficult for the subject to assign a meaningful rating to, or resulted in little variability from subject to subject. The finalized Body Cathexis Scale and Self Cathexis Scale was administered to 70 males and 56 females. Their study concluded that the split half reliability for the two scales were satisfactory, $r = .81$ for body cathexis, and $r = .90$ for self cathexis. No important differences between means of the various scores for the two sexes were obtained.

In 1981 Tucker revealed a test - retest reliability coefficient of 0.87. Based on his analysis he concluded that the scales developed by Secord and Jourard are stable and consistent measurements of an individual's feelings about his / her own body. A subsequent study in 1984 by Hammond and O'Rourke on 398 subjects substantiated the reliability and validity of the scales and Tucker's conclusions. Their sample population

consisted of 398 individual's ranging in age from 14 to 22 years with a median age of 17.5.

Lerner, Karabenick, and Stuart in 1973, collected data from 308 college students focusing on self concept and body image. Body satisfaction ratings were significantly related ($p < .01$) to self concept scores. A 1982 study by Mayer and Eisenberg determined that Secord and Jourard's Body Cathexis Scale and Self cathexis Scale had split half reliability of ($r = 0.81$) and high validity for what the scales measure, which is satisfaction with one's own body and general self satisfaction. They determined that the scales are valid measures of body image perception and self satisfaction.

The Body Cathexis Scale and Self Cathexis Scale were combined into the "What I Think About Me" questionnaire (Appendix C). The reliability coefficient for this instrument was Alpha = .9599, using Cronbach's alpha. The value of the reliability coefficient can range between .00 and +1.00, higher values reflect a higher degree of internal consistency (Polit & Hungler, 1999). Readability of this questionnaire based on the Flesch-Kincaid scale is Grade Level 6.

Procedure

The subjects from the physician's office practice were recruited over a period of six weeks. It was anticipated, based on typical appointments during this time frame that a sample population of approximately 30 to 40 adolescents would be recruited. Unfortunately even though multiple strategies were used to increase the number of participants, recruitment was low. The population from the local high school was recruited from ninth grade English classes. In excess of 100 students would be available for the study. However, after allowing for parental consent, the return of the parental consent

forms, and the voluntary participation of the students, it was anticipated that between 50 and 75 students would be in the sample population.

The participants were asked to complete a 100 item questionnaire on body image, (What I Think About Me, Appendix C) that was analyzed as the basis for this study. Each questionnaire included nine demographic questions. The demographic information differed slightly between the groups. The demographic information for the sample population at the physician's office included: sex, age, grade in school, whether or not they have an insulin pump, how many years or months they have had diabetes, if they have any other health care problems, race, family life satisfaction, and if they believe in a higher power (Appendix D). The demographic information for the sample population at the local high school included: sex, age, if they have diabetes and if so for how long, if they have any other health care problems, race, family life satisfaction, and if they believe in a higher power (Appendix E).

The recruitment process for the diabetic participants from the physician's office was as follows:

The receptionist was given a verbal script to read to parents and adolescent patients (Appendix F), copies of the parental consent form (Appendix G), the introductory statement (Appendix H) and the "What I Think About Me" questionnaire. As patients checked in for their scheduled appointments, the receptionist identified those who were between the ages of 13 and 16. She presented the introductory statement to the parent and based on interest she provided the consent form and the "What I Think About Me" questionnaire. Participation by the adolescent was strictly voluntary; however, he/she must have parental consent in order to participate in the study. The adolescent was

allowed to complete the questionnaire in privacy. After completion, the consent form and questionnaire were placed in separate envelopes, sealed, and picked up on a weekly basis by the principal researcher. If the adolescent did not complete the "What I Think About Me" questionnaire prior to seeing the physician, he/she could choose to complete the questionnaire after his/her visit and mail it in the stamped, return addressed envelope provided.

The recruitment process for non-diabetic participants at the high school was as follows:

One week prior to presentation of the "What I Think About Me" questionnaire during ninth grade English classes an introductory letter (Appendix I) and consent form (Appendix J) were mailed to the parents of the students in ninth grade English classes. In order for the child to participate in the study the consent form had to be mailed back to the researcher using the enclosed return addressed, stamped envelope, or returned to the ninth grade English teacher. Participation by the adolescent was strictly voluntary. The "What I Think About Me" questionnaire was introduced (Appendix K) to those students with parental consent during their scheduled English class. Those students without consent or who chose not to participate were allowed this time for additional study. In order to maintain anonymity students were asked not to write their names on the questionnaire. After completing the questionnaire the students turned it in to the principal researcher. Those students who finished prior to the end of class used the additional time to study.

Chapter 4

RESULTS AND DATA ANALYSIS

Statistical Techniques Used for Analysis

The purpose of this study was to determine if there is a difference in body image perception between adolescents with diabetes and adolescents without diabetes. This study used a descriptive design. Using descriptive statistics frequencies and percentages and when applicable, means and standard deviations were determined for each question on the "What I Think About Me" questionnaire. A total mean score for each group was also calculated. Descriptive statistics were performed in a similar manner to previous studies to maintain consistency. Data from the returned questionnaires were entered into Microsoft Word, and then converted to a text file for use in the Statistical Package for the Social Sciences (SPSS Version 9.0). Analysis of the data was conducted using SPSS, significance level was set at (0.5). Data analysis was performed to describe the demographic characteristics of the sample population. The responses to the survey questions were entered as a whole and then divided by group, diabetic adolescent or non-diabetic adolescent, and placed in rank order from highest to lowest value (Appendices L and M).

The independent variable in this study is adolescent diabetes, present or absent. The independent variable is measured on a nominal scale. The dependent variable is body image. It was measured on an ordinal scale as responses were based on a Likert type scale. Body image was measured using characteristics from the "What I Think About Me Questionnaire" with mean scores calculated for each item along with a total mean score for each group.

Characteristics of Subjects

The population for this study was a convenience sample of 42 adolescents aged 14 to 16. The population was derived from two sources as outlined in Chapter 3. Typically a two sample t-test would be used to analyze the difference between the means of the two groups. Due to the uneven distribution of participants, (8 diabetic subjects and 34 non-diabetic subjects) and small number of diabetic adolescents the study was limited in the statistical analysis that could be performed, resulting in a descriptive analysis being done.

Descriptive Data and Research Question Testing

Adolescents were asked to rank their feelings at the present time as they relate to 100 items on the "What I Think About Me" questionnaire. The questionnaire consists of 45 physical characteristics and 55 factors that influence or correlate to body image. The ordering of the responses was based on a Likert type scale as follows: (1) have strong feelings and wish change could somehow be made, (2) don't like, but can put up with, (3) have no particular feelings one way or the other, (4) am satisfied, (5) consider myself fortunate. A higher number response (five is greater than one) indicates a more positive perception. The items on the questionnaire were identical for both groups, however the order of ranking was different between the two groups. Using SPSS the 100 items were placed in rank order from highest to lowest (Appendices L and M). The item mean was used to formulate the final order of the rankings. A total mean score was also calculated for each group.

The ten highest ranking items in order for the non-diabetic adolescents are listed in Table 2. The ten highest ranking items in order for diabetic adolescents are listed in Table 3.

