An Investigation of Hope, Health Promotion Lifestyle Behaviors, and Self-Efficacy in Young Adults with Type 1 Diabetes

by

Sola Aina-Popoola

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Approved by:

Maria Witte, Chair, Professor of Educational Foundations, Leadership, and Technology
Constance Hendricks, Professor of Nursing
James Witte, Professor of Educational Foundations, Leadership, and Technology
Leslie Cordie, Assistant Professor of Educational Foundations, Leadership, and Technology

Abstract

The influence of hope and self-efficacy among young adults with type 1 diabetes (T1D) has not been fully researched. Research has been conducted on the effects of hope and self-efficacy in chronic diseases such as diabetes. However, few studies have investigated hope, health promotion lifestyle behaviors, and self-efficacy on young adults with type 1 diabetes (T1D). To fill the gap, this study investigated the hope, health promotion lifestyle behaviors, and self-efficacy of young adults with type 1 diabetes. The variables in this study were age, education, and gender.

The Hendricks Perceptual Health Promotion Determinants Model provided the theoretical framework that guided this study. Hope was measured using the Adolescent Hope Scale (Hendricks, Murdaugh, & Hendricks, 2004). Health promotion lifestyle behaviors was measured using the Adolescent Lifestyle Profile (Hendricks & Pender, 2001) Self-efficacy was measured by the Stanford Diabetes Self-Efficacy Scale (Lorig, Ritter, Villa, & Armas, 2009).

A quantitative study was used to investigate young adults with T1D at an online group at T1D Exchange *(N*=130*).* A survey identified the effects of hope, health promotional lifestyle behaviors, and levels of self-efficacy. Pearson correlations were used to examine the relationship between hope, self-efficacy, and health promotion lifestyle behaviors. Identifying the relationships among all these variables can assist health care professionals to plan better care for young adults at the early stages of the disease.

The findings revealed that hope and self-efficacy were significant predictors of health promotion lifestyles behaviors. The study mean for hope scale was 38.63 with a standard deviation of 6.92. The health promotion lifestyles behaviors reported a mean of 135.39 with a

16.89 standard deviation. The self-efficacy scale reported a mean of 7.71 with standard deviation of 1.37. The majority (76%) of the participants were from outside of the United States of America. The researcher recommends that the study be replicated in the United States as there might be an opportunity to improve participants' self-management ability.

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CHAPTER I. INTRODUCTION

As a chronic condition, diabetes has multidimensional effects with serious physical, psychological, and clinical complications for individuals affected if not properly managed. People with chronic disease have recognized that hope is a significant strategy in coping with their illness (Miller, 1986). Type 1 diabetes is an autoimmune disease in which insulin producing B-cell of the pancreas are destroyed. It is a chronic disease. In early years, there was no diagnosis or treatment for diabetic patients. In 1776, Dobson, a British man, discovered that the existence of excess sugar in urine and blood was a cause of diabetes (Ahmed, 2002). Another significant finding explained by Ahmed (2002) is the publication by Claude Bernard of France in 1857 that diabetes was due to surplus glucose production in the body. Currently, urine glucose testing is a method of diagnosis of diabetes in the clinical laboratory (Kyi, Wentworth, Nankervism, Fourlanos, & Colman, 2015).

Equally important, in 1889, Paul Langerhans recognized cells in the pancreas that were not involved in other digestive processes (Ahmed, 2002). These cells are known as Islet of Langerhans and damage to these cells caused diabetes. Inside each islet are numerous types of cells that work to adjust blood sugar. Among these cells is the beta cell and beta cells sense sugar in the blood and discharge the insulin (a hormone in the beta cell) to maintain normal blood sugar (Diabetes Research Institute Foundation, 2016). Two Canadian surgeons, Fredrick Banting and Charles Best, were the first known to isolate the hormone called insulin during clinical trials (Ahmed, 2012). According to the Diabetes Research Institute Foundation (2016),

the immune system mistakenly identifies beta cells as an antigen and destroys them, initiating type 1 diabetes (T1D).

Young adults living with type 1 diabetes face various life stressors coupled with the daily regimen and self-management. The emotional, psychological and healthy promoting habits, the social and environmental influences are considered prominent in maintaining their health. This study acknowledged that as adult learners, young adults living with T1D are self-directed and self-motivated. Malcolm Knowles' concept of andragogy specifies that adult learners have recognized an effective learning climate where one feels safe and comfortable articulating themselves (Kaufman, 2003).

Type 1 diabetes (T1D) is a chronic disorder that affects about 5% of all cases of diabetes (Daneman, 2006). It is instigated by the immune-mediated destruction of pancreatic beta cells, leading to insulin deficiency, hyperglycemia, and the risk of ketoacidosis (Kyi, Wentworth, Nankervism, Fourlanos, & Colman, 2015). The majority of individuals diagnosed with T1D are children, adolescents, and young adults. Each year, more than 13,000 young people are diagnosed with type 1 diabetes (CDC, 2012). Type 1 diabetes is a condition, which involves daily multifaceted self-care and a combination of all management tasks, decision-making, and implementing treatment pertaining to the disease (Munt & Hutton, 2012). The American Diabetes Association (2008) indicated that T1D affects about 208,000 Americans under age 20. About one million Americans are living with type 1 diabetes (Guo, Whittemore, & He, 2011).

Raleigh (1992) stated that hope plays a vital role for people with chronic diseases such as diabetes. Hope is an anticipation of goal attainment enriched by the significance of the goal and the prospect of attaining it (Raleigh, 1992). Hope relates to motivation. One assumes that motivation is present when one acts cognitively to attain an objective.

With hope comes self-efficacy. Bandura (1982) asserts self-efficacy as a reflection of a person's confidence to perform the actions required to successfully accomplish a specific task. Young adults with type 1 diabetes who retain strong self-efficacy beliefs seek to participate in self-care and face the challenging tasks of their lifestyles. Such lifestyles include more than just maintaining daily regime such as monitoring, interpreting blood glucose levels, dietary planning, and incorporating physical exercises into their daily life (Abubakri, Cousins, Thomas, Sharma, & Naderali, 2016).

A fundamental component in attaining the goals of Healthy People 2020 is promoting healthy behavior lifestyles. Healthy People 2020 are set of goals and objectives with 10 years directed strategy to guide national health promotion and disease prevention efforts to improve health for all people in the United States. (CDC, 2015). The United States Department of Health and Human Services (2016) pointed out that health promotion continues to be a long-term and most cost-effective approach to reduction in preventable health problems. Abubakri et al. (2016) affirmed that promoting individual self-management is imperative for a T1D individual in reducing the risk of complications.

One of the characteristics of health promotion is the idea of empowerment. Health promotion involves empowering individuals to help themselves by improving their capacity to recognize choices, options, and the consequences of each choice before making decisions that will affect their quality of life options in the near future (Hendricks, 1992, 1998a, 1998b; Murdaugh & Parsons, 2002; Pender, 1996,).

Overview of Type 1 Diabetes

Type 1 diabetes (T1D), previously called insulin-dependent diabetes mellitus (IDDM) or juvenile diabetes, is a metabolic syndrome in which the body does not produce or lacks insulin

production cells leading to insulin deficiency in the body. After clinical onset, the individual diagnosed with type 1 diabetes will have a life-long dependence on insulin (Sacco & Bykowski, 2010). Insulin is a hormone used by the body to absorb glucose and other nutrients from food to store fat and build up the protein (American Diabetes Association (ADA, 2011). Michel (2011) indicated that genetic susceptibility or exposures to a virus are other pathogenesis contributing factors of immune-related type 1 diabetes. However, the cause for type 1 diabetes is unknown and is a condition that cannot be cured (Diabetes Health Center, 2013).

Metabolic Regulation of Glucose

Prior to the discovery and refinement of insulin, medical treatment of diabetes consisted of little more than the passive supervision of the patient's gradual decline towards eventual death (Aronoff, Berkowitz, Shreiner, & Want, 2004; Shillitoe, 1988). Insulin treatment has changed the prognosis dramatically because it provides an effective means of blood glucose control (Arnoff et al., 2004). Currently, a person with type 1 diabetes lives a normal life with conscientious self-management of the disease. According to Roder, Wu, Liu, and Han (2016), the pancreas is the main regulatory macronutrient digestion and consequently metabolism/energy homeostasis by releasing various digestive enzymes and pancreatic hormones. From the various hormones, especially glucagon and insulin, the pancreas maintains blood glucose levels. Glucose is absorbed into the circulatory system and a vital fuel for the brain and muscles (Aronoff, et al., 2004). The effect of glucose in the circulatory system after the intake of food depends on the processing rate of the gastric system (Aronoff et al., 2004).

A proportion of glucose is also stored in the liver as glycogen; any glucose left over is then converted into fat and stored as triglycerides. The conservation of glucose as glucagon is

accomplished by the differing and complementary action of glucagon and insulin, which is referred to as glucose homeostasis (Aronoff et al., 2004; Roder, et al., 2016).

Aronoff, Berkowitz, Shreiner, and Want (2004) indicated that during a meal containing carbohydrates, insulin levels rise. A person who has type 1 diabetes is unable to produce insulin in the body, which leaves blood glucose levels free to rise in a petrifyingly uncontrolled manner. This person is obligated to observe careful monitoring of blood glucose levels on a daily basis using multiple injections of insulin. A glucometer machine (a blood glucose meter) allows a person with diabetes to determine the level of sugar in the system and to utilize the information as part of their treatment regimen. The primary function of insulin is to prevent an excessive rise of glucose in the blood by enhancing its conversion into fat and storage as glycogen.

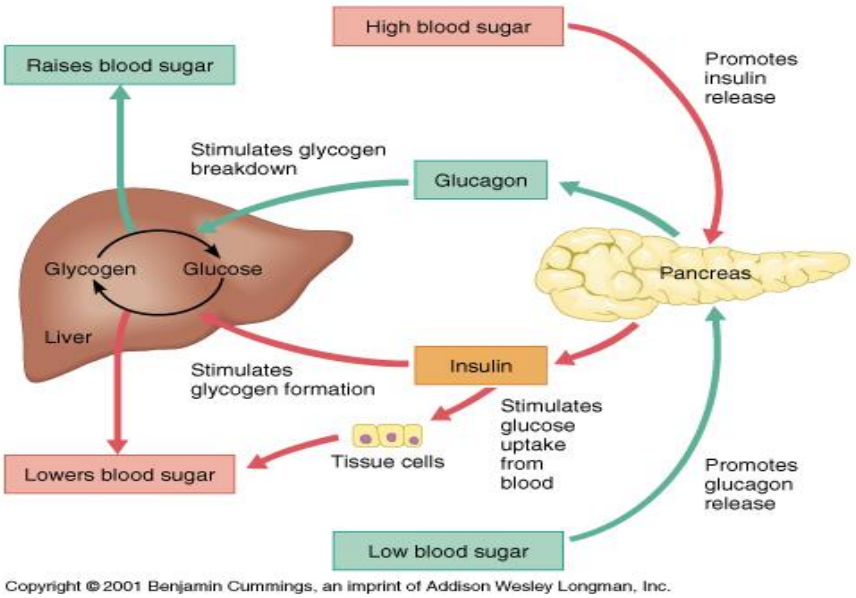
Figure 1 demonstrates the balance of insulin and glycogen to conserve blood glucose. The pancreas in response to high blood glucose secretes insulin after a meal. To create a balance, the body stored excess glucose in the liver thereby creating equilibrium.

Figure 1. Glucose homeostasis: Role of insulin and glucagon. Adapted from Internal Doctors of Mill Basin & Bergen, Brooklyn by Bella Zimilevich, M.D.

Hemostasis is a state of equilibrium. All systems adjust their internal process to correspond with environmental changes and maintain functions of the systems mechanisms. Blood glucose levels are maintained by glucagon and insulin. When blood glucose levels are low, the pancreas secretes glucagon, which stimulates endogenous blood glucose levels through glycogenolysis. After a meal, when exogenous blood glucose levels are high, insulin is released to trigger glucose uptake into insulin-dependent muscle and adipose tissues as well as to promote glycogenesis.

Risk of Type 1 Diabetes Complications

Type 1 diabetes is a metabolic disorder resulting from deficiency in insulin secretion. As a result, an individual may develop chronic hyperglycemia (elevated levels of plasma glucose)



with disturbance of carbohydrate, fat, and protein metabolism (Deakin, McShane, Cade, & Williams, 2009). Diabetes intensifies the cause of cardiovascular diseases and it is the major

cause of death in person with diabetes. In addition, Deakin, et al., indicated that a person with diabetes is more likely to develop cardiovascular disease than a person without the disease. Cardiovascular disease is the most common complication of diabetes.

Hyperglycemia Complications

Those with type 1 diabetes are at a high risk of developing high glucose levels, which is a dangerous complication. Hyperglycemia occurs when low levels of insulin allow blood glucose to rise above normal levels. According to Fowler (2008), when excess glucose spills into the urine track (polyuria), it causes microvascular and macrovascular complications such as nephropathy, retinopathy, and neuropathy. Macrovascular complications include coronary artery disease, peripheral arterial disease, and stroke.

Hypoglycemia Complications

Hypoglycemia is categorized by abnormally low blood glucose, typically less than 70mL/dl (ADA, 2015). Symptoms of hypoglycemia include:

- Polyuria or excessive urination
- Polydipsia or excessive thirst
- Weakness, and
- Unexplained weight loss.

Other symptoms include blurred vision, genital itching, nausea and vomiting, and slow wound healing (Diabetes, 2015). If these signs and symptoms are not identified in time and treated, they may lead to other complications such as diabetes ketoacidosis, which is an acute life-threatening complication that is caused by lack of insulin. It is significant for those in health care and those working with diabetic persons to understand the health promoting lifestyle – hope, and self-efficacy – of young adults with type 1 diabetes in the management of diabetes.

Table 1 identifies the expected glucose levels and the tight control of blood glucose level in preventing hypoglycemic reactions according to American Diabetes Association (2015). Table 2 identifies the expected glucose level of youths with Type 1 Diabetes specified by American Diabetes Association (2015).

Table 1

Tight Control of Blood Glucose Levels for Someone with Diabetes or 2 Hours After Meal

Before meals, blood glucose	70 – 130 mg/dL	With glycated hemoglobin
Two hours after a meal	< 180	(A1C) less than 7 percent

Note: Recommended glucose levels before and two hours after meals. Adapted from American Diabetes Association.

Table 2

Youth (Younger than 18 years old) with Type 1 Diabetes

Preprandial	90 – 130 mg/dL	With glycated hemoglobin
Bedtime and overnight	90 to 150 mg/dL	(A1C) less than 7. 5 percent

Note: Recommended Type 1 Diabetes blood sugar levels. Adapted from American Diabetes Association

Self-Efficacy, Hope, and Health Management

Young adults with type 1 diabetes who demonstrate self-efficacy focus on available opportunities to learn about the management of the disease, not obstacles. Self-efficacy and control seem to be two of the more commonly used concepts in both defining and measuring of empowerment. Self-efficacy is a conviction in oneself for being capable of completing tasks or examining activity (Wang, 2011). Self-efficacy is a social cognitive theory and a variable used in research relating to the management of chronic diseases (Prior & Bond, 2004). It also

pertains to the logic of control over one's environment and behavior (Bandura, 1982; Schwarzer & Lusczynka, 2007). Bandura identifies self-efficacy as the motivator of higher performance and lower emotional arousal. Self-efficacy influences the efforts one takes to persevere in a situation despite barriers and difficulties that may undermine motivation. Developing self-efficacy permits young adults to adapt to the life situations with maturity. Young adults' formulations of good adaptation to life experiences increase the ability to control hypo/hyperglycemia reactions.

