BODY IMAGE OF DIABETIC AND WELL ADOLESCENTS

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DEDICATION

To my husband Jay, whose support, nurturance, patience, and editing made this possible.

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CHAPTER 1

INTRODUCTION

The developmental tasks of adolescence often seem overwhelming to teenagers. The anatomical, physiological, psychological, and sociological changes occurring during adolescence necessitate considerable adjustment. Add chronic illness to the picture and the challenge becomes even greater.

Problem of Study

Adolescents are especially volunerable to the compounded alterations in body image imposed by a chronic disease such as diabetes mellitus. The diabetic adolescent must cope with rapid physiological changes due to normal growth plus the changes caused by his illness. Therefore, the problem studied was: Is there a difference in the body image of diabetic and well adolescents?

Justification of the Problem

In 1979, 20% of the United States population was between the ages of 10 and 19 (Mercer, 1979). As with any other subgroup of the population, the nurse must be prepared to implement the nursing process in meeting the

physical, emotional, psychological, and educational needs of the adolescent. One of the primary goals in planning interventions with adolescents should be to strengthen and confirm them in their development (Dempsey, 1972). It is important for the nurse to acknowledge the significance of body image in the adolescent's task of acclimating to a new body size, appearance, and function and to institute nursing interventions which accommodate this phenomenon (Mercer, 1979).

Diabetes mellitus poses serious potential threats to body image both overtly, due to the disease process and treatment regime, and covertly, due to the individual's perception of "being different". These potential threats to body image are particularly significant during adolescence when the individual is adjusting to an already-changing body image. Illness compounds the difficulty of this process.

Conceptual Framework

Body image is a component of self-concept, an abstract term that refers to an individual's perception of himself. One concise definition of self-concept is "the organization of qualities the individual attributes to himself" (Kinch, 1963, p. 481). A more elaborate definition offered by Jersild (1963) incorporates cognitive, sensory, and

neurological functions in the formulation of self-concept, indicating that self-concept is a comprehensive, personalized image of the self.

Body image is primarily concerned with the physical aspects of self-concept, conformational, visual, functional, and perceptual. According to Gorman (1969):

> The word image (is) a concept based on reports not only from conciousness but also from outside awareness. The image of body may then simply be defined as the concept of one's own body, based on present and past perception. (p. 6)

Body image is then seen as being derived from internal conciousness and external awareness. The neurological system exerts influence over the kinesthetic contributions to the individual's perception of body image (Gorman, 1969; Head, 1926). Two processes identified by Daniel (1970) are "recognition and integration of sensations from body parts and appreciation of body relationship to environment" (p. 341). These processes imply awareness of function, sensation, mobility, and perceived reactions of others to the physical self (McCloskey, 1976; Traub & Orbach, 1964). Sensation, perception, and experience are thus critical in the development of body image.

Body image is a dynamic phenomenon. It develops early in life and is continually modified by the individual's experiences, perceptions, and sensations (Dempsey, 1972;

Gorman, 1969; Horowitz, 1966; McCloskey, 1976; Schilder, 1950). Schilder (1950) suggested that body image develops initially through the tactile exploration of infants and their mothers. Horowitz (1966) described body image as having a layered quality. Body images may be stored from previous stages of development and may be re-instated through spontaneous regression (Lincoln, 1978).

Researchers have indicated that body image stabilizes during adolescence but continues to be modified as the individual matures (Mercer, 1979; Ritchie, 1973; Rogers, 1972). The physical changes in height, weight, and body build not only alter the way the adolescent sees his body but also herald change in how others react to him. The increase in sexual hormones leads to sexual feelings and interests as well as the development of secondary sex characteristics. Accompanying the anatomical and physiological changes the adolescent experiences emotional, intellectual, and psychological changes. These numerous changes that occur during adolescence impel a preoccupation with body image by the individual (Dempsey, 1972).

The problems sometimes created by chronic disease can provide difficult obstacles to the successful accomplishment of the psychosocial tasks of adolescence (Lincoln, 1978). Often, chronic disease compounds the adolescent's

autistic concern with his body. The struggles for independence, self-actualization, personal and sexual identity, and formulation of realistic future plans and goals seem endless. Achievement of idealized body image may seem impossible. Neill (1979) stated,

> The most striking feature of a chronic illness is that it is unrelenting, adding infinitely more complexity and psychosocial stress to the life of the affected child. (p. 453)

Diabetes mellitus was the chronic disease selected for this study. Diabetes mellitus is a covert disease that, when effectively controlled, manifests no apparent symptoms or physical disability (Blos & Finch, 1974; Wu, 1973). The diabetic appears normal. Therefore, the impact of diabetes mellitus on the body image of the adolescent may be easily overlooked. Successful management of diabetes mellitus, including urine testing, insulin administration, and diet, restricts freedom and mandates a cautious lifestyle which implies abnormality and deficiency. These implications are especially significant at a time when conformity to peer norms is so important (Daniel, 1975). Hence, the psychosocial problems of adolescents with diabetes mellitus can lead to social disability far more serious than the direct effects of the physical ailment (Jelnick, 1977).

Assumptions

For the purpose of this study, the following assumptions were made:

1. Adolescence constitutes a crucial period in an individual's life when numerous anatomical, psychological, physiological, and sociological changes occur.

2. Changes occurring during adolescence necessitate a change in the individual's body image.

3. The existence of chronic disease complicates the accomplishment of the developmental tasks of adolescence.

Research Question

The research question studied was: Is there a difference in the body image of diabetic adolescents and well adolescents?

Definition of Terms

Operational and/or conceptual definitions for key terms included the following:

Diabetes mellitus - A chronic, metabolic disorder resulting in disturbances in the normal insulin mechanism (Wieczorek & Natapoff, 1981). For the purpose of this study, diabetes mellitus included juvenile onset, insulin dependent diabetics only.

Adolescent - Males and females between the ages of 13 and 19, inclusive.

Well adolescent - Males and females between the ages of 13 and 19, inclusive, who deny existence of acute or chronic illness, have no activity restrictions, and are not under the care of a physician other than for check-ups.

Body-cathexis - The degree of feeling of satisfaction or dissatisfaction with various parts or processes of the body as measured by the Secord-Jourard Body-Cathexis Scale.

Limitations

The following limitations were identified with regard to this study:

1. Findings from this study are generalizable only to the sample studied due to the use of a convenience sampling technique.

2. Additional factors which are not under consideration in this study may affect the perception of body-cathexis among subjects of the sample.