Table 2

Adolescents Without Diabetes Ten Highest Ranking Items

Item	N	Minimum	Maximum	Mean	Std. Deviation
Dreams	34	3	5	4.53	.66
Taste in Clothes	34	3	5	4.53	.71
Gender	34	2	5	4.50	.79
Manners	34	3	5	4.38	.60
Morals	34	3	5	4.38	.70
Intelligence	34	2	5	4.35	.81
Sympathy	34	3	5	4.32	.73
Personality	33	2	5	4.30	.85
Meeting People	34	2	5	4.29	.91
Life Goals	34	2	5	4.29	.76

Table 3

Adolescents With Diabetes Ten Highest Ranking Items

Item	N	Minimum	Maximum	Mean	Std. Deviation
Gender	8	4	5	4.88	.35
Taste in Clothes	8	4	5	4.75	.46
Body Build	8	4	5	4.63	.52
Energy	8	4	5	4.63	.52
Dreams	8	3	5	4.50	.76
Conscience	8	4	5	4.50	.53
Intelligence	8	4	5	4.50	.53
Self Respect	8	4	5	4.50	.53
Self Understanding	8	4	5	4.50	.53
Morals	8	4	5	4.50	.53

The highest ranking items common to both groups included dreams, taste in clothing, being male or female, morals and intelligence, although the items were not ranked in the same order between the two groups. The items that differed among the two groups are body build, energy, conscience, self respect and self understanding which were choices of the diabetic adolescents; and manners, ability to express sympathy, personality, ability to meet people and life goals which were included in the highest rankings of the adolescents without diabetes.

Table 4 displays the ten items that were rank ordered with the lowest ratings by the adolescent group without diabetes. Table 5 displays the diabetic adolescent's ten lowest ranking items on the "What I Think About Me" questionnaire.

The characteristics that were the same between the two groups of adolescents among the ten lowest ranking items are the ability to accept criticism, elimination, fears, and moods. Characteristics that were included by the diabetic adolescents are ankles, wrists, digestion, health, feet, and teeth. Items selected by the adolescents without diabetes and not included in the diabetic rank order are neatness, handwriting, complexion, weight, waist, and procrastination.

The research question was to determine if there is a significant difference in body image perception between adolescents with diabetes and adolescents without diabetes. This question cannot feasibly be answered based on the data collected. The research data came from two disproportionately represented groups. Based on this study there is insufficient evidence to answer the research question, however total mean scores were calculated for each group. The diabetic adolescent's total mean score was 3.9428, (SD = .2086) and the non-diabetic adolescent's total mean score was 3.8229, (SD = .4507).

Table 4

Adolescents Without Diabetes Ten Lowest Ranking Items

Item	N	Minimum	Maximum	Mean	Std. Deviation
Accept Criticism	34	1	5	3.38	1.13
Elimination	31	2	5	3.35	.75
Neatness	34	1	5	3.35	1.25
Handwriting	34	1	5	3.35	1.15
Complexion	34	1	5	3.35	1.10
Fears	34	1	5	3.21	1.10
Weight	34	1	5	3.18	1.01
Moods	34	1	5	3.18	1.53
Waist	34	1	5	3.15	1.46
Procrastination	34	1	5	2.79	1.32

Table 5

Adolescents With Diabetes Ten Lowest Ranking Items

Item	N	Minimum	Maximum	Mean	Std. Deviation
Ankles	8	2	4	3.50	.76
Wrists	8	3	4	3.38	.52
Fears	8	3	4	3.25	.46
Accept Criticism	8	2	5	3.25	1.04
Digestion	8	1	5	3.25	1.28
Elimination	7	3	4	3.14	.38
Health	8	1	5	3.13	1.36
Feet	8	2	4	3.13	.83
Moods	8	2	4	2.88	.99
Teeth	8	1	4	2.88	1.13

Other Findings of Interest

The group of diabetic adolescents had two characteristics with a mean below three, (three indicates a neutral feeling), teeth and moods. The non-diabetic adolescent group had one characteristic with a mean below three, procrastination. In the rank order of the ten lowest rated items the diabetic group included four physical characteristics (ankles, wrists, feet, and teeth), two bodily processes (elimination and digestion), health, and three developmental or emotional items (fears, the ability to accept criticism, and moods). The non-diabetic group included three physical characteristics in rank order of the ten lowest rated characteristics (complexion, weight, and waist), one bodily process (elimination), and six developmental or emotional issues (ability to accept criticism, neatness, handwriting, fears, moods, and procrastination).

The ten highest ranking items for the diabetic adolescents were comprised of one physical trait (body build), and nine developmental, psychosocial or emotional attributes (being male or female, taste in clothing, energy, dreams, conscience, intelligence, self respect, self understanding, and morals). The ten highest ranking items for the non-diabetic group were all either developmental, psychosocial or emotional in nature (dreams, taste in clothing, being male or female, manners, morals, intelligence, being able to express sympathy, personality, the ability to meet people, and life goals).

Appendix N compares the means and standard deviations of each groups response to the items on the questionnaire. The following five responses had the widest differences in means between the two groups; body build diabetic adolescents (M = 4.63, SD = .74) non-diabetic adolescents (M = 3.41, SD = 1.26), waist diabetic adolescents (M = 4.13, SD = .64) non-diabetic adolescents (M = 3.15, SD = 1.46), complexion diabetic adolescents

(M = 4.23, SD = .46) non-diabetic adolescents (M= 3.35, SD = 1.10), chest diabetic adolescents (M = 4.38, SD = .74) non-diabetic adolescents (M = 3.50, SD = 1.13), and health diabetic adolescents (M = 3.13, SD = 1.36) non-diabetic adolescents (M = 3.97, SD = 1.17).

The characteristic elimination was not answered, as indicated in data analysis with a nine, by four of the adolescents (9.5%). Elimination was the most frequently missed item on the questionnaire. This item received a rating of (3) by 25 (59.5%) of the sample population.

Each participant was asked to circle the response that best tells how they feel about their family life. The responses were based on a Likert type scale and the choices included; (1) have strong feelings and wish change could somehow be made, (2) don't like, but can put up with, (3) have no particular feelings one way or the other, (4) am satisfied, (5) consider myself fortunate. The analysis of their responses is as follows; 4.8% (n=2) responded by selecting (1), 7.1% (n=3) chose response (2), 2.4% (n=1) circled (3), 28.6% (n=12) selected (4), and the majority of subjects 57.1% (n=24) indicated response (5).

When the participants were asked to reply to the demographic question, Do you believe in God or a higher power?, 92.9% (n=39) indicated yes, 4.8% (n=2) indicated no and one participant did not answer the question 2.4% (n=1). Unanswered items were indicated with a nine (9) in the data analysis.

Chapter 5

DISCUSSION AND IMPLICATIONS

Discussion of Findings and Conclusions

The purpose of this study was to determine if there is a difference in body image perceptions between adolescents with diabetes and adolescents without diabetes. The statistical analysis of the data collected during this study was limited by the small diabetic sample and disproportionate representation of the two groups, n = 8 (diabetic), and n = 34 (non-diabetic). The information from this study, while unable to statistically answer the research question, is unique because previous studies have not examined body image of adolescents with diabetes.

