2023

Self-Care and Psychosocial Factors That Predict Sickle Cell Disease-Related Outcomes among African Americans in the USA

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Walden University
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Abstract

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Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Public Health

Walden University

August 2023

Abstract

Existing beliefs and conceptions regarding sickle cell disease (SCD) have had a significant impact on the appropriate management of the condition, including self-care and psychosocial factors, particularly among African Americans. The aim of this study was to examine the influence of self-care and psychosocial factors on SCD-related outcomes among African Americans in the United States. The study was grounded in the self-care management theory and employed a cross-sectional, quantitative design. Regression analyses were conducted to explore the associations between self-care and psychosocial factors and SCD-related outcomes sample of 180 individuals. The results indicated three factors showed significant relationships for sickle cell pain frequency. These were coping behavior ability ($\beta = 0.249$, $p = .049$), hopelessness, and mood swings ($p < .05$) indicating they may be significant factors related to self-care and psychosocial factors, but not necessarily for overall health status and quality of life. This study highlights the importance of self-care measures in managing SCD-related pain, as a patient's ability to manage symptoms significantly enhances their quality of life. The findings can inform the development of tailored interventions and programs that address the specific needs of African Americans with SCD, promoting more effective self-care practices and psychosocial support. The study will help care providers to focus on improving coping behavior and compliance in patients with sickle cell disease, thereby improving their self-care abilities.

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Chapter 1: Introduction to the Study

Introduction

Sickle cell disease (SCD) refers to a set of genetic conditions that have been associated with abnormal hemoglobin (MedicinePlus, 2016). Hemoglobin is a protein molecule in erythrocytes, which supply oxygen to the entire body. Ordinarily, erythrocytes are biconcave, disc-shaped and flexible, which is an adaptation that enables greater surface area to hemoglobin volume and to move easily through gore vessels (Richardson & Swietach, 2016). Individuals with sickle cell disease possess an anomalous hemoglobin molecule known as sickle hemoglobin, or hemoglobin S (Hb S; Lu et al., 2016). Sickle hemoglobin molecule distorts the structure of a red blood cell from round and biconcave to a crescent or sickle shape in areas of low oxygen concentration. Irregularly shaped erythrocytes lose their adaptation to function (Li et al., 2017) and can get stuck in small capillary structures, choking or slowing down blood flow to areas of the body. The characteristics of SCD onset in early childhood and the symptoms of this condition include repeated infections, periodic painful crisis, and anemia (Cheesman, 2018). The severity of the disorder differs from one person to another, with some having mild episodes and others having serious complications. Physicians diagnose SCD through blood tests that screen sickle hemoglobin (Piety et al., 2017), a technique advocated to infants for early identification and management of the disorder.

The risk factor for SCD is genetic transfer (Ribeil et al., 2017) from sickle cell trait (SCT) carriers. A gene refers to the basic functional and physical unit of heredity.

For a child to have SCD, both parents must have the SCT, a disorder in which an individual possesses an abnormal allele of the Hb beta gene. This implies that the individual has acquired the sickle cell gene from either of the parents. Individuals with SCT do not display any symptoms of the disorder and lead a normal life.

SCD is the most common genetic gore problem in the US and affects approximately 70,000 to 100,000 Americans. This blood disorder is estimated to affect one in every 500 African American, and one in every 365 of their live births (Centers for Disease Control and Prevention, 2017). One in every 16,300 Hispanic American births has SCD, and one in every thirteen African Americans has SCT.