3. Research design and time period available for data collection did not allow the investigator to measure the subject's pre-diabetic body image.

Summary

This exploratory study attempted to determine if there is a difference between the body image of diabetic and well adolescents. Components of the conceptual framework included self-concept, body image, adolescence, and the effects of chronic illness. A non-experimental two group design was employed using the Secord-Jourard Body-Cathexis Scale to evaluate the body image of the subjects. Key terms were identified. Assumptions and limitations were delineated. Justification of the problem was congruent with the conceptual framework and current nursing practice. Methods of data collection and treatment were described.

CHAPTER 2

REVIEW OF LITERATURE

The review of literature was divided into four parts. In the first section, the phenomenon of adolescence was discussed. In the second part of Chapter 2, current and classic literature regarding the significance of body image during adolescence was reviewed. The concept of body image in relation to chronic illness and diabetes was presented in the latter two sections.

Adolescence

Adolescence refers to the stage of development that spans the years between childhood and adulthood. This period can be defined in terms of chronological age, biological functions, anatomical changes, psychological factors, intellectual milestones, or sociological norms (Pillitteri, 1977). It is generally agreed that adolescence begins with puberty, the period in which primary and secondary sex characteristics appear and rapid physical growth occurs (Marlow, 1977; Papalia & Olds, 1978; Whaley & Wong, 1979). According to Hammar and Eddy (1966) "the biological changes of puberty provide the catalyst for the

behavioral and psychological development of adolescence" (p. 61).

Chronologically, pubescence normally begins between the ages of 10 to 16 years for females and 12 to 18 years for males, and lasts approximately 2 years (Wieczorek & Natapoff, 1981). The adolescent undergoes skeletal growth, changes in physique and body appearance, and increases in weight and muscle mass. Psychologically, the adolescent vacillates between the dependency of childhood and the independence of adulthood, often struggling with the confusion and frustration of ambivalence (Osterrieth, 1962).

Adolescence is a period unique to humans, and, until the twentieth century, not identified as a developmental stage (Marlow, 1977; Papalia & Olds, 1978). It is proposed that adolescence, as a distinct period, resulted from the industrial revolution in which the increasing complexity of society was accompanied by extended educational requirements (Ausubel, Montemayor, & Svajian, 1977). Prior to the recognition of adolescence, individuals were presumed to progress from childhood directly into adulthood.

Adolescence ranges from 5 to 10 years in length. According to Duvall (1977), adolescence lasts longer today than in previous times. Duvall attributed this extension to societal and economic changes. Papalia and Olds (1978)

cited the "secular trend" of earlier maturity and increasing educational requirements as factors contributing to a longer adolescence.

Several developmental theories exist which describe and explain adolescence. Freud, as cited in Maddi (1968), characterized adolescence as the genital stage of mature sexuality. According to psychoanalytic theory, "the adolescent, flooded by his own resurgent impulses, must regroup the defensive forces of his ego in an attempt to meet this new onslaught" (Blum, 1969, p. 71). Within this framework, adolescence is characterized as a stage of conflict in which instinctive drives clash with the superego (Committee for the Study of Adolescence, 1968).

Erikson (1963) identified adolescence as the stage of identity versus role diffusion. It is during this period that the individual asks the question, "Who am I?" The adolescent wrestles with the disparity between parental definitions and peer definitions in seeking to achieve an autonomous synthesis. Erikson viewed the primary danger in this stage as identity confusion which can be expressed in a variety of behaviors including rebellion, regression, and poor impulse control.

Piaget (1962) characterized adolescence in terms of intellectual development. In this stage of formal

operations the individual is capable of abstract thought or "hypothetico-deductive reasoning". The adolescent's ability to engage in abstract thought results from the maturation of neurologic structures, the expanding social environment, and the tendency to experiment with new situations, ideas, and behaviors during this stage.

The developmental tasks of adolescence, as described by Duvall (1977) and Havighurst (1972), involve the establishment of an identity that is congruent with the individual's personal abilities, aspirations, and limitations, as well as compatible with societal expectations and economic realities. Pillitteri (1977) identified four areas in which the adolescent must achieve identity: value system, career, body image, and independence from parents. Duvall (1977) emphasized the significance of the peer group in the accomplishment of the developmental tasks of adolescence noting that it is contact with age-mates that facilitates the acquisition of skills and values and fosters a sense of identity. To develop a sense of identity, the adolescent must merge all he has learned about himself since childhood into a unified, total image of self. Thus, adolescence cannot be understood within the framework of a single discipline for it is a striking example of the interrelatedness of the biological, sociological,

developmental, emotional, and intellectual forces operating within the human organism (Gallagher, Heald, & Garell, 1976).

Adolescence is often considered to be a difficult stage of development (Garrison & Garrison, 1975; Josselyn, 1952; Pillitteri, 1977).

> The adolescent enters the threshold of personhood seeking an image he does not know, in a world he rarely understands, with a body that he is just discovering. (Jones, 1969, p. 332)

This transition from childhood to adulthood is not always smooth. Implicit in this process are numerous, potentially conflicting forces.

The desire to be independent is frequently met with parental restraints, financial constraints, and societal prohibitions. Often the individual himself is torn between the security of childhood and the allure of adulthood (Pillitteri, 1977). Parents sometimes contribute to this dilemma by giving mixed messages of "grow up" and "you're not old enough". Consequently, adolescents often feel suspended in a developmental limbo between childhood and adulthood (Osterrieth, 1962).

Hall, as cited by Papalia and Olds (1978), is recognized as the "father of adolescence". Hall characterized adolescence as a period of "storm and stress". Deutsch

(1967) referred to adolescence as "a battlefield of various forces" (p. 33). The Committee for the Study of Adolescence (1968) agreed with this viewpoint. They identified one of the unique characteristics of adolescence as "the recurrent alternation of episodes of disturbed behavior with periods of relative quiescence" (p. 61).

The notion that adolescence is a period of turmoil does not go undisputed. Anthropologists have noted that this characterization of adolescence, as a troublesome stage, is not a universal phenomenon. Mead (1961) wrote that the nature of the transition from childhood to adulthood is culturally determined. Hurlock (1973) proposed that the primary reason adolescence is reputed to be a problem age in our society is that adolescents are expected to behave according to adult standards rather than standards that are age-appropriate. Bandura (1969) labeled the notion of "the stormy decade" as a self-fulfilling prophecy.

