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UNIVERSITY OF SAN DIEGO
Hahn School of Nursing and Health Science
DOCTOR OF PHILOSOPHY IN NURSING

DEPRESSIVE SYMPTOMATOLOGY AND PERCEIVED SOCIAL SUPPORT IN
ADOLESCENTS WITH TYPE 2 DIABETES

by

Kristiana Gay Huffman Cullum, PhD, CPNP

A dissertation presented to the
FACULTY OF THE HAHN SCHOOL OF NURSING AND HEALTH SCIENCE
UNIVERSITY OF SAN DIEGO

In partial fulfillment of the
requirements for the degree
DOCTOR OF PHILOSOPHY IN NURSING

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Dissertation Committee

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Abstract

Type 2 diabetes has increased dramatically in the pediatric population in the last decade. One of the comorbidities of diabetes is depression. In the presence of depression, diabetes may be mismanaged by patients and lead to a decline in health. Diabetes with comorbid depression may have better disease management outcomes in the presence of higher levels of social support. Defining childhood depression, which encompasses adolescence, and the subtleties of this disorder compared to the adult counterpart, was needed to better delineate important variables for this research study. There are several instruments that evaluate adolescents' perceived social support, but a fairly new instrument related to this construct not only assesses the availability of social support, but also support for healthy behaviors. The purpose of this dissertation was threefold. First, to explore the definition of childhood depression using a concept analysis approach to describe the critical attributes, antecedents, and consequences of childhood depression through the lens of a diathesis stress model. Second, to review the psychometric properties of the Child and Adolescent Social Support Scale for Healthy Behaviors (CASSS-HB) and its potential uses. Last, to explore the relationships between depressive symptomatology, social support, and relevant physiological and sociocultural variables in adolescents with type 2 diabetes during the developmental stages of early and middle adolescence. This was a descriptive correlational, cross sectional study using a purposive sample of adolescents with type 2 diabetes. Results indicated that depressive symptoms were not significantly related to other variables, however mean depressive symptoms scores were higher among early adolescents. Middle adolescents had lower BMI percentiles but higher HgA1c levels. Early adolescents had greater mean scores of social

support and reported this support was more important compared to middle adolescents.

Overall, this research demonstrated that differences exist in perceived social support, depressive symptoms, and HgA1c levels among early and middle adolescents.

Keywords: type 2 diabetes, adolescents, childhood depression, social support

Dedication

Many years ago my family's lives were changed forever with my brother's diagnosis of diabetes. My sister's diagnosis came shortly thereafter, followed years later by her son, then a second sister's son. It is from them that my inspiration comes. It is to them, and the countless others living with and affected by diabetes, that I dedicate this work. I am blessed to have parents who always believe in me and taught me that no star is out of reach and a husband who stands by me as I pluck each one from the sky. For my daughter Grace, my brightest star, I am forever blessed. Thank you for lighting my way on this incredible journey.

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I am grateful for the financial assistance provided by the California State University Chancellor's Doctoral Incentive Program and to Dr. Michael Gates for his continued mentorship. Dr. Sarah Livermore, my dear friend and colleague, has been a tremendous support throughout this journey, as well as Sarah Giron and Chris Sloan. The support I received from colleagues, friends, and family was instrumental to my success and does not go unrecognized.

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Depressive Symptomatology and Perceived Social Support in Adolescents With Type 2 Diabetes

Introductory Chapter

In the past 20 years, there has been a dramatic increase in the number of pediatric patients diagnosed with type 2 diabetes mellitus. Studies indicate that in pediatric patients with type 1 diabetes, a significant, and inverse, relationship exists between social support and depressive symptoms. Thus far, only a few pediatric type 2 diabetes studies support these findings. Parents provide much of the social support needed by younger children with type 2 diabetes, however, by the time they reach adolescence, their tendency to spend increasing amounts of time away from home means that other sources of social support become more important. Given the growing number of adolescents living with type 2 diabetes over the past two decades, little is known about the impact of this chronic disease on their emotional health and their need for and sources of social support.

Diabetes is a lifelong, chronic illness, with no cure. Children are being diagnosed at earlier ages than in the past, and type 2 diabetes, once an adult disease, now affects children as young as school age. There is a strong, positive correlation between

pediatric obesity and type 2 diabetes. The rise in childhood obesity has been met with a rise in type 2 diabetes in the pediatric population. Compliance to medication regimens and dietary and activity changes will help to prevent negative outcomes and comorbidities in the future. Depression is a comorbidity of diabetes that may lead to non-adherence and result in additional comorbidities. The literature supports this association for children with type 1 diabetes and adults with type 2 diabetes, but the evidence for this in adolescents with type 2 diabetes is limited. Furthermore, while social support is correlated with depression in adults with type 2 diabetes and adolescents without illness, there is little research on adolescents with type 2 diabetes.

It wasn't until the late 1970s that depression in children was thought to exist; prior to this time there lacked a precise definition (Kovac, 1983). The ambiguity in the definition of childhood depression is exacerbated today by diagnostic criteria that are the same for both adults and children (Pilgrim & Bentall, 1999; APA, 2013). Depression, or major depressive disorder, is defined by criteria presented in the American Psychological Association's (APA) *Diagnostic and Statistical Manual of Mental Disorders Fifth Edition* (APA, 2013). Adults and children are evaluated using the same criteria, although some signs and symptoms are unique to the pediatric population. In light of this dilemma, further exploration of the concept of childhood depression was warranted given that this study evaluated depressive symptoms in an adolescent population. A concept analysis of childhood depression using a diathesis stress framework to highlight vulnerabilities and risk factors was conducted. The term *childhood* encompassed children and adolescents and findings helped to drive data collection variables for the study by identifying biologic risk factors, such as gender, chronic illness, and obesity as

well environmental factors, such as parental conflict and poor peer relationships which may, in turn, affect perceived social support and importance of support.

The social support instrument used in this study, the Child and Adolescent Social Support Scale for Healthy Behaviors (CASSS-HB), was a newly adapted version of an established instrument, the Child and Adolescent Social Support Scale (CASSS) (Menon & Demaray, 2013). The CASSS-HB is specific to health related social support but has had limited testing. Understanding its origin and psychometric properties, including validity and reliability, was important prior to its use in this study. Based upon the initial publication of the CASSS-HB, its psychometric properties were evaluated along with the multiple publications for the CASSS to determine whether this instrument would be appropriate for use with a population of adolescents with type 2 diabetes.

Adolescence is divided into three subphases, early (11-14 years), middle (15-17 years), and late (18-21 years), each with its own identifying milestones. Early adolescence presents the most challenges as these adolescents search for belonging in a subculture that will later define their middle and late adolescence. Early adolescents are rapidly growing both physically and emotionally and beginning to think abstractly. Along with physical changes comes concern about appearance which is intensified in middle adolescence (Garzon & Dunn, 2013). Abstract thought matures during middle adolescence and an increasing desire for independence leads to a separation from parents and shift in social support networks. Having type 2 diabetes, a chronic illness that sets one apart from peers, and requires daily parental oversight, adds another dimension to this developmental period. Early and middle adolescents were the focus of this study as type 2 diabetes in this age group is increasing rapidly.

Purpose of the Study

The purpose of this study was to examine depressive symptomatology and perceived social support among adolescents with type 2 diabetes between the ages of 13 and 17. In addition, this study aimed to explore the relationships between depressive symptomatology, perceived social support, body mass index (BMI), hemoglobin A1c (HgbA1c), gender, years since diagnosis, socioeconomic status, ethnicity/race, age, comorbid illnesses, and involvement in after school activities.

Research Questions

The research questions to be addressed in this study were:

Question 1. What are the relationships between depressive symptomatology, perceived social support, body mass index (BMI), hemoglobin A1c (HgbA1c), gender, years since diagnosis, socioeconomic status, ethnicity/race, age, comorbid illnesses, and family history of depression.

Question 2. What is the reliability of CASSS-HB with adolescents with type 2 diabetes, between the ages of 13 and 17?

Significance of the Study

This study adds to the limited research currently available about adolescents with type 2 diabetes. The comorbidity of depression and its relationship to perceived social support will add to the knowledge about how to best support this population. Prevention is important but equally significant is the need for interventions aimed at decreasing comorbidities and returning adolescents to a healthy state in the presence of chronic illness. Although the findings will not be generalizable to this entire population, it will set the stage for future interventional research.

Summary

Type 2 diabetes is a chronic disease that affects millions of people across the lifespan, and cultures, causes significant comorbidities, and costs the nation billions of dollars every year. Depression is a comorbidity, which, when present, can lead to complications stemming from non-adherence to the appropriate medical regime. Most complications are preventable. The Diathesis Stress Model coupled with adolescent developmental stages may explain the relationship between perceived social support and depression in adolescents with type 2 DM. Results of this study may guide future interventions with this population.

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Childhood Depression Within a Diathesis-Stress Model: A Concept Analysis

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Abstract

Aim: To report an analysis of the concept of childhood depression.

Background: Defining childhood depression, and the subtleties of this disorder compared to the adult counterpart, is needed to better understand and evaluate this clinical population.

Design: Concept analysis utilizing Walker and Avant's eight step process.

Data Sources: A search of Medline, PsycINFO, PsycArticles, Academic Search Premier, and CINAHL Plus with Full Text from 2004-2014 yielded literature sources relevant to this analysis.

Methods: The literature was reviewed until saturation was reached and new material for the concept analysis was no longer discovered.

Results: The literature demonstrated that the definition of childhood depression is deeply rooted in the American Psychiatric Association's defining characteristics of a major depressive disorder found in the *Diagnostic and Statistical Manual of Mental Disorders Fifth Edition*. This diagnostic criteria may be mapped onto a diathesis-stress model to figuratively define childhood depression.

Conclusions: This concept analysis provides the clinician, researcher, and health science student with a better understanding of childhood depression, its roots, and the future needs of this specialized population.