Lazarus and Folkman (1984) indicated that surviving in general symbolizes self-motivation and adjust to the demands and resources required to construct the dynamic appraisal of difficulties in a situation. Bandura (1982) revealed that self-efficacy affects surviving behavior of a person. The relationship between self-efficacy and the management of diabetes become apparent and important for a healthy behavioral approach. Young adults comprise the developmental stages that include early transitional phase between the ages of 18–22 of age and later transitional phase between the ages of 23–35 years (Balfe, et al., 2013). Balfe et al. asserted that young adults in their twenties struggle between characteristics of adolescents and adjusting to the stability of life. Those in their late twenties and early thirties are concerned about their future and diabetes management. Maintaining good health promotion with work, educational status, and personal relationships can be challenging for young adults with this chronic disease. Table 3 identifies the classification and psychosocial developmental stages of young adults.

Table 3

Young Adults' Developmental Stages

Phase	Age	Characteristics

Early transitional phase	18–22 years of age	Young adults in their twenties struggle between characteristics of adolescents and adjusting to the stability of life
Later transitional phase	23–35 years of age	Concern about future and diabetes management personal relationships can be challenging for young adults with a chronic disease.

Note: Type 1 diabetes in young adulthood. Adapted from Monaghan, Helgeson, and Wiebe manuscript.

The transitional phases are the integration into adulthood when young men and women are challenged with the transition of living away from home to college or the workforce, changing primary care providers (Physician), and shifting relationships. Monaghan, Helgeson, and Wiebe (2015) explained this phase as a precarious period for the shift and integration of lifelong diabetes maintenance skills. A majority of young adults are involved in several transitions during this struggling developmental period, including changes in lifestyle and coping with the daily regime of managing the disease. During this phase, young adults move from the pediatrician (child and adolescent physician) and transfer their medical care into the adult health care system (Monaghan, Helgeson, & Wiebe, 2015). Stability of medical care is significant for proper management of the disease. It should be noted that the value of commitment in diabetes care in young adulthood impacts health and quality of life consequences including psychosocial needs and varying patterns of relationships with significant others, peers, and the parents. Young adults rely on hope to manage to manage and prevent hypoglycemic on daily bases. Hope is an anticipation of a future that is good and is based upon mutuality (relationships with others), a sense of personal competence, coping ability, psychological well-being, purpose and meaning in life, and a sense of the possible (Miller, 1986).

Theoretical Framework

The Hendricks Perceptual Health Promotion Determinants (HPHD) Model (see Figure 2) guided the study. The model suggests five cognitive/perceptual attributes (self-esteem, hope, self-efficacy, cognitive, development, and pubertal development) influence the prospect to participate in health promoting lifestyle. The model was derived from the literature and clinical practice (Hendricks, 1998a, 1998b). This study encompassed the concepts of hope and self-efficacy as founded to be the stronger predictors of health promoting lifestyle (Hendricks 1992, 1998a). There is a significant gap in the literature with the young adults with type 1 diabetes on hope, self-efficacy, and health promoting lifestyle.

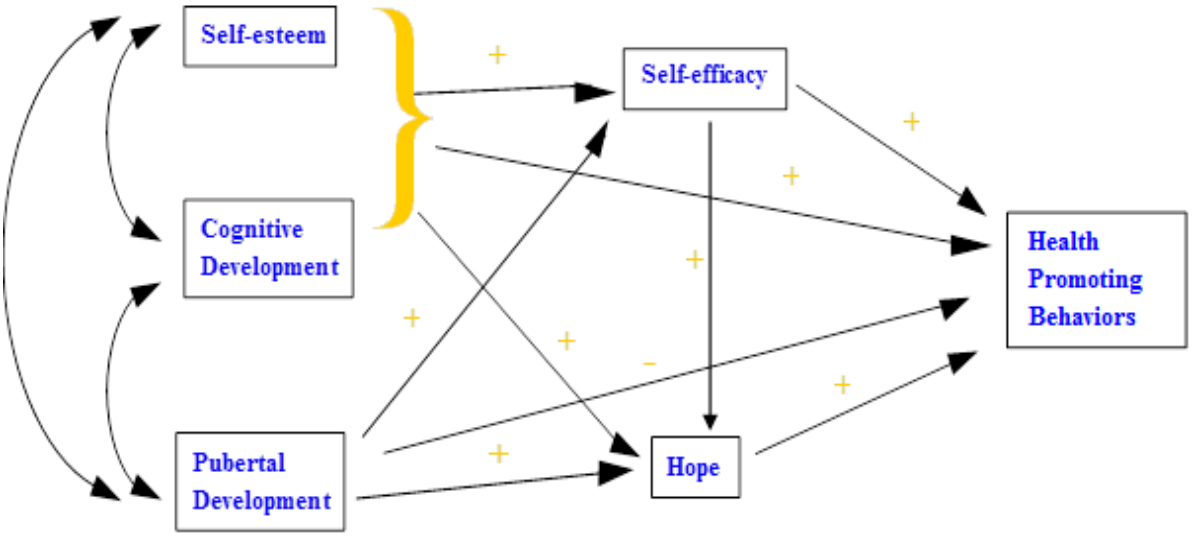


Figure 2. The Hendricks Perceptual Health Promotion Determinants Model. Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Pender (1982) defined health promotion as consisting of "activities directed toward increasing the level of wellbeing and actualizing the health potential of individuals…" (p. 4). Health promoting lifestyle are activities that are part of one's lifestyle, maintain one's current

health prominence, and change the individual desirable health level. Health promoting lifestyle are preventative lifestyle, which are approaches for evading disease or illness (Pender, 1996).

Pender (1982) described healthy lifestyle as integrating the corresponding components of health preventative and health promoting behavior. Pender distinguishes the focus of each component. Health protecting lifestyle are directed towards reducing health risks by decreasing their probability of encountering illness or injury. Health promoting lifestyle are a positive approach to living, where activities are direct toward sustaining or increasing one's level of wellbeing, stress management, and personal fulfillment. The lifestyle is pursued because it is satisfying and enjoyable (Tavassoli, Shariferad, & Shojaeezadeh, 2013).

There is a need for this study because these variables, hope and self-efficacy as they relate to health promoting lifestyle, have not been researched in detail utilizing T1D young adults. According to Hendricks (1992), additional research is needed to develop strategies to enhance levels of hope, self-efficacy, and health promoting lifestyle.

Statement of the Problem

The perspectives of young adults with type 1 diabetes (T1D) are seldom discussed or studied in research. There is limited or lack of literature on hope, health promotion, and self-efficacy of young adults with T1D. An increasing number of young adults with type 1 diabetes are transitioning into adulthood. These young men and women face the challenge of self-managing their diabetes. Coping with the stress of life and managing dynamics of diabetics is a challenge. There is a lack of literature relating to hope, health promotion and self-efficacy of young adults between the ages of 18 to35 with type 1 diabetes living independently.

Purpose of the Study

The purpose of this study was to investigate the hope, health promotion lifestyle

behaviors and self-efficacy levels of young adults with type 1 diabetes (T1D). Variables in this study included age, education, and gender. The Hendricks Perceptual Health Promotion Determinants Model provided the theoretical framework that guided this study. Hope was measured using the Adolescent Hope Scale (Hendricks, Murdaugh, & Hendricks, 2004). Health promotion lifestyle behaviors was measured using the Adolescent Lifestyle Profile (Hendricks & Pender, 2001) Self-efficacy was measured by the Stanford Diabetes Self-Efficacy Scale (Lorig, Ritter, Villa, & Armas, 2009).

Research Questions

The following research questions were used in this study:

1. What is the level of hope among young adults with type 1 diabetes?
2. What is the health promoting lifestyle behavior profile of young adults managing type 1 diabetes?
3. What is the level of self-efficacy among young adults with type 1 diabetes?
4. What is the relationship between hope, health promotion lifestyle and self-efficacy levels among young adults with type 1 diabetes?

Significance of the Study

There is limited or a lack of literature on hope, health promotion and self-efficacy for young adults with T1D. There is a need for this study because the variables hope and self-efficacy as they relate to health promoting lifestyle have not been researched with T1D young adults. According to Hendricks (1992), additional research is needed to develop strategies to enhance levels of hope, self-efficacy and health promoting lifestyle.

Hope and self-efficacy are identified as important among patients with chronic diseases (Bandura, 1986; Kane, Marks, Zaccaro, & Blair, 1996; Snyder, Harris, & Anderson. 1991). The outcome of this study will reinforce and nurture healthy lifestyle lifestyle among young adults with T1D. Hope is considered a constructive anticipation in goal attainment (Santos, Sigulem, Areco, Gabbay, Dib, & Bernardo, 2015).

Research has supported the positive effects of self-efficacy on individual self-management abilities (Bandura & Jordan, 1991; Bandura & Wood, 1989; Forbes, 1999). Assessing the way individuals conceptualize themselves and perceive their health status is crucial to the effective development and evaluation of interventions that promote healthy lifestyle choices (Pender, 1996).

Assumptions of the Study

The following assumptions were made in the study: young adults, who are living with type 1 diabetes

a) have poor glycemic control and are at risk for diabetes complications;
b) experience eating disorders;
c) improve self-efficacy when they are able to manage and cope with the disease; and
d) have support from health care practitioners and intensive educational treatment that increase self-efficacy.

Definitions of Terms

The following definitions were used in this study:

1. **Basal**: continuous dose of insulin administration to maintain glucose level
2. **Bolus**: extra amount of insulin delivered at specific time throughout the day

3. **Diabetes ketoacidosis:** referred to as diabetic acidosis and diabetic coma is manifested by extended insufficiency insulin leading to hyperglycemic reaction, ketosis, and dehydration (Michel, 2011)
4. **Health Promoting Lifestyle:** a multidimensional patterns of the individual's self-initiated actions and discernments that serve to maintain or improve the level of wellness, self-actualization, and fulfillment of the individual (Pender, 1987, p. 77)
5. **Hemoglobin A1C**: blood test used in diagnosing diabetes mellitus. Results reveal glucose level in the blood for two to three months
6. **Hope**: Miller (1986) defines as a state of being described by an anticipation for a continued good state. An improved state or a release from a perceived entrapment
7. **Hormone:** is a substance produced in the body by internal glands that regulate the function of cells to maintain the smooth operation of the entire body
8. **Hypoglycemia:** low blood sugar
9. **Hyperglycemia:** high blood sugar
10. **Insulin:** a hormone produced in the beta cells of the pancreas. Insulin helps the body to obtain energy from glucose
11. **Macrovascular:** coronary artery disease, peripheral arterial disease, and stroke
12. **Microvascular:** nephropathy (damage to the kidney), retinopathy (damage to the retina), and neuropathy (damage to the nerves)
13. **Pre-prandial:** before meal
14. **Self-efficacy:** Perceived one's belief about the capability to produce an effect. Self-efficacy was also defined as "people's belief about their capabilities to produce

designated levels of performance that exercise influence over events that affect their lives" (Bandura, 1994, p.71)

CHAPTER II. LITERATURE REVIEW

Introduction

Globally, chronic disease is the leading cause of death (World Health Organization, 2014). Chronic diseases such as heart disease, diabetes, and arthritis are among the most common and expensive of all health problems in the United States (CDC, 2014). With self-efficacy, hope, and maintenance of one's health, the disease can be managed in order for one to have a productive life. Of interest is the fact that type 1 diabetes is more prevalent among White males than Black males. In addition, the disease affects males more than females (Guo, Whittemore, & He, 2011).

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Hope

Hope is essential to human existence. A person with chronic disease has an expectation for ongoing life and progressive functional capacity (Broadhurst & Harrington, 2015; Philp, God, Brand, Douglass, Miller & Sundararajan, 2016). Soanes and Stevenson (2003) identified hope as a sense of anticipation and waiting for specific events to occur. Soanes and Stevenson (2003) continued that hope improves quality of life in patients with type 1 diabetes.

Dubree and Vogelpohl (1980) identified hope as an act of a powerful life force, producing vitality and liveliness in life. Snyder (1995) linked hope and goal setting, identifying hope as one of the necessary components for goal achievement. Hope, according to Snyder (1995) was the cognitive energy and pathways for goal attainment. The constituent of hope was considered to be the element of choice (Dubree & Vogelpohl, 1980).

Hope gives rise to a sense of well-being; hope is a key factor and a major motivator of behavior that yields optimum health. Hope and perceived social support are aspects of affective responses to stressors that make life bearable in times of stress or transition (Wei, Li, Tu, Zhao, & Zhao, 2016). The presence of hope fortifies the physiological and psychological defenses,

while its absence correlated with an early demise of functioning (Wei, Li, Tu, Zhao, & Zhao (2016).

Hope has been described as an important basis of human behavior (Haugan, 2013). Connectedness and socializing with others facilitates hopefulness and meaning in life among elderly patients. Haugan (2013) studied the association of hope, meaning of life, self-transcendence and nurse-patient interaction in a long-term care facility. Interacting and communicating feelings of worth increased hope and self-worthy among this group of elderly individuals. As a method of coping, hope enables individuals to surpass psychologically unpleasant, stressful situations by reinforcing the cognition that there is a way out of a difficult situation (Feldman & Sills, 2013; Haugan, 2013). Snyder (1995) indicated that it is one's hope that directs the chosen response related to the importance of the goal, solutions, and probabilities for successful action (Feldman & Sills, 201; Snyder (2004).

Studies have indicated the importance of hope in influencing behavior (Beyea, 1991; Dufault & Martocchio, 1985; Hendricks, et al., 2000; Miller, 1983, 1986; Staats, 1987, 1991). Beyea (1991) found that the indirect influence of hope to the practice of healthy lifestyle among healthy adults were direct determinants of healthy lifestyle.

Hendricks (1998b) found that there was a statistically significant difference in the observed level of hope between males and females. Females have higher levels of hope score than males. Females had stronger belief in the future, which is positive and grounded in mutuality. Females possessed a higher sense of personal competence, coping ability, psychological wellbeing, tenacity and importance in life. Hendricks (1998a, 1998b) also found that there was a significant difference in the perceived level of hope between the racial groups. Perceptions of one's ability have shown to predict performance better than actual ability.

Bandura (1992) accentuated that if self-efficacy is strengthened, situations would be approached more assuredly and skills enhanced. Similarly, Mishali, Omer, and Heymann (2011) implied that self-efficacy was a significant aspect influencing diabetes self-management lifestyle. After reading the literature, the research assets that assessment of self-efficacy is the first implication in considered involvements concerning control of glycemic self-management in young adults with T1D (Iannotti et al., 2006).

According to Bandura (1977a), feelings of self-efficacy need to be recognized, explored and developed in order to produce and regulate life events. Bandura's work suggested that expectations of self-efficacy were the "most powerful determinants of behavioral change" (p. 190) because they determine a person's initial decision to perform a behavior, the effort expended, and the persistence of approach whenever faced with adversity. Bandura's (1986) research led to the theory of perceived self-efficacy, which influences all aspects of behavior, including the acquisition of new lifestyle to replace existing lifestyle. Bandura and Schunk (1981) proposed that when faced with obstacles, problems, or failures, persons who experience serious doubts about their capabilities tend to decrease their efforts or give up, whereas those with a strong sense of efficacy exert greater effort to master the task. As early as 1977, Bandura stressed the need for clinicians to recognize the powerful impact of efficacy expectations on behavioral change in order to understand the potential of therapeutic approaches on behavioral changes.