> If a society labels its adolescents as "teen-agers", and expects them to be rebellious, unpredictable, sloppy, and wild in their behavior, and if this picture is repeatedly reinforced by the mass media, such cultural expectations may very well force adolescents into the role of rebel. (Bandura, 1969, p. 24)

Daniel (1977) agreed and stated that adolescence is no more difficult than any other stage of life each with its own advantages and disadvantages. The findings from a longitudinal study conducted by Offer (1969) supported this position. Offer reported that, for a majority of adolescents, this stage was characterized by neither stress nor turmoil. Simmons, Rosenberg, and Rosenberg's research (1973) supported the latter viewpoint. In their cross-sectional study of 1,917 subjects, aged 8 to 15 years, they found adolescence to be a period of definite instability in self-image and lower self-esteem than in previous stages of development.

Cultural and political influences, socioeconomic factors, and individual differences affect the course of adolescence in any society. It can be stated that in the complex world of today, adolescents have a more difficult time discovering their identity than in more primitive societies where choices and options are limited (Fine, 1973; Marlow, 1977). Thus, adolescence must be considered in light of the aforementioned factors.

Adolescence is part of a maturational process that is characterized by psychological, emotional, social, physical, and intellectual growth (Kalafatch, 1975). Whereas the onset of adolescence has several biological

parameters, the completion of adolescence is dependent on numerous factors related to individual development and thus difficult to pinpoint. Indeed, some individuals never leave adolescence (Papalia & Olds, 1978). Accordingly, while there exist clearly established norms for the onset of puberty, considered the beginning of adolescence, the end of adolescence is not determined in terms of reproductive maturity. The end of adolescence is more often associated with the completion of the developmental tasks specific for that period.

In Western society, no single initiation rite signals adulthood. Individuals are legally afforded adult status between the ages of 18 to 21 years. Yet adulthood involves far more than chronological age. The passage from adolescence to adulthood depends on the successful resolution of the aforementioned developmental challenges.

The Significance of Body Image During Adolescence

As the adolescent's body changes, his awareness of his body image increases (Daniel, 1977; Pillitteri, 1977; Whaley & Wong, 1979). During childhood, the body changed slowly, necessitating only minor alterations in body image. However, the rapid changes in body size, function, and appearance that occur during adolescence require more

drastic changes in body image (Ausubel, Montemayer, & Svajian, 1977; Dempsey, 1972). The adolescent must acknowledge these changes and incorporate them into his changing self-concept. Duvall (1977) identified several steps in this process including:

1. Coming to terms with the new size, shape, function, and potential of one's maturing body.
2. Accepting differences between one's own physique and that of age-mates of the same and other sex.
3. Understanding what pubertal changes mean.
4. Caring for one's body in ways that assure its health and optimum development.
5. Learning to handle oneself skillfully in a variety of recreational, social, and family situations. (p. 303)

Hence, the reformulation of body image is a complex process that involves changes in function and social interaction in addition to physical form. The anatomical and physiological changes that take place in the body during adolescence lead not only to a change in the way the adolescent sees his body in terms of its appearance but also affect how the body is used. The adolescent must accept these changes as well as adjust to other's changing perceptions of him. "No adolescent can forget his own body; it is the external presentation of himself to the world, and others constantly remind him of it" (Rogers, 1972, p. 13).

Initially, when pubertal changes begin to appear, the body seems strange and unfamiliar to the adolescent. In

addition to observable physical changes the adolescent experiences new feelings, sensations, and drives due to hormonal activity. The adolescent develops an intense interest in his body. Hurlock (1973) noted that this heightened interest in body image was due not only to the physical changes of adolescence but also to the strong emphasis placed on physical traits by peers. Mercer (1979) concurred, noting that as the body changes, the adolescent becomes aware of changes in how others respond to him. Schonfeld (1963) cited subjective perception of the body, internalized psychological factors, and societal influences as operational in the adolescent's preoccupation with body image.

Jersild (1952) proposed that adolescents expressed more concern about their physical appearance than any other aspect of themselves. Stolz and Stolz's research (1944) supported this proposition. In the findings from their longitudinal study of 176 adolescent males and females, it was revealed that 1/3 of all males and 1/2 of all females were concerned about at least one aspect of their physical appearance. In a study to determine the significance of physical attractiveness and physical effectiveness during adolescence, Lerner, Orlos, and Knapp (1976) found that female adolescents were concerned

about physical attractiveness; whereas, males were more concerned about physical effectiveness.

Because of the adolescent's extreme concern with his physical self, "any deviation from what he considers to be normal can be a source of excrutiating self-conciousness" (Marlow, 1977, p. 848). Stolz and Stolz (1944) found that, out of a group of 93 normal adolescent boys, 7.5% appeared disturbed by their shortness and, out of a group of 83 normal adolescent girls, 13% expressed concern about their tallness. In a study by Jones and Bayley (1950), 66% of the adolescents studied expressed a desire for a change in their physical appearance.

In research conducted to investigate the relationship between body image and self-concept, the significance of body image during adolescence was confirmed. Mussen and Jones (1957) administered the Thematic Aperception Test to a sample of adolescent boys. Their conclusion, based on interpretation of this projective technique of personality, was that late maturing males were more likely to have a negative self-concept than early maturers. In a similar study, Faust (1960) reported that limited prestige was associated with early maturity in girls before age 13 but after age 13 increased prestige positively correlated with maturation. In their work on body-cathexis, Secord and

Jourard (1953) found a positive correlation between body-cathexis and self-concept. McCandless (1960) confirmed the findings of Secord and Jourard.

The concept of body image is of paramount importance during adolescence. Body image influences how the adolescent feels about himself as well as how others respond to him. According to Wieczorek and Natapoff (1981), "the body image perceptions at the end of adolescence are the ones which will most probably be significant through life" (p. 1089). Whaley and Wong (1979) agreed that body image was established most firmly during adolescence. Thus, the concept of body image during adolescence has both immediate and long range implications.

Chronic Illness and Body Image

Adolescents, preoccupied with their bodies, tend to exaggerate imperfections, both real and imagined. To the adolescent, being different is often perceived as being inferior (Dempsey, 1972; Howe, 1980; King, 1963; Schonfeld, 1963; Travis, 1976). Travis (1976) proposed that being different from one's peers was the crux of identity problems in chronically ill teenagers. Hammar and Eddy (1966) agreed, noting that:

> Illness, which focuses increased attention upon the adolescent's body, tends to set him apart

> from his peers and, consequently, it poses a serious threat to his self-image. (p. 89)

According to Teicher (1973), adolescents perceive physical handicaps/limitations as threats to the self-concept. Howe (1980) noted that body image could be damaged by "hidden ailments"; those that were not outwardly detectable. Kaufman (1972) studied how alterations in body function affected body image during adolescence. Kaufman concluded, based on interpretation of drawings and data gathered during interviews, that the experience of illness was perceived as an imperfection or insult to the body image. This finding was particularly significant in that few of the subjects studied experienced observable manifestations of their illness.