Key Words: concept analysis, childhood depression, diathesis-stress model, major depressive disorder, nursing

SUMMARY STATEMENT

Why is the research or review needed?

- Childhood depression, and mental health, have become a primary concern in health care.
- Childhood depression in the context of a diathesis-stress model aids in the recognition of children at high risk for developing depression.
- There are insufficient pediatric mental health providers, requiring primary and ancillary health providers to recognize childhood depression.

What are the key findings?

- This analysis adds to nursing knowledge in light of the 2013 release of the *Diagnostic and Statistical Manual of Mental Disorders Fifth Edition* which include revisions to Major Depressive Disorder.
- There are differences in some presenting signs and symptoms of depression during childhood than adulthood despite identical diagnostic criteria.

How should the findings be used to influence policy/practice/research/education?

- This analysis provides guidance for recognition of childhood depression in clinical practice
- This analysis is instrumental for pediatric health care providers, health science students, as well as educators at all levels.

Childhood Depression Within a Diathesis-Stress Model: A Concept Analysis

Introduction

Psychopathology has been examined by researchers worldwide in the fields of psychiatry, sociology, psychology, nursing, and more. Within this context is depression, which has been studied for decades. As with most research, the origins of this disorder lay in the adult literature, not the pediatric realm, which has only recently been studied. According to the National Institute of Mental Health (NIMH) (2011), childhood depression was not seriously considered until the latter part of the last millennium. This occurred, partly, because depression was not readily recognized in children, nor were age-appropriate approaches to assessment available. Initially, interviews were conducted to assess depression in children based on adult interview questions. Until the late 1970s, there were few developmentally appropriate self-report questionnaires. This was preceded by lack of a precise definition of childhood depression (Kovac, 1983). Pilgrim and Bentall (1999) go on to say that there is ambiguity in the diagnosis of depression in that the diagnosis occurs in the presence of symptoms, not signs, and these same symptoms may not be present in all patients with the same diagnosis of depression. Today, even with many evaluative measures available for childhood depression, the need for further exploration of the concept of childhood depression is warranted.

Background

This paper will utilize the eight steps of concept analysis identified by Walker and Avant (2011). What began as an 11 step process in Wilson's 1963 concept analysis model was streamlined to eight iterative steps by Walker and Avant. A thorough concept analysis requires constant review and reflection on what has already been written, is

currently being written, and what is to come, hence the iterative process (Walker & Avant, 2011). The eight components of the concept, childhood depression, are presented utilizing borderline, related, and contrary cases in addition to the model case.

This analysis has three aims. The first is to explore the definition of childhood depression while dissecting the two terms. The second aim is to describe the historical background of childhood depression. Lastly, this concept analysis will describe the critical attributes, antecedents, and consequences of childhood depression through the lens of a diathesis stress model. This model is organized to show the signs, symptoms, and risk factors, or vulnerabilities and stressors as described in the model, experienced by an individual which may lead to depression.

Data Sources

A search for the concept childhood depression revealed an abundance of literature during the years 2004 and 2014. Search Engines used were Medline, PsycINFO, PsycArticles, Academic Search Premier, and CINAHL Plus with Full Text and all articles searched were in English. Articles were screened first by title, then by abstract if the title revealed that further investigation might yield the article useful. Forty two articles were further reviewed at which point data saturation was reached. All articles reviewed were categorized as research, literature review, or continuing education article. Articles published prior to 2004 relating to the history of depression in children were specifically and individually pursued, as were articles relating to a diathesis stress model.

Results

Uses of Individual Terms

In order to fully understand the phrase *childhood depression*, the two terms must be separated and fully defined. The definition of childhood, according to the online Merriam-Webster Dictionary (n.d.) is simply “the state or period of being a child” or “the early period in the development of something.” This begs the question, what is a child? A child is a human being between infancy and puberty or youth (Merriam-Webster Dictionary, n.d.; Venes, 2009). The Merriam-Webster Dictionary (n.d.) also includes an unborn person in the definition. The definition for the use of this paper will be a human being from birth through adolescence, or age zero to eighteen.

The term depression is used in the field of psychology, medicine, and nursing as a diagnosis or to describe a symptom or state of a patient. As previously mentioned, the concept is disjunctive and ambiguous but, depression has definitive signs and symptoms that must be present when assigning the diagnosis (Pilgrim & Bentall, 1999; Hankin, Fraley, Lahey, & Waldman, 2005). For individuals not associated with the medical world, the definition is blurred and used loosely to describe an individual’s mood or emotion at a certain time, for a day or longer. Terms such as having the blues, being down in the dumps, in misery, or black dog have been coined. It can also be used in disciplines other than medicine, such as business and meteorology, which have nothing to do with a person’s psyche. Because *childhood depression* was lacking in definition until the latter half of the last century, the use of this term prior to this time as well as the present usage was sought. *Childhood depression* has not been defined as a concept, rather, it is considered depression in children and adolescents. Therefore, having

previously defined the term childhood, the term depression will now be defined in order to better understand the concept of childhood depression as a whole.

In 1966, The Unabridged Random House Dictionary, held twelve different uses for the term depression:

1. the act of depressing. 2. the state of being depressed. 3. a depressed or sunken place or part; an area lower than the surrounding surface. 4. dejection; sadness; gloom. 5. *Psychiatry*. a condition of general emotional dejection and withdrawal; sadness greater and more prolonged than that warranted by any objective reason. 6. Dullness or inactivity, as of trade. 7. A period during which business, employment, and stock-market values decline or remain at a low level of activity. 8. **the Depression**. See **Great Depression**. 9. *Pathol.* A low state of vital powers or functional activity. 10. *Astron.* The angular distance of a celestial body below the horizon; negative altitude. 11. *Survey*. a. the angle between the line from an observer or instrument to an object below him or it and a horizontal line. b. an area completely surrounded by higher ground. 12. *Meteorol.* an area of low atmospheric pressure. (Stein, 1966, pp.388)

From this definition, there are more than four disciplines that use the term depression to define a phenomenon within its field. The field of psychiatry represents the world of medicine in this example. Nearly half a century later, in the online Merriam-Webster Dictionary (n.d.), the definition has not changed to any degree except for the editing of the psychiatry definition to include more detailed information about what it means to be

in a state of depression. It now includes symptoms such as appetite, sleep, and activity level changes.

The use of this concept will be the psychiatric use, hence, the need for defining characteristics within this field of medicine. Taber's Cyclopedic Medical Dictionary (Venes, 2009) defines depression very similarly to the 1966 version of Random House Dictionary. Taber's contains four definitions, three of which align with the Random House definition: depressing or lowering something, a depressed, sunken, or lowered region, and a low state of function. The last definition in Taber's relates to psychiatry but, instead of the symptoms of sadness or gloom, it cites lack of pleasure or interest in living which aligns more with suicidal tendencies (Venes, 2009). As previously mentioned, all four of Taber's uses are found in the 1966 dictionary definition.

The American Psychiatric Association (APA) determines the criteria for assessing patients with possible diagnoses of depression, or major depressive disorder (MDD). The Diagnostic and Statistical Manual of Mental Disorders Fifth Edition (DSM-5) was released in 2013 (APA, 2013). The DSM provides the criteria for the diagnosis of MDD. There is no distinction drawn between adults, children, or adolescents, however there are notes specific to children. It is this set of criteria and symptoms that healthcare providers turn to in diagnosing a patient, both child and adult. There are defining characteristics, or symptoms, that must be present for a diagnosis of major depressive episode to occur. Depressed mood or loss of interest or pleasure, as seen in Taber, must be present almost every day, lasting the majority of the day (Venes, 2009; APA, 2013). In addition to either of these symptoms, four or more of the remaining seven symptoms must be present, and must have been present during the past two week period and represent a

functional change. These consist of weight or appetite changes, sleep changes, activity changes, fatigue, guilt or feelings of worthlessness, decreased ability to concentrate or make decisions, and thoughts of death or suicide, with or without a suicide attempt (APA, 2013). All of the above must be present nearly every day. Furthermore, the symptoms significantly affect functioning in multiple areas such as social or occupational, and may not be attributable to other conditions including medical or psychological illness and substance use. It is worthwhile stating again that these criteria are the same for adults and children. There is no current distinction between the two (APA, 2013).

The American Academy of Child and Adolescent Psychiatry (AACAP) emphasizes many of the same characteristics as the dictionary definitions and DSM when writing about depression as an illness as opposed to a normal emotion experienced by humans. It references symptoms of self-blame, the presence of guilt, indecisiveness, hopelessness, helplessness, thoughts of death, and possible suicide attempts (Emslie, 2010). From this point forward, the two terms, childhood and depression, will be combined and further explored beginning with its initial use.

Historical Perspective

In 1978, Lefkowitz and Burton wrote a concept critique of *childhood depression* that provides an excellent overview of the history of the disorder. The article cited the year 1975 as the first year that the National Institute of Mental Health held a conference on childhood depression. The conference concluded with two opposing opinions of *childhood depression*: the concept was either a true disorder or syndrome, or reflected the natural progression of childhood development. If the former were true, it should be measurable, but at the time no such tool existed (Lefkowitz & Burton, 1978). Many of

the symptoms that were used to define childhood depression at that time are present in all children: withdrawal, crying, sadness, aggression, poor school performance, avoiding eye contact, bed wetting, and somatic complaints of headache or stomachache, with frequency of complaints the defining factor (Lefkowitz & Burton, 1978). A critique of this paper by Costello (1980) questioned whether *childhood depression* could exist if the symptoms are present in all children and resolve spontaneously. Furthermore, the use of adult checklists or tools with children was invalid and unreliable (Costello, 1980). Hankin, Fraley, Lahey, and Waldman (2005) critiqued these measures in that they did not address all of the DSM criteria in one tool.