According to Hurley and Shea (1992), self-efficacy was found to be one of the long-term strategies to enhance self-care and management of diabetes. The study by Hurley and Shea also found that the idea of self-efficacy could be coupled with self-care lifestyle for individuals with complex insulin requirements. Research has supported the positive effects of self-efficacy on

successful treatment of chronic illness (Adam & Folds, 2014). The conviction of individuals to self-manage the disease process allows for completion of a given task and successful implementation of the desired goal.

Hendricks (1998b) found that there was a statistically significant difference in the perceived total self-efficacy between males and females. Females had a higher total self-efficacy score. Females perceived themselves to possess a stronger belief in their own capacity to do behavior required to produce a desired outcome. There was no difference in the general self-efficacy and no difference in the social self-efficacy between the gender groups. There was a significant difference in the perceived total self-efficacy between racial groups. Caucasian students had a higher total self-efficacy score than African American students. Caucasian students perceived themselves to possess more beliefs in their own capacity to do behavior required to produce a desired outcome than African American students.

Health Promoting Lifestyle Behaviors

Pender (1982) defined health promotion as consisting of "activities directed toward increasing the level of wellbeing and actualizing the health potential of individuals…" (p. 4). Health promoting lifestyle behaviors are activities that are parts of an individual's lifestyle to maintain that one's current health status, move the individual to a more desirable level. Health promoting lifestyle behaviors differ from preventative lifestyle, which are strategies for avoiding disease or illness (Pender, 1996).

Pender (1982) described healthy lifestyle as incorporating the complementary mechanisms of health protecting (preventative) and health promoting behavior. Health protecting lifestyle focus on reducing health risks by decreasing the probability of encountering illness or injury. Health promoting lifestyle behaviors are a positive tactic to living, where

activities are directed towards sustaining or increasing one's level of wellbeing, self-actualization, and personal fulfillment.

T1D affects only 9% of the United States population and the second leading chronic disease among adolescence (Boris & Laffel, 2010). Young adults with T1D face numerous health promoting challenges, instability in family, alleged social stresses and depressed mood, and these young adults may have negative influence in metabolic controls. Teenagers have experienced various psychological problems and glycemic control. Although this study focuses on young adults with T1D, the teenage years are most stressful and damaging to patients with this disease. Borus and Laffel (2010) reviewed articles on adherence encounters in controlling T1D in adolescents, both prevention and intervention. Teenagers with type 1 diabetes perceived that their peers without diabetes would react negatively to their diabetes. Contrary to this perception, peers were supportive and sympathetic towards their diabetes. They also found that effective health promoting habits included glycemic control, diet, and exercise to minimize complications and morbidity.

Moreover, Bryden et al. (2001) found that poor glycemic control led to psychological changes and complications in the treatment regimen. According to Bryden et al. (2001), constant smoking, extreme alcohol consumption, and weight gain lead to high HemoglobinA_{1C} (HA_{1c}). These habits resulted in diabetes complications. These authors concluded that peer pressure and social perspective as a teenage may have contributed to poor health promoting habits.

The psychological and societal stresses led to poor outcomes that intensified complications in health promoting habits among young adults with T1D. Datye, Moore, Russell and Jaser (2015) postulated that adolescence is a trying period, including the hormonal and psychosocial fluctuations accompanying puberty and developing young adulthood.

Understanding these psychosocial issues were essential steps to improving glycemic control in T1D patients and promoting health. Managing diabetes during transition periods of adolescence to young adults was significant.

Balfe et al. (2013), in a qualitative study revealed that multiple factors of life stressors caused distress in young adults. Awareness of the stigma attached with diabetes, daily difficulties of insulin administration, and concerns of the future were some of the apprehension faced by these young adults. Planning strategically should include glycemic control, emotion, and social context to achieve good health promoting outcomes. Exercise is also an important health promotional behavior for an individual with T1D in controlling blood glucose levels. The length and intensity of the exercise depends on the individual's ability to tolerate physical activities. Therefore, individuals with type1 diabetes require special thoughts during exercise or any physical activities. Riddell and Perkin (2006) described fluctuations in glucose distribution during exercise for an individual with diabetes. Riddell and Perkin indicated that the pancreatic insulin secretion is lowered and circulating levels of glucagon, growth hormone, cortisol, and catecholamine increase during exercise. The significance of these fluctuating hormonal levels is to provide adequate glucose for the exercising muscles.

Table 4 summarizes some of the journal articles reviewed in this study. The table includes research on qualitative and quantitative finding that were relevant to the study. Excluded from the table were information derived from government or states site such as Centers for Disease Control and Prevention. The table identifies the author(s) of the research articles, standards used in the articles, research methodology, data variables, and the analytical findings

Self-Efficacy

Management of chronic diseases is lifetime task involving time and self-efficacy. The person with a chronic disease should be willing to take the responsibilities of managing the disease on a daily basis without relenting. Self-efficacy was defined as "people's belief about their capabilities to produce designated levels of performance that exercise influence over events that affect their lives" (Bandura, 1994, p.71). Self-efficacy is a conviction in oneself for being capable of completing tasks or examining activity (Wang, 2011). Self-efficacy is a social cognitive theory and a variable used in research relating to the management of chronic diseases (Prior & Bond, 2004). It also pertains to the logic of control over one's environment and behavior (Bandura, 1982; Schwarzer & Lusczynka, 2007). Self-efficacy encompasses the feelings of competency about one's aptitude to perform a role or a task and influences the amount of effort and persistence that an individual exerts when obstacle is confronted. Self-efficacy will be measured by using the Hendricks Perceptual Health Determinants Model (Bandura, 1997).

Willis (2016) argues that self-efficacy is the beginning of motivation and accomplishment. If a person has doubts about the performance of an action, regardless of change, there will be little incentive to produce the desired outcomes. One must possess self-efficacy in order for a behavior to be performed. A person's perception of the ability to efficaciously implement a behavior can affect motivation, interest, and achievement.

Balfe et al. (2009) investigated the viewpoints of university students with T1D on how this disease had affected their physical body image. The practices of the young adults with T1D were precarious concerning their diabetes control when compared to others without diabetes.

Rasmussen, Ward, Jenkins, King, and Dunning (2011) asserted that the dynamics of life affect diabetes self-management and the complexities of life increase the decision-making for the young adults with type 1 diabetes. Young adults with type 1 diabetes who demonstrated self-efficacy focused on available opportunities to manage the disease, not obstacles. Self-efficacy and control seem to be two of the more commonly used concepts in both defining and measuring of empowerment. Bandura (1994) identified self-efficacy as the motivator of higher performance and lower emotional arousal. Self-efficacy influences the efforts one takes to persevere in a situation despite barriers and difficulties that may undermine motivation. Developing self-efficacy permits the young adults to adapt to the life situations with maturity. Young adults' formulation of good adaptation to life experiences increases the ability to control hypo/hyperglycemia reaction.

Emma et al. (2014) investigated the characteristics of the relationship that develop from nurse-caregiver communication using telecare on self-efficacy in patients with chronic obstructive pulmonary disease (COPD). This study was conducted using telemedicine to investigate self-efficacy of patients admitted during acute exacerbation of the disease as compared with hospital admission. Emma et al. revealed that self-efficacy affected people's choice of activities. The belief in one's capabilities to organize and implement the courses of action was essential to produce specified accomplishments. However, an experience is the most influential source of information regarding the construction of self-efficacy beliefs, because it provides realistic evidence of one's ability to obtain targeted outcomes. The study found that there was no difference between self-efficacy in COPD patients using telecare compared to hospital admission.

Table 4

Summary of Literature Reviews

Author/Date/Title	**Entry & Criteria**	**Type of Study/ Method**	**Variables/ Data Source**	**Analysis/Findings**
Abubakari, A. R., Cousin, R., Thomas, C., Sharma, D., & Naderali, E. K. (2016). Sociodemographic and clinical predictors of self-management among people with poorly controlled T1D and T2D. The role of illness perceptions and self-efficacy.	Poor glycemic control and self-management of Type 1 Diabetes	Quantitative study	128 participants at a convenient diabetes clinic	Self-management is significant in maintaining glycemic control and minimizing macrovascular and microvascular complication in type 1 and type 2 diabetes
Adam, J. (2014). Depression, self-efficacy, and adherence in patients with Type 2 Diabetes.	Type 2 diabetes patients	A cross-sectional descriptive, correlational design	55 adults with T2D	The study shown significant correlation between depressive symptoms, diet and exercise adherence. It also found that as the level of self-efficacy increased participants are able to increase levels of exercise, healthy diet, and smoking cessation.
Ahmed, A. M. (2002). History of diabetes mellitus.		Discussion on history of diabetes		Discovery of diabetes and insulin starting from the 1800
Aronoff, S. L., Berkowitz, K., Shreiner, B., & Want, L. (2004). Glucose metabolism and regulation: Beyond insulin and glucagon.	A paper on treatment of client with T1D, and regulation of glucagon action.		Feature article	Intensive supervision of glycemic control remains the only source of controlling diabetes complications
Bandura, A. (1982). Self-efficacy mechanism in human agency America.	Statements of mechanism on centrality of self-efficacy			The persuasive role of observed collective efficacy in social change is analyzed as well as the social conditions constructive to the growth of collective inefficacy.
Bandura, A. (1997). *Self-efficacy: The exercise of control.*	A book for advanced undergraduate, graduate courses, or professional use for psychologist.			Based on Bandura's theory of those with high self-efficacy expectancies, the belief, healthier, more effective and general success than those with low self-efficacy.

Author/Date/Title	Entry & Criteria	Type of Study/ Method	Variables/ Data Source	Analysis/Findings
Balfe, M., (2009). The body projects of university students with Type 1 Diabetes.	19–44 years old young adults with Type 1 Diabetes University students	A qualitative study		Examining the meaning normalcy among young adults with T1D. The article identifies the lack of research on the viewpoint of these young adults with diabetes.
Balfe, M., Doyle, F., Smith, D., Sreenan, S., Brugha, R., Hevey, D., & Conroy, R. (2013). What's distressing about having Type 1 diabetes? A qualitative study of young adults' perspectives.	23–30 years of age young adults with Type 1 Diabetes	A qualitative study	Semi-structure interview with young adults with Type 1 Diabetes	Study found diabetes psychological distress to be rampant amount sample of young adults with Type 1 Diabetes in the second phase of young adulthood. Multiple factors triggered
Borus, J. S. & Laffel, L. (2010). Adherence challenges in the management of Type 1 Diabetes in adolescents: prevention and intervention.	Problems and inter-ventions for reducing challenges with T1D among adolescence and young adults	Manuscript		Discussion on difficulties faced by young adults with T1D and successful interventions.
Broadhurst, K. & Harrington, A. (2016). A mixed method thematic review: the importance of hope to the dying patient.	Literature review	A mixed method thematic	Twelve qualitative articles reviewed.	Found that hope is valuable in dealing with life diversities.
Bryden, K. S., Peveler, R. C., Stein, A., Neil, A., Mayou, R. A., & Dunger, D. B. (2001).	Adolescents and young adults with Type 1 Diabetes	Longitudinal study	76 adolescents ages 11–18	Age, duration diabetes, HbA1C, BMI, complications such as severe retinopathy, nephropathy, multiple and hypertension The research found that constant smoking and drinking of alcohol affect the health their promotion habits. Other variables affect the psychological problems and caused recurrent hospitalization of these young adults.

Author/Date/Title	Entry & Criteria	Type of Study/ Method	Variables/ Data Source	Analysis/Findings
Daneman, D. (2006). Type 1 Diabetes. Seminar, 367, 847-853		An interpretation on T1D, microvascular, macrovascular and management of T1D		The author suggested that management of T1D is best assumed in the by multidisciplinary health team.
Datye, K. A., Moore, D. J., Russell, W. E., & Jaser, S. S. (2015). A review of adolescent adherence in Type 1 diabetes and the untapped potential of diabetes providers to improve outcomes. *Current Diabetes Report, 15*(8), 621.		Review of literatures		The importance of healthcare providers' communication and the role of provider in assisting compliance in adolescents with T1D are identified. Result to eliminating nonadherence to therapy was also discussed.
Dubree, M., & Vogelpohl, R. (1980)	Personal experience of two MICU Nurses	A paper		
Emma, C., Mortensen, E. L., Raydahl-Hensen, S., Ostergaard, B., Hakobsen, A. S., Schou, L., & Phanareth, K. (2014). The impact of virtual admission on self-efficacy in patients with chronic obstructive pulmonary disease – a randomized clinical trial.	The study was to investigate the feasibility and safety of telemedicine-based treatment for patient with acute COPD exacerbation. A chronic disease.	Randomized50 participants		The study finds that there is no difference between self-efficacy in chronic obstructive pulmonary disease patients undergoing virtual admission, compared with hospital admission.
Feldman, D. B. & Sills, J. R. (2013). Hope and cardiovascular health-promoting behavior: Education is not enough.	Immigrants	Questionnaire	Volunteered individual immigrants at a health fair.	These authors suggested that with high hopes, an individual can accomplish a set goal.
Forbes, M. A. (1999). Hope in the older audit with chronic illness: A comparison of two research methods in theory building.		Descriptive qualitative	Six older adults with chronic diseases interviewed	Six older adults with chronic diseases interviewed for their experience of hope. Using concept mapping the procedures and outcome were compared
Fowler, M. J. (2008). Microvascular and macrovascular complications of	Reviewing the fundaments of diabetes		A paper on Identifying the	An article on the microvascular and macrovascular complications of diabetes

Author/Date/Title	Entry & Criteria	Type of Study/ Method	Variables/ Data Source	Analysis/Findings
diabetes.	care for physicians		significance of protecting the body from hyperglycemia	
Guo, J., Wittemore, R., & He, G. P. (2011). The relationship between diabetes management and metabolic control in youth with Type 1 Diabetes: an integrative review	Relationship between diabetes self-management and metabolic control in youth with Type 1 Diabetes	Integrative review of literature	Electronic databased search. 18 research studies were reviewed pertaining T1D young adults.	Self-management in youth with T1D and families of diverse race and ethnicity. Evidence suggest that positive relationship between diabetes self-management and metabolic control affect glycemic and emotional stability with young adults with T1D.
Haugan, G. (2013). Nurse-patient interaction is resource of hope, meaning in life and self-transcendence in nursing home patients.	Cognitive elderly at a long-time care facility	Cross sectional design survey	202 cognitive elderly	Caring and providing hope for individual increased the feeling of well-being and patient's health.
Henzen-Niejodex (1997). Coping style and its role in coping with stressful encounters.	259 participants presented with coping style and role with stressful encounter.			Two studies on coping with illness, the coping styles was evaluate using adaptation of the Miller Behavioral Style Scale.
Hendricks, C. S. (1998a). Perceptual determinants of early adolescent health promoting lifestyle: Model development.	Early Adolescents	Cross sectional Survey	Multivariate statistical techniques	The research used Hendricks Perceptual Health Promotion Determinants Models. The result relates with the belief that healthy lifestyle is a choice made by individual. The motivation and self-determination to leave a healthy lifestyle comes from within.
Hendricks, C. S. (1998b). The influence of race and gender on health promoting behavior determinants of southern "at-risk" adolescents.	Adolescence 13-18 years of age; child 6-12 years	A journal article		Influence of race and gender on health promotion. It concluded that self-perception is an essential determinant.
Iannotti, R. J., Schneider, S., Nansel, T. R., Haynie, D. L., Plotnick, L. P., Clark, L. M., Sobel, D. O., & Simon-	168 adolescents ages 10-16 years with type 1 diabetes	Survey questionnaire	A quantitative research method	Aim to develop and evaluate measures of adolescent diabetes management self-efficacy and outcome expectation. It