The chronically ill adolescent has additional issues to resolve in the development of his self-concept which tend to complicate the struggle for identity (Lincoln, 1978; Skellern, 1979; Wolfish & McLean, 1974). Chronic illness has the potential to limit social contacts, restrict physical activity, and make the individual more dependent on his parents (Howe, 1980; Marlow, 1977). Such limitations can "restrict the pool of potential responders whose reactions can be used for self-definition" (Howe, 1980, p. 92). Adolescents with chronic illness may have problems formulating a body image that does not

disproportionately emphasize their disorder. Perhaps then the greatest developmental task awaiting the chronically ill adolescent is to recognize and accept what he is, both physically and biologically, and to incorporate this into his changing self-concept.

Diabetes and Body Image

Juvenile onset or insulin dependent diabetes mellitus is the most common endocrine disorder found in childhood. The incidence of childhood diabetes is estimated to be 1 out of 600 (Daniel, 1977; Laron, 1970, Wieczorek & Natapoff, 1981). Diabetes has the potential for both acute and chronic complications. In the United States, diabetes is the eighth leading cause of death, the third leading cause of blindness, and contributes significantly to the incidence of heart and blood vessel disorders. Diabetes is a complex, chronic disease that places numerous demands and restrictions on the individual requiring substantial self-discipline (Barcai, 1970; Etzwiler, 1970). These factors are often difficult to deal with for, when well controlled, the diabetic does not feel the presence of his disease nor manifest any observable symptoms. According to Zeidel (1970)

> The emotional conflict involved (in diabetes) is characterized by the subjectively mild course of the disease, on the one hand, and the strict

> regimen which must be followed, with the accompanying anxiety of the adults involved, on the other. This discrepancy tends to bestow an aura of mystery upon the disease, thus evoking fantasies of its being a punishment and provoking denial and rebellion. (p. 159)

Diabetes has special significance during adolescence. The nutritional demands accompanying the growth spurt and the hormonal fluctuations accompanying puberty often precipitate management problems. Adjustments in insulin, caloric intake, and activity must frequently be made to accommodate the periods of rapid growth that the adolescent experiences (Ashburn, 1975; Guthrie & Guthrie, 1975). In addition, diabetes, as with other chronic diseases, may exacerbate the problems sometimes associated with adolescence. The diabetic adolescent dislikes being different and will sometimes risk endangering his health to avoid revealing his illness (Bruce & Dawson, 1975; Crosby, 1977; Hammar & Eddy, 1966; Hoffman, 1973). Thus, a vicious cycle develops in which the physiological demands of diabetes conflict with the psychological stresses of adolescence, with both being intricately related to the anatomical and physiological processes of puberty.

Diabetes requires the individual to lead a controlled cautious lifestyle. Consequently, the diabetic is frequently faced with his "differentness". Eating, an

important aspect in the social lives of adolescents, is an obvious example of how diabetes impinges on the normal activities of adolescence. The diabetic adolescent must eat balanced meals at regular intervals. He cannot engage in the "food faddism" associated with adolescence (Marlow, 1977; Wolfish & McLean, 1974). In striving to be independent, the diabetic adolescent is constantly reminded of his dependence on medication and the various routines and restrictions involved in controlling his disease. For the diabetic adolescent, rebellion against these regimens poses serious, life threatening consequences.

Diabetes has serious implications in regard to acceptance, independence, and sexuality (Daniel, 1975). Accompanying the cognitive sophistication of adolescence is the realization of the long-range implications of diabetes. The diabetic adolescent must realistically appraise the impact his disorder may have on his future. Hoffman (1973) noted that the diabetic adolescent "must come to grips with the implications of his condition in relation to his hopes for a career, marriage, and family" (p. 6). Both males and females worry about how their illness will affect social and sexual acceptability. Leichtman and Friedman (1975) identified several concerns of the diabetic adolescent including the ability to be

self-sufficient and to assume the role of a parent. In particular, female diabetics must consider the consequences and risks involved in reproduction. In research conducted by Offutt (1967), the difficulty diabetic adolescents experience in terms of social adjustment was confirmed. Offutt reported that diabetic adolescents displayed greater disturbances in social adjustment than their non-diabetic peers.

At a time when being like one's peers is so important, the regimen required to successfully manage diabetes can complicate the process of developing a healthy, realistic body image and self-concept. Researchers have substantiated this assumption. Kaufman and Hersher (1971) presented case studies of diabetic adolescents which illustrated the relationship between diabetes and body image. Data gathered from these studies indicated that teenagers felt their bodies were damaged by their diabetes. Swift, Seidman, and Stein (1976) reported that, when compared with non-diabetic adolescents, diabetic adolescents exhibited greater disturbances in self-percept and body image.

The diabetic adolescent must accept being different. This includes the need for insulin, urine testing, diet management, and activity restrictions as well as the long-range implications of the degenerative sequelae of

diabetes. All of these factors have a profound impact on the individual's self-concept of which body image is an especially critical element. The psychological effects of diabetes are far reaching.

Maddison and Raphael (1971) proposed that 33% of all diabetic adolescents displayed neurotic behavior. In a study by Sullivan (1979), it was reported that diabetic adolescent girls exhibited significantly more depression than non-diabetic girls. A classic longitudinal study by Fischer and Dolger (1946) revealed that there were distinct behavioral patterns and psychological problems associated with diabetes. Specifically, the "temporary behavior alterations exhibited by normal adolescents" were exaggerated in diabetic adolescents (p. 711).

The intense narcissism of adolescence tends to accentuate physical defects. Physical defects are a source of concern for they represent social handicaps, either real or imagined. Diabetes complicates the adolescent's struggle for independence and identity. Daniel (1977) stated that many adolescents felt that diabetes was a hopeless condition and that being different was too much to bear. Howe (1980) summarized the impact of this disorder in reporting a diabetic adolescent's reaction to his condition: "As far as he was concerned his body had betrayed him. . .

and the (diabetes) threatened the physical integrity he was striving for" (p. 89).

Summary

This chapter presented a review of classic and current literature regarding the concepts of adolescence and body image and the impact of chronic disease, specifically diabetes. Relevant research results were cited. Subtopics included adolescence, the significance of body image during adolescence, chronic illness and body image, and diabetes and body image.