Today, there are several self-report tools available for the evaluation of depression in children. Clark, Jansen, and Cloy (2012) proposed that symptoms of depression for adolescents should include the inability to experience pleasure, boredom, alcohol and drug use, weight changes, hopelessness, hypersomnia, and suicide attempts. Children, on the other hand, are likely to have somatic symptoms, which may be headache or stomachache, restlessness, separation anxiety, hallucinations, and phobias (Clark, Jansen, & Cloy, 2012). The latter symptomatology is not questioned on self-report tools, such as the Children's Depression Inventory (CDI) and Center for Epidemiological Studies Depression Scale for Children (CES-DC), which are widely used. One of the oldest tools is the Children's Depression Inventory (CDI), an adaptation of the Beck Depression Inventory, by Kovac (1983). It is still widely used today due to its high specificity and sensitivity, and because it encompasses nearly all of childhood, ages seven to seventeen (Clark et al., 2012). There are several other measures to assess depression in children and adolescents, a few of which may be universally used for

school age children and adolescents. The Center for Epidemiological Studies Depression Scale (CES-D), the revised version for children (CES-DC), the Children's Depression Inventory, and the Beck Youth Inventory II are among these tools. The measures to address childhood depression, along with the DSM criteria, will be deconstructed to determine antecedents, defining attributes, and consequences of *childhood depression* within the context of a diathesis stress model.

Diathesis Stress Model

A diathesis stress model describes the presence of a diathesis, or vulnerability, subsequent exposure to a stressor, and the triggering of a health problem outcome, such as depression, following this exposure. For example, the stressor may be a traumatic event, socioeconomic status, or conflict as antecedents to *childhood depression*. Monroe and Simons (1991) discussed diathesis-stress theories and their origin in general. The term diathesis- stress, although originating in Ancient Greek times, came to the forefront over 50 years ago as an effort to explain schizophrenia (Bleuler, 1963; Rosenthal, 1963). The term was later used with depression. Abramson, Metalsky, and Alloy (1989) used a diathesis-stress model for their theory of hopelessness and depression, modeling it after an earlier theory of helplessness and depression (Abramson, Seligman, & Teasdale, 1978). The former was used by Carpentier, Mullins, Wagner, Wolfe-Christensen, and Chaney (2007) to examine illness uncertainty as a moderator in children with chronic illness. The versatility of the diathesis-stress model may lend itself to many psychopathological or behavioral studies. The diathesis, stressors, and mediators may be different for each study with the ultimate end result of psychopathology, such as depression. The model is represented in Figure 1.

Defining Attributes

Childhood depression is a set of signs and symptoms, or attributes, which are present within a human being at any age between birth through adolescence. All attributes need not be present for the diagnosis. These attributes, represented in the DSM-V criteria for major depressive episode, are feelings of sadness, unhappiness, hopelessness, worthlessness, and/or negative mood which may manifest as irritability, restlessness, or moodiness in children (Liu, Chen, & Lewis, 2011; Bhardwaj & Goodyer, 2009; Maughan, Collishaw, & Stringaris, 2013; Luby, 2009; Hamrin, Antenucci, & Magorno, 2012; Brent, & Maalouf, 2009; Garzon, Nelson, & Figgemeier, 2009; Lenz, Coderre, & Watanabe, 2009). According to the diathesis-stress model, these attributes may stem from an antecedent and lead to certain consequences, as the following case demonstrates.

Model Case

One year ago, Johnny, now 11 years-old, was diagnosed with type one diabetes. He initially seemed to adjust well to the new diagnosis and had been managing the demands of his chronic illness with the help of mom and dad. At the time of diagnosis he was in his last year of elementary school, getting good grades, and enjoying after school activities with friends. Two months ago, Johnny started his first year of middle school. His parents noticed that he no longer wants to participate in any after school activities with friends and he declines offers to hang out after school stating that “it won’t be any fun.” Instead, he comes home every day, mopes around the house or goes to his room where he lies on his bed, sometimes falling asleep, or snacks. He repeats the same behaviors on the weekends, sometimes not getting out of bed until 2:00 P.M. even though

he went to bed at 9:00 P.M. With the lack of activity, he has gained 5 pounds in the last month. When his parents probe further, Johnny tells them that he just wants to be like the other kids and life isn't worth living if he has to be connected to a pump his whole life.

In the model case Johnny is suffering from all of the symptoms of depression. He is experiencing sadness, hopelessness, and feelings of death or suicide when he states that life isn't worth living. The antecedent of his chronic illness has led to depression and the consequences he is experiencing, including lack of pleasure, weight gain, sleep disturbances, and activity level changes.

Borderline Case

Joe, a 16 year-old, logged onto his Facebook page three weeks ago and saw that his girlfriend's status had been updated to available. His girlfriend confirmed through a text message that yes, things just weren't working out and Joe was, in fact, single again. The sadness has been overwhelming and he has had trouble sleeping since he received the confirmation of this break-up. He continues with his day to day routines of lunch at the cool kid's table and baseball practice after school, but they don't seem as enjoyable as they used to be. At home, he feels hopeless, as though he will never have another relationship again.

This example contains the attributes of sadness and hopelessness, but no suicidality or thoughts of death which are commonly, but not universally, found in *childhood depression*, especially in adolescence (Maughan et al., 2013; Hamrin et al., 2012; Lenz et al., 2009; Ruderman et al., 2013). The antecedent is relationship loss, in this case, a girlfriend. Joe is also experiencing sleep disturbances and anhedonia, but lacks changes to his eating habits or activities.

Related Case

Mary is five years-old and lives with her mom, dad, and 2 month-old sister. Since the birth of the baby her mom and dad have been yelling a lot and Mary overhears her dad frequently say that he never wanted a second child. Mary has to share a room with her baby sister who doesn't yet sleep through the night. Some nights, she wakes up to her sister's crying and goes to the crib to comfort her before her parent's awaken and the yelling begins again. She has a hard time falling asleep after listening to the yelling. She is very irritable in the mornings when awakened for school and restless in her seat at school. She picks at her food at snack and lunch time saying she has a stomachache, and the teacher thinks she is getting thinner. She phones Mary's parents to arrange a parent conference to address her concerns.

This example contains the attributes of irritability and restlessness that may be present in a younger child. The five year-old doesn't come out and say she is sad, hopeless, or even suicidal as may be seen in older children. This case has the antecedents of female gender, as females have higher rates of depression, and parental conflict, and the birth of a new sibling. She has had changes in her sleep, likely due to the baby in her room, but also due to the parent conflict. Consequently, her depressive symptoms have led to behavioral changes at school and eating pattern disturbances which likely will lead to weight loss.

Contrary Case

Maggie is 17 years-old and was diagnosed with type two diabetes two years ago. The diagnosis shocked her and her family despite the fact that she was severely overweight. Maggie and her family saw this as a wake-up call. Maggie began a

management plan that consisted of eating better and increasing her activity level. She began walking one mile to and from school each day and packing her own lunch instead of eating the cafeteria food which was high in fats and carbohydrates. She integrated her disease management into her life so that it didn't even seem to feel like a burden. She began losing weight, feeling better about herself, smiling more, and is now a member of her school's cheer squad.

Maggie's is an example of a child with a chronic illness (an antecedent) who is not depressed. She is a well-adapted adolescent managing a chronic illness, representing the positive end of the mental health spectrum.

Antecedents

Clark et al. (2012) categorize risk factors for depressive disorders into three categories. Antecedents will be drawn from this list and literature on *childhood depression*. Biologic risk factors include differences in brain structure and/or function (Luby, Lenze, & Tillman, 2012; Lima et al., 2013), positive family history especially in the mother, female gender, chronic illness (Clark et al., 2012; Monaghan, Singh, Streisand, & Cogen, 2010), and obesity. Psychological risk factors are low self-esteem, ineffective coping skills, negative self-image, and self-consciousness. The final category, environmental, consists of antisocial peer group or poor peer relationships, bullying perpetrator or victim (Fitzpatrick, Dulin, & Piko, 2010; Bhardwaj & Goodyer, 2009), parental conflict or family violence, experiencing a traumatic event, relationship loss due to death or other, poor school performance, and substance abuse which may also be a consequence (Clark et al., 2012; Fitzpatrick et al., 2010; Liu et al., 2011; Bhardwaj & Goodyer, 2009; Maughan et al., 2013; Hamrin et al., 2012). The list of possible

antecedents is lengthy and an individual with *childhood depression* may present with one or many of these.

Consequences

The most serious consequence of depression is suicide or homicide and both have been documented in childhood. Other consequences found in the literature are anhedonia, weight gain or loss, psychomotor changes, sleep disturbances, energy level changes, excessive or inappropriate guilt, and/or impaired thinking or concentration (DSM, Hamrin et al., 2012; Garzon et al., 2009; Lenz et al., 2009; Ruderman, Stifel, O'Malley, & Jimerson, 2013). If the antecedent is poor peer relationships or family turmoil, these are exacerbated as the disorder progresses, as well as negativity about feelings, self-esteem, and self-consciousness, all of which may lead to suicide or homicide. The literature also describes compromises to child development with regard to social, cognitive, and emotional aspects which lead to impairment of future relationships (Lima et al., 2013; Lenz et al., 2009) and decline in academic scholarship (Brown, Pearson, Braithwaite, Brown, & Biddle, 2013). Substance misuse, also an antecedent, is a risk (Liu et al., 2011, Bhardwaj & Goodyer, 2009; Maughan et al., 2013). Somatic complaints, such as stomachache, headache, and joint pain, are not uncommon in children with depression (Ruderman et al., 2013; Garzon et al., 2009). If chronic illness, such as diabetes, is the antecedent the child may experience an increase in symptoms, lack of integration of management into daily life, impaired glucose control, and an increase in the likelihood of diabetic complications (Culpepper, 2002). Overall, the consequences are decreased overall function and well-being. Table 1 illustrates the antecedents, attributes, and consequences of *childhood depression*.