Persons with SCD suffer complications including "hand-foot syndrome, pain crises, anemia, infections, acute chest syndrome, splenic sequestration, vision loss, leg ulcers, stroke, deep vein thrombosis (DVT) and pulmonary embolism (PE), priapism, gallstone, and growth retardation" (Centers for Disease Prevention and Control, 2017). Stroke can happen if sickle cells impede gore flow to an area of the encephalon (Cheesman, 2018); signs of stroke include loss of consciousness, sudden speech challenges, numbness in the limbs, and seizures. Sickle cells that choke gore flow through circulatory vessels deprive the affected organ oxygen and blood, which can damage organs and nerves resulting in possible fatal repercussions. For example, obstruction of blood flow to the ocular system over time can damage areas such as the retina resulting in blindness. Denaturing of erythrocytes releases bilirubin and higher levels of the substance in the body can result in gallstones. Obstruction of blood flow to the reproductive organs can result in priapism (Cheesman, 2018), a painful, long-lasting

erection that can damage the penile organ and cause impotence. Adults with sickle cells can also develop pulmonary hypertension, a condition associated with fatigue and dyspnea. Obstruction of gore flow to the lungs and infections can cause acute chest syndrome (Cheesman, 2018), a life-threatening problem associated with breathing difficulty, fever, and chest pain that requires emergency medical attention.

Cheesman (2018) indicates that there are many management practices for managing hand-foot syndrome. The management practices for hand-foot syndrome include an increased fluids and pain management. Pain medications such aspirin and ibuprofen are used to manage pain episodes, while opioid morphine (Cheesman, 2018) is effective in severe aches. Some patients may require intense facility care during pain crisis. Management for severe anemia includes blood transfusion (Cheesman, 2018), but multiple transfusions can cause hemosiderosis that can harm body organs. Antibiotic formulations, and at times, gore transfusion is imperative to treating infections. Children should take prescribed antibiotics such as penicillin (Cheesman, 2018) daily until at least the age of five as prompt treatment of infection can avert attacks. Depending on the cause, acute chest syndrome is managed using blood transfusions, drugs to open airways, drugs to treat infections, and supplementary oxygen. Typically, the management method for splenic sequestration is gore transfusion (Centers for Disease Prevention and Control, 2017). Physicians use laser treatment to manage vision loss (Menaa et al., 2017) resulting from damaged retina due to excessive gore vessel growth. Medication ointments and creams are effective in managing leg ulcers. Doctors may prescribe strong pain medicine depending on the pain of the ulcer. Cultured skin grafts can also be utilized to treat leg

ulcers (Singh & Minniti, 2016). Physicians can propose frequent gore transfusion to children at risk of stroke to help prevent the chances. Persons with regular transfusions and close monitoring is imperative because of grievous effects. Finally, medication is imperative for treatment and prevention of DVT and PE.

Background of the Study

The incidence of SCT in U.S. indicates that at least one out of 13 infants have SCT (Centers for Disease Control and Prevention, 2019). Lanzkron (2013) presumed 1016.5 per 100000 as the estimated death rate for SCD. Owens (2015) presumes that over 70,000 Americans have SCD. The rate of occurrence of the disease is highest among African American and lowest among whites. About "one in every 500 African American and one in 1,000-14,000 Hispanic American is born with SCD" and one in 12 African American has SCT. According to a report by Ojuodu et al. (2014), the overall incidence of SCT in the US is 15.5 cases per 1,000 deliveries, 73.1 among African Americans, and 6.9 among Hispanics. This report was compiled through newborn screening (NBS) carried out in several states in the US. Ojodu et al. (2014) presumed that NBS is exemplary for genetic counselors and primary caregivers to start informing parents of spotted SCT persons about reproduction considerations and possible health issues.

Self-care is an imperative element in SCD pain management that helps prevent pain crises. Effective self-care requires both professionalism among health caregivers and positive attitudes among the patients. Clear comprehension of self-care can aid caregivers in equipping patients with skills and resources necessary to take part in their disease management (Matthie et al., 2015). Self-care is the discerned capacity to take part in the

general therapeutic actions focused on ameliorating quality of life and health status, as well as actual execution of those actions. Management of SCD focuses on hydration (Matthie et al., 2015), pain, and prevention of infections and complications. Episodes of pain are most frequent from age 19 to 39, which makes self-care a priority, especially for SCD youths and adults (Matthie et al., 2015). Matthie et al. (2017) presumed that misconceptions about SCD still prevail among the African American community based on the knowledge base of African American women of middle reproductive age. Matthie et al. (2017) posited that interventions focused on providing education on the need for SCT screening should commence after pinpointing what the general population believes to improve their capacity to make informed health decisions, including expertise to undertake home self-care. The study explores the areas of limited information relating to self-care by identifying potential misconceptions and beliefs exhibited by the general population at risk for SCD.