Since the review of literature did not produce any studies that examined body image of adolescents with diabetes, it is difficult to compare results from this study to previous research. Previous studies focused on psychological stability, family and peer relationships, age, eating behaviors and gender, and spiritual beliefs (Seigel, et al., 1990; Cadman, Boyle, Szatmari & Offord, 1987; Newacheck, McManus & Fox, 1991; Rosenbaum & Carty, 1996; Hanson, Henggeler & Burghen, 1987; Jacobson, et al., 1987; Neumark-Sztainer, et al., 1996; Resnick, Harris & Blum, 1993). Based on prior research that found increased incidences of depression, low self esteem, disturbances in eating behaviors, difficulty with relationships, and risk taking behaviors in adolescents with diabetes or other chronic illnesses, it would seem natural to assume that the diabetic adolescents in this study would have a more negative perception of body image than adolescents without diabetes. The adolescents in this study had more positive or neutral

perceptions of body image, but because of the sample population firm conclusions cannot be drawn from this study.

While other studies did not look specifically at body image perception, they did look at other components that may interfere with or contribute to an adolescent's evolving development of body image. Seigel and colleagues (1990) found higher incidences of low self esteem in adolescents with chronic illness. Their 1990 study included 80 adolescents with chronic illness, 20 of which were diabetic. Lerner, et al. (1973) found a positive relationship between body image satisfaction and self concept. In this current study, Body Image Perceptions of Adolescents with Diabetes, the diabetic adolescents ranked self respect and self understanding in the ten highest ranking characteristics, out of 100, ($M = 4.50$, $SD = .53$) on each of these items. The non-diabetic adolescents ranked self understanding, ($M = 4.18$, $SD = .80$), and self respect, ($M = 4.12$, $SD = .98$) lower. Based on the comparisons between the scores from the diabetic and non-diabetic adolescents, the diabetic adolescents rank ordered self understanding and self respect higher than the adolescents without diabetes. This may possibly be explained by regular visits to a health care provider. The physician's office that participated in this study places a high priority on patient education. Diabetic nurse educators work closely with diabetic adolescents and their families to ensure that they understand the disease process and life style changes that must be incorporated to maintain control over their disease. According to Neuman's systems model these measures may increase the efficacy of the lines of defense and protect the core (body image) from stressors. Education and understanding can provide the means for an adolescent to own their health care (Price, 1990).

Research by Hanson, Henggeler and Burghen (1987) demonstrated that good family relationships were significantly and positively associated with good metabolic control and adherence to the diabetic regimen for adolescents. In the current study the adolescents who participated were asked to circle the response that best tells how they feel about their family life at the time. Responses were based on a Likert type scale and included: (1) have strong feelings and wish change could somehow be made, (2) don't like but can put up with, (3) have no particular feelings one way or the other, (4) am satisfied, (5) consider myself fortunate. Overall the diabetic adolescents were satisfied with their family life, (M = 4.50, SD = .53). The non-diabetic adolescents were also satisfied with their family life, (M = 4.21, SD 1.23), although the range between responses was greater than the diabetic adolescents, (4 compared to 1).

Rosenbaum, and Carty (1996) looked at adolescents in relation to their healthcare within their peer subculture and family context. Their findings confirm the importance of peer groups in the development of personal identity. Health for these adolescents was defined as well-being, absence of illness, dealing with problems, and taking responsibility. The adolescents in the current study were asked to respond to their present feelings about their health. The diabetic adolescents rank ordered health in the ten lowest items, out of 100, from the "What I Think About Me" questionnaire, (M = 3.13, SD 1.36). The non-diabetic adolescents ranked health at 34 out of 100, (M = 3.97, SD = 1.17). Health appears to be more of an issue for the adolescents with diabetes even though the average response is more neutral than negative.

Clothing, hair, and music were identified by Rosenbaum and Carty (1996) as symbolic of an adolescent's emerging identity. This confirms the importance of clothing in

the current study, as taste in clothes was ranked in the highest ten items by both groups of adolescents. Hair was given a lower rating than taste in clothes, (M = 3.86, SD .64) indicating a more positive than negative response for both groups.

A 1993 study by Resnick, Harris and Blum showed that adolescents who identified themselves as spiritual or religious had lower levels of risk taking behaviors than their non-spiritual counterparts. The demographic information gathered in the current included a question that asked the adolescents if they believe in God or a higher power. The responses were either yes or no. Of the 42 questionnaires, one response was missing, 95.1% responded yes, and 4.9% responded no. As a result, the adolescents in this survey identify themselves as spiritual individuals.

The two groups of adolescents shared the following characteristics in their ten highest ranking items: (1) being male or female (gender), (2) taste in clothes, (3) dreams, (4) and intelligence. The diabetic teens also included body build, energy, conscience, self respect and self understanding. The non-diabetic group had included manners, morals, sympathy, personality, and meeting people. The diabetic group listed one physical characteristic in their top ten items, the non-diabetic groups did not include any physical characteristics.

Items shared between the two groups for ranking as ten lowest ranked characteristics were: (1) elimination, (2) moods , (3) ability to accept criticism, and (4) fears. The remainder of the diabetic adolescents ten lowest ranking items were ankles, wrists, digestion, health, feet, and teeth. The other characteristics included in the non-diabetic adolescents ten lowest ranking characteristics are neatness, handwriting, complexion, weight, waist, and procrastination. The characteristic elimination was not

answered by four of the participants. It is possible that some of the participants did not understand the definition of elimination or were embarrassed by this bodily function and chose not to respond.

The following items had a greater than 0.80 difference between the mean scores of the two groups; body build diabetic adolescents (M = 4.63, SD = .74) non-diabetic adolescents (M = 3.41, SD = 1.26), waist diabetic adolescents (M = 4.13, SD = .64) non-diabetic adolescents (M = 3.15, SD = 1.46), complexion diabetic adolescents (M = 4.23, SD = .46) non-diabetic adolescents (M= 3.35, SD = 1.10), chest diabetic adolescents (M = 4.38, SD = .74) non-diabetic adolescents (M = 3.50, SD = 1.13), and health diabetic adolescents (M = 3.13, SD = 1.36) non-diabetic adolescents (M = 3.97, SD = 1.17). Each of these items is a physical trait or characteristic. The diabetic group ranked each item, other than health, higher than the non-diabetic adolescents.

The overall results of this study indicate that the participants have more positive or neutral perceptions of their body image as opposed to negative perceptions of their body image. The diabetic adolescent's total mean score was 3.9428, (SD = .2086), (M = 3.9236, SD = .2138) for physical traits and (M = 3.9662, SD = .3658) for non-physical factors). The non-diabetic adolescent's total mean score was 3.8229, (SD = .4507) (M = 3.7137, SD = .5329) for physical traits and (M = 3.9272, SD = .4405) for non-physical factors). The "What I Think About Me Questionnaire" was a combination of Secord and Jourard's Body Cathexis and Self Cathexis scales. The Body Cathexis scale measures satisfaction with one's own body, primarily physical characteristics. The Self Cathexis scale determines general self satisfaction, non-physical factors that contribute to body image perception. Out of the 100 items listed on the "What I Think About Me"

questionnaire the diabetic adolescents scored only two items with means of less than three, moods (M = 2.88, SD = .99), and teeth (M = 2.88, SD 1.13). The non-diabetic teens responded to only one item with a mean of less than three, procrastination (M = 2.79, SD = 1.32). This study did not identify any major problems with body image perception in the adolescents with diabetes or in the adolescents without diabetes.

Neuman's systems model as it pertains to adolescent perception of body image would focus on wellness retention and maintenance of the core (body image). This model's multidimensional systems approach supports the many elements that make up an individual's perception of his or her body image. Optimal health is constantly changing as is an individual's perception of body image. Applying Neuman's systems model requires critical thinking to identify the multiple stressors associated with body image perception.