Empirical Referents

The empirical referents for childhood depression mirror the concept attributes, as well as many of the consequences. There are multiple approaches to evaluate the presence of depressive symptoms in childhood. Most measures address feelings such as unhappiness and happiness, hunger, loneliness, feelings of equality with other children, and positive energy in everyday activities, to name a few. It is important to note that many of these instruments assess depressive symptoms, not a specific diagnosis of depression. In addition, the importance of the patient interview to elicit feelings should not be underscored. Results may indicate whether further evaluation is required to determine if the diagnostic criteria for depression are met. Thus, empirical referents for childhood depression contain both quantitative and qualitative components.

Discussion

The concept analysis of the term *childhood depression* is important for several reasons. The defining attributes may be used in research to further investigate the prevalence of depression in children, including those with a chronic illness or other identified high risk variables. The use of the diathesis stress model, which illuminates the antecedents, defining attributes, and consequences of *childhood depression*, may serve as a useful approach to the assessment of depressive symptoms for research and clinical practice. Once identified, further evaluation may be initiated, and a management plan set into action prior to the development of depression. The management plan should include promotion of behaviors and the identification of potential stressors, as well as current stressors, which may be protective or mediate against the development of depression.

Lastly, it may be used to educate individuals with regard to mental illness who are contemplating a career in a healthcare field providing care to the pediatric population. The prevalence of mental illness in childhood requires that the next generation of nurses and other health care providers possess the tools necessary to effectively assess and manage the care of this growing population.

Limitations

This paper gives a broad definition of depression while distinguishing certain features specific to children. The primary limitation is that childhood encompasses the broad age range of ages zero to 18 years. The literature is just now identifying depressive symptoms in children less than five years, but not infancy. While the diagnostic criteria for depression in the pediatric population is identical to that of adults, this analysis illustrates that the clinical presentation in childhood is highly variable. A further limitation is that some of the consequences of depression are also contained within the DSM-V criteria for the diagnosis.

Conclusions

Depression is a term that has been defined for decades. In the fields of business and astronomy the definition is clear. In psychiatry it has come to be synonymous with sadness and encompasses an array of symptoms. *Childhood depression*, once believed to be nonexistent, is now recognized by its own symptomatology, some of which is shared with the adult form, while others are unique to childhood. The ambiguity in the definition of *childhood depression* has evolved as a list of symptoms to be cautiously evaluated before assigning a diagnosis. It is hoped that this analysis will lead the reader

to an early recognition of symptoms, paving the way for appropriate treatment to prevent future, irreversible consequences in children.

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Table 1

Antecedents, Attributes, and Consequences of Childhood Depression

Antecedents	Attributes	Consequences
Biologic Differences in brain structure or function Positive family history, especially mother Female gender Chronic illness Obesity	Sadness Unhappiness Hopelessness Worthlessness Excessive or inappropriate guilt Negative mood: (in children manifested as) irritability, restlessness, moodiness	Suicide Homicide Anhedonia Weight changes Psychomotor changes Sleep changes Energy level changes Impaired thinking or concentration
Psychological Low self-esteem Ineffective coping skills Negative self-image Self-consciousness		Somatic complaints Stomach ache Headache Joint pain
Environmental Antisocial peer group Poor peer relationships Bullying perpetrator or victim Parental conflict Family violence Experience of traumatic event Relationship loss due to death or other Poor school performance Substance misuse		Antecedents exacerbated Low self-esteem Negative self-image Self-consciousness Poor peer relationships Parental conflict Family violence Poor school performance Substance misuse
		In presence of chronic illness Increase in disease symptoms Decreased integration of management into daily life Increased complications

Figure 1. Diathesis-stress model representing concept of childhood depression.

A Review of the Child and Adolescent Social Support Scale for Healthy Behaviors

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2452 words

Abstract

Assessing an instrument's psychometric properties to determine its appropriateness for use can be a challenging process. Dissecting the statistical terminology may be even more perplexing. There are several instruments that evaluate adolescents' perceived social support, but a fairly new instrument related to this construct not only assesses the availability of social support, but also support for healthy behaviors in this population. The Child and Adolescent Social Support Scale for Healthy Behaviors (CASSS-HB), first published in 2013, demonstrates adequate initial reliability and validity. The purpose of this paper is to review the psychometric properties of the CASSS-HB and its potential uses.

Introduction

Nursing research often involves the use of instruments to measure important variables. Trending important indicators for evidence-based practice changes likewise requires sound measures. Locating a reliable and valid instrument for a specific purpose and given population may be difficult. An instrument may take years to develop. Once such measure, the Child and Adolescent Social Support Scale for Healthy Behaviors (CASSS-HB), initiated in 2012, was first published in February 2013¹.

Background

The Child and Adolescent Social Support Scale for Healthy Behaviors (CASSS-HB) measures perceived social support for certain health behaviors¹ making it an important instrument for advanced practice nurses working with children and adolescents. The CASSS-HB is an adapted version of The Child and Adolescent Social Support Scale (CASSS) (2000)¹. Both versions have theoretical underpinnings from the fields of psychology and school psychology. The original CASSS (2000) was a general measure for child and adolescent social support. The psychometric properties of the original CASSS were evaluated for middle school children^{2,3,4} and high school children⁵ and were deemed to be reliable and valid for respondents from third through twelfth grades. Adapted versions of instruments must also be evaluated as being psychometrically sound. The purpose of this paper is to analyze the psychometric properties of, the adapted version of the CASSS-HB.

Description of Instruments

The CASSS-HB differs from the original CASSS in that it measures *health-related* social support. However, the original CASSS had been in use for over a decade

prior to the development of the CASSS-HB. The original CASSS was based upon Noltén's Student Social Support Scale (SSSS)^{6,7}. Subsequently, different versions of the CASSS were developed over time. For example, initially there were separate versions for children and adolescents. Over time these were merged into one instrument that could be administered to both children and adolescents in grades 3 through 12⁶. Twelve items, worded as phrases, addressed four domains of supportive behaviors, including emotional, instrumental, informational, and appraisal supportive behaviors^{4,8,9}. Because the CASSS has 5 categories of sources of support: parent, teacher, classmates, close friend, and people in my school⁶, the 12 items, thematically the same but phrased differently, are repeated for each category of support. Each item is scored for frequency and importance. Six-point and 3-point Likert scales are used to score frequency and importance respectively.

Structurally, the CASSS-HB is identical to the CASSS. Like its predecessor, the CASSS-HB has the same 5 sources of social support categories (labeled "subscales"): parent, teacher, classmates, close friend, people in my school, and 12 items per category pertaining to emotional, instrumental, informational, and appraisal behaviors. However, the CASSS and CASSS-HB differ in that issues about health are now included. For example, in the original CASSS, the phrase "My parents listen to me when I need to talk," has been replaced in the newer version with, "My parents listen to me when I ask questions about my health¹." As in the CASSS, the CASSS-HB measures the frequency of support for each item, as well as the importance, using similar Likert scales to those mentioned above. An illustration of the CASSS-HB structure is found in Figure 1.

CASSS-HB Instrument Scoring

The frequency of the 12 items on sources of support is scored on a continuum from 1 (never) to 6 (always) with total scores ranging from 12-72. . The importance of each item is scored on a 3 point scale from 1 (not important), 2 (important), and 3 (very important) with total scores ranging from 12 – 36. The respondent's total frequency score in any given category (ie, parent, teacher) is derived by summing each of the frequency item scores. This is repeated to obtain the respondent's total importance score. In any given category, an overall social support score (possible range 60 - 360) is calculated by summing the total frequency scores across all items. The higher the score, the greater amount of perceived social support. The scores from each category make it possible to determine where support is the greatest or lacking. In any given category, an overall importance score (possible range 12-36) is calculated by summing these total importance item scores for each of the categories. A higher score reflects greater importance to the respondent for support to come through that network category. Finally, the total frequency scores are summed across all categories to obtain the total social support score. It should be noted that the *importance* scores are not calculated into total overall social support. These importance scores are only used to denote where respondents would like to receive social support. Therefore, an advanced practice nurse could use this instrument to assess social support without scoring importance. However, as a clinician, the frequency scores considered with the importance scores will allow for an individualized plan of support including specific strategies weighted in the direction of importance.

Figure 1. Structure of the CASSS-HB

FS= Frequency Score

IS= Importance Score

Subscale scores may stand alone to determine the amount of support provided by each category of source of support and the importance of receiving support from that category. Or, *frequency* subscales may be added to obtain an overall general support total score.

CASSS-HB Psychometric Testing

Setting and Sample

The psychometric properties of the CASSS-HB were evaluated in a study involving overweight and obese children. Recruitment occurred in 2 separate school districts in Illinois, one rural, the other urban. Four elementary schools, 3 in rural areas and 1 urban, yielded a total of 121 third through fifth grade respondents. The majority of respondents (62.8%) attended school in a rural setting, and 63.7% were Caucasian. One child was excluded for being underweight. The BMI of all participants was calculated based on height and weight; a series of questionnaires were then completed during a single study session. The CASSS-HB, CASSS, Social Support and Eating Habits Survey (SSEHS), Social Support and Exercise Survey (SSES), and the Collins Body Image Measure were utilized to establish validity of the CASSS-HB¹.

Factor Analysis

Factor analysis is used when developing an instrument to determine whether items group together into factors or dimensions¹⁰. The number of factors in the final instrument is calculated by examining eigenvalues, variance of components, the scree plot, and residuals¹⁰. Some or all of the mentioned techniques may be used and may or may not be reported in the literature. Menon and Demaray¹ used principal component factor analysis to identify the factor structure of the CASSS-HB. Eigenvalues, variance, and the scree plot were examined. The eigenvalues indicated there were 11 factors that accounted for 76.58% of the variance, but only 3 to 5 strong factors were shown in the scree plot. An exploratory factor analysis with an oblique rotation, to identify correlated items, was then conducted forcing 5 factors, and return results indicated that 63.7% of the

variance was accounted for in this model. The factor loadings findings were not reported by the investigators, but they did discuss 4 items that did not load on the 5 factors and provide rationale for why they were retained in the instrument. Each item had strong item-total correlations, meaning that 2 of the 3 items were representative of instrumental support on 2 subscales, therefore they were deemed important to retain¹.