Adolescence as a developmental stage is a relatively recent phenomenon. Body image is of particular concern during adolescence. Chronic illnesses, such as diabetes, have the potential to impose negative influences on the body image thus compounding the difficulty of the developmental tasks associated with adolescence.

CHAPTER 3

PROCEDURE FOR COLLECTION AND TREATMENT OF DATA

This study employed an exploratory, non-experimental, two group design to investigate the difference in body image between diabetic and well adolescents. Exploratory research attempts to discover factors that affect or relate to a particular phenomenon (Polit & Hungler, 1978). The design of this study was non-experimental because the investigator did not control for all extraneous variables nor manipulate the independent variable (Kerlinger, 1973).

The independent variable in this study was diabetes. A one-way analysis of variance (ANOVA) was used to determine if there was a significant difference between the body image of diabetic and well adolescents. Extraneous variables which may affect body image include age, sex, grade in school, and age at time of diagnosis. The relationship of these factors to body image was studied using various statistical techniques.

Group I was composed of diabetic adolescents. Group II was composed of well adolescents. Data were collected over a 3-month period.

Setting

The setting for this study included a summer camp for diabetics located in north Texas and a suburban high school located in southeast Texas. Questionnaires were administered to the diabetic subjects in their camp dormitories under the supervision of the camp's medical director. Dormitories were assigned according to age and sex. The investigator administered the questionnaires to subjects in Group II in selected school classrooms.

Population and Sample

This study employed a convenience sample. Sample size was 25 subjects per group. Subjects for Group I were obtained from Camp Sweeney, a summer camp for diabetic children and teenagers located in Gainesville, Texas. The camp draws its population from the southwest. Individuals attending the camp range in age from 6 to 18 years. Subjects and their parents were informed of this study through a letter included in their orientation packet (Appendices A and B). Subjects and their parents had an opportunity to discuss the study with the investigator during camp registration. Those subjects and their parents willing to participate signed a consent form (Appendix C). The investigator used the first available 25 subjects.

Subjects for Group II were obtained from health classes at a high school located in a suburb of a large, metropolitan area in southeast Texas. The suburb has an estimated population of 40,000. Students enrolled in health classes range in age from 14 to 18 years. Subjects and their parents were asked to participate in this study via a letter distributed during class (Appendices A and B). Subjects willing to participate returned signed consent forms (Appendix C). The subjects were selected for this population until $n = 25$.

Protection of Human Subjects

Approval for the study was obtained from the Human Rights Committee at Texas Woman's University and the committees of selected agencies (Appendices D, E, and F). The subjects' rights were protected in the following manner:

1. Prospective subjects and their parents were informed that participation in this study was voluntary.

2. Written consent forms were signed by the subjects and their parents and witnessed by a person other than the investigator.

3. Questionnaires remained anonymous.

4. Subjects were told that they could withdraw from the study at any time.

Potential risks to the subjects included concern about self-disclosure, fear of improper release of information, and increased awareness of body parts included in the questionnaire. Various items may have drawn attention to body parts or functions not previously considered by the subjects. These risks were identified in the letters distributed to the parents and adolescents.

Instrument

Body image, the dependent variable, was measured according to the Secord-Jourard Body-Cathexis Scale (Appendix G). This instrument assesses individuals' attitudes toward their bodies. Subjects are asked to rate the strength and direction of feelings about various parts or functions of their bodies.

The original questionnaire consisted of 40 items. For this study, three items--sex drive, sex activities, and sex organs--were deleted. Modification of the instrument was done to preclude any possible parental concern about the age-appropriateness of those items.

Subjects rated their feelings according to the following criteria:

1. Have strong positive feelings
2. Have moderate positive feelings

3. Have no feelings one way or another
4. Have moderate negative feelings
5. Have strong negative feelings

Sample items include the words hair, facial complexion, height, digestion, profile, and body build.

Secord and Jourard (1953) examined the validity of the Body-Cathexis Scale by correlating it with the Homonym Test of Body-Cathexis and the Maslow Test of Psychological Security-Insecurity. Findings revealed a negative relationship with a correlational value of -.41 for a sample of 43 college females. A sample of 46 college males revealed a negative relationship with a correlational value of -.40. These findings indicate an inverse relationship. Secord and Jourard also compared body-cathexis scores to self-cathexis scores and found a correlation coefficient of .66 which is significant at the .01 level.

Split-half reliability reported by Secord and Jourard (1953) was .81 for the Body-Cathexis Scale using a sample of college freshmen. Johnson (1956) calculated a test-retest reliability coefficient of .72 for the Body-Cathexis Scale using a sample of 52 male college students. Although this instrument was tested on college students, it was considered appropriate for high school students because the reading levels of the two groups are similar. An

alpha coefficient was run on the collected data to determine the reliability of the instrument for this sample.

Data Collection

Written permission from the subjects and the subjects' parents was obtained. Questionnaires were administered to subjects in Group I in the dormitories prior to the evening meal. In addition to the questionnaire, subjects were requested to complete a brief personal data sheet to determine age, sex, grade in school, age when diagnosed, the presence of other diseases or disabilities, and whether they were using an insulin pump (Appendix H). Questionnaires indicating the presence of disability or disease other than diabetes were excluded from data analysis.

Questionnaires were administered to subjects in Group II during scheduled weekly health classes. Students were seated at individual desks and were requested to remain silent during administration of the questionnaire. In addition to the questionnaire, subjects were requested to complete a brief personal data sheet which asked for age, sex, grade in school, and information to determine the presence of chronic disease or disability (Appendix I). Questionnaires indicating the presence of chronic disease or disability were not included in the analysis of data.

Treatment of Data

Descriptive statistics were used to summarize the demographic data and responses to the questionnaires. Depending on the level of measurement, the frequency, measure of central tendency, and variability for each variable were calculated (Hopkins & Glass, 1978). Tables were used to illustrate this information.

Responses on the Secord-Jourard Body-Cathexis Scale were scored on a Likert scale from 1 through 5, with number 1 the most favorable response. Individual scores were determined by summing the numerical responses (Secord & Jourard, 1953). A one-way ANOVA, a parametric statistical procedure, was applied to compare the difference between Groups I and II. Analysis of variance tests the significance of differences between group means (Polit & Hungler, 1978).

Differences within groups were studied in regard to age, sex, grade in school, and age at time of diagnosis, using various statistical techniques. A Spearman's rho was used to determine the relationship between score and grade in school. Spearman's rho was selected because of its appropriateness in analyzing ordinal level data (Polit & Hungler, 1978). The Mann-Whitney U test was applied to determine the relationship between score and sex.