There are three levels of nursing intervention. Primary intervention involves the maintenance of healthy lifestyles and environment that prevent or lessen the incidence of negative perceptions of body image. Anticipatory guidance is used to recognize individual responses to influences that may affect body image perception. Creating an awareness of body image perception and building trusting relationships are important in the primary prevention stage. Client education should provide information and counseling related to biological variables such as health status, nutritional intake, exercise, and family history that place an adolescent at risk.

Secondary prevention includes screening and treatment of acute manifestations of alterations in body image perception. This may include counseling, psychotherapy, social support group involvement with careful attention paid to close monitoring of blood

glucose levels if the adolescent is diabetic. Secondary prevention is appropriate after a reaction has occurred and the lines of resistance need to be strengthened.

Tertiary prevention is the maintenance of the system stability and re-education to prevent further occurrences (Neuman, 1995). During this stage it is important to reinforce an adolescent's perception of body image, recognizing when body image perceptions are negative and seeking treatment. A diagnosis of alteration in body image should be part of the differential diagnosis when adolescents present with negative feelings regarding themselves. The Neuman systems model provides effective structure that prompts the practitioner to think holistically and comprehensively when examining an adolescent.

Limitations

The principle limitation to this study was sample size. The sample population was too small with a large discrepancy between the number of participants in the two groups. Adolescents without diabetes outnumbered adolescents with diabetes by more than four to one. A number of strategies were employed by the researcher to increase the number of diabetic participants without success. If the researcher would have continued to collect data over a longer period of time, it is possible the number of diabetic participants would have increased.

Another limitation of this study involves the homogeneity of the sample. A variety of ethnic groups and individuals with varying socioeconomic levels were not well represented. The majority of the participants in this study were Caucasian, and the high school that the non-diabetic adolescents attended is in a predominately middle class neighborhood. The homogeneity of the sample was also a benefit. Because the groups were similar in background any major discrepancies could be more meaningful.

Internal validity was threatened due to self selection bias since participants volunteered to be part of the study. Testing bias may also have surfaced as a potential threat if the participants responded to the questionnaire in order to score "high" rather than answering based on their true feelings at the time (Polit & Hungler, 1999).

Instrument clarity was also a potential source for measurement error. As the questionnaire was based on a Likert type scale, it is possible that some of the adolescents did not understand the concept of circling the number that best corresponds with their feelings at the time. Some of the adolescents may also have responded inconsistently depending on external influences such as distractions or time constraints.

Generalization of the findings was limited by the small number of participants recruited (n=42). The findings failed to statistically provide adequate information to answer the research question.

Implications for Nursing

A person's self concept is ultimately related to the way in which he or she experiences his or her physical body. Self concept and body image are definitively entwined (Champion, Austin, & Tzeng, 1982). The research supports evidence that adolescents with diabetes are at risk for depression, anxiety, low self esteem, poor adaptation to their illness, and unhealthy eating practices.

It is essential for nurses to recognize adolescence as a subculture and utilize peer groups in helping diabetic adolescents adjust to and cope with their disease. A teen with diabetes will be more receptive to another teen diabetic communicating the complexities of life as an adolescent with diabetes particularly as it pertains to food, medications, and exercise.

In this study, although limited by the small sample size, the adolescents who participated characterized three items that they would most like to change; moods, teeth, and procrastination. Moods and procrastination are developmental issues associated with adolescence. Moods would have to be evaluated to determine if the occurrence is typically situational, hormonal, or if the potential for depression exists. Nurses must be able to assess coping skills, support systems, and risk for suicidal ideation. At this stage in development many adolescents still have braces or other orthodontic equipment and this may explain the low ranking of teeth by the diabetic adolescents. Education and instruction in proper dental hygiene should be implemented.

If nurses would incorporate a modified (less than 100 items) body image questionnaire into their assessment of adolescent clients they could identify those areas that adolescents ranked as lowest, either by a rating of (1) have strong feelings and wish change could somehow be made or (2) don't like but can put up. This would provide direction for nursing interventions.

Recommendations for Research

The findings from this study are unique and present opportunities for additional research. Since body image is a consistently evolving phenomenon, a longitudinal study that evaluates body image perception and how it changes and develops over time would be a more definitive evaluation of body image perception. A larger sample incorporating a variety of geographic locations that includes sampling a variety of socioeconomic groups, adolescents with barriers to obtaining consistent health care, and more racial diversity would be beneficial. Another option would include comparing body image perceptions

not only between diabetic adolescents and non-diabetic adolescents but also between adolescents with other chronic illnesses.

Summary / Conclusion

There is a continued need for research that explores body image perceptions of adolescents. Studies have been done that focus on gender differences, coping skills, eating disturbances, family and peer relationships, spiritual beliefs, and self image. Body image and self image are interrelated (Secord & Jourard, 1953). Body image perception, unless it is related to body size and eating disorders, is overlooked in the current literature. It is often neglected as well in the health care arena unless it presents as a problem. If disturbances in body image can be identified early, interventions can then be put into practice and potential long term harm can be averted. Both groups of participants in this study had total mean scores over three, which indicates a more positive than negative body image perception.

GRAND VALLEY
STATE UNIVERSITY
1 CAMPUS DRIVE • ALLENDALE, MICHIGAN 49401-9403 • 616/895-6611

April 18, 2001

Appendix A

Cathleen Kessler GVSU Human Research Review Committee Approval
3523 Blue Water Pines Dr.
Grand Rapids, MI 49525

RE: Proposal #01-175-H

Dear Cathleen:

The Human Research Review Committee of Grand Valley State University is charged to examine proposals with respect to protection of human subjects. The Committee has considered your proposal, **Body Image of Adolescents with Diabetes**, and is satisfied that you have complied with the intent of the regulations published in the Federal Register 46(16)8386-8392, January 26, 1981.

Sincerely,

[redacted]

Paul A. Huizenga, Chair
Human Research Review Committee

Spectrum Health

Downtown Campus
100 MICHIGAN STREET NE GRAND RAPIDS MI 49503-2560
616 391 1774 FAX 391 2745 *www.spectrum-health.org*

May 17, 2001

Cathleen Kessler BSN, RN
3523 Bluewater Pines Dr. NE
Grand Rapids, MI 49525

Appendix B

Dear Cathleen,

Spectrum Health Internal Review Board Approval

By means of the expedited review process your project, "Body Image of Adolescents with Diabetes" dated 2001, was given approval by the Spectrum Health Research and Human Rights Committee. Any changes made to the study, including informed consent changes, following this approval, require submission in writing and approval of the Committee before the changes are implemented. The Spectrum Health number assigned to your study is # 2001-072. Please use this number as a reference in all correspondence with the Research Office.

This approval does not include the awardence of any monies for your study.

Please be advised that any unexpected serious, adverse reactions must be promptly reported to the Research and Human Rights Committee within five days; and all changes made to the study after initiation require prior approval of the Research and Human Rights Committee before changes are implemented.

The Research and Human Rights Committee and the F.D.A. requires you submit in writing, a progress report to the committee by May 1, **2002** and you will need reapproval should your study be ongoing at that time. Enclosed are some guidelines, entitled "Protocol Points", for your convenience in working with your study.