The recommended use of factor analysis is typically for a sample size of 300 or greater if reliable data are expected¹¹. While the sample size of this study was 121, the authors examined 2 additional measures to assist with reliability of the factors: Kaiser-Meyer-Olkin (KMO) and Bartlett's test of sphericity, both tests of sampling adequacy. A KMO score closer to 1, its highest value possible, is best^{12,13}. The CASSS-HB score was 0.87. When using Bartlett's test, the researcher wants a significant value suggesting items are, in fact, correlated, belong in the same factor, and supportive of the model used¹³. The Bartlett's test of sphericity for the CASSS-HB was significant¹. The small sample size, a major limitation for using factor analysis, was not a significant limitation in that all of the above mentioned analyses supported the 5 factor model, representing the social support categories of parent, teacher, classmate, close friend, and people in my school.

Reliability and Validity

Reliability of the CASSS-HB was measured with internal consistency using Cronbach's alpha. A Cronbach's alpha value was calculated for each social support category for frequency and importance, as well as for the total scores. Alpha coefficients for the frequency subscales ranged from 0.92 to 0.95 and for the total frequency, the score was 0.98. Alpha coefficients for the importance subscales ranged from 0.92 to

0.97. The coefficient for the total importance score was 0.98¹. All considered, the CASSS-HB demonstrated strong internal consistency¹.

Factor analysis as well as comparisons to other valid and reliable instruments is typically done in order to determine the validity of a new instrument. Both of these approaches were used with the CASSS-HB. Criterion-related and construct validity for the CASSS-HB were evaluated. To demonstrate criterion-related validity for two of the subscales, a positive, moderate correlation was found between the parent frequency subscale and the family encouragement score of the SSEHS ($r=0.468$, $P<.001$) and the family participation score of the SSES ($r=0.322$, $P<.001$). A moderate, positive correlation was also found between the close friend frequency subscale and the friend encouragement score of the SSEHS ($r=0.422$, $P<.001$) and the friend participation of the SSES ($r=0.419$, $P<.001$)¹.

Convergent validity was demonstrated by correlating the subscale scores ($r=0.267$ to $.514$, $P<.001$) and total scores ($r=0.421$, $P<.001$) of the CASSS-HB to the original CASSS. The authors hypothesized that a moderate correlation would exist between the CASSS-HB and CASSS and this assumption was verified. The authors also hypothesized that a significant, negative correlation would exist between the CASSS-HB and BMI scores, testing construct validity, but this was not supported ($r=-0.059$, no P value given)¹.

Discussion

The CASSS-HB, although at first glance appearing to be a sound, valid and reliable instrument, has several limitations. First and foremost, it is a new instrument with reliability and validity measured using a single, small sample. The instrument

authors have acknowledged the need for further testing with larger and more diverse populations. Second, only one test of reliability was performed. Third, two questions arose when the validity of the CASSS-HB was examined: 1) was factor analysis was on the frequency or importance scales, or both; and 2) why are the factors for the CASSS-HB sources of support (parent, teacher, classmates, close friend, and people in my school) instead of types of support (emotional, instrumental, informational, and appraisal behaviors).

The method to assess reliability was internal consistency, calculating Cronbach's alphas. Because this was the first time this instrument was used, another form of reliability is desired to enhance the internal consistency reliability. A second norm-referenced reliability measure such as a test-retest procedure could have been used if the author had access to the same sample a second time. This would have provided further evidence of reliability.

The CASSS-HB may be seen as two distinct measures, one measuring frequency of support and the second importance of support. Frequency and importance are measured on the same instrument however, they could be divided and measured separately. Because of this, the importance measure requires its own psychometric evaluation including reliability and validity testing. The authors mention that the 12 items in each subscale encompass the four elements of supportive behaviors (emotional, instrumental, informational, and appraisal). Each of the 60 items were rated on frequency and importance, different scales of measure. The literature does not provide information on importance therefore, it is not clear whether two factor analyses were conducted for both frequency and importance.

Factor analysis determines whether items group together into factors or dimensions¹⁰. If items do group together, it is understood that the grouped items are all measuring a similar construct. In the case of the CASSS-HB the items within each factor (parent, teacher, classmates, close friend, and people in my school) do not represent similar items. For example, the parent factor items cover (emotional, instrumental, informational, and appraisal behaviors), the teacher factor items cover (emotional, instrumental, informational, and appraisal behaviors), and so on. In fact, the items in each factor are diverse. Rather, the CASSS-HB factors reflect each person for whom the child is completing the items about, not the items. Why then, might the social network categories (parent, teacher, classmates, close friend, and people in my school) appear to be valid factors for the CASSS-HB?

One explanation is that the instrument was tested with early school age children. Children were asked to only think about one social network category on each subscale when answering questions. They may have assumed each and every item to be of equal importance for that social support category (ie, parent vs peer) thus responding to each item in the same way. Then when moving on to the next social network category, intra-variability would again be low. For instance the parent social network category of the instrument received all sixes, the teacher all fives, and so on. The final analysis may have resulted in very low intra-variability for each social network category and higher inter-variability between the social network categories. If this were to happen with each social network section of the instrument, the items would factor together in the manner the investigators have found in previous validity testing. If the overall length of the instrument was burdensome to the participant this would further contribute to this pattern.

Previous investigators do note that further testing of this instrument is needed and factor analyses of the instrument used with different populations should be a part of this.

Potential Use of Instrument

The CASSS-HB is a unique instrument in that it measures perceived social support for a variety of healthy behaviors in a variety of settings, and is designed for the pediatric population. This instrument addresses behaviors specific to food and activity choices, so it may be used when assessing support in obese populations. It has potential for use with children with chronic illnesses who require specialized nutrition such as those with type 2 diabetes, cystic fibrosis, or inflammatory bowel disease, for example, once further validity testing has been done with these unique populations. In an era of increasing medical costs, support needs to be focused on from whom or from where it is most important to the recipient instead of in an overall, generic, manner. The CASSS-HB may be used in a clinical or school setting to assess the support children and adolescents currently receive for their health-related concerns. At the same time, it will measure which sources of support are most important. This will allow future interventional studies to target specific types of support rather than addressing the social network as a whole.

Summary

The CASSS-HB, although a new instrument, has begun to demonstrate validity and reliability during initial testing. The authors outlined in detail the steps that were taken for initial psychometric evaluation of the CASSS-HB. As a revised version of the CASSS, it has demonstrated validity and reliability. However, further psychometric

testing is warranted. Future use of the instrument and reports of validity and reliability are needed within the same and different populations.

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Depressive Symptoms and Social Support in Adolescents with Type 2 Diabetes

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Keywords: adolescent, depression, social support, type 2 diabetes

Abstract

Introduction: Adolescents with diabetes and comorbid depression may have better outcomes on disease management in the presence of higher levels of social support. The purpose of this study was to explore the relationships between depressive symptomatology, perceived social support, body mass index (BMI), hemoglobin A1c (HgbA1c), and months since diagnosis for adolescents with type 2 diabetes ages 13 to 17.

Methods: This cross-sectional, descriptive correlational study surveyed adolescents at an endocrinology clinic regarding depressive symptoms and perceived social support.

Results: Depressive symptoms were not significantly related to other variables, however mean depressive symptoms scores were higher among early adolescents. Middle adolescents had lower BMI percentiles but higher HgA1c levels. Early adolescents had greater mean scores of social support and reported this support was more important compared to middle adolescents.

Discussion: The results show that differences exist in perceived social support, depressive symptoms, and HgA1c levels among early and middle adolescents.

Introduction

In the past 20 years there has been a dramatic increase in the number of adolescents diagnosed with type 2 diabetes mellitus. What was once believed to be an adult disease has now reached into the adolescent population. The comorbidities of diabetes are well known, but the prevalence of depression in this younger group may be underestimated. The Centers for Disease Control and Prevention (CDC) (2011) reports that the likelihood of depression is twice as high in adults with diabetes as in adults without the disease; diabetes management can be complicated in adults by depression. Children and adolescents with diabetes have similar to higher prevalence of depression as those without the disease (Lawrence et al., 2011; Reynolds & Helgeson, 2011; Anderson et al., 2011; Levitt Katz et al., 2005). Depression is a comorbidity of diabetes that may lead to poor glycemic control in children and adolescents with type 1 diabetes resulting in additional comorbidities (Lernmark, Persson, Fishert, & Rydelius, 1999; McGrady, Laffel, Drotar, Repaske, & Hood, 2009; Hood, Rausch, & Dolan, 2011). More research is needed with adolescents with type 2 diabetes to assess consequences of depression.

Research suggests that greater social support is associated with lower depression, and greater treatment adherence in adults with type 2 diabetes (Osborn & Egede, 2012; Yang, Li, & Zheng, 2009; Sacco & Yanover, 2006). These relationships between social support, depression, and treatment adherence have yet to be demonstrated in adolescence, although Brouwer et al. (2012) and Auslander, Sterzing, Zayas, and White (2010) explore social support and self-management with adolescents with type 2 diabetes using a qualitative approach. Adolescents turned to family for diabetes care needs, such as glucose testing and medication adherence. If disease disclosure to peers occurred,

generalized disease support, such as reminders, eating healthy, and exercising was sought. However, without disclosure, the support was more emotional, unrelated to diabetes (Brouwer et al., 2012; Auslander, Sterzing, Zayas, & White, 2010). Auerbach, Bigda-Peyton, Eberhart, Webb, and Ho (2010) found higher depressive symptoms in the presence of lower levels of social support in adolescents without chronic illness.