This statistical treatment is appropriate for data in which one variable is nominal and the other ordinal (Hopkins & Glass, 1978). The Pearson r was used to determine the correlation between age and score, and age at time of diagnosis and score. This test was selected as these variables are both ratio level data (Polit & Hungler, 1978). An alpha coefficient was run on the data to determine the reliability of the instrument for this sample. Coefficient alpha is the preferred correlational technique because it provides "an estimate of the split-half correlation for all possible ways of dividing the measure into two halves" (Polit & Hungler, 1978, p. 431).

Summary

In this chapter, the sample and settings of the study were described. The procedure for collection and treatment of data was outlined. A description of the instrument used to measure body image was provided.

CHAPTER 4

ANALYSIS OF DATA

This study asked the question: Is there a difference in the body image of diabetic and well adolescents? This chapter presents the findings of this study. A description of the sample studied and an analysis of the data collected are provided.

Description of Sample

A total of 56 subjects participated in this study. Fifty of the subjects met the criteria for inclusion in the research. Each group consisted of 25 subjects.

The ages of the subjects ranged from 13 to 18 years. The mean age was 14.44 years with a standard deviation of 1.29 years. The median age was 14.18 years and the mode was 14 years with 38% of the subjects falling in this age category. An equal number of males and females were represented (see Table 1).

The mean grade level was 9.5, with a majority of subjects in the ninth grade. The median grade level was 7.23. Subjects' grade level in Group I ranged from seventh to twelfth. In Group II, the range was from ninth to twelfth.

Table 1

Frequencies and Percentages of Variables Age and Sex for Diabetic and Well Subjects

Variable	Group I		Group II		Total	Percent
	Frequency	Percent	Frequency	Percent	Frequency	of Total
Age						
13-14	13	52	18	72	31	62
15-16	10	40	5	20	15	30
17-18	2	8	2	8	4	8
Total	25	100	25	100	50	100
Sex						
Male	13	52	12	48	25	50
Female	12	48	13	52	25	50
Total	25	100	25	100	50	100

In Group I, the mean age at time of diagnosis was 8.8 years with a standard deviation of 3.2 years (see Table 2). Only one subject reported using an insulin pump. This subject was excluded from data analysis due to a positive response on another item in the demographic data base which precluded his participation.

Findings

The research question studied was: Is there a difference in the body image of diabetic and well adolescents? The instrument used to measure body image was the Secord-Jourard Body-Cathexis Scale (Secord & Jourard,

Table 2

Age at Time of Diagnosis of Diabetes

Age at Time of Diagnosis (years)	Frequency of Subjects	Percent
2	1	4
4	1	4
5	2	8
6	3	12
7	3	12
9	3	12
10	4	16
11	2	8
12	2	8
13	3	12
15	1	4
Total	25	100

1953). This instrument assesses individuals' attitudes towards their bodies.

Scores on the Secord-Jourard Body-Cathexis Scale from Group I and Group II were compared, using a one-way analysis of variance (ANOVA), to determine if a significant difference existed between groups. ANOVA results indicated no significant difference between groups (see Table 3). Therefore, there is no difference in body image between diabetic and non-diabetic adolescents in this sample.

The possible range of scores was 37 to 185. Scores for Group I ranged from 50 to 132. Scores for Group II ranged from 39 to 126. The mean score for Group I was 87.5

Table 3

Analysis of Variance Table for Comparison of Body-Cathexis Between Diabetic and Well Adolescents

Source of Variance	Sum of Squares	Degrees of Freedom	Mean Square	F	Total Probability
Between Groups	204.01	1	204.02	0.494	0.4857
Error	19,842.48	48	413.38	--	--

with a standard deviation of 20.01. The mean score for Group II was 83.4 with a standard deviation of 20.46 (see Table 4). Therefore, adolescents in this sample as a whole show a negative body image.

Table 4

Mean, Standard Deviation, and Range of Body-Cathexis Scores for All Subjects

	Group I	Group II	Total Sample
Mean	87.5	83.4	85.5
Standard Deviation	20.01	20.64	20.21
Range	50-132	39-126	39-132

Demographic variables studied included age, age at time of diagnosis, sex, and grade in school. A Pearson Correlation Coefficient was used to determine the relationship between age and body-cathexis score for the total sample and age at time of diagnosis and body-cathexis score for Group I. No significant correlation was found for either of these factors. It is interesting to note, however, that while not statistically significant, a negative correlation existed between each variable and score (age: -.1043; age at time of diagnosis: -.1148). This means that the younger the subject, the lower the body image as measured by the Secord-Jourard Body-Cathexis Scale. Accordingly, the younger the subject at the time of diagnosis, the lower the body image.

To determine the relationship between grade in school and body-cathexis score, the Spearman Correlation Coefficient was used. The results of this test indicated that a statistically significant relationship did not exist. Again, however, a negative correlation (-.1043), although not statistically significant, was found. In other words, the lower the grade level of the subject, the higher the body-cathexis score, indicating a lower, or less positive, body image. A Mann-Whitney U was performed to identify any

significant difference between the body-cathexis scores of males and females. None was found.

An alpha coefficient, done to determine the reliability of the instrument for this sample, revealed a reliability coefficient of .87. This value reflects a high degree of internal consistency. Based on this value, it was decided that the Secord-Jourard Body-Cathexis Scale was appropriate for this sample.

Summary of Findings

In this chapter, the demographic data and scores on the questionnaire were discussed. Tables were used to highlight this information. Appropriate descriptive statistics were employed.

Statistical analysis revealed that there was no significant difference in body image between the diabetic and well samples studied. Analysis of demographic variables identified revealed no significant correlation between these factors and body image. Although not statistically significant, a negative correlation was found between the variables of age, age at time of diagnosis, and grade with the scores on the Secord-Jourard Body-Cathexis Scale.

CHAPTER 5

SUMMARY OF THE STUDY

This study was conducted to determine whether there is a difference in the body image of diabetic and well adolescents. In this chapter, a general summary of the study is provided. Conclusions are drawn and implications are discussed. Recommendations for future studies are identified.

Summary

This exploratory study employed a non-experimental, two group design to investigate the difference in body image between diabetic and well adolescents. The Secord-Jourard Body-Cathexis Scale was used to measure body image. A sample of 25 diabetic adolescents, meeting specified criteria, were obtained from a summer camp for diabetics. Twenty-five subjects for the well adolescent group were obtained from health classes at a suburban high school. Protection of human rights was assured through appropriate measures. A one-way analysis of variance was computed to determine the difference in body image between the two groups. This test revealed there were no significant differences in body image.