If you have any questions please phone me or Linda Pool at 391-1291\1299.

Sincerely,

[redacted]

Jeffrey S. Jones, M.D.
Chairman, Spectrum Health Research and Human Rights Committee

JSJ/tjv

c: File

Appendix C

What I Think About Me Questionnaire

What I Think About Me

Instructions:
The following is a listing of a number of things characteristic of yourself or related to you. You are asked to indicate which things you are satisfied with exactly as they are, which things you worry about and would like to change if possible, and which things you have no feelings about one way or the other.
Consider each item and circle the number that best represents your feelings according to the following scale:

1. Have strong feelings and wish change could somehow be made.
2. Don't like, but can put up with.
3. Have no particular feelings one way or the other.
4. Am satisfied.
5. Consider myself fortunate.

Hair	1	2	3	4	5
Facial complexion	1	2	3	4	5
Appetite	1	2	3	4	5
Hands	1	2	3	4	5
Body hair distribution	1	2	3	4	5
Nose	1	2	3	4	5
Fingers	1	2	3	4	5
Elimination	1	2	3	4	5
Wrists	1	2	3	4	5
Breathing	1	2	3	4	5
Waist	1	2	3	4	5
Energy level	1	2	3	4	5
Back	1	2	3	4	5
Chin	1	2	3	4	5
Exercise	1	2	3	4	5

1. Have strong feelings and wish change could somehow be made.
2. Don't like, but can put up with.
3. Have no particular feelings one way or the other.
4. Am satisfied.
5. Consider myself fortunate.

Ankles	1	2	3	4	5
Neck	1	2	3	4	5
Shape of head	1	2	3	4	5
Body build	1	2	3	4	5
Profile	1	2	3	4	5
Height	1	2	3	4	5
Age	1	2	3	4	5
Width of shoulders	1	2	3	4	5
Arms	1	2	3	4	5
Chest	1	2	3	4	5
Eyes	1	2	3	4	5
Digestion	1	2	3	4	5
Hips	1	2	3	4	5
Skin texture	1	2	3	4	5
Lips	1	2	3	4	5
Legs	1	2	3	4	5
Teeth	1	2	3	4	5
Forehead	1	2	3	4	5
Feet	1	2	3	4	5
Sleep	1	2	3	4	5
Voice	1	2	3	4	5
Health	1	2	3	4	5
Sex Activities	1	2	3	4	5
Knees	1	2	3	4	5

1. Have strong feelings and wish change could somehow be made.
2. Don't like, but can put up with.
3. Have no particular feelings one way or the other.
4. Am satisfied.
5. Consider myself fortunate.

Posture	1	2	3	4	5
Face	1	2	3	4	5
Weight	1	2	3	4	5
Being Male or Female	1	2	3	4	5
Back view of head	1	2	3	4	5
Trunk	1	2	3	4	5
First name	1	2	3	4	5
Morals	1	2	3	4	5
Ability to express self	1	2	3	4	5
Taste in clothes	1	2	3	4	5
Sense of duty	1	2	3	4	5
Sophistication	1	2	3	4	5
Self understanding	1	2	3	4	5
Life goals	1	2	3	4	5
Artistic talents	1	2	3	4	5
Tolerance	1	2	3	4	5
Moods	1	2	3	4	5
General knowledge	1	2	3	4	5
Imagination	1	2	3	4	5
Popularity	1	2	3	4	5
Self confidence	1	2	3	4	5
Ability to express sympathy	1	2	3	4	5
Emotional control	1	2	3	4	5

1. Have strong feelings and wish change could somehow be made.
2. Don't like, but can put up with.
3. Have no particular feelings one way or the other.
4. Am satisfied.
5. Consider myself fortunate.

Self consciousness	1	2	3	4	5
Generosity	1	2	3	4	5
Ability to accept criticism	1	2	3	4	5
Thoughts	1	2	3	4	5
Artistic and literary taste	1	2	3	4	5
Memory	1	2	3	4	5
Thriftiness	1	2	3	4	5
Personality	1	2	3	4	5
Self respect	1	2	3	4	5
Ability to concentrate	1	2	3	4	5
Ability to take orders	1	2	3	4	5
Sensitivity to others opinions	1	2	3	4	5
Ability to lead	1	2	3	4	5
Last name	1	2	3	4	5
Impulses	1	2	3	4	5
Manners	1	2	3	4	5
Handwriting	1	2	3	4	5
Intelligence level	1	2	3	4	5
Athletic skills	1	2	3	4	5
Fears	1	2	3	4	5
Happiness	1	2	3	4	5
Creativeness	1	2	3	4	5
Love life	1	2	3	4	5
Strength of conviction	1	2	3	4	5

1. Have strong feelings and wish change could somehow be made.
2. Don't like, but can put up with.
3. Have no particular feelings one way or the other.
4. Am satisfied.
5. Consider myself fortunate.

Conscience	1	2	3	4	5
Skill with hands	1	2	3	4	5
Capacity for work	1	2	3	4	5
Conscientiousness	1	2	3	4	5
Ability to meet people	1	2	3	4	5
Self discipline	1	2	3	4	5
Suggestibility	1	2	3	4	5
Neatness	1	2	3	4	5
Vocabulary	1	2	3	4	5
Procrastination	1	2	3	4	5
Will power	1	2	3	4	5
Self-assertiveness	1	2	3	4	5
Ability to make decisions	1	2	3	4	5
Dreams	1	2	3	4	5

Appendix D

Demographic Tool Diabetic Adolescents

Demographic Information

Please answer the following questions about yourself, either by marking the appropriate blank or writing in the answer.

1. Gender: Female _____ Male _____

2. Age:_____ Grade in school: _____

3. Do you have an insulin pump? Yes _____ No _____

4. How long have you had diabetes? years _____ months _____

5. Do you have any other problems that you see a health care provider for on a regular basis? Yes _____ No _____

6. Race: White _____ African-American _____ Hispanic descent_____
Asian _____ Native American (American Indian) _____
Other _____

7. Please circle the response that best tells how you feel about your family life.

1. Have strong feelings and wish change could somehow be made.
2. Don't like, but can put up with.
3. Have no particular feelings one way or the other.
4. Am satisfied.
5. Consider myself fortunate.

8. Do you believe in God or a higher power? Yes _____ No _____

Appendix E

Demographic Tool Non-Diabetic Adolescents

Demographic Information

Please answer the following questions about yourself, either by marking the appropriate blank or writing in the answer.

1. Gender: Female _____ Male _____

2. Age:_____

3. Diabetic: Yes _____ No _____

4. If you have diabetes, how many years or months have you had the disease? years _____ months _____

5. Do you have any problems that you see a health care provider for on a regular basis? Yes _____ No _____

5. Do you have any other problems that you see a health care provider for on a regular basis? Yes _____ No _____

6. Race: White _____ African-American _____ Hispanic descent_____
Asian _____ Native American (American Indian) _____
Other _____

7. Please circle the response that best tells how you feel about your family life.

1. Have strong feelings and wish change could somehow be made.
2. Don't like, but can put up with.
3. Have no particular feelings one way or the other.
4. Am satisfied.
5. Consider myself fortunate.

8. Do you believe in God or a higher power? Yes _____ No _____

Appendix F

Verbal Script Diabetic Adolescents

Verbal Script

A registered nurse, Cathy Kessler, is currently working on her masters in nursing degree at Grand Valley State University. As part of the requirements for this degree, she is conducting a research study on the feelings adolescents with diabetes have about their body. She will be comparing the feelings of adolescents with diabetes to the feelings of adolescents without diabetes.