The purpose of this study was to evaluate the prevalence of depressive symptomology in a population of adolescents between the ages of 13 and 17 with type 2 diabetes. In addition, this study explored the relationships between depressive symptomatology and perceived social support as well as additional clinical and sociodemographic factors that may be related.

Conceptual Framework

The guiding framework for this study was the developmental stages of adolescence. These stages explicate the cognitive and socioemotional tasks that characterize adolescents, including those diagnosed with Type 2 diabetes. Early adolescents (age 11-14 years) are rapidly growing both physically and emotionally. In early adolescence teens transition from concrete thinking to limited abstract thinking and the renegotiation of relationships as independence from parents is sought and acceptance in a peer group pursued. Mood swings and an outward expression of emotions are common. Later in middle adolescence (age 15-17 years) individuals turn more to introspection when faced with emotional dilemmas. Abstract thought is further developed and parental conflict is high as peer acceptance becomes extremely important. In late adolescence (age 18-20 years), individuals are physically mature, independent, able to think abstractly, and now value individual friendships over peer groups (Garzon &

Dunn, 2013). This study focused on early and middle adolescence because of the rapidly increasing incidence of Type 2 diabetes in these age groups.

Type 2 diabetes is a disease that requires daily management and multiple provider visits each year with a multidisciplinary team. The dietary requirements alone set these adolescents apart from their peers at a time when peer acceptance is at its highest. As abstract thought becomes more refined, disease management may become less cumbersome, but independence from parents may be threatened if parents continue to assist with daily disease management and organization of appointments.

Methods

Design

This research was a cross-sectional, descriptive correlational study on a convenience sample of culturally and economically diverse adolescents with type 2 diabetes. Participants were patients in a pediatric endocrinology clinic in a large metropolitan city of California.

Recruitment

University and hospital Institutional Review Boards (IRB) approved the study prior to recruitment (see Appendices A, B, and C for IRB approval letters). Eligible participants attending the endocrinology clinic received an IRB approved brochure, in English or Spanish, describing the study as well as a short explanation by the clinic staff or PI. Eligible and interested families spoke with the PI in detail before proceeding to the informed consent process, which consisted of parental consent, adolescent assent, and a HIPAA waiver to obtain further information from the medical record. All Spanish translations were performed by a certified translator.

Setting

The study was conducted in a pediatric endocrinology clinic in a large metropolitan city in southern California. The interdisciplinary clinical team consists of physicians, nurse practitioners, nurses, diabetes educators, dieticians, and social workers.

Participants

Adolescents who met inclusion/exclusion criteria at their clinic visit were invited to participate in the study. Inclusion criteria for the study were: a diagnosis of type 2 diabetes; ages 13 to 17 years; ability to read, write, and speak English; and signed assent form. Parents had to be able to read, write, and speak English or Spanish. Patients were not eligible for the study if they had a diagnosis of clinical depression or other psychological disorder.

Measures

Socio-demographic and clinical variables.

A six-item self-report questionnaire gathered the following information: self-identified ethnicity/race, grade in school, number of times a day medication is taken and glucose tested, participation in after-school activities, and family members living in the home. Additional data was obtained from the participant's medical record: age, body mass index (BMI), HgbA1c, gender, months since diagnosis, type of health insurance, and history of depression.

Center for Epidemiological Studies Depression Scale for Children (CES-DC).

The CES-DC measures depressive symptoms in children age 6 to 17 years. Higher scores indicate increased depressive symptoms. Further evaluation is recommended for scores greater than 15 (Weissman, Orvaschel, & Padian, 1980;

Faulstich, Carey, Ruggiero, Enyart, & Gresham, 1986). The CES-DC demonstrates acceptable internal consistency reliability ($\alpha=.84$) and concurrent validity (Faulstich et al., 1986).

Child and Adolescent Social Support Scale for Healthy Behaviors (CASSS-HB).

The CASSS-HB is an adapted version of the Child and Adolescent Social Support Scale (2000) (CASSS) (Menon & Demaray, 2013). The CASSS-HB differs from the original CASSS in that it measures health-related social support. The CASSS-HB has five subscales: parent, teacher, classmates, close friend, and people in the respondent's school. With permission of the CASSS-HB authors, a sixth subscale measuring support from other family member(s) was added for this study; items on this subscale were identical to that of the parent subscale. "Frequency" and "importance" were measured for each item. Frequency subscales are totaled to yield an overall support level. Importance items are summed to determine perceived importance of support sources. The reliability of the frequency scale ($\alpha=.98$) and importance scale ($\alpha=.98$), and construct validity of this instrument have been demonstrated on school age children. Table 1 provides reliability for the CES-DC and CASSS-HB.

Analytic Strategy

The Statistical Package for the Social Sciences, version 22.0 (SPSS) was used to analyze the data. Descriptive statistics summarized study variables for measures of central tendency and to describe the study sample. Bivariate relationships were tested using Pearson's r for continuous variables and point biserial analysis for categorical

variables. T-tests were used to evaluate differences in group means between early versus middle adolescent groups.

Results

Thirty-one adolescents 13 to 17 years old ($M=15.3$ years, $SD= 1.28$) participated in this study. More than half (19) were female and twenty-one were Hispanic (consistent with findings in a national prevalence study called SEARCH, one of the largest studies involving youth with both types 1 and 2 diabetes) (SEARCH for Diabetes in Youth Study Group, 2006). Socioeconomic status (SES) was defined by the type of health insurance documented in the participant's medical record. Twenty-five participants had public insurance, the remaining had private insurance.

Table 2 summarizes participant characteristics and presents descriptive data on each of the variables. The number of months since diagnosis ranged from 0 to 87.6 ($M=30.1$, $SD= 26.9$). Twenty-five participants had a BMI greater than 95% placing them in the obese category, four had a BMI between 85 and 95% placing them in the overweight category, and the remaining two fell into the normal weight category according to Centers for Disease Control (CDC) standards. These findings were expected as clinical features of children diagnosed with type 2 diabetes are they are typically overweight or at risk for overweight and undergoing pubertal changes (Pinhas-Hamiel & Zeitler, 2007).

Raw scores for the CES-DC were calculated; a score greater than 15 indicating significant depressive symptoms warranted a letter to the participant's provider with this information. Eleven participants had scores greater than 15. Mean total CES-DC score was greater in females ($M=15.9$, $SD= 10.7$) than males ($M=11.3$, $SD=8.8$). Frequency of

support from classmates related to CES-DC scores was negatively correlated with a moderate effect size ($r=.4$, $p<.05$). Depressive symptoms was not significantly correlated to other variables for this group of adolescents. Subscale scores for the CASSS-HB were calculated, as well as a total overall score. Total scores ranged from 108 to 409 ($M=281.5$, $SD= 96.2$).

Correlations between two continuous variables were explored using Pearson's r ; point biserial correlation summarized relationships of nominal and continuous variables. Age of the participant significantly correlated with HgA1c. This was negatively correlated with a large effect size. The number of months since diagnosis in relation to HgA1c was positively correlated with a small effect size, but was not statistically significant ($r= .2$, $p>.05$). Correlations between study variables did not produce statistically significant results with the exception of age of the participant with HgA1c ($r=.39$, $p<.05$) indicating that as age increased, so did the HgA1c level; number of months since diagnosis in relation to BMI ($r= -.52$, $p<.01$), indicating that BMI was lower in participants who were further from diagnosis.

To further examine the differences in outcomes by developmental group, adolescents 13-14 years were compared as "early adolescents" to adolescents 14-17 years ("older adolescents"). Differences in mean scores between these two groups were compared with t-tests (see Table 3). As age increased, HgA1c also increased: a statistically significant finding in both the correlation and t-test analyses. Middle adolescents had lower BMI scores, but higher HgA1c levels.

Early adolescents had higher mean scores of social support frequency for each social network represented in the subscales as well as importance of social support

scores. This suggests that support received from each social network was greater the younger the adolescent. It also suggests that it was more important to this age group to receive support from each social network. For this sample, younger adolescents are not only receiving more support from each social network, but also the support is desired. The difference in means between groups was statistically significant for the frequency subscales parent, teacher, people in my school, and other family member. The overall score for social support was also statistically significant. The importance subscales did not demonstrate statistical significance. Table 3 shows group comparisons.

Discussion

The division of adolescence into early, middle, and late adolescence provides a more in depth understanding of this complex age and how to better study and treat those within it. Adolescence greets puberty and a period of fitting in through identification with peers of a common culture, background, ideals, or interests. Early adolescence is the beginning of a break from parents and search for belonging among peers, however adolescents in this age group have not excluded parents and adults from their lives. These peer interactions become more valuable than parental relationships and support is sought through the former while parents long for a continued presence in the lives of their adolescents (Erikson, 1963). The division among adolescents is especially important to understand how diabetes is affecting each age group and when planning interventions for this population. Early adolescents are still concrete thinkers whereas middle adolescents possess the ability for abstract thought (Maehr & Felice, 2006a; Maehr & Felice, 2006b). Middle adolescents also begin to have the capacity for moral judgment and the development of moral principles (Maehr & Felice, 2006b). These characteristics may

alter the interview process depending on the age group as well as the success of planned interventions.

The means of “Importance” scales of the CASSS-HB for early adolescents were highest for parent, other family member, and close friend, whereas for middle adolescents it was close friend, other family member, and parent. Parents still play an important role in the health of adolescents, especially early adolescence, despite going through a psychosocial stage where independence and peer relationships are highly valued (Erikson, 1963). The importance of support from close friends should not be underscored. Exploring interventions involving individuals outside the family social network may prove to be fruitful in aiding this population with disease management. The social network that is particularly important to this generation, but excluded from current instruments, is that of social media. Information is widely available and sought through the internet and social media sites. Instrument development to assess this is important. This study may provide support for future research involving social support deemed important to this sample.