Author/Date/Title	Entry & Criteria	Type of Study/ Method	Variables/ Data Source	Analysis/Findings
Morton, B. (2006).				concluded that the effect of self-efficacy was higher when adolescent had strong beliefs in the beneficial outcomes of adherence.
Kane, T. D., Marks, M. A., Zaccaro, S. J., Blair, V. (1996). Self-efficacy, personal goals, and wrestlers' self-regulation.	216 high school wrestlers	A survey method	A quantitative research method	Athletes' self-efficacy can influence the performance and cognition of self.
Kyi, M., Wentworth, J. M., Nankervism, A. J., Fourlanos, S., and Colman, P. G. (2015). Recent advances in Type 1 Diabetes.	Update of T1D management.		Clinical focus	Recent advances in Type 1 Diabetes now include use of technology in controlling self-adjustment of bolus insulin dose to achieve optimal glycemic control bolus
Mishali, M., Omer, H., and Heymann, A. D. (2011). The importance of measuring self-efficacy in patients with diabetes.	Patient with diabetes	Survey questionnaire	119 patients with Type 1 Diabetes	Self-efficacy determine adherence to self-treatment and daily regimen of managing diabetes.
Munt, R. & Hutton, A. (2012). Type 1 Diabetes mellitus (TIDM) self-management in hospital, is it possible? A literature review.	A search of literature published between 1998 and 2008 on self-management of T1D in hospital	A mixed-methods peer review journal.	A systemic review of literature was conducted identifying glycemic control, development of self-management, expect patient, and T1D management in hospital	Sixteen publication were reviewed for daily self-management of Type 1 Diabetes patients. It concludes that person with T1D who have knowledge and skill can self-manage irrespective of hospitalization.
Philp, J., Gold, M., Brand, C., Douglass, J., Miller, B., & Sundararajan, V. (2016). Negotiating hope with chronic obstructive pulmonary disease patients: a qualitative study of patients and healthcare professionals.	Hospitalized patients with respiratory failure; have smoked for at least 47 years with 4 or more previous hospitalization.	A qualitative	Semi-structured interview of patient with chronic obstructive pulmonary disease patients	Healthcare professionals initiate the significant of incorporating hope in treatment of patients with chronic disease.

Author/Date/Title	Entry & Criteria	Type of Study/ Method	Variables/ Data Source	Analysis/Findings
Prior, K. N. & Bond, M. J. (2004). The role of self-efficacy and abnormal illness behavior in osteoarthritis self-management.	119 participants with diagnosis of osteoarthritis.	A survey questionnaire	Participants completed questionnaire address self-management, self-efficacy, identifying abnormal illness and behavior, physical and psychological health status	The study found that self-management characteristics are related to psychological and physical health status.
Raleigh, E. D. (1992). Sources of hope in chronic illness.	45 cancer patients and 45 participants with chronic disease.	An investigative interview		Participants reported positive characteristics momentary time of lowered hope and associated illness.
Rasmussen, Ward, Jenkins, King, & Dunning (2011). Young adults' management of type 1 diabetes during life transitions.	20 young adults with Type 1 Diabetes	A qualitative interpretive inquiry	Semi-structured interviews	Young adults with Type 1 Diabetes identified two significant transition live development associated with adolescence
Riddell, M. C., & Perkins, B. A. (2006). Type 1 diabetes and vigorous exercise: Applications of exercise physiology to patient management.		Peer review	Investigative	Investigating the disturbance vigorous exercise patients with T1D. e Highlights numerous strategies to optimize blood glucose level in patients with T1D
Sacco, W. P., & Bykowski, C. A. (2010). Depression and hemoglobin A1C in type 1 and type 2 diabetes: The role of self-efficacy.	124 participants with type 1 diabetes	Cross-sectional design from participants with diabetes	Questionnaire	In person with T1D, A1C levels are relevant to diabetes self-efficacy and link to depression
Santos, F. R. M., Sigulem, D., Areco, K. C. N., Gabbay, M. A. L., Dib, S. A. & Bernardo, V. (2015). Hope matters to the glycemic control of adolescents and young adults with Type 1 Diabetes.	113 adolescents and young adults with T1D		Investigative	Hope matters to glycemic control
Snyder, C. R. (1995). Conceptualizing measuring and nurturing hope			Article theorizing hope & its concepts	

Author/Date/Title	Entry & Criteria	Type of Study/ Method	Variables/ Data Source	Analysis/Findings
Tavassoli, A. T., Shariferad, G. R., & Shojaeezadeh (2013). Health-promoting lifestyle and quality of life among undergraduate students at school of health, Isfahan University of Medical sciences	Undergraduate students ages 21 years old.	Cross-sectional study.	Survey method	There are correlations between living a healthy lifestyle, spiritual growth, and stress management
Wang, J. N. (2011). Self-efficacy and social support among 68 people living with HIV/AIDS in Hubei Province. Nursing and healthcare of chronic illness.	68 participants with HIV/AIDS		Participants with social support developed high self-efficacy	Suggestions was made for healthcare provider to increase social supports in patients with HIV/AIDS in order to maintain self-efficacy
Wei, W., Li, X., Tu, X., Zhao, J., & Zhao, G. (2016). Perceived social support, hopefulness, and emotional regulations as mediators of the relationship between enacted stigma and post-traumatic growth among children affected by parental HIV/AIDS in rural China	790 children between ages 6-17 years affected by parental HIV	Cross-sectional	Randomized controlled trial study	The study found that supporting these children emotionally and giving hope reduces various impact of the stigma attached to HIV/AIDS
Willis, E. (2016). Patient's self-efficacy within online health communities; facilitating chronic disease self-management lifestyle through peer education.	8, 231 participants involving four online health communities utilized by people with arthritis.	On-line ethnography		Investigate four community with various types of chronic diseases and found that self-efficacy is a significant means of treating chronic diseases

Summary

The summary and description of the independent variables demonstrate the agreement of discernment and implication each independent variable — hope, and self-efficacy — has to behavior in general. The literature suggested that these perceptual determinants were essential connections in empowering young adults with type 1 diabetes. The necessity of considering hope and self-efficacy are essential components of chronic disease such as diabetes, and it is paramount to the improvement of health promotion.

CHAPTER III. METHODS

Chapter 3 will identify the research design, the sample participants, description of sample, data collection procedures, protection of human subjects, instrumentation, data and statistical analysis. Descriptive statistics and regression were used for first three questions and Pearson correlations used to answer research questions about the strength and trend of the relationships among hope, self-efficacy, and health promoting lifestyle

Hope and self-efficacy were significant features among individuals with chronic diseases such as diabetes. It is the premise that if psychosocial factors can be identified and incorporated into the holistic care of T1D patients, health promotion programs can be developed or improved that are receptive to the behavioral/cultural/developmental need of young adults with type 1 diabetes.

Purpose of the Study

The purpose of this study was to investigate the hope, health promotion lifestyle behaviors and self-efficacy levels of young adults with type 1 diabetes (T1D). Variables in this study included age, education, and gender. The Hendricks Perceptual Health Promotion Determinants Model provided the theoretical framework that guided this study. Hope was measured using the Adolescent Hope Scale (Hendricks, Murdaugh, & Hendricks, 2004). Health promotion lifestyle behaviors was measured using the Adolescent Lifestyle Profile (Hendricks & Pender, 2001) Self-efficacy was measured by the Stanford Diabetes Self-Efficacy Scale (Lorig, Ritter, Villa, & Armas, 2009).

Research Questions

The following research questions were used in this study:

1. What is the level of hope among young adults with type 1 diabetes?
2. What is the health promoting lifestyle behavior profile of young adults managing type 1 diabetes?
3. What is level of self-efficacy among young adults with type 1 diabetes?
4. What is the relationship between hope, self-efficacy, and health promotion lifestyle behaviors levels among young adults with type 1 diabetes?

The three instruments that were used to answer the research questions were:

1. The Hendricks, Murdaugh, and Hendricks (2004) Adolescent Hope Scale was used to measure perceived level of hope;
2. The Hendricks and Pender Adolescent Lifestyle Profile (Hendricks, Pender, & Hendricks, 2001) was used to measure health promoting behaviors;
3. The Self-Efficacy Diabetes Scale (Stanford Patient Education Research Center) was used to measure perceived self-efficacy.

Design of the Study

A survey, using a convenience sample, was used to answer the research questions from young adults with type 1 diabetes at an online group. Descriptive statistics were used for questions 1–3; and Pearson correlations used to answer question four. In the field of adult education descriptive research is used frequently (Meriam & Simpson, 2000). Descriptive statistics describes participants either through numerical calculations or graphs or tables (Meriam & Simpson, 2000).

Prion and Haerling (2014) describe Pearson Corrections as a method of describing the strength of associations between variables. Pearson's correlation coefficient is symbolized by *r* (sample statistic), a measure of linear development between two variables (Mukaka, 2012; Puth, Neuhauser, & Ruxton, (2014). Puth, Neuhauser, and Ruxton. (2014) clarified the value of *r* between -1 and +1. If *r* is equal to +1, there a positive linear relationship between the variables. If the value of *r* is -1, indicate that there is a negative or opposing relationship between the variables. Prior and Haerling (2014) elaborated on the "the rule of thumb" for interpreting Pearson *r* values as 0 to ±0.20 is negligible, ±0.36 to ±0.67 is moderate, and ±0.68 to ± 0.90 is strong correlation between the variables. Prior and Haerling (2014) concluded that only the strength and direction of the relationship can be reported. In this study Pearson correlation was used to measure the relationship between hope and health promotion lifestyle behaviors; and self-efficacy and health promotion lifestyle behaviors.

Population and Sample

The participants in this study consisted of young adults with type 1 diabetes who had enrolled in the Glu community network for T1D. The Glu community is part of T1D Exchange clinical network. The T1D Exchange consists of three parts and it is the first established registry of clients with T1D in the United States. Beck et al. (2012) indicated that the network is the gathering of T1D adults and children that provides and gathers information used for research. This network Exchange includes:

- A large population of data set available for research;
- A biobank containing biological data available for researchers;
- The resources for learning about diabetes, communicating, and motivating a person with type 1 diabetes.

The T1D Exchange was established in 2010 for conducting multiple studies requested by T1D Exchange investigators, researchers, clients, and companies (T1D Exchange, 2016). Participation in this study was voluntary and remuneration for participating in the study was received. The investigator obtained University Institutional Review Board (IRB) approval and internal approval from the management staff of T1D Exchange clinic network (see Appendix A). Participants received an online electronic information letter and survey to complete for the study. The completion of this online survey indicated that the participant had agreed to participate in the study. Criteria for inclusion in this study included:

1. Being 18 years or older
2. Being diagnosed with Type 1 Diabetes
3. Must be on insulin injection or insulin pump
4. Voluntary willingness to participate in the research and respond to the questionnaire.

Instrumentation

A four-part questionnaire was used to gather the data in this study. The questionnaire included a designed demographics questionnaire form and three instruments to collect data based on the research questions. The demographic questionnaire requested information on the participant's age, gender, race, educational program (academic or technical), marital status, and health promotion habits such as smoking or not smoking, drinking, and exercise. The three instruments used to collect data on the participants were:

1) The Hope Scale
2) Adolescent Lifestyle Profile
3) Self-Efficacy Diabetes Scale

The investigator received written permission from authors of the instruments for their use in the study (see Appendices A and B).

Adolescent Hope Scale

Hendricks, Murdaugh, and Hendricks (2004) developed the Adolescent Hope Scale (H2MHS) to measure perceived levels of hope (positive and negative). The Adolescent Hope Scale has 22-items that uses a Likert-type four-point scale format to measure responses ("disagree a lot" = 1, "disagree a little" = 2, "agree a little" = 3, "agree a lot" = 4). The possible range of scores is 22 to 88 or 1 to 4 if using the means of the value assigned based on the four-point scale. There are two subscales: Hopefulness (positive Hope) and Hopefulness (negative Hope). For the Hopefulness subscale (positive hope), higher scores indicate higher levels of hope (n=13 items). For Hopelessness subscale (negative hope), higher scores indicate perceived levels of negative hope (n=9 items). In either subscale, a mean score between 4 and 3 is considered high, between 3 and 2 is considered moderate, and a mean score between 2 and 1 is considered low. The reliability for the instrument was 0.93 as measured by Cronbach's alpha and reported by Hendricks, Murdaugh, and Hendricks (2004). Hope allows a person with chronic disease to be motivated to perform the essential daily routine of self-management or receive treatment intended for the disease (Raleigh, 1992). Hope augments the aim and prospect of attainment of a desire to care for one's self. The study indicated that the participants hope level were high with a mean of 42.65 and standard deviation (SD) of 8.94. These results confirm that the level of hope for T1D participants was high while self-efficacy was moderate to high with a mean of 7.71 and standard deviation of 1.37.

Adolescent Lifestyle Profile

The Adolescent Lifestyle Profile consists of 44-items. The behavior rating scale uses a 4-point Likert-type score (Never = 1, Sometimes = 2, Often = 3, Always = 4). The responses that measure the frequency of self-reported health promoting lifestyle are in the following domains:

1. Health Responsibility: Items 3, 8, 14, 22, 33, 34, 44
2. Physical Activity: Items 2, 4, 16, 27, 32, 40
3. Nutrition: Items 7, 10, 13, 21, 30, 42
4. Positive life perspective: Items18, 23, 26, 38, 39
5. Interpersonal relations: Items 1, 6, 12,19,31, 37
6. Stress management: Items 5, 11, 17, 25, 35, 43
7. Spiritual health: Items 9, 15, 20, 29, 36, 41). (Hendricks, Pender, & Hendricks 2001).

The internal consistency reliability was as follows: Health Responsibility (0.825), Physical Activity (0.773), Nutrition (0.648), Positive Life Perspective (0.810), Interpersonal Relations (0.769), Stress Management (0.656), Spiritual Health (0.810), Total (0.929) (Hendricks, Pender, & Hendricks, 2001).