If you are interested in participating in this study you must have your parent's consent. Even if your parents have granted permission, participation in this study is strictly voluntary. Your decision to participate will have no effect on your health care. To participate you will complete a "What I Think About Me" questionnaire which asks you to rate 100 items on a scale from 1 to 5. Please respond by circling the number that best corresponds with your feelings at this time. There are no right or wrong answers to the items. Your answers will be kept confidential.

Please do not write your name on the questionnaire.

Appendix G

Consent Form Diabetic Adolescents

Body Image of Adolescents with Diabetes

Consent form

In signing this document, I am giving consent for my child, _____ to complete the questionnaire on body image. Body image is the way a person feels about his or her own body. My child has been selected to participate in this study because he/she is between the ages of 13 and 16 and has diabetes. It is anticipated that there is minimal risk to my child for participating in this study. However, answering the questions about body image may arouse some anxiety or stress in some children.

The questionnaire will be completed while waiting for a scheduled doctor's appointment. Completion of the questionnaire takes between 20 and 40 minutes. Participation in this study is entirely voluntary and will have no effect on my child's health care.

I have been informed that the information supplied by my son / daughter will be kept confidential to the extent permitted by law and the questionnaire will not have any identifying characteristics.

The purpose of this study is to explore body image of adolescents so that health care professionals can be more aware of an adolescent's developing perception of body image and the psychological and emotional effects that may impact it.

My son / daughter will not be compensated for participation in this study. The results of this research study will be given to me if I ask for them, but the specific responses of my son/daughter will not be revealed. The data collected through this

research project is to be included in a thesis project for the completion of the requirements for a masters degree from Grand Valley State University. I may contact Cathy Kessler, the researcher, at (616) 361-9222, if I have any questions. If I have any questions regarding my child's rights I may contact Professor Paul Huizenga in the Research and Development Center at Grand Valley State University at (616) 895-2472 or the Spectrum Health Human Rights representative, Linda Pool at (616) 391-1291/1299.

I have read and understand the above information and agree to allow my child to participate in this study. I will receive a copy of this consent.

Date	Parent Signature
Date	Witness Signature

Appendix H

Introductory Letter Diabetic Adolescents

Dear Parents:

I am a graduate nursing student at Grand Valley State University. As part of the requirements for my masters degree I am conducting a research study looking at the relationship between body image (how a person feels about his or her body) of adolescents with diabetes and body image of adolescents without diabetes.

If you consent to your child participating in this study, a "What I Think About Me" questionnaire will be given to your child to complete while waiting for his or her appointment. In order for your child to participate in this study, a parent must sign the attached consent form and return it to the receptionist, along with the completed questionnaire. Participation in this study is strictly voluntary. In order to maintain anonymity and confidentiality please tell your child **not** to write their name on the questionnaire. Your child's care will not be affected in any way with the decision to participate or not to participate in this study.

If you have any questions regarding this study, you may contact me at (616) 361-9222 or if you have any questions regarding your child's rights, you may contact Professor Paul Huizenga in the Research and Development Center at Grand Valley State University at (616) 895-2472 or the Spectrum Health Human Rights representative, Linda Pool at (616) 391-1291/1299.

Thank you for your time.

Sincerely,

Cathy Kessler, R.N., B.S.N.

Appendix I

Introductory Letter Non-Diabetic Adolescents

Dear Parents:

I am a graduate nursing student at Grand Valley State University. As part of the requirements for my masters degree I am conducting a study looking at the relationship between body image (how a person feels about his or her body) of adolescents with diabetes and body image of adolescents without diabetes.

A "What I Think About Me" questionnaire will be given to your child to complete during his or her English class. In order for your child to participate in this study, a parent must sign the attached consent form and return it in the enclosed, stamped return envelope. Please inform your child of your decision. If you chose to have your child participate in this study, please remind your child that he / she may choose to participate or not to participate. Participation in this study is strictly voluntary. Your child's grade in English will not be affected in any way.

If you have any questions regarding this study, you may contact me at (616) 361-9222 or if you have any questions regarding your child's rights, you may contact Professor Paul Huizenga in the Research and Development Center at Grand Valley State University at (616) 895-2472.

Thank you for your time.

Sincerely,

Cathy Kessler, R.N., B.S.N.

Appendix J

Consent Form Non-Diabetic Adolescents

Body Image of Adolescents with Diabetes

Consent Form

In signing this document, I am giving consent for my child _____ to complete the questionnaire on body image. Body image is the way a person feels about his or her own body. I understand that my child has been selected to participate in this study because he/she is between the ages of 13 and 16. It is anticipated that there is minimal risk to my child for participating in this study. However, answering the questions about body image may arouse anxiety or stress in some children.

The questionnaire will be administered during my son / daughter's English class. I understand that participation in this study is entirely voluntary and will have no effect on either my child's schoolwork or grades. Completion of the questionnaire takes between 20 and 40 minutes.

I have been informed that the information supplied by my son / daughter will be kept confidential and the questionnaire will not have any identifying characteristics.

I understand that the purpose of this study is to explore body image of adolescents so that health care professionals can be more aware of an adolescent's developing perception of body image and the psychological and emotional effects that may impact it.

I understand that my son / daughter will not be compensated for participation in this study. I understand that the results of this research study will be given to me if I ask for them, but the specific responses of my son/daughter will not be revealed. I understand

that the data collected through this research project is to be included in a thesis project for the completion of the requirements for a masters degree from Grand Valley State University. I may contact Cathy Kessler, the researcher, at (616) 361-9222, if I have any questions. If I have any questions regarding my child's rights I may contact Professor Paul Huizenga in the Research and Development Center at Grand Valley State University at (616) 895-2472.

this study.

I have read and understand the above information and agree to allow my child to participate in this study.

_____ _____

Date Parent Signature

Appendix K

Verbal Script Non-Diabetic Adolescents

Verbal Script

My name is Cathy Kessler, I am a registered nurse and I am currently working on my masters in nursing degree at Grand Valley State University. As part of the requirements for my masters degree, I am conducting a research study on the feelings adolescents with diabetes have about their body. I will be comparing the feelings of adolescents with diabetes to the feelings of adolescents without diabetes.

You must have parental permission to take part in this study. Even if your parents have granted permission, participation in this study is strictly voluntary. Your decision to participate will have no effect on your grade. To participate you will complete a "What I Think About Me" questionnaire which asks you to rate 100 items on a scale from 1 to 5. Please respond by circling the number that best corresponds with your feelings at this time. There are no right or wrong answers to the items. Your answers will be kept confidential.
Please do not write your names on the questionnaire.

Thank you for your participation. If you have any questions please let me know by raising your hand.