Demographic factors were studied using various statistical tests. Results of these correlational techniques indicated that no significant relationship between body-cathexis scores and the variables of age, sex, grade in school, and age at time of diagnosis existed. Although not statistically significant, a negative correlation was found between the variables of age, age at time of diagnosis, and grade in school and the scores on the Secord-Jourard Body-Cathexis Scale.

Discussion of Findings

The results of this study do not support the findings of Kaufman and Hersher (1971). They reported that teenagers felt their bodies were damaged by diabetes. The literature suggested that a chronic illness, such as diabetes, may have a negative effect on body image. It was further suggested that this negative effect would be most strongly felt during adolescence. Several factors can be identified which may account for the contrary results obtained from this study. Most obviously, the size of the sample and the sample technique preclude any generalizations to the overall population. Hence, any comparison of these findings with other studies is not likely to yield significant similarities.

In addition, the selection of diabetic subjects may have skewed the data. Besse (1970) noted that individuals attending summer camps for diabetics "lead a daily life comparable to that of non-diabetic young people of their own age" (p. 145). Besse cited numerous advantages of summer camps for diabetics including the disruption of certain patterns of family overprotection, egocentricity, and inferiority. Vandenberg (1971) concurred and proposed that summer camps for diabetics were instrumental in helping the diabetic gain self-confidence.

One further influencing factor may have been the health status of the diabetic subjects in this sample. A criteria for camp attendance is that the individual's diabetes is controlled and the general health status of each individual good. Thus, the diabetic subjects studied may not have been representative of the diabetic adolescent population.

Findings regarding the demographic variables are again due to sample size and sampling technique, not generalizable to the overall population. The results of this study, while not statistically significant, do support the findings of Simmons, Rosenberg, and Rosenberg (1973) in which age positively correlated with stability of the self-image. In regard to age at time of diagnosis, the

results derived from this research were found to be compatible with the findings of Fischer and Dolger (1946). They reported no relationship between age of onset of diabetes and exaggerations in behavioral alterations. This investigator found no relevant research regarding body image during adolescence and sex or grade in school.

Conclusions and Implications

The following conclusions were drawn from this study:

1. There is no significant difference in the body image of diabetic and well adolescents.

2. Age, sex, grade in school, and age at time of diagnosis do not significantly correlate with body image.

3. Adolescents have a negative body image.

The major implication drawn from this study pertains to the role of summer camps in fostering a positive self-image in diabetic children and teenagers. Although not proven, the potential for diabetic summer camps to provide role models, referrent groups, and "a chance to be like everyone else" cannot be overlooked. The findings from this study, when compared to the assumptions in the literature, imply either a need for re-examination of the assumptions or further investigation into the area. The latter being the more judicious choice.

Recommendations for Further Study

The following recommendations are made:

1. A replication of this study should be done using a larger sample size and a random sampling technique.

2. A study should be conducted to examine the relationship between the body image of diabetics attending special summer camps and diabetics not attending summer camps. This study should, ideally, incorporate a longitudinal follow-up.

3. Further research should be conducted to study the effect of other chronic diseases on body image.

4. Similar studies should be conducted to determine the relationship between age and body image using various age groups.

5. A study should be conducted using a pre- and posttest design in which summer camp is the identified treatment.

APPENDIX A

LETTER TO TEEN

Dear Teen,

I am conducting a study to learn how teenagers feel about their bodies. As part of my research, I am administering a questionnaire that measures body image.

I would appreciate your participation in this study. If you agree to participate, you will be asked to complete a questionnaire and a brief personal data sheet. This will conclude your participation.

The knowledge gained from this study will be helpful in understanding how teenagers feel about themselves.

Included in the letter to your parents is a consent form granting me permission to administer the questionnaire. If you agree to participate, please sign it and return it.

Your cooperation will be greatly appreciated.

Sincerely,

Ruth C. Koonce, R.N.
Graduate Student
Maternal-Child Nursing
Texas Woman's University
Houston, Texas

APPENDIX B

LETTER TO PARENTS

Dear Parents,

I am a graduate student in Maternal-Child Nursing at Texas Woman's University, Houston. For my master's thesis, I am conducting a research study on body image during adolescence. I would appreciate your allowing your child to participate in this study.

Participants will be asked to anonymously complete a questionnaire that measures body image. No physical procedures or other activities will be conducted. Your child will be informed that he or she may refuse to participate and may discontinue participation at any time. Questionnaires will be administered by me and will take approximately 20 minutes to complete. This will conclude your child's participation in the study.

Risks identified in this study include possible increased awareness of body image and concern about confidentiality. The investigator will be available to the participants to discuss any questions or concerns about the questionnaire. To assure confidentiality, the questionnaires will be numerically coded according to group and will remain anonymous.

Information gained from the results of this study will contribute to knowledge about how teenagers feel about themselves. Such knowledge is useful in understanding the problems sometimes associated with adolescence.

On the following page is the consent form granting permission for your child to participate in this study. If you agree to allow your child to participate, please sign the permit, have it witnessed, and return it with your child.

Thank you for your time and consideration. Your child's participation will be greatly appreciated.

Sincerely,

APPENDIX C

CONSENT FORM

CONSENT FORM

1. I hereby authorize Ruth C. Koonce to perform the following investigation:

   Administration of the Secord-Jourard Body-Cathexis Scale

2. The above investigation has been explained to me in a letter written by Ruth C. Koonce.

3. The aforementioned letter describes the possible risks and benefits of this study.

4. Although there are no forseen physical complications, it is the policy of the university that no medical service or compensation is provided to subjects as a result of injury from participation in research.

_____ _____
Subject's signature Date

Subject is a minor (age _____)

Signatures (one required)

_____ _____
Father Date

_____ _____
Mother Date

_____ _____
Guardian Date

_____ _____
Witness (one required) Date

APPENDIX D

PERMISSION FROM TEXAS WOMAN'S UNIVERSITY

TEXAS WOMAN'S UNIVERSITY

DENTON, TEXAS 76204

THE GRADUATE SCHOOL

October 7, 1981

Mrs. Ruth C. Koonce
22527 Indian Ridge Drive
Katy, Texas 77450

Dear Mrs. Koonce:

Thank you very much for sending written authorization of clearance.

I have placed the clearance with the prospectus of your study and have noted that final approval has now been given the prospectus.

I look forward to seeing the results of your study.