Self-Efficacy Diabetes Scale

Logig, Ritter, Villa and Armas (2009) developed the Self-Efficacy Diabetes Scale for the Stanford Patient Education Research Center to measure perceived levels of self-efficacy among diabetes individuals primarily adults (18 years or older). The Self-Efficacy Diabetes Scale has 8-items that used a Likert-type scale. It measures the confidence level of individuals with diabetes in certain activities. The internal consistency reliability was reported as .828; the mean is 6.87; and the standard deviation is 1.76 (Lorig, Ritter, Villa, & Armas, 2009). The questions include regularly performed tasks such as:

1. How confident do you feel that you can eat your meals every 4 to 5 hours every day, including breakfast every day?
2. How confident do you feel that you can follow your diet when you have to prepare or share food with other people who do not have diabetes?
3. How confident do you feel that you can choose the appropriate foods to eat when you are hungry (for example, snacks)?
4. How confident do you feel that you can exercise 15 to 30 minutes, 4 to 5 times a week?
5. How confident do you feel that you can do something to prevent your blood sugar level from dropping when you exercise?
6. How confident do you feel that you know what to do when your blood sugar level goes higher or lower than it should be?
7. How confident do you feel that you can judge when the changes in your illness mean you should visit the doctor?
8. How confident do you feel that you can control your diabetes so that it does not interfere with the things you want to do?

Each response ranges from 8 to 24 ("Less confident" = 1–3, "Moderately confident" = 6–7, "Totally confident" = 8–10). The higher score indicates greater levels of self-efficacy. For each question, a score of 10 reflects high levels of self-efficacy. A mean score of 6.87 is considered high. Reported Reliability for the instrument was 0.828 (Lorig, Ritter, Villa, & Armas, 2009). Due to the nature of participants in this study, question #7 was removed because young adults in the study had graduated from high school and they do not require a school counselor. Therefore, this study applied only seven questions from the instrument.

Data Collection Procedures

This study used a convenient sample from the T1D Exchange clinic network (see Appendix B for the permission letter). The population consisted of young adults with type 1 diabetes who had enrolled in the Glu community network. Participants received an online electronic information letter and survey to complete. The completion of this online survey indicated that the participant had agreed to participate.

Through the coordination of the T1D Exchange clinic network management staff, email recruitment and survey questionnaires were sent to the Glu community (see Appendix C). In order to accommodate this population and the style of information distribution, management staff at the T1D Exchange constructed a modified recruitment survey questionnaire with the approval of Auburn University Institutional Research Board (see Appendix D). The representative of T1D Exchange received Auburn University Institutional Research Board (IRB) approved electronic informed consent, the demographic questionnaire, survey instruments and disseminated them electronically. The collection of data was anonymous, and the investigator has no access to the participants.

Once all questionnaires were received, staff at the T1D Exchange sent an electronic Excel^{R} spreadsheet of all participants' responses. The results were downloaded using an Excel^{R} spreadsheet, coded, and analyzed using SPSS IBM 23 Windows software. Upon completion of the questionnaire, a check for gift certificates was sent to each participant through the T1D Exchange as compensation as approved by the Institutional Research Board (IRB).

Type 1 Diabetes (T1D) is a chronic disorder that affects about 9% of all cases of individuals with diabetes (Daneman, 2006). Knowing the challenge involved in finding a large

population with Type 1 Diabetes, the research started the initial search in early 2014. Several governmental agencies were called before contacting the T1D Exchange.

Participants received an electronic link to the survey instrument using Survey Gizmo software imbedded into the platform that the Glu community uses. The electronic informed consent and the four-part questionnaire were distributed online. The management staff of T1D Exchange sent a request via Glu/Email using social media such as Twitter and Facebook. The surveys were completed during Fall, 2016. Participation was voluntary and a gift certificate was provided as compensation to all participants that completed the surveys.

Summary

This chapter discussed the sample population, instrumentation, and data collection techniques. Data collection complies with research guidelines as specified by the Auburn University Institutional Research Board. The chapter also discussed the three instruments used and the internal consistency reliability in detail. The Statistical Program for Social Science (SPSS) IBM 23.0 (2015) was used in data analysis. Descriptive statistic was used to summarize the data collection of the participants. The Pearson correlations was used to determine the strength of the relationship among the selected health promotion determinants variables and health promoting lifestyle.

CHAPTER IV. FINDINGS

Introduction

This chapter presents the findings of the survey. Data regarding the research questions is presented and analyzed. Chapter 4 presents the results of the data analysis and was divided into three sections. The initial section presents a description of the demographics for the total sample (N–130) and selected demographic variables for each institution. The second section denotes the research questions with data interpretation.

Purpose of the Study

The purpose of this study was to investigate the hope, health promotion lifestyle behaviors and self-efficacy levels of young adults with type 1 diabetes (T1D). Variables in this study included age, education, and gender. The Hendricks Perceptual Health Promotion Determinants Model provided the theoretical framework that guided this study. Hope was measured using the Adolescent Hope Scale (Hendricks, Murdaugh, & Hendricks, 2004). Health promotion lifestyle behaviors was measured using the Adolescent Lifestyle Profile (Hendricks & Pender, 2001) Self-efficacy was measured by the Stanford Diabetes Self-Efficacy Scale (Lorig, Ritter, Villa, & Armas, 2009).

Research Questions

The following research questions were used in this study:

1. What is the level of hope among young adults with type 1 diabetes?
2. What is the health promoting lifestyle behavior profile of young adults managing type 1 diabetes?
3. What is the level of self-efficacy among young adults with type 1 diabetes?
4. What is the relationship between hope, health promotion, self-efficacy and lifestyle levels among young adults with type 1 diabetes?

Organization of the Data Analysis

A description of the sample is presented including how the data is gathered to develop the findings shown. The total number of participants from the T1D Exchange (Glu community) group was N=130. Demographic data on the participants follows using descriptive statistics. Table 13 showed the data on the age as to the time of diagnosis and Table 18 identified the most recent Hemoglobin $_{A1C}$ levels (the average level of blood glucose in the system within the past two to three months) were reported.

Questions 1–3 were shown using frequencies. The visual representations were shown with Histogram distribution of the response. Research Question 4 addressed whether or not relationships existed between hope, levels of Self-efficacy, and health promotion among young adults with type 1 diabetes. The data obtained through survey was analyzed using regression analysis to determine if there was a relationship between hope, health promotion, and self-efficacy. Pearson product moment coefficients were used to measure the strength and direction of variables.

Demographic Information

As shown in Table 5, the sample was comprised of 106 (81.5%) females, 24 (17.7%) males, and 1 (0.8%) other. The ages of the young adults ranged from 18 to 34, with 23 being the average age.

Table 5

Number of Participants by Average Age and Gender

Average Age	**N**	**Females**	**Males**
18	6	5	1
20–25	41	37	3
26–30	37	33	4
31–36	46	31	15
Other	1	–	–

N=130

Table 6 data reported that T1D affects females more than males. There were 106 (81.5%) females, 23 (17.7%) males, and 1 (0.8%) identified as other.

Table 6

Number and Percentage of Participants by Gender

Gender Bias	N	%
Female	106	81.5
Male	23	17.7
Other	1	.8
Total	130	100.0

N=130

The racial composition (see Table 7) confirmed the review by Gale and Gillespie (2001), that White/Caucasians have a higher rate of T1D with a data of 89.4% compared with 1.5% Asian, 0.8% Black or African American, 5.3% Multiracial, and 3.0% Other. Number and percentage of race was affected by T1D White males. The ethnic classification breakdown as follows: 0.8% Cuban, 3.0% Mexican/Mexican American/Chicano, and 6.1% other.

Table 7

Number and Percentage of Participants by Race Classification

Race by Classification	N	%
Asian	2	1.5
Black or African American	1	0.8
Multiracial	7	5.4
Other	3	2.3
White/Caucasian	117	90.0
Total	130	100

N=130

Table 8 shows the ethnicity classification indicate the majority were not Spanish/Hispanic/Latino.

Table 8

Number and Percentage of Participants by Ethic Classification

Ethnicity Classification	N	%
not Spanish/Hispanic/Latino	117	90.0
Cuban	1	0.8
Mexican/Mexican American/Chicano	4	3. 0
Other	8	6.2

N = 130

Table 9 reported that 46.9% of the participants were married or living with domestic partners; one of participant was separated; 49.2% were single and one widowed. The number of the singles was slightly higher than married participants. The findings showed one was divorced, and three had no response.

Table 9

Number and Percentage of Participants by Marital Status

Marital Status	N	%
Divorced	1	0.8
Married or Domestic Partnership	60	46.1
Separated	1	0.8
Single	64	49.2
Widowed	1	0.8
No Response	3	2.3
Total	130	100

N = 130

Table 10 identifies the number with T1D participants with an advanced degree. The findings indicated that 8.5% participants obtained an Associates Degree, 39.2% had a Bachelor's degree, 20% had a Master's degree; 4.6% had Doctoral degrees, a combined 24.7% had some college and attended Trade/Technical/Vocational training, and 3.0% had completed high school or obtained a GED.

Table 10

Number and Percentage of Participants by Educational Level

Educational Level	N	%
Associates Degree	11	8.5
Bachelor's Degree	51	39.2
Doctoral Degree	6	4.6
High School Diploma or GED	4	3.0
Master's Degree	26	20.0
Other	1	0.8
Some College	27	20.8
Trade/Technical/Vocational Training	4	3.1
Total	130	100.0

N=130

Table 11 reported the findings as 53.5% working full time, 15.8% are students, 6.9% as both working full-time and student, 11.5% as working part-time and students. The table continued that 4.6% worked part-time, 2.3% are homemakers, 0.8% Retired, 2.3% unemployed, and 3.1% are Others (occasionally work part-time, student, or homemaker).

Table 11

Number and Percentage of Participants by Work Status

Work Status	N	%
Homemaker and Student	1	0.8
Retired	1	0.8
Not Working or Student	2	1.5
Working Part-Time and Homemaker	3	2.3
Homemaker	3	2.3
Unemployed	3	2.3
Working Part-Time	6	4.6
Working Full-Time and Student	9	6.9
Working Part-Time and Student	12	9.2
Student	21	15.8
Working full-time	69	53.5

N=130

In Table 12, participants with disability were reported as 0.5%. Reviewing Table 11, most (99.5%) were working full-time or working part-time.

Table 12

Number and Percentage of Participants With or Without Disability

Participants With/Without Disability	N	%
Participants without Disability	129	99.5
Participant with Disability	1	0.5

N=130

Table 13 presents the age when participants were first diagnosed with diabetes. Most of the participants (7.7%) reported being diagnosed at around five years of age. Several participants were diagnosed at ages 6 (6.2%), 9 (6.2%), and 12 (6.2%). Several participants were diagnosed between the ages of one (1) and nineteen (19) years (See Table 13).

Table 13

Number and Percentage of Age at Which Participant was First Diagnosed with T1D

Age at Diagnosis	N	%
1	3	2.3
2	2	1.5
3	1	0.8
4	5	3.8
5	10	7.7
6	8	6.2
7	7	5.4
8	4	3.1
9	8	6.2
10	6	4.6
11	7	4.6
12	8	6.2
13	3	2.3
14	5	3.8
15	2	1.5
16	4	3.1
17	5	3.8
18	4	3.1
19	4	3.1
20	5	3.8
21	3	2.3
22	1	1.5
23	3	2.3

24	2	1.5
25	3	2.3
26	6	4.6
27	3	2.3
28	4	3.1
30	2	1.5
32	2	1.5

N=130

In the study, participants were asked the number of times they were hospitalized within the past 12 months due to hypoglycemic reactions. The study reported 95.5% participants were not admitted to the hospital within the last 12 months, while 0.5% of the participants were hospitalized in the past twelve-month because of hypoglycemic reactions. (See Table 14).

Table 14

Several behavioral items were included as part of the survey (see Tables 14–25). Of the 130 participants studied, 1 (0.8%) reported injecting insulin using a syringe. The majority (85.4%) reported having used an insulin pump, and a moderate number had used an insulin pen.

Table 14

Number of Participants and Primary Insulin Delivery Method

Type of Insulin Injection	n	Valued %
Valid Injections Using a Syringe	1	0.8
Injections Using an Insulin Pen	27	13.8
Insulin Pump	102	85.4
Total	130	100

N=130

Table 15 reported the number of times participants injected short-acting insulin in a day. The highest number of participants, thirty-four (26.15%), reported injecting short-acting insulin more than four times in a day. Twenty-three (17.69%) reported six times in a day, while eleven (8.46%) reported ten times in a day.

Table 15

Number and Percentage of Times Participants Injected Short-Insulin per Day

Number Injections	n	Value %
10	11	8.46
17	1	.77
2	1	.77
3	8	6.1
4	9	6.9
5	34	26.15
6	23	17.69
7	7	5.38
8	6	4.62
9	1	.77
No Response	29	22.31

N=130

Table 16 indicates the percentage of participants administering bolus insulin before meals. Of the 130 participants, 34 (26.5%) administered short-acting insulin at least seven times

a day before meals. This table further indicates that at least 1 person (0.8%) administered insulin before meals.

Table 16

Number and Percentage of Bolus Short-Insulin Administered Before Meals

Number on Short-Acting Insulin	n	Valued %
10	29	22.0
17	11	8.3
2	1	0.8
3	1	0.8
4	8	6.1
5	9	6.8
7	34	26.5
8	23	18.1
8	7	5. 3
9	6	4.5
No Response	1	0.8

N=130

This study found several of the participants that maintained Hemoglobin H A1c of 7.1 or less. Young adults with T1D should maintain Hemoglobin A1c level of 7.5% or less to decrease the complications caused by the disease (ADA, 2015; Chiang, Kirkman, Laffel, & Peters, 2014).

Table 17

Number and Percentage of Participants with Most Recent $HbA1_C$

Value of Most Recent $HbA1_C$	*n*	Percentage
5.0	1	.8
5.3	1	.8
5.4	1	.8
5.6	2	1.5
5.7	3	2.3
5.8	3	2.3
5.9	5	3.8
6.0	4	3.1
6.1	2	1.5
6.2	6	4.6
6.3	9	6.9
6.4	4	3.1
6.5	6	4.6
6.6	1	.8
6.7	3	2.3
6.8	8	6.2
6.9	7	5.4
7.0	5	3.8
7.1	10	7.7
7.2	9	6.9
7.3	4	3.1
7.4	3	2.3
7.5	2	1.5
7.6	5	3.8
7.7	3	2.3
7.8	6	4.6
7.9	2	1.5

Value of Most Recent $HbA1_C$	*n*	Percentage
8.0	3	2.3
8.1	1	.8
8.2	3	2.3
8.3	2	1.5
8.6	1	.8
9.1	2	1.5
9.5	1	.8
9.9	1	.8
10.1	1	.8

N=130

Table 18 shows the most recent hemoglobin A1C tested in 12 months. A higher percentile (66.6%) of the participants reported being tested in less than 3 months. A moderate number (35%) indicated being tested within three to less than six months.

Table 18

Number and Percentage Most Insulin Tested for H1Ac

Times Tested	n	%
3 months to less than 6 months ago	35	26.5
6 months to less than 9 months ago	7	6.1
9 months to less than 12 months ago	1	.8
Less than 3 months ago	87	66.6

N=130

Table 19 indicated that 91.7% of the participants self-inject insulin with meals. Based on healthcare provider recommendations, a person with diabetes self-administered insulin with each meal for better utilization of insulin in the blood.

Table 19

Number and Percentage of Participants who Administered Insulin with Each Meal

Insulin with Each Meal	n	%
No	1	.8
Sometimes	10	7.6
Yes	119	91.7

N=130

Table 20 showed that the highest proportion (92%) of the participants administered insulin with each meal while a lower proportion (0.8%) did not. However, a moderate number (7.2%) specified that they occasionally administer insulin with meals.