Appendix L

Adolescents with Diabetes. Rank Order of Questionnaire Items: Highest to Lowest

	N	Minimum	Maximum	Mean	Std. Deviation
Being Male/Female	8	4	5	4.88	.35
Taste in Clothes	8	4	5	4.75	.46
Body Build	8	4	5	4.63	.52
Energy	8	4	5	4.63	.52
Dreams	8	3	5	4.50	.76
Conscience	8	4	5	4.50	.53
Intelligence	8	4	5	4.50	.53
Self Respect	8	4	5	4.50	.53
Self Understanding	8	4	5	4.50	.53
Morals	8	4	5	4.50	.53
First Name	8	4	5	4.50	.53
Profile	8	4	5	4.50	.53
Face	8	4	5	4.38	.52
Last Name	8	4	5	4.38	.52
Concentration	8	4	5	4.38	.52
Self Confidence	8	3	5	4.38	.74
Life Goals	8	3	5	4.38	.74
Sophistication	8	3	5	4.38	.74

Weight	8	3	5	4.38	.74
Hips	8	3	5	4.38	.74
Chest	8	4	5	4.38	.74
Age	8	3	5	4.38	.74
Breathing	8	3	5	4.38	.74
Manners	8	3	5	4.25	.71
Knowledge	8	4	5	4.24	.46
Height	8	1	5	4.25	1.39
Exercise	8	3	5	4.25	.71
Complexion	8	4	5	4.25	.46
Popularity	8	3	5	4.13	.64
Conviction	8	3	5	4.13	.83
Leadership	8	3	5	4.13	.83
Personality	8	4	5	4.13	.35
Sense of Duty	8	3	5	4.13	.64
Self Expression	8	2	5	4.13	.99
Skin Texture	8	4	5	4.13	.35
Eyes	8	2	5	4.13	.99
Back	8	3	5	4.13	.64
Waist	8	3	5	4.13	.64
Decisions	7	3	5	4.00	.58
Self Discipline	8	3	5	4.00	.53
Meeting People	8	3	5	4.00	.53

Love Life	8	3	5	4.00	.76
Happiness	8	3	5	4.00	.53
Athletic Skills	8	3	5	4.00	.76
Handwriting	8	3	5	4.00	.76
Memory	8	3	5	4.00	.53
Imagination	8	3	5	4.00	.53
Tolerance	8	3	5	4.00	.53
Artistic Talent	8	3	5	4.00	.76
Trunk	8	3	5	4.00	.53
Posture	8	3	5	4.00	.53
Legs	8	3	5	4.00	.76
Shoulders	8	3	5	4.00	.76
Head Shape	8	3	5	4.00	.53
Emotional Control	8	2	5	3.88	.83
Thoughts	8	3	4	3.88	.35
Sympathy	8	3	5	3.88	.64
Back of Head	8	3	5	3.88	.64
Arms	8	3	5	3.88	.64
Neck	8	3	5	3.88	.64
Hair	8	3	5	3.88	.64
Sensitivity	8	3	4	3.87	.35
Nose	8	3	4	3.87	.35
Self Assertiveness	8	2	5	3.75	.89

Artistic Tastes	8	3	5	3.75	.89
Voice	8	3	5	3.71	.71
Body Hair	8	2	4	3.75	.71
Vocabulary	8	3	5	3.75	.71
Forehead	8	2	5	3.75	.89
Lips	7	3	5	3.71	.76
Appetite	7	3	4	3.71	.49
Will Power	8	2	5	3.63	1.06
Creativeness	8	2	5	3.63	.92
Self Consciousness	8	2	4	3.63	.74
Knees	8	2	5	3.63	.92
Sex Activity	8	3	5	3.63	.74
Sleep	8	2	5	3.63	.92
Fingers	8	3	4	3.63	.52
Hands	8	3	5	3.63	.52
Skill with Hands	8	3	5	3.62	.74
Impulses	8	3	5	3.62	.74
Generosity	8	3	5	3.62	.74
Chin	8	3	4	3.62	.52
Procrastination	8	2	5	3.50	1.07
Suggestibility	8	3	5	3.50	.76
Conscientiousness	8	3	5	3.50	.76
Work Ethic	8	3	5	3.50	.53

Able to Take Orders	8	2	5	3.50	.93
Thriftiness	8	3	5	3.50	.76
Neatness	8	2	5	3.50	1.07
Ankles	8	2	4	3.50	.76
Wrists	8	3	4	3.38	.52
Fears	8	3	4	3.25	.46
Accept Criticism	8	2	5	3.25	1.04
Digestion	8	1	5	3.25	1.28
Elimination	7	3	4	3.14	.38
Health	8	1	5	3.13	1.36
Feet	8	2	4	3.13	.83
Moods	8	2	4	2.88	.99
Teeth	8	1	4	2.88	1.13
Valid N (Listwise)	6				

Appendix M

Adolescents without Diabetes. Rank Order of Questionnaire Items: Highest to Lowest

	N	Minimum	Maximum	Mean	Std. Deviation
Dreams	34	3	5	4.53	.66
Taste in Clothes	34	3	5	4.53	.71
Being Male/Female	34	2	5	4.50	.79
Manners	34	3	5	4.38	.60
Morals	34	3	5	4.38	.70
Intelligence	34	2	5	4.35	.81
Sympathy	34	3	5	4.32	.73
Personality	33	2	5	4.30	.85
Meeting People	34	2	5	4.29	.91
Life Goals	34	2	5	4.29	.76
Imagination	34	3	5	4.26	.83
Eyes	34	2	5	4.26	.83
Creativeness	34	3	5	4.24	.70
Knowledge	34	2	5	4.24	.70
Sophistication	34	3	5	4.24	.74
Generosity	34	3	5	4.21	.73
Sense of duty	34	3	5	4.18	.80
Self Understanding	34	2	5	4.18	.87

First Name	34	2	5	4.18	1.00
Thoughts	34	2	5	4.15	.74
Leadership	34	1	5	4.12	.98
Self Respect	34	2	5	4.12	.98
Conscience	34	3	5	4.09	.67
Happiness	34	1	5	4.09	1.00
Lips	34	1	5	4.06	.98
Athletic Skills	34	2	5	4.06	.95
Last Name	34	1	5	4.03	.97
Self Expression	34	1	5	4.03	1.17
Sensitivity	34	1	5	4.00	1.02
Popularity	34	1	5	3.97	.90
Legs	34	1	5	3.97	1.06
Wrists	34	3	5	3.97	.76
Self Discipline	34	1	5	3.97	.94
Health	34	1	5	3.97	1.17
Conviction	34	2	5	3.94	.89
Energy	34	1	5	3.94	1.25
Back	34	1	5	3.91	.97
Vocabulary	34	1	5	3.91	1.00
Back of Head	34	3	5	3.88	.84
Skill with Hands	34	2	5	3.88	1.04
Artistic Taste	34	1	5	3.88	1.01

Voice	34	1	5	3.88	.95
Breathing	34	1	5	3.88	1.15
Profile	34	1	5	3.85	.96
Exercise	34	1	5	3.85	1.23
Hair	34	2	5	3.85	.96
Skin Texture	34	1	5	3.85	.99
Self Confidence	34	1	5	3.85	1.10
Memory	34	1	5	3.82	1.17
Chin	34	2	5	3.82	.72
Conscientiousness	34	2	5	3.82	.80
Sexual Activity	34	2	5	3.82	.87
Decisions	34	1	5	3.79	1.15
Neck	34	1	5	3.79	.81
Age	34	1	5	3.79	1.09
Head Shape	34	2	5	3.76	.85
Hands	34	1	5	3.76	.99
Height	34	1	5	3.76	1.21
Self Assertiveness	34	1	5	3.74	1.08
Work Ethic	34	2	5	3.74	.93
Impulses	34	2	5	3.74	.90
Ankles	34	1	5	3.74	.99
Emotional Control	34	1	5	3.71	1.12
Suggestibility	34	2	5	3.68	.91