Sincerely yours,

Dissertation/Theses signature page is here.

To protect individuals we have covered their signatures.

APPENDIX E

PERMISSION FROM HUMAN RIGHTS COMMITTEE

TEXAS WOMAN'S UNIVERSITY
HOUSTON CAMPUS
HUMAN RESEARCH REVIEW COMMITTEE
REPORT

STUDENT'S NAME RUTH C. KOONCE

PROPOSAL TITLE BODY IMAGE OF DIABETIC AND WELL ADOLESCENTS

COMMENTS:

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To protect individuals we have covered their signatures.

APPENDIX F

AGENCY PERMISSION

TEXAS WOMAN'S UNIVERSITY
COLLEGE OF NURSING
DENTON, TEXAS 76204

DALLAS CENTER
1810 INWOOD ROAD
DALLAS, TEXAS 75235

HOUSTON CENTER
1130 M. D. ANDERSON BLVD.
HOUSTON, TEXAS 77025

AGENCY PERMISSION FOR CONDUCTING STUDY*

THE CAMP SWEENEY

GRANTS TO RUTH C. KOONCE
a student enrolled in a program of nursing leading to a Master's Degree at Texas Woman's University, the privilege of its facilities in order to study the following problem:

BODY IMAGE OF DIABETIC AND WELL ADOLESCENTS

The conditions mutually agreed upon are as follows:

1. The agency (may) (may not) be identified in the final report.
2. The names of consultative or administrative personnel in the agency (may) (may not) be identified in the final report.
3. The agency (wants) (does not want) a conference with the student when the report is completed.
4. The agency is (willing) (unwilling) to allow the completed report to be circulated through interlibrary loan.
5. Other We would suggest the questionaire administered at the beginning & at the conclusion of camp session to assess benefits of camp.

Date: 5/18/87 Jay Murphy M.D. Med. Director
Signature of Agency Personnel

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To protect individuals we have covered their signatures.

TEXAS WOMAN'S UNIVERSITY
COLLEGE OF NURSING
DENTON, TEXAS 76204

DALLAS CENTER
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DALLAS, TEXAS 75235

HOUSTON CENTER
1130 M. D. ANDERSON BLVD.
HOUSTON, TEXAS 77030

AGENCY PERMISSION FOR CONDUCTING STUDY*

THE [redacted]

GRANTS TO Ruth C. Koonce
a student enrolled in a program of nursing leading to a Master's Degree at Texas Woman's University, the privilege of its facilities in order to study the following problem:

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3. The agency (wants) (does not want) a conference with the student when the report is completed.
4. The agency is (willing) (unwilling) to allow the completed report to be circulated through interlibrary loan.
5. Other _____

Dissertation/Theses signature page is here.

To protect individuals we have covered their signatures.

APPENDIX G

SECORD-JOURARD BODY-CATHEXIS SCALE

On the following page are listed a number of things characteristic of yourself or related to you. Consider each item listed and encircle the number after each item which best represents your feelings according to the following scale:

1 - HAVE STRONG POSITIVE FEELINGS
Encircle a 1 for those aspects of yourself about which you feel proud or happy or which give you a pleasant feeling when you think about them. For example, if you are proud of your body build, encircle the 1 after that item If you feel happy about your intelligence level, encircle the 1 after that item.

2 - HAVE MODERATE POSITIVE FEELINGS
Encircle a 2 for those aspects of yourself about which you have some positive feeling but not as strong as that in category 1.

3 - HAVE NO FEELING ONE WAY OR THE OTHER
Encircle a 3 for those aspects of yourself about which you have no feeling at all, For example, if you have no feeling at all about your artistic talents (or lack of them) encircle the 3 after that item.

4 - HAVE MODERATE NEGATIVE FEELINGS
Encircle a 4 for those aspects of yourself about which you have some negative feeling but not as strong as that in category 5 (see below).

5 - HAVE STRONG NEGATIVE FEELINGS
Encircle a 5 for those aspects of yourself about which you worry or which you dislike very much or which cause you to feel unhappy when you think about them. For example, if you think that your profile is ugly and this disturbs you when you think about it, or if you feel unhappy about your height, encircle the 5 after these items.

1 - Have strong positive feelings

2 - Have moderate positive feelings

3 - Have no feelings one way or the other

4 - Have moderate negative feelings

5 - Have strong negative feelings

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

distribution of hair (over body) 1 2 3 4 5

nose 1 2 3 4 5

physical stamina 1 2 3 4 5

elimination 1 2 3 4 5

muscular strength 1 2 3 4 5

waist 1 2 3 4 5

energy level 1 2 3 4 5

back 1 2 3 4 5

ears 1 2 3 4 5

age 1 2 3 4 5

chin 1 2 3 4 5

body build 1 2 3 4 5

profile 1 2 3 4 5

height 1 2 3 4 5

arms 1 2 3 4 5

chest (or breasts) 1 2 3 4 5

appearance of eyes 1 2 3 4 5

digestion 1 2 3 4 5

hips 1 2 3 4 5

resistance to illness 1 2 3 4 5

legs 1 2 3 4 5

appearance of teeth 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

knees 1 2 3 4 5

posture 1 2 3 4 5

face 1 2 3 4 5

weight 1 2 3 4 5

tolerance for pain 1 2 3 4 5

width of shoulders 1 2 3 4 5

keeness of senses 1 2 3 4 5

APPENDIX H

PERSONAL DATA - GROUP I

PERSONAL DATA

AGE _____

SEX M____ F____

WHAT GRADE ARE YOU IN? _____

HOW OLD WERE YOU WHEN YOUR DIABETES WAS DISCOVERED OR DIAGNOSED? _____

DO YOU HAVE ANY ACTIVITY RESTRICTIONS? YES _____ NO_____

IF YES, EXPLAIN _____

ARE YOU UNDER A DOCTOR'S CARE FOR ANY PROBLEM OTHER THAN DIABETES? YES_____ NO_____

IF YES, EXPLAIN _____

ARE YOU USING AN INSULIN PUMP? YES_____ NO_____

APPENDIX I

PERSONAL DATA - GROUP II

PERSONAL DATA

AGE _____

SEX M_____ F_____

WHAT GRADE ARE YOU IN? _____

ARE YOU UNDER A DOCTOR'S CARE? YES_____ NO_____

IF YES, HOW LONG? _____

WHAT IS THE REASON? (DIAGNOSIS) _____

_____

DO YOU HAVE ANY ACTIVITY RESTRICTIONS? YES_____ NO_____

IF YES, EXPLAIN _____

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