Table 20

Number and Percentage of Participants Who Adjust Insulin with Meal

Insulin with Meals	n	%
No	1	0.8
Sometimes	10	7.2
Yes	119	92.0

N=130

Table 21 shows that a large number (81.8%) of the participants reported that their family involvement makes a difference in their life. However, further research is needed to investigate the level of family involvement that affects a person with diabetes.

Table 21

Number and Percentage of Participants That Family Involvement Affects Their Diabetes

Family Involvement	n	%
	108	81.8
Family	22	18.2

N=130

Table 22 shows that 43.9% of the participants in the study stated that stress worsened their diabetes. A higher percentage (56.1%) indicated that stress had no effect on their management of the disease.

Table 22

Number of Participants that Indicate How Stress Affects Their Diabetes

Affects of Stress	n	%
Stress from work makes diabetes worse	57	43.9
Stress does not make diabetes worse	73	56.1

N=130

Table 23 indicates that 89.4% of participants expressed that stress from work created problems with managing their diabetes. A lower percentage of the participants (10.6%) did not have any stress from work experiences.

Table 23

Number and Percentage of Participants that Indicate How Work Effects Their Diabetes

Effects of Work	n	%
Work affects diabetes	117	89.4
Work does not affect diabetes	13	10.6

N=130

Table 24 shows that more participants (34.8%) indicated that they engaged in physical activities four or more times a week. A moderate number of participants (16.7%) reported they were in involved in physical activities twice a week. The study found out that 15.2% were not engaged in any physical activities.

Table 24

Number of Participants Who Engaged in Physical Activity

30 Minutes Physical Activity in a Day	n	%
1 day	12	9.1
2 days	22	16.7
3 days	31	24.2
4 or more days	45	34.8
None	20	15.2

N=130

Table 25 shows that a higher percentage (31.8%) of the participants reported never having engaged in daily use of alcohol beverages. However, 25.8% indicated that they had alcohol less than once per week. The study indicated that the lowest percentage of the participants (5.3%) reported using used alcohol six to seven days per week.

Table 25

Number of Participants Who Engaged in Daily Use of Alcohol

Daily Use of Alcohol	n	%
1–2 days per week	30	22.7
3–5 days per week	19	14.4
6–7 days per week	7	5.3
Never	41	31.8
Socially (less than once per week)	33	25.8

N=130

Table 26 provides the range, mean, and standard deviations for this study and available norms for the study instruments.

Table 26

Range, Mean, and Standard Deviations of Major Study Variables

Instruments	Variables	Instruments Scale	Instruments Range	Study Range	M	SD
Adolescent Hope Scale	Hope	1–4	22–88	26–52	38.63	6.92
Adolescent Lifestyle Profile	Health Promoting Lifestyle Behavior	1–4	44–176	92–173	135.39	16.89
Self-Efficacy Scale	Self-Efficacy	1-8	1–10	1–7	7.71	1.37

The subscales Spiritual Health and Physical Activities had the lowest study means with 16.35 and 19.07 respectively. The study range for the total score was 26–52, with a standard deviation of 8.92.

Table 27

Descriptive Statistics of Variable Range and Means of Adolescent Lifestyle Profile Subscales

Subscale	*Instrument Scale*	*Obtainable Range*	*M*
Health Responsibility	1–4	18–30	20.69
Physical Activity	1–4	23–30	19.07
Nutrition	1–4	21–33	24.39
Positive Live	1-4	21–30	23.50
Interpersonal Relations	1–4	14–30	23.91
Stress Management	1–4	14–27	20.64
Spiritual Health	*1–4*	*24–30*	*16.35*

N=130

Treatment of Missing Data

The Diabetes Self-Efficacy Scale had one question removed from the study because the researcher focused on young adults with type 1 diabetes who had graduated from high school and were young adult professionals, working, or disabled. The question "How confident do you feel that you can eat your meals every 4 to 5 hours every day, including breakfast every day?" was omitted based on T1D exchange format. The original scale gave average score of the instrument as a result, the overall sum was not affected. If a participant did not answer all questions, their response was not included.

Analysis of the Research Questions

In this section, the results of the analysis of the data in relation to the research questions are presented in bold and are followed by their respective answers.

Question One: What is the level of hope among young adults with type 1 diabetes?

A 22- items survey on Adolescent Hope Scale was created by Hendricks, Murdaugh, and Hendricks (2001) using Likert-type scale of 1 to 4. The possible range of score is 22 to 88. The study range was 26–52. This data confirmed that hope is essential to human existence.

Question Two: What is the health-promoting lifestyle behavior profile of young adults managing type 1 diabetes?

The health promoting lifestyle behaviors have 44-items with six (6) subscales use Likert-type scale 1-4 score. The subscales Spiritual Health and Physical Activities had the lowest study means with 16.35 and 19.07 respectively. The health promotion lifestyles behaviors variables had a mean of 135.39 with a 16.89% standard deviation. The study range for the total score was 26–52. (See Table 26).

Question Three: What is the level of self-efficacy among type 1 diabetes?

An 8-item survey on Self-efficacy was created for Stanford Diabetes Self-Efficacy Scale by Lorig, Ritter, Villa, and Armas with range was 1-10 with a mean of 6.87 and standard deviation of 1.76. The study mean was 7.71 with standard deviation of 1.37 (See Table 26) indicating a strong self-efficacy among participants.

Question Four: What is the relationship between hope, health promotion lifestyle behaviors, and self-efficacy levels among young adults with type 1 diabetes?

Pearson correlations were used to determine the relationship between self-efficacy and Hope, r =. 362 and $p < .001$. The relationship between self-efficacy and hope was statistically significant. The relationship between self-efficacy and health promotion among young adults with T1D was statistically significant, r = .340 and $p < .001$.

Pearson correlations were also used to determine the relationship between self-efficacy and health promoting lifestyle of the young adults with T1D. The relationship was statistically significant for health promoting lifestyle behaviors and self-efficacy, r = .569 and p < .001. The relationship between these variables explained 8.94% of the variance in the Hendricks Perceptual Health Promotion Determinants Model.

Summary

Analyses of the data answered the four proposed research questions. As a group the young adults showed higher levels of self-efficacy and health promoting lifestyles, and moderate to high levels of hope and self-efficacy. Approximately 34.8% of the participants reported performing physical activities 4 or more days a week. A high percentage of participants, 97%, adjusted insulin administration with meal. This demonstrated that the participants were involved in caring for self and maintaining their health. The questions on the Adolescent Lifestyle Profile had a missing question; the question regarding "seek guidance from a school counselor" was removed from the survey question because of the age of the participants. The study was on young adults who were professionals, working, or disabled. Consequently, they did not require a school counselor.

CHAPTER V. SUMMARY, DISCUSSION, IMPLICATIONS, RECOMMENDATIONS FOR FUTURE RESEARCH

Introduction

The first chapter discussed the general introduction of type 1 diabetes. It elaborated on the disease and the complications associated with the disease. There was discussion on how it adversely affected the body system and how individuals can self-manage the disease. The statement of the problem, purpose, research questions, and meanings of terms were acknowledged. The second chapter provided the literature review on the hope perceptions, self-efficacy, and health promotions. The third chapter described the methods, the design of the study, the population and samples collected the survey instrument, and how data would be reported. The fourth chapter presented findings. This chapter presents the summary, discussion, implications, and recommendations for future research.

Purpose of Study

The purpose of this study was to investigate the hope, health promotion lifestyle behaviors and self-efficacy levels of young adults with type 1 diabetes (T1D). Variables in this study included age, education, and gender. The Hendricks Perceptual Health Promotion Determinants Model provided the theoretical framework that guided this study. Hope was measured using the Adolescent Hope Scale (Hendricks, Murdaugh, & Hendricks, 2004). Health promotion lifestyle behaviors was measured using the Adolescent Lifestyle Profile (Hendricks & Pender, 2001) Self-efficacy was measured by the Stanford Diabetes Self-Efficacy Scale (Lorig, Ritter, Villa, & Armas, 2009).

Research Questions

The following research questions were used in this study:

1. What is the level of hope among young adults with type 1 diabetes?
2. What is the health promoting lifestyle behavior profile of young adults managing type 1 diabetes?
3. What is the level of self-efficacy among young adults with type 1 diabetes?
4. What is the relationship between hope, health promotion lifestyle behaviors, and self-efficacy among young adults with type 1 diabetes?

Summary

This study used a survey instrument to collect data through the online Glu community in the T1D Exchange. The survey collected information regarding participants' diabetes level of hope, health promotion, and self-efficacy as young adults with diabetes. The following additional instruments were used: Adolescent Hope Scale (Hendricks, Murdaugh, & Hendricks, 2001), the Hendricks Perceptual Health Promotion Determinants Model (2001), and Stanford Diabetes Self-Efficacy Scale (Lorig, Ritter, Villa, & Armas, 2009)

Discussion

In reviewing the demographic variables, several outcomes were noteworthy. The participants were from ten countries including the United States of America. Of the 130 participants who completely answered our questions, four (4) were from Australia, twelve (12) from Chile, seventeen (17) from Italy, nine (9) from The Netherlands, five (5) from Israel, and fifty-two (52) from Czech Republic. Healthcare practitioners are known to provide holistic care to sick persons and their family or caregiver. It also should be noted that this study included

disabled young adults with type 1 diabetes. Because of these facts, the researcher elected not to eliminate five caregivers who participated in the study. In this study, 81.1% of the participants were female while 17.7% were male. This was contrary to Gale and Gillespie's (2001) study, which found that White males were more likely to have type 1 diabetes than White females.

Analysis of data revealed some discrepancies and some limited answers to the surveys. In the Stanford Diabetes Self-Efficacy Scale (2006), there were eight questions but only seven were presented to the participants. However, the original scale gave an average of the score; as a result, the overall sum was not affected. All unanswered items were handled as missing values as specified by the IBM, SPSS 23 software.

Based on the results, participants were involved in health promoting habits that were said to reduce complications associated with diabetes. According to the findings, 84.8% of the participants performed physical activities for at least 30 minutes in a day. The majority of the participants (31.8%) had never used of alcohol. Participants understood the disadvantages and consequences in the usage of alcohol as a person with diabetes. Positive attitudes, dietary planning, and incorporating physical exercise were beneficial to a diabetes client (Abubakri, Cousins, Thomas, Sharma, & Naderali, 2016).

Daily self-administering of insulin and regular self-monitoring of blood glucose are indispensable steps to the management of diabetes. In this study, most of the participants were using an insulin pump. Insulin pumps are a quick source of administering self-insulin when it is needed. Another quick source of administering self-injections was the use of an insulin pen. Of note is the fact that the participants had one or the other fast approaches to self-injection of insulin when needed. These habits of health promoting lifestyle in the self-management and self-injection of insulin decrease the complications associated with type 1 diabetes. Ninety-

seven percent of the participants adjusted their insulin with meals. Self-adjustment involves calculating the amount of insulin to inject with each meal to maintain a balance between high and low blood glucose levels. Precision of the reading on the glucometer minimized error in amount of insulin dosage given pre-prandial (pre-meal glucose) and post-prandial (post-meal glucose). Therefore, preventing a hypoglycemia reaction is a common complication with persons with T1D (Budiman, Samant, & Resch, 2013).

Adjusting insulin with meals is quite different from using insulin with meals as previously indicated. The ability to best manage and adjust insulin doses is a major part of diabetic's self-management support. Self-adjustment involves calculating approximately the amount of insulin to inject with each meal to maintain a balance between high and low blood sugar levels. Working with a healthcare provider, the person with T1D will confidently adjust self-insulin doses. Table 19 indicates that 91.7% of the participants adjust their insulin with meals.

Most of the participants maintained Hemoglobin A_{1C} levels below 7%. Fifty-one and half percent of the participants maintained HA_{1C} levels of 5% to 6.9% which were below the 7% as established by American Diabetes Association. The New Positional Statement by the American Diabetes Association (2014) for young adults with type 1 diabetes specified 7.5% HA_{1C} maintenance. The number of participants (n = 37) were below the specified recommendations. Using Prion and Haerling (2014) Pearson correlations "rule of thumb" the relationship between self-efficacy and hope was r =. 362. Which means that there was a moderate positive correlation between these two variables. The relationship between self-efficacy and health promotion among young adults with T1D was weak at r = .340. While the

relationship for health promoting lifestyle behaviors and self-efficacy, r = .569, showed a moderate positive correlation between the two variables.

Implications for Healthcare Providers, Health Administrators, and Allied Health

The outcomes from this study specified a number of implications for healthcare providers. Young adults with T1D who had strong self-efficacy were able to control the blood glucose and self-manage the daily regime associated with diabetes. Bandura (1994) defined self-efficacy as people's beliefs in their ability to motivate and effectively accomplish affairs that influence life in a positive manner. Healthcare providers who care for this group should start educating T1D patients as soon as diagnosed or old enough to comprehend management of the disease. Healthcare providers working with young adults should understand the dynamic of care involve with health management among this age group. The providers should continue to develop self through continuing education and reading latest research available for self-management of type 1 diabetes. Healthcare clinics should provide physiological support for young adults with type 1 diabetes.

This study also confirmed that adults are self-directed learners. Self-directed is a method of uniting teaching and learning in which responsibilities are largely within the learners' control (Kaufman, 2003). An early age, healthcare providers should establish an accommodating environment where people with T1D will feel safe and comfortable expressing themselves in order to be involved in learning. This type of environment allows for continuous learning and support where questions are answered and treatment are offered in order to effectively live with diabetes.

Limitations

This study was limited because it focused on T1D young adults from a specific online site, the Glu Community. The sample for this study was a convenience sample. Participants voluntarily agreed to participate and were not randomly chosen. Participants in this study were from 10 countries including the United States of America. The other countries may have implemented regulations different from the American Diabetes Association.

Recommendations for Future Research

It is recommended that this study be replicated using the same research design to continue testing of Hendricks Perceptual Health Determinants Model with a focus on young adults with type 1 diabetes (T1D). A longitudinal study could be used to determine if the participants continued with their health promotional attitudes as they matured. Further study could include study on health promotion, self-efficacy, and depression of type 1 diabetes young adults. This study did not asked questions on specific choices of lifestyle or the improvement in choices made. Further research is needed on the difference types of lifestyles effect on a person with type 1 diabetes. Another potential study is to explore gender physical activities levels and its effect on T1D daily regime. Several of the participants were from outside of the United States of American. This offers an opportunity not only to improve participants' awareness but also to increase the likelihood of future study in the United States and allow for follow-up on the study. If this study were to be repeated, it would be done differently. Participants would be adults male and female and randomize selected for data collection.

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APPENDIX A

PERMISSION TO USE ADOLESCENT HOPE SCALE

Permission to Use the Adolescent Hope Scale©

I plan to use the **Adolescent Hope Scale©** in a research or evaluation project entitled:

An Investigation of Hope, Health Promotion, and Self-Efficacy in Young Adults with Type 1Diabetes

Adolescent Health Promotion Project

x I am enclosing a check/money order for ten dollars ($10.00) payable to the

Print Name: Sola Aina-Popoola

Signature: *spopoola*

Area Code Telephone#334-663-0537

Position/Institution: Auburn University, Auburn, Alabama

2026 Sara St. Auburn , Al. 36832

Mailing Address

Permission is granted to the above investigator to copy and use the Adolescent Hope Scale© for non-commercial data collection purposes such as research or evaluation projects provided that content is not altered in anyway and the copyright/permission statement at the end is retained.