The sample size for this study was small, but provided sufficient data to describe this group. The majority of participants were Hispanic. Forty-two percent of participants had a HgA1c less than 7% which is ideal for adolescents with type 2 diabetes (Copeland et al., 2013). Overall, middle adolescents had higher mean HgA1c levels.

Limitations

The purpose of this study was to investigate depressive symptomology and social support among adolescents 13 to 17 years of age with type 2 diabetes. The major limitation of this study was the small sample size which was not sufficient to demonstrate

significant relationships between many of the research variables. This clinic experienced a moderate “no-show” rate for patient appointments; therefore, the sample may not be representative of the total clinic population. Although the number of adolescents with type 2 diabetes is increasing, future studies involving this population would benefit from a multi-site approach. In addition, expanding the age range to include late adolescents would provide a more robust sample size and description of the adolescent population.

Implications for Clinical Practice

Type 2 diabetes is a growing problem among adolescents. Obesity prevention has been on the forefront of practice and research in recent years. For the individuals who have already developed type 2 diabetes, interventions targeting obesity need to be coupled with a more global, multidisciplinary approach involving the care team and social support networks. For overweight adolescents with type 2 diabetes, the challenge of losing weight and managing their disease may be overwhelming as they strive for an independent sense of self and the desire to fit in with peers. Increasing social support, including on-line social networks, may lessen the burden of disease management and, in turn, improve their ability to successfully manage their disease.

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Appendix A

131584

UNIVERSITY OF CALIFORNIA, SAN DIEGO
HUMAN RESEARCH PROTECTIONS PROGRAM

Michael Gottschalk, MD, PhD
Clinical Professor Pediatrics, Chief
Endocrinology

Re: 131584
Depression and Perceived Social Support in Adolescents with Type 2 Diabetes

Dear Dr. Gottschalk:

The above-referenced project was reviewed and approved by one of this institution's Institutional Review Boards in accordance with the requirements of the Code of Federal Regulations on the Protection of Human Subjects (45 CFR 46 and 21 CFR 50 and 56), including its relevant Subparts. This approval, based on the degree of risk, is for 365 days from the date of IRB review and approval unless otherwise stated in this letter. The regulations require that continuing review be conducted on or before the 1-year anniversary date of the IRB approval, even though the research activity may not begin until some time after the IRB has given approval.

The IRB determined that a waiver of informed consent may be granted for this project for recruitment purposes, as it meets the requirements outlined in 45 CFR 46.116(d). The research is minimal risk; the waiver or alteration will not adversely affect the rights and welfare of the subjects; the research could not practically be carried out without the waiver or alteration.

In addition, a partial waiver of individual authorization for use of Protected Health Information (PHI) for recruitment purposes was granted by the IRB as stipulated by the HIPAA Privacy Rule, 45 CFR 164 Section 512(i).

The protected health information for which use has been determined necessary includes: name, type II diabetes diagnosis, date and time of diabetes clinic appointment.

This protocol was reviewed in accordance with the guidelines on research involving children as research subjects and has found that this project meets the requirements as stated in 45 CFR 46.404 in that this research presents no greater than minimal risk to the children; and criteria for waiver of assent have been met as set forth in HHS regulations at 45 CFR 46.408 as specified in 45 CFR 46.116(d); the research is minimal risk; the waiver or alteration will not adversely affect the rights; welfare of the subjects; the research could not practically be carried out without the waiver or alteration; and whenever appropriate, the subjects will be provided with additional pertinent information after participation.

Date of IRB review and approval: 12/10/2013

On behalf of the UCSD Institutional Review Boards,

131584
1/10/2014
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Michael Caligiuri, Ph.D.
Director
UCSD Human Research Protections Program

Please be aware that while you have IRB approval and may start your study at UCSD, you may not start your study at Rady Children's Hospital - San Diego until you have completed the administrative approval process and have been issued a Ready to Accrue letter by Children's Hospital Administration.

Approval release date: 1/10/2014

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1/10/2014
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UCSD HUMAN RESEARCH PROTECTIONS PROGRAM

GENERAL APPROVAL INFORMATION

The information below does not encompass all human subjects protections requirements, however, is intended to highlight those of significance to ensure awareness by researchers engaged in research involving human subjects or their related specimens and data.

Approval Letters and Consent Documents

Unless otherwise stated, approval letters will be accompanied by stamped, approved consents. Should a study be closed to accrual and no consent released as a result, this information will be documented on the approval letter. Also, any waivers will be documented in the approval letter (such as waiver of documented consent or waiver of authorization for use of PHI).

The PI must ensure approval is in place from other appropriate review boards (such as Radiation Safety, Institutional Biosafety Committee, Conflict of Interest, ESCRO Committee, etc.)

If other institutions are involved, the PI must ensure that IRB approvals (or other administrative approvals) from those sites are secured and forwarded for the study file. In addition, PI's must ensure that the clinical trial agreement, as applicable, or other funding (such as a grant) is appropriately in place prior to conducting any research activities. IRB approval does not constitute funding approval.

Duration of IRB approval

The IRB may grant approval up to 365 days. (See 45 CFR 46.109(d) (DHHS) and 21 CFR 36.109(d) (FDA)). However, for some studies the committee may grant approval for a lesser period or a specific number of subjects to allow for more frequent monitoring. The approval letter or related documentation will indicate this information.

Because IRB review of research studies must be completed at least annually, investigators should plan ahead to meet required continuing review dates. **Please submit complete continuing review documentation at least 45 days prior to the expiration date to guard against a lapse in IRB approval.** The signed continuing review facpages and any other required hard copies must be received by the HRPP office before the continuing review process can begin.

As a courtesy, automated continuing review reminders can be set-up by PI's at various intervals (75 days, 45 days, 30 days, for example) on the website at <http://irb.ucsd.edu>. However, as these are automated electronic messages based on data entered, and the HRPP cannot anticipate which type of software programs (such as spam-blockers or anti-virus software) may block receipt of the messages, PI's are **required to not rely upon notification, but have internal mechanisms which track continuing review submission times.** Ultimately, it is the PI's responsibility to initiate a continuing review application, allowing sufficient time for the review and re-approval process to be completed before the current approval expires.

Continuing review is required even if no changes are made, or if the only study activity is participant follow-up, and even if the only study activity is data analysis.

What happens if there is a lapse in IRB approval?

If the IRB has not reviewed and approved a research study by the study expiration date, **all research activities must stop**. This includes the following:

All research-related interventions or interactions with currently enrolled subjects (unless the IRB finds that it is in the best interests of the individual subjects to continue participating in the research interventions or interactions;*) recruitment and informed consent procedures; and continued collection and/or analysis of data/information.

Exception: Research-related interventions or interactions with enrolled subjects may continue if the IRB determines that stopping the research would jeopardize the rights or welfare of current subjects. The IRB will decide which subjects should continue receiving the intervention during the lapse in approval. A request for such an exception must be submitted in writing to the attention of the IRB Chair by the Principal Investigator. If any project activity—even activity required for participant safety—occurs or continues after the expiration date, the investigator is out of compliance with both federal regulations and university policy. Retrospective approval for work done after the expiration date cannot be granted.

Amendment/revision to an IRB approved study

IRB approval is required before implementing any changes in the approved research plan, consent documents, recruitment materials, or other study-related documents. Please see Amendment Fact Sheet at <http://irb.ucsd.edu/amendmodchg.pdf> for submission guidance.

Adverse Event and Unanticipated Problems Reporting

All problems having to do with subject safety must be reported to the IRB within ten working days. All deaths, whether or not they are directly related to study procedures, must be reported. For adverse events, please utilize the form found at http://irb.ucsd.edu/AE_biomedical_plain.doc. For deviations and other reports, a cover letter and any supplemental information appropriate to the review should be provided. Please see IRB Guidelines for more information at <https://irb.ucsd.edu>.

Changes in Financial Interest or Conflict of Interest (COI) disclosure

Any changes in the financial relationship between the study sponsor and any of the investigators on the study and/or any new potential conflicts of interest must be reported immediately to the Independent Review Committee via the Conflict of Interest Office. If these changes affect the conduct of the study or result in a change in the required wording of the approved consent form, then these changes must also be submitted as an amendment request.

Appendix B

Ready-to-Accrue Letter
Research Approval Notification

Research Administration
Email: research@rchsd.org

Date: 1/14/2014
RCHSD project #: 2871
Principal Investigator: Gottschalk, Michael, MD, PhD
Title: Depression and Perceived Social Support in Adolescents with Type 2 Diabetes
EPIC #: 906

The above-referenced project may now be activated at Rady Children's Hospital-San Diego. Please use the RCHSD project number in all internal communications and correspondence pertaining to this study. If the use of an informed consent for the project is applicable, please place the number on the consent.

This approval is valid for the duration of your Institutional Review Board (IRB) approval. If the IRB approval lapses or expires, this approval notification will no longer be valid.

As the principal investigator for this study, it is your responsibility to follow all applicable RCHSD policies and procedures and to notify us of any changes in the status of your project or in changes in your research plan that will affect resource utilization at RCHSD.

At the conclusion of your project, please notify us at research@rchsd.org so we can close your EPIC # (if you have one) and your project #.