Trunk	34	1	5	3.68	.91
Shoulders	34	1	5	3.68	1.07
Fingers	34	1	5	3.68	.94
Feet	34	1	5	3.68	.91
Concentration	33	1	5	3.67	1.14
Will Power	34	1	5	3.65	1.18
Face	34	1	5	3.65	.98
Arms	34	1	5	3.65	1.20
Thriftiness	34	2	5	3.62	.95
Love Life	34	1	5	3.62	1.28
Tolerance	34	1	5	3.62	1.02
Self Consciousness	34	1	5	3.62	1.07
Hips	34	1	5	3.59	1.21
Teeth	34	1	5	3.56	1.11
Body Hair	34	1	5	3.56	1.05
Appetite	34	1	5	3.56	1.24
Knees	34	1	5	3.56	.93
Nose	34	1	5	3.56	1.24
Chest	34	1	5	3.50	1.13
Forehead	34	1	4	3.50	.79
Artistic Talent	34	1	5	3.47	1.40
Digestion	34	1	5	3.47	.93
Sleep	34	1	5	3.44	1.24

Able to Take Orders	34	1	5	3.44	1.21
Posture	34	1	5	3.44	1.08
Body Build	34	1	5	3.41	1.26
Accept Criticism	34	1	5	3.38	1.13
Elimination	31	2	5	3.35	.75
Neatness	34	1	5	3.35	1.25
Handwriting	34	1	5	3.35	1.15
Complexion	34	1	5	3.35	1.10
Fears	34	1	5	3.21	1.01
Weight	34	1	5	3.18	1.53
Moods	34	1	5	3.18	1.24
Waist	34	1	5	3.15	1.46
Procrastination	34	1	5	2.79	1.32
Valid N (Listwise)	31				

Appendix N

Comparison of Means and Standard Deviations

Item	Diabetic Mean	Diabetic Std. Dev.	Non Diabetic Mean	Non Diabetic Std. Dev.
Able to Take Orders	3.50	0.93	3.44	1.21
Accept Criticism	3.25	1.04	3.38	1.13
Age	4.38	0.74	3.79	1.09
Ankles	3.50	0.76	3.74	0.99
Appetite	3.71	0.49	3.56	1.24
Arms	3.88	0.64	3.65	1.20
Artistic Talent	4.00	0.76	3.47	1.40
Artistic Tastes	3.75	0.89	3.88	1.01
Athletic Skills	4.00	0.76	4.06	0.95
Back	4.13	0.64	3.91	0.97
Back of Head	3.88	0.64	3.88	0.84
Being Male/Female	4.88	0.35	4.50	0.79
Body Build	4.63	0.52	3.41	1.26
Body Hair	3.75	0.71	3.56	1.05
Breathing	4.38	0.74	3.88	1.15
Chest	4.38	0.74	3.50	1.13
Chin	3.62	0.52	3.82	0.72
Complexion	4.25	0.46	3.35	1.10

Concentration	4.38	0.52	3.67	1.14
Conscience	4.50	0.53	4.09	0.67
Conscientiousness	3.50	0.76	3.82	0.80
Conviction	4.13	0.83	3.94	0.89
Creativeness	3.63	0.92	4.24	0.70
Decisions	4.00	0.58	3.79	1.15
Digestion	3.25	1.28	3.47	0.93
Dreams	4.50	0.76	4.53	0.66
Elimination	3.14	0.38	3.35	0.75
Emotional Control	3.88	0.83	3.71	1.12
Energy	4.63	0.52	3.94	1.25
Exercise	4.25	0.71	3.85	1.23
Eyes	4.13	0.99	4.26	0.83
Face	4.38	0.52	3.65	0.98
Fears	3.25	0.46	3.21	1.01
Feet	3.13	0.83	3.68	0.91
Fingers	3.63	0.52	3.68	0.94
First Name	4.50	0.53	4.18	1.00
Forehead	3.75	0.89	3.50	0.79
Generosity	3.62	0.74	4.21	0.73
Hair	3.88	0.64	3.85	0.96
Hands	3.63	0.52	3.76	0.99
Handwriting	4.00	0.76	3.35	1.15

Happiness	4.00	0.53	4.09	1.00
Head Shape	4.00	0.53	3.76	0.85
Health	3.13	1.36	3.97	1.17
Height	4.25	1.39	3.76	1.21
Hips	4.38	0.74	3.59	1.21
Imagination	4.00	0.53	4.26	0.83
Impulses	3.62	0.74	3.74	0.90
Intelligence	4.50	0.53	4.35	0.81
Knees	3.63	0.92	3.56	0.93
Knowledge	4.24	0.46	4.24	0.70
Last Name	4.38	0.52	4.03	0.97
Leadership	4.13	0.83	4.12	0.98
Legs	4.00	0.76	3.97	1.06
Life Goals	4.38	0.74	4.29	0.76
Lips	3.71	0.76	4.06	0.98
Love Life	4.00	0.76	3.62	1.28
Manners	4.25	0.71	4.38	0.60
Meeting People	4.00	0.53	4.29	0.91
Memory	4.00	0.53	3.82	1.17
Moods	2.88	0.99	3.18	1.24
Morals	4.50	0.53	4.38	0.70
Neatness	3.50	1.07	3.35	1.25
Neck	3.88	0.64	3.79	0.81

Nose	3.87	0.35	3.56	1.24
Personality	4.13	0.35	4.30	0.85
Popularity	4.13	0.64	3.97	0.90
Posture	4.00	0.53	3.44	1.08
Procrastination	3.50	1.07	2.79	1.32
Profile	4.50	0.53	3.85	0.96
Self Assertiveness	3.75	0.89	3.74	1.08
Self Confidence	4.38	0.74	3.85	1.10
Self Consciousness	3.63	0.74	3.62	1.07
Self Discipline	4.00	0.53	3.97	0.94
Self Expression	4.13	0.99	4.03	1.17
Self Respect	4.50	0.53	4.12	0.98
Self Understanding	4.50	0.53	4.18	0.87
Sense of Duty	4.13	0.64	4.18	0.80
Sensitivity	3.87	0.35	4.00	1.02
Sex Activity	3.63	0.74	3.82	0.87
Shoulders	4.00	0.76	3.68	1.07
Skill with Hands	3.62	0.74	3.88	1.04
Skin Texture	4.13	0.35	3.85	0.99
Sleep	3.63	0.92	3.44	1.24
Sophistication	4.38	0.74	4.24	0.74
Suggestibility	3.50	0.76	3.68	0.91
Sympathy	3.88	0.64	4.32	0.73

Taste in Clothes	4.75	0.46	4.53	0.71
Teeth	2.88	1.13	3.56	1.11
Thoughts	3.88	0.35	4.15	0.74
Thriftiness	3.50	0.76	3.62	0.95
Tolerance	4.00	0.53	3.62	1.02
Trunk	4.00	0.53	3.68	0.91
Vocabulary	3.75	0.71	3.91	1.00
Voice	3.71	0.71	3.88	0.95
Waist	4.13	0.64	3.15	1.46
Weight	4.38	0.74	3.18	1.53
Will Power	3.63	1.06	3.65	1.18
Work Ethic	3.50	0.53	3.74	0.93
Wrists	3.38	0.52	3.97	0.76

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