The instrument **may not** be produced in the appendix of a thesis, dissertation or research grant proposal **without further** permission. Reproduction for any other purpose, including the publication of study results, is prohibited without specific permission.

Constance S. Hendricks, PhD, RN Date

Please send **two signed copies** of this page to:

Constance S. Hendricks, PHD, RN, FAAN
612 Kimberly Circle. Selma, AL 36701

APPENDIX B

PERMISSION LETTERS

Permission to Use the Adolescent Lifestyle Profile©

I plan to use the **Adolescent Lifestyle Profile©** in a research or evaluation project entitled: An Investigation of Hope, Health Promotion, and Self-Efficacy in Young Adults with Type 1 Diabetes

1_____I am enclosing a check/money order for ten dollars **($10.00)** payable to the **Adolescent Health Promotion Project**

or

____X____I have made a $10.00 donation to the Dr. Constance Smith Hendricks Nursing Scholarship using either of the links provided below-donation receipt enclosed:

www.uab.edu/give/hendricks or

https://www.memberplanet.com/campaign/cshnursingscholarship/donations

2.__X_____I agree to provide a copy of the psychometric properties of the ALP from my research when completed.

3.___X____ I understand that the instrument **may not** be produced in the appendix of a thesis, dissertation or research grant proposal without further permission. Reproduction for any other purpose, including the publication of study results, is prohibited without specific permission.

Sola Aina-Popoola
Print Name

_____
Signature

PhD Student, Auburn University
Position/Institution

__334-663-0537_____
Area Code Telephone#

2026 Sara St, Auburn, Alabama. 36832
Mailing Address

_____solap9@gmail.com_____
Email

My signature below indicates that permission is granted to the above investigator to copy and use the Adolescent Lifestyle Profile© for non-commercial data collection purposes such as research or evaluation projects provided that content is not altered in anyway and the copyright/permission statement at the end is retained.

Constance S. Hendricks, PhD, RN, FAAN

February 12, 2016
Date

Please send **two signed copies** of this page to:

Constance S. Hendricks, PHD, RN, FAAN
612 Kimberly Circle Selma, AL
334-332-3850; FAX 334-844-5654

T1D Exchange

February 25, 2016

Sola Popoola
2026 Sara St
Auburn, AL. 36832

Dear Ms. Aina-Popoola,

It is with great pleasure that I write to you in support of our collaboration around your dissertation study. As the VP of Strategic and Corporate Development for Unitio, Inc. and T1D Exchange, I'm looking forward to working with you on your project exploring the relationship of hope, self-efficacy, and health behaviors promotion among young adults with Type1Diabetes (T1D). We are planning on providing recruitment for, and hosting of the survey that you have developed in order to collect data that will inform the findings of this project.

Sincerely,

George Serbedzija
VP, Strategic & Corporate Development Unitio, Inc.

T1D Exchange · 11 Avenue de Lafayette · Boston, MA 02111 · 617.892.6100 · info@t1dexchange.org

T1D Exchange unitio

STATEMENT OF WORK

Date: 2/19/16

Notwithstanding any provisions to the contrary in any other agreements associated with the Services, including the Master Service Agreement, the following additional terms and conditions shall apply, and are hereby agreed to by AUBURN UNIVERSITY (Sponsor) and T1D EXCHANGE (Service Provider), a program of Unitio, Inc. To avoid confusion, all terms contained within this SOW regarding data ownership, control, and publication rights shall prevail. Reference to T1D Exchange in this statement of work includes Unitio, Inc., and the signature of Unitio, Inc. below binds Unitio Inc. and T1D Exchange.

1. **Scope of Work**
   T1D Exchange ("Service Provider") will edit and host a survey to understand the changing motivations for keeping healthy throughout adulthood and its predictions of final outcomes within the T1D Community in accordance with the Master Service Agreement and this SOW.

   a. Description of Services:
      i. Final edits to a Sponsor supplied survey
      ii. Administer the finalized survey to T1D patients within Glu online community
      iii. Collection of results
      iv. Provide data tables and basic summary statistics

   b. Approach:
      i. Survey will address the objective described in the opening paragraph
      ii. Participants completing the survey will be remunerated
      iii. Sample size target is 150 participants
      iv. Length of the survey will be such that it will take the average participant between 15-20 minutes

   c. Service Provider is responsible for:
      i. Editting and hosting survey of the Glu website
      ii. Posting an article on the Glu website to promote the survey
      iii. Recruiting survey participants from Glu community
      iv. Providing regular project updates via telephone
      v. Acquiring and distributing participant remuneration of $10 per participant
      vi. Summarizing final dataset based on participant responses
      vii. Providing data tables and summary statistics within 4 weeks of survey completion

   d. Sponsor is responsible for:
      i. Providing any necessary materials to aid Service Provider in the creation of the final version of the survey as well as the associated article
      ii. Participating in the review and comments on materials prepared by Service Provider
      iii. Participating in project update meetings
      iv. Providing IRB review services for all material and activities outlined in this agreement

   e. Survey Participant Characteristics
      i. All those diagnosed with T1D at time of survey
      ii. All those 18-35 years of age
      iii. All those attending college at the time of survey

APPENDIX C

INSTITUTIONAL REVIEW BOARD APPROVAL

AUBURN UNIVERSITY INSTITUTIONAL REVIEW BOARD for RESEARCH INVOLVING HUMAN SUBJECTS

REQUEST for MODIFICATION

For help, contact: **THE OFFICE OF RESEARCH COMPLIANCE (ORC)**, 115 Ramsay Hall, Auburn University
Phone: 334-844-5966 **e-mail:** IRBAdmin@auburn.edu **Web Address:** http://www.auburn.edu/research/vpr/ohs

Revised 2.1.2014 **Submit completed form to IRBsubmit@auburn.edu or 115 Ramsay Hall, Auburn University 36849.**

Form must be populated using Adobe Acrobat / Pro 9 or greater standalone program (do not fill out in browser). Hand written forms will not be accepted.

1. **Protocol Number:** 16-102 EX 164
2. **Current IRB Approval Dates: From:** 04/26/2016 **To:** 04/25/2019
3. **Project Title:** The Relationship of Hope, Self-Efficacy, and Health Promotion Behaviors among young adults with Type1diabetes (T1D)
4. Sola Aina-Popoola | PhD candidate | EF LT,Adult | 334-663-0537 | oza0002@auburn.edu
   Principal Investigator | **Title** | **Department** | **Phone** | **AU E-Mail** (primary)
   PI Signature | 2026 Sara St, Auburn, AL. 36832 (**Mailing Address**) | solap9@gmail.com (**Alternate E-Mail**)
   Maria M. Witte | *Maria M. Witte* | EF LT, Adult | 334844-3078 | wittemm@auburn.edu
   Faculty Advisor | **FA Signature** | **Department** | **Phone** | **AU E-Mail**
   Name of Current Department Head: Dr. Sherida Downer **AU E-Mail:**
5. **Current External Funding Agency and Grant number:** N/A
6. **a. List any contractors, sub-contractors, other entities associated with this project:**
   N/A
   b. List any other IRBs associated with this project: N/A
7. **Nature of change in protocol: (Mark all that apply)**

- ☐ **Change in Key Personnel** (attach CITI forms for new personnel)
- ☐ **Change in Sites** (attach permission forms for new sites)
- ☐ **Change in methods for data storage/protection or location of data/consent documents**
- ☐ **Change in project purpose or questions**
- ☐ **Change in population or recruitment** (attach new or revised recruitment materials as needed)
- ☑ **Change in consent procedures** (attach new or revised consent documents as needed)
- ☑ **Change in data collection methods or procedures** (attach new data collection forms as needed)
- ☐ **Other (explain):**

FOR ORC OFFICE USE ONLY

DATE RECEIVED IN ORC: _____ by _____ MODIFICAT
DATE OF IRB REVIEW: _____ by _____ PROTOCOL
DATE OF IRB APPROVAL: _____ by _____ MODIFICAT
INTERVAL F
COMMENTS:

The Auburn University Institutional Review Board has approved this Document for use from 06/22/2016 to 04/25/2019
Protocol # 16-102 EX 1604

1 of 2

8. Briefly list *(numbered or bulleted)* **the activities that have occurred up to this point, particularly those that involved participants.**

1. Auburn University IRB approval was emailed to T1D Exchange, Boston (the proposed site for this study)
2. T1D Exchange, Boston acknowledged receipt of the AUIRB approval
3. T1D Exchange, Boston requested some modifications to the survey and informed consent.

9. For each item marked in Question #7, describe the requested changes to your research protocol, with an explanation and/or rationale for each. (*Additional pages may be attached if needed to provide a complete response.)*

#7 - Change in consent procedures:
T1D Exchange, Boston need to change the Informed consent format because of their system's constraints.

- T1D Exchange, Boston changed the survey format and the data collection format to suit the type of populations served.
See attached

10. Identify any changes in the anticipated risks and / or benefits to the participants.

The participants information/identifications are better protected because no personal email will be released to the investigator. This is an added benefit to the participants.

11. Identify any changes in the safeguards or precautions that will be used to address anticipated risks.

No changes or anticipated risks to the participants

12. Attach a copy of all "stamped" IRB-approved documents you are currently using. *(information letters, consents, flyers, etc.)*

Health Promotion Behaviors Survey

Approved by Auburn University Institutional Review Board on XX/XX/XX

You are being asked to take part in a research study about diabetes and health promotion behaviors. Please read this form carefully and ask any questions you may have before agreeing to participate in this study.

What is the purpose of the study?

The purpose of this study is to explore the relationship of hope, self-efficacy, and health promotion behaviors among young adults with type 1 diabetes (T1D). The study is being conducted by investigators at the Auburn University Department of Educational Foundations, Leadership, and Technology. You are invited to participate because you are have type 1 diabetes and are currently between 18-35 years old.

What are you asking me to do?

If you agree to participate, you will be asked to complete an online survey. This survey will take 15-20 minutes to complete; it includes questions about your diabetes and overall health.

Will I have to provide information that I do not want to provide?

No, your participation is voluntary. You have the right to withdraw from this study at any time for any reason without penalty to you. You may also choose to skip any questions that you do not wish to answer. Any information you do provide will remain in our secure research database. If you choose not to participate, it will not affect your current or future relations with T1D Exchange or Auburn University.

What are the risks of taking part in this study?

We do not expect any risks to you participating in this study, other than what you would encounter in daily life. Some questions may be uncomfortable to answer, but you can always choose to skip those questions. You can also withdraw from the study at any time.

What are the benefits of participating in the study?

While you may not directly benefit from participating, results of this study may provide new information that improves health outcomes for all people living with T1D.

Will I receive any compensation for participating?

After recruitment for this study is complete, you will receive a $10 Amazon gift card at the email address associated with your Glu account. In addition, the results of this study may be shared back to you on the T1D Exchange website or by email.

Where will my information be stored and how will you make sure it is safe?

If you agree to participate, your information will be kept private and stored in a secure database. Information used for research will not include your name, email address, or other data that could be used to identify you.

How will my information be used?

The results of the study may be presented at meetings and published in medical journals. No identifying information about you will be shared.

Who will see my information?

Only research staff will have access to our secure research database.

Questions or comments?

If you have any questions or concerns about this study, please contact the T1D Exchange research team at research@t1dexchange.org or the Principle Investigator Sola Popoola at oza0002@auburn.edu.

If you have any questions about your rights as a research participant, you may contact the Auburn University Office of Research Compliance or the Institutional Review Board by phone at (334) 844-5966 or by email at IRBadmin@auburn.edu or IRBChair@auburn.edu.

The Auburn University Institutional Review Board has approved this document for use from _____ to _____ under Protocol #_____.

Add this approval information in sentence form to your electronic information letter!

The Auburn University Institutional Review Board has approved this Document for use from 06/22/2016 to 04/25/2019 Protocol # 16-102 EX 1604

Recruitment Materials:
Health Promotion Behaviors Survey

Article for Glu/Email Text:

Title: Motivation and Good Health Choices Survey

What motivates you to make the best choices for your health? What aspects of your life factor into your sense of well-being? We're seeking to understand the connection between personal motivation and how it may influence type 1 diabetes. In this short survey, we ask about setting goals and activities that are important to you.

Criteria for participating in this survey:

- Are 18-35 years old
- Have type 1 diabetes

If you have any questions, please contact us at research@t1dexchange.org. Thank you for helping Glu Research—we appreciate your time!

Social Media:

Twitter:

1. What motivates you in making healthy choices for diabetes management? Take the new Glu survey today! (104 characters)
2. How do healthy behaviors influence type 1 diabetes? Let us know in our new survey! (86 characters)
3. What goals do you set for good health and well-being? Please take our survey about personal motivation and #T1D (115 characters)
4. Glu Research is studying motivation and healthy behaviors in type 1 diabetes. Please take our survey today! (111 characters)
5. Help Glu Research understand goal-setting, healthy behaviors, and #T1D—please take our survey: (98 characters)
6. Please take our survey on motivation and healthy behaviors and its connection to type 1 diabetes: (101 characters)
7. Participate in #T1D research! We're studying healthy behaviors and type 1 diabetes. Take our brief survey today (115 characters)
8. What inspires you to make healthy choices for managing #T1D? Help Glu Research and take our survey: (100 characters)

Facebook/Google+:

1. We have a new survey on Glu! Help us understand the connection between healthy choices and managing type 1 diabetes.
2. Participate in type 1 diabetes research! Glu is studying motivation, healthy choices and managing type 1 diabetes. Please take our brief survey today:
3. What motivates you in making healthy choices for diabetes management? We're studying how healthy behaviors influence type 1 diabetes—please take our brief survey today!

ELECTRONIC CONSENT

Please check each box to indicate your agreement with the following statements.

☐ You have read and understood this consent form

☐ You voluntarily agree to participate in this study

☐ You are at least 18 years old

If you have checked all boxes above and agree to provide information for research, please click the "I Agree" button below. Clicking this button is the equivalent of a handwritten signature. You will be emailed a copy of this form to print and keep for your records. You may also print this page from your internet browser.