Sincerely,

Irvin A. Kaufman, MD
Senior Medical Director
Rady Children's Hospital-San Diego

Table 1

Behavioral Measures

Behavioral measures	Measure	Scale (response level) Possible score range	Cronbach's α coefficient
Depressive Symptoms	Center for Epidemiological Studies Depression Scale for Children (CES-DC)	20 items (4 level response) 0-60	.90
Social Support Frequency	Child and Adolescent Social Support Scale for Healthy Behaviors (CASSS-HB)	6 Subscales, 12 items each (6 level response) 72-432	Subscales: .96-.99 Total: .99
Social Support Importance	Child and Adolescent Social Support Scale for Healthy Behaviors (CASSS-HB)	6 Subscales, 12 items each (3 level response) 72-216	Subscales: .94-.99 Total: .99

Table 2

Participant Characteristics

Categorical Variable	Frequency (%)
Gender	
Male	12 (38.7%)
Female	19 (61.3%)
Age	
13	4 (12.9%)
14	3 (9.7%)
15	9 (29%)
16	9 (29%)
17	6 (19.4%)
Ethnicity	
Hispanic	21 (67.7%)
African American	3 (9.7%)
Other	7 (22.6%)
Type of health insurance	
Public	25 (80.6%)
Private	6 (19.4%)
Participation in after school activities	
Yes	12 (38.7%)
No	19 (61.3%)
Continuous Variable	M (SD) Range
Depressive Symptoms (CES-DC)	14.1 (10.1) 1-40
Social Support (CASSS-HB)	
Parent Frequency	54.9 (16.9) 14-72
Teacher Frequency	38 (21.7) 12-72
Close Friend Frequency	54.8 (19.3) 12-72
People in My School Frequency	37.2 (21.2) 12-72
Classmates Frequency	41.5 (19.9) 12-72
Other Family Members Frequency	55 (16) 21-72
Total Overall Frequency	281.5 (96.2) 108-409
BMI %	95.8 (7.4) 65.6-100
HgA1c	8.8 (2.9) 5.4-14
Months since diagnosis	30.1 (26.9) 0-87.6

Table 3

Comparing study characteristics of younger adolescent group (n=7) with older adolescent group (n=24)

Variable	Total (n=31)	Younger	Older	t(29)	p
	M(SD) Range	M(SD) Range	M(SD) Range		
CES-DC	14.13 (10.14) 1-40	16.7 (12.8) 5-40	13.4 (9.4) 1-33	.76	.45
BMI	95.76 (7.43) 65.55-100	99 (.77) 97.7-100	94.8 (8.2) 65.6-99.8	1.33	.19
HgA1c	8.82 (2.90) 5.40-14.00	6.7 (.93) 5.7-8.1	9.5 (3) 5.4-14	- 3.98	<.01
Months since diagnosis	30.14 (26.88) 0-87.55	26.4 (31) 2.8-84.7	31.2 (26.2) 0-87.6	-.41	.69
CASSS-HB					
Parent Frequency	54.94 (16.87) 14-72	65.7 (7.5) 53-71	51.8 (17.6) 14-72	3.04	.006
Parent Importance	29.71 (5.63) 19-36	31 (4.1) 27-36	29.3 (6) 19-36	.68	.5
Teacher Frequency	38.03 (21.65) 12-72	56 (22.1) 14-72	32.8 (18.9) 12-67	2.76	.01
Teacher Importance	22.06 (8.84) 12-36	27 (8.3) 13-36	20.6 (8.6) 12-35	1.73	.093
Classmate Frequency	41.48 (19.90) 12-72	46.3 (21.3) 12-67	40.1 (19.7) 12-72	.72	.477
Classmate Importance	23.06 (7.45) 12-36	25.3 (8.6) 12-36	22.4 (7.2) 12-35	.89	.379
Close Friend Frequency	54.84 (19.31) 12-72	62.3 (13.7) 32-72	52.7 (20.4) 12-72	1.17	.253
Close Friend Importance	27.19 (8.04) 12-36	31.3 (4.7) 24-36	26 (8.5) 12-36	1.57	.128
People in My School Frequency	37.19 (21.20) 12-72	52.7 (21.1) 13-72	32.7 (19.4) 12-71	2.36	.025
People in My School Importance	21.55 (8.94) 12-36	27.1 (8.3) 12-36	19.9 (8.6) 12-36	1.97	.059
Other Family Member Frequency	55.00 (16.04) 21-72	64.9 (7.9) 48-72	52.1 (16.8) 21-72	2.80	.01
Other Family Member Importance	27.00 (7.14) 12-36	31.3 (3.9) 24-36	25.8 (7.4) 12-36	1.88	.07
Total Frequency Score	284.48 (96.25) 108-409	347.9 (74) 239-403	262.1 (94.5) 108-409	2.20	.036

Final Chapter

Synthesis of Findings

Today, the United States is in the midst of a pediatric obesity epidemic, especially among adolescents with type 2 diabetes. Forty years ago type 2 diabetes was referred to as adult onset diabetes, or noninsulin dependent diabetes, and type 1 diabetes was the principal concern for pediatric diabetes care providers. Depression occurs more during adolescence than in other stages of childhood, and coupled with a chronic disease requiring daily management, could lead to devastating consequences for teens and their families. Initially, pediatric and mental health providers debated whether depression could even exist during childhood, or was just a variation of normal childhood. Eventually, researchers began to adapt old instruments and develop new ones to assess for depressive symptoms in children and adolescents.

The participants in this study tended to be obese and prone to depression. There were differences between early and middle adolescents in the extent to which their disease was managed well (eg. their BMI, HgA1c), and who they viewed as relevant sources of social support. Both groups of adolescents in this study reported that they received a high levels of support from parents and that this support was important. As

adolescents move from the early to middle phase of adolescence, friends and peers become increasingly important. This tendency was reflected in the findings of this study in that the desire for support from close friends ranked significantly lower for the early adolescent compared to middle adolescents. At the same time, the importance of parental support was significantly higher among early adolescents compared to those in their middle adolescence. Health care provider understanding about the intricacies of each phase of adolescent development and how these influence disease management and social support are important factors in the approach to treatment.

Implications for Research

This study provides initial understanding about the challenges of caring for adolescents with type 2 diabetes. Recruitment was challenging, however, for a number of reasons. The major limiting factor to eligibility was age. In future studies, expanding the sample to include late adolescents as well as adolescents from multiple clinical sites would benefit research of this nature. Another limiting factor was the no-show rate for teens with scheduled appointments in the clinical setting where the study took place. Many patients travelled long distances to reach the clinic because, there is no other pediatric endocrinology provider nearby. A visit to the endocrinology clinic took half a day which is lost school time for the adolescent and lost work hours for the parent. Other barriers may have included additional transportation challenges, healthcare costs, lack of parental oversight of disease management, or communication difficulties between the clinic and patient or parent. Future research could investigate more carefully the full nature of these barriers along with the feasibility of telemedicine and social media to improve recruitment to clinical studies.

Another research priority is instrument development and testing. As new generations emerge, it is important to reexamine instruments for continued reliability and validity with the target population. Of equal importance is the development of new instruments to address current health issues. The CASSS-HB, a newer instrument, requires further testing with larger sample sizes and a broader age range than this study provided.

Implications for Practice

Given that almost one third of the adolescents in this study had significant depressive symptoms, mental health assessment and social support should be available and tailored to the individual adolescent's needs. In the practice setting, mental health evaluation is being drawn to the forefront and should be part of every office visit. The diabetes management team is perfectly positioned to conduct these assessments when patients are being seen every three months. The concept analysis of childhood depression illuminates signs and symptoms as well as risk factors and consequences. Chronic illness and obesity are among the risk factors for depression, and the majority of adolescents with type 2 diabetes have both. Family history is a strong risk factor as well, and the presence, or lack thereof, should be charted in the patient's medical record. The use of age appropriate depression screening is paramount.

The rate of obesity among the study population has important implications for practice. Given that 95% of the participants were obese at the time of the study, lifestyle behaviors leading to obesity should be addressed as part of a comprehensive approach to their care. Nutritional consultation should be available, along with information about sleep hygiene and the benefits of regular exercise. As with every patient facing a chronic

illness, motivational interviewing to determine the teen's interest in improving health should be utilized. Individualized assessment, and treatment should take into consideration the adolescent's cognitive, emotional, and social developmental tasks when providing care to this population.

Finally, both the early and middle adolescents in the study indicated that support from close friends was important. Peer relationships are an important part of every phase of adolescence. This doesn't always include face to face interactions, but may include the use of the internet or social media such as Facebook. The latter could serve as a platform for support and education for the adolescent with diabetes with oversight from a multidisciplinary team monitoring the social media site.

Implications for Policy

The State of California does not have a policy in place requiring school-based mental health screenings for adolescents. Having type 2 diabetes in addition to obesity places an adolescent at increased risk for depression. Depression may initially be recognized in the school setting manifested as poor peer interactions and poor school performance. Signs and symptoms may become visible to peers and/or teachers prior to a parent's recognition. This is also true for other mental health disorders. The school setting, where children and adolescents spend the majority of their waking hours, is a viable option for mental health evaluations.

Implications for Education

Research, practice, and policy issues pertaining to adolescents with type 2 diabetes are important topics for nursing education. Each of the manuscripts in this dissertation may be used as an educational tool. Understanding childhood depression is

the responsibility of all pediatric professionals who may care for adolescents with type 2 diabetes. Familiarity with the multiple instruments available to evaluate adolescents for depressive symptoms and social support is important. Finding the appropriate instrument for the population at hand may present a challenge but understanding its roots and psychometric properties sheds light on this process. This complex process is worth the educational challenge in learning about it. Finally, adolescents with type 2 diabetes are a unique group. They are striving for independence at a point in their lives when parental support, and even oversight, is of utmost importance to their health and well-being. This study reinforces the differences between a population of early and middle adolescents with type 2 diabetes and their desire for social support. Incorporating lessons learned from this study into nursing and allied health education may ultimately improve the health outcomes of this important clinical population.

Future Journal Submissions

Childhood Depression: A Concept Analysis will be submitted to *Journal of Advanced Nursing* for publication consideration.

A Review of the Child and Adolescent Social Support Scale for Healthy Behaviors will be submitted to the *Journal of the National Association of Clinical Nurse Specialists* for publication consideration.

Depressive Symptoms and Social Support in Adolescents with Type 2 Diabetes will be submitted to the *Journal of Pediatric Health Care* for publication consideration.