I Agree I Do Not Agree

Health Promotion Behaviors Survey

Screening Questions

1. Which of the following best describes you? Check all that apply.
    - A person with type 1 diabetes (T1D)
    - A parent/guardian of someone with T1D
    - A supporter of someone with T1D (e.g., spouse, sibling, grandparent)
    - None of the above

2. What is the age of the person completing this survey?
    - [Dropdown menu with <1, 1…100+]

PART 1

Directions: *Please read each question carefully and pick the response that best represents your answer*

3. What is your gender?
    - Female
    - Male
    - Other

4. What is your race?
    - American Indian or Alaska Native
    - Asian
    - Black or African American
    - Multiracial
    - Native Hawaiian or Other Pacific Islander
    - North African or Middle Eastern
    - White/Caucasian
    - Other

5. Are you Spanish/Hispanic/Latino?
    - No, not Spanish/Hispanic/Latino
    - Yes, Cuban
    - Yes, Mexican/Mexican American/Chicano
    - Yes, Puerto Rican
    - Yes, other

6. What is your current marital status?
    - Single
    - Married or domestic partnership
    - Separated
    - Divorced
    - Widowed

7. What is your highest level of education?
    - Some high school, no diploma
    - High school diploma or GED
    - Some college
    - Trade/technical/vocational training
    - Associate's degree
    - Bachelor's degree

- Master's degree
- Doctoral degree
- Other

8. How would you describe your current work status? Check all that apply.
    - Working full-time
    - Working part-time
    - Homemaker
    - Student
    - Retired
    - Unemployed
    - On disability
    - Military
    - Other

9. At what age were you diagnosed with T1D?
    - [Dropdown menu with <1-100+]

10. In the past 12 months, how many times have you been hospitalized due to your diabetes? Do not include hospitalization at diagnosis.
    - 0
    - 1
    - 2
    - 3
    - 4 or more
    - Unsure

11. What insulin delivery methods do you currently use? Check all that apply.
    - Insulin pump
    - Injections using an insulin pen
    - Injections using a syringe
    - Other (please specify)

    [***Injections***] Approximately how many injections of short-acting insulin do you take per day?
    - [Dropdown menu with <1-20+]

    [***Insulin pump***] Approximately how many boluses of short-acting insulin do you take per day?
    - [Dropdown menu with <1-20+]

12. What was your most recent HbA1c?
    - [Dropdown menu with <5.0, 5.0, 5.1,... 12.0+]

13. When was your most recent HbA1c tested?
    - Less than 3 months ago
    - 3 months to less than 6 months ago
    - 6 months to less than 9 months ago
    - 9 months to less than 12 months ago
    - 12 or more months ago
    - Unsure

14. Do you use and administer insulin with each meal?
    - Yes
    - No
    - Sometimes

15. Do you adjust your insulin dosage depending on how much or what kind of food you eat?
    - Yes
    - No
    - Sometimes

16. Which of the following do you think most apply as factors in making your blood glucose level worse?
    - Family
    - Work

17. In the past seven days, how many times did you perform at least 30 minutes of continuous physical activity?
    - None
    - 1 day
    - 2 days
    - 3 days
    - 4 or more days

18. In the past two weeks, how many days have you had at least one drink of alcohol (including beer, wine, or liquor). For this question, do not include drinking small amounts for religious purposes.
    - Never
    - Socially (less than once per week)
    - 1-2 days per week
    - 3-5 days per week
    - 6-7 days per week

PART 2

Directions: *Please read each statement and indicate the extent of your agreement with the statement by selecting the appropriate response. Please describe yourself as you really are, not as you would like to be. [Agreement response options will be presented in a Likert scale format]*

- I am positive about most parts of my life.
- I look forward to an enjoyable future.
- There are things I want to do in life.
- I am able to set goals I want to reach.
- I am at peace with myself.
- My life has meaning.
- I make plans for my own future.
- I intend to make the most out of life.
- I am positive about the future.
- I spend time planning for the future.
- I am able to reach my goals in life.
- I am valued for what I am.
- I feel loved.

PART 3

Directions: *We would like to know how confident you are in doing certain activities. For each of the following questions, please choose the number that corresponds to your confidence that you can currently do these tasks. [Response options will be presented in a Likert scale format]*

- How confident do you feel that you can follow your diet when you have to prepare or share food with other people who do not have diabetes?
- How confident do you feel that you can choose the appropriate foods to eat when you are hungry (e.g., snacks)?
- How confident do you feel that you can exercise 15 to 30 minutes, 4 to 5 times a week?
- How confident do you feel that you can do something to prevent your blood glucose from dropping significantly when you exercise?
- How confident do you feel that you know what to do when your blood glucose level goes higher or lower than your target range?
- How confident do you feel that you can judge when changes in your diabetes mean you should visit the doctor?
- How confident do you feel that you can control your diabetes so that it does not interfere with the things you want to do?

- Attend programs about preventing health problems and improving my health
- Am happy with who I am
- Eat 3-5 servings of vegetables each day
- Take time for myself to do something I like
- Work toward important goals in my life
- Walk or do something active during my free time
- Look forward to each new day
- Engage in activities to help me grow spiritually
- Eat a variety of meats (e.g., chicken, fish, beef, pork)
- Settle conflicts through discussion rather than fighting
- Play active games with my friends (e.g., basketball, softball, volleyball, tennis)
- Ask questions of my healthcare provider about improving my health
- Spend time in prayer or meditation
- Try to think pleasant thoughts as I fall asleep
- Make a special effort to be helpful to others
- Set goals that I can achieve
- Feel good about myself when I do something well
- Exercise until my heart beats fast and I perspire
- Use spiritual beliefs as a guide for what I do
- Drink six (6) or more glasses of water each day
- Discuss my problems with someone close to me to try and solve them
- Avoid behaviors that damage my health (e.g., smoking, drinking, doing drugs, engaging in risky sexual activity)

APPENDIX D

INSTRUMENTS

Adolescent Lifestyle Profile (ALP-R2)

DIRECTIONS: Think carefully about each statement in this questionnaire and tell us how frequently you do each behavior by circling:

N for never, S for sometimes, O for often, or A for always

	Never	Sometimes	Often	Always
1. Spend time talking to members of my family.	N	S	O	A
2. Spend time with my family being active (walking, playing games).	N	S	O	A
3. See my school nurse or my doctor if I am not feeling well.	N	S	O	A
4. Engage in vigorous physical activity for 20 minutes or more 3 days a week (aerobic dancing, brisk walking, running, rope jumping, bicycling, swimming).	N	S	O	A
5. Get 6-8 hours of sleep at night.	N	S	O	A
6. Congratulate others when they do something well.	N	S	O	A
7. Avoid "sweets" or other foods high in sugar.	N	S	O	A
8. Read articles about health topics.	N	S	O	A
9. Talk with others about my spiritual beliefs.	N	S	O	A
10. Choose low-fat milk or low-fat dairy products (yogurt, cheese, ice cream).	N	S	O	A
11. Take time to relax each day.	N	S	O	A
12. Try to be sensitive to the feelings of others.	N	S	O	A
13. Eat breakfast.	N	S	O	A
14. Ask questions of the doctor or nurse to understand their instructions.	N	S	O	A
15. Feel that there is a higher power guiding my life.	N	S	O	A
16. Participate in recreational activities or sports.	N	S	O	A

	Never	Sometimes	Often	Always
17. Accept things in my life that I cannot change.	N	S	O	A
18. Am excited about the future.	N	S	O	A
19. Spend time with close friends.	N	S	O	A
20. Attend a group that shares my spiritual beliefs.	N	S	O	A
21. Eat 2-4 servings of fruit each day.	N	S	O	A
22. Attend programs about preventing health problems and improving my health.	N	S	O	A
23. Am happy with who I am.	N	S	O	A
24. Eat 3-5 servings of vegetables each day.	N	S	O	A
25. Take time for myself to do something I like.	N	S	O	A
26. Work toward important goals in my life.	N	S	O	A
27. Walk or do something active during my free time.	N	S	O	A
28. Look forward to each new day.	N	S	O	A
29. Engage in activities to help me grow spiritually.	N	S	O	A
30. Eat a variety of meats (chicken, fish, beef, pork).	N	S	O	A
31. Settle conflicts through discussion rather than fighting.	N	S	O	A
32. Play active games with my friends (basketball, softball, volleyball, tennis, etc.).	N	S	O	A
33. Seek guidance from school counselor when needed.	N	S	O	A
34. Ask questions of the doctor or nurse about improving my health.	N	S	O	A
35. Spend time in prayer or meditation.	N	S	O	A
36. Try to think pleasant thoughts as I fall asleep.	N	S	O	A.
37. Make a special effort to be helpful to others.	N	S	O	A
38. Set goals that I can achieve.	N	S	O	A
39. Feel good about myself when I do something well.	N	S	O	A

	Never	Sometimes	Often	Always
40. Exercise until my heart beats fast and I perspire.	N	S	O	A
41. Use my spiritual beliefs as a guide for what I do.	N	S	O	A
42. Drink six (6) or more glasses of water each day.	N	S	O	A
43. Discuss my problems with someone close to me to try and solve them.	N	S	O	A
44. Avoid behaviors that damage my health (smoking, drinking, doing drugs, sexual activity).	N	S	O	A

Adolescent Lifestyle Profile (ALP)
(44 Items)

SUBSCALES

Health Responsibility

3. See my school nurse or my doctor if I am not feeling well.

8. Read articles about health topics

14. Ask questions of the doctor or nurse to understand their instructions.

22. Attend programs about preventing health problems and improving my health.

33. Seek guidance from school counselor when needed.

34. Ask questions of the doctor or nurse about improving my health.

44. Avoid behaviors that damage my health (smoking, drinking, doing drugs, sexual activity.

Physical Activity

2. Spend time with my family being active (walking, playing games).

4. Exercise in vigorous physical activity for 20 minutes or more 3 days a week (aerobic dancing, brisk walking, running, rope jumping, bicycling, swimming).

16. Participate in recreational activities or sports.

27. Walk or do something active during my free time.

32. Play active games with my friends (basketball, softball, volleyball, tennis, etc.).

40. Exercise until my heart beats fast and I perspire.

Nutrition

7. Avoid "sweets" and other foods high in sugar.

10. Choose low-fat milk or low fat dairy products (yogurt, cheese, ice cream).

13. Eat breakfast.

21. Eat 2-4 servings of fruit each day.

24. Eat 3-5 servings of vegetables each day.

30. Eat a variety of meats (chicken, fish, beef, pork).

42. Drink six (6) or more glasses of water each day.

Positive Life Perspective

18. Am excited about the future.

23. Am happy with who I am.

26. Work toward important goals in my life.

28. Look forward to each new day.

38. Set goals that I can achieve.

39. Feel good about myself when I do something well.

Interpersonal Relations

1. Spend time talking to members of my family.

6. Congratulate others when they do something well.

12. Try to be sensitive to the feelings of others.

19. Spend time with close friends.

31. Settle conflicts through discussion rather than fighting.

37. Make a special effort to be helpful to others.

Stress Management

5. Get 6-8 hours of sleep at night.

11. Take time to relax each day.

17. Accept things in my life that I cannot change.

25. Take time for myself to do something I like.

35. Try to think pleasant thoughts as I fall asleep.

43. Discuss my problems with someone close to me to try and solve them.

Spiritual Health

9. Talk with others about my spiritual beliefs.

15. Feel that there is a higher power guiding my life.

20. Attend a group that shares my spiritual beliefs.

29. Engage in activities to help me grow spiritually.

36. Spend time in prayer or meditation.

41. Use my spiritual beliefs as a guide for what I do.

ADOLESCENT LIFESTYLE PROFILE (ALP) - Form R2

Scoring Instuctions

Items are scored as	**Never (N)**	=	**1**
	Sometimes (S)	=	**2**
	Often (O)	=	**3**
	Always (A)	=	**4**

A score for the overall adolescent lifestyle profile is obtained by calculated a mean of the individual's responses to all 44 items; seven subscale scores are obtained similarly by calculating a mean of the responses to subscale items. The use of means rather than sums of scale items is recommended to retain the 1 to 4 metric of item responses and to allow meaningful comparisons of scores across subscales. The items included in each scale are as follows:

Adolescent Lifestyle	**1 to 44**
Health Responsibility	**3, 8, 14, 22, 33, 34, 44**
Physical Activity	**2, 4, 16, 27, 32, 40**
Nutrition	**7, 10, 13, 21, 24, 30, 42**
Positive Life Perspective	**18, 23, 26, 28, 38, 39**
Interpersonal Relations	**1, 6, 12, 19, 31, 37**
Stress Management	**5, 11, 17, 25, 36, 43**
Spiritual Health	**9, 15, 20, 29, 35, 41**

2001:NJP

Invoice

Unitio, Inc.

Boston, MA 02111
11 Avenue de Lafayette

Date	Invoice #
9/14/2016	426

Phone # 617-892-6108 jcosta@t1dexchange.org
Fax # 617-892-6112 www.t1dexchange.org

Bill To	Ship To
Olusola Popoola 2026 Sara St Auburn, AL 36832	

P.O. Number	Terms	Rep	Ship	Via	F.O.B.	Project
	Net 60		9/14/2016			

Quantity	Item Code	Description	Price Each	Amount
132	Participant Remun...	Motivation & Good Health Choices Survey Participant Remuneration (up to 150)	10.00	1,320.00

Make all checks payable to Unitio, Inc.

Total $1,320.00

APPENDIX E

PERMISSION TO USE INSTRUMENT LETTER

Making a Health Promotion Connection Outreach Program
Constance S. Hendricks, PhD, RN, FAAN, Principal Investigator
Professor/Auburn University School of Nursing
612 Kimberly circle, Selma, AL 36701
334-332-3850
csh25rn@gmail.comcshzhope@bellsouth.net

November 15, 2015

Mrs. Sola Popoola
Auburn University
Auburn, AL

Dear Mrs. Popoola:

Thank you for your interest in the **Hendricks/Murdaugh/Hendricks Hope Scale** (**H2M Hope Scale)©**. The **H2MHS** was designed to measure perceived levels of hope (positive and negative). The H2HMS is a 22-item scale that uses a four-point Likert format to measure response frequencies("disagree a lot" = 1, "disagree a little" = 2, "agree a little" = 3, "agree a lot" = 4). The possible range of scores is 22 to 88, or 1 to 4 if using the mean of the values assigned based on the four point scale. There are two subscales: Hopefulness (positive hope) and Hopelessness (negative Hope). For the Hopefulness subscale (positive hope), higher scores indicate higher perceived levels of hope (n=13 items). For the Hopelessness subscale (negative hope), higher scores indicate higher perceived levels of negative hope. (n=9 items) In either subscale, a mean score between 4 and 3 is considered high, between 3 and 2 is considered moderate, and mean score between 2 and 1 is considered low The reliability for the instrument is 0.93 as measured by Cronbach's alpha. The reading level for this tool is grade 4.9. The same instrument has been used with adult women with HIV in rural South Carolina and adult caregivers in Virginia.
Manuscripts describing the reliability and validity of the **H2MHS** have been published in the following:

- Hendricks, C.S., Hendricks, D., Murdaugh, C., Tavakoli, A., Gibbons, M.E., Servonsky, E.J., Brock, T., Burton, P.D., Gilmore, K.J. (2005). Psychometric testing of the Miller Hope Scale with rural Southern adolescents. *The Journal of Multicultural Nursing and Health, 11(3)*, 41-50;
- Hendricks, D.L., Hendricks, C.S. (2005). The relationship of hope and self-efficacy to health promoting behaviors among student-athletes attending historically Black colleges and universities. *The Journal of Multicultural Nursing and Health, 11(3)*, 23-34
- Hendricks, C.S., Hoffman, H., Robertson-Laxton, Tavakoli, A. Mathis, D., Hackett, D., Byrd, L. (2000). Hope as a predictor of health promoting behavior among rural southern early adolescents. *Journal of Multicultural Nursing and Health. 6* (3), 5-11.
- Hendricks, C.S. (1998). Perceptual determinants of early adolescent health promoting behaviors: Model development. *Journal of Theory Construction & Testing, 2* (1), 13-22.

Best wishes in your research endeavors. Please provide us with a copy of your results, as it will assist us in assessing the efficacy of the instrument. If you have additional questions, please contact me.

Sincerely,

Constance Smith Hendricks

Constance Smith Hendricks, PhD, RN, FAAN
Charles W. Barkley Endowed Professor
W. K. Kellogg Project LEAD Fellow/ NINR/NIH Minority Mentored Research Scientist

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