Self-care is a priority for persons with SCD and information on the importance of self-care management in sickle cell disease is essential in the development of public health interventions related to SCD. Bean et al. (2014) presumed that most parents are without knowledge about SCD, which can lead to serious effects such as stroke for these children. Savage et al. (2015) also noted that gaps exist in the management of SCD, including prevention, screening, priapism, renal disease management, ophthalmologic complications, and multi-system organ breakdown. Savage et al. (2015) further posited that there is a necessity for high-quality proof to usher management of SCD, which calls for organized approaches for solutions.

Self-care practices are imperative in the management of SCD by helping to prevent deaths. Wang et al. (2015) postulate that 1.5% of children diagnosed with SCD after neonatal screening succumbed to any cause, such as acute splenic sequestration and infections. Therefore, mothers to SCD children need the necessary self-care skills to reduce the fatality burden among babies, even after newborn screenings. Eckman et al. (2017) presumed that diverse measures can help gather data across SCD research studies to evaluate the complexity of SCD phenotypes. However, the scope of these investigations and the diversity of the measures utilized make it hard to compare research. Therefore, standard measures and usual data components for SCD that improve the quality of data and allow comparability, which are essential for cross-study evaluation and the establishment of directions, support effective management practices and interventions.

Policy-based approaches towards SCD have been summarized in the US. Health "Triple Aim" as a framework for improving the well-being of the population (Hulihan et al. 2017). The first objective is to improve the population's well-being; the second is to boost patient encounters; and the third is to minimize health care costs by abolishing avertable acute care readmissions and utilization (Hulihan et al., 2017). Policy makers and researchers are establishing ways to attain the Triple Aim for SCD societies that align with prevailing healthcare precedence and happen at system level, provider, and individual level. Hulihan et al. (2017) posited that the CDC executed the "Sickle Cell Data Collection" program to tackle the demand for public health approaches toward health outcomes. Thus, the study is essential in addressing limited information relating to

how beliefs and misconceptions can influence self-care and psychosocial factors among African Americans suffering from SCD. By so doing, evidence-based recommendations can be developed based on this research that could influence interventions to promote self-care, an imperative component of SCD management.

Problem Statement

Lay beliefs and conceptions relating to SCD can largely affect practices that are vital for appropriate management of SCD, including self-care and psychosocial factors among African Americans. SCD is a debilitating illness associated with both short-term and long-term complications that present a substantial number of visits to an emergency room and hospitalization of a patient (Santos et al., 2016). Eckman et al. (2017) presumed that SCD causes composite complications with economic, social, psychological, and physical consequences to the affected persons. Despite being a blood disease, SCD affects the whole body, and its pathophysiology sets in early in infancy (Manwani & Frenette, 2013). The key features of SCD are vaso-occlusion and chronic hemolytic anemia (Manwani & Frenette, 2013).

Self-care across the lifespan is imperative in managing this chronic disease, preventing complications, and boosting the general health and well-being of the individual. SCD is associated with several complications such as auto infarction due to sickling of the erythrocytes, which leads to a non-functioning spleen (Brown et al., 2017). This results in functional asplenia, which also increases the risk of invasive attacks since the spleen is unable to screen bacteria from circulation. Therefore, infections mainly from encapsulated bacterial microorganisms, such as salmonellae, *Haemophilus influenza*,

S.pneumoniae, and parasitic infections are common among these patients (Brousse et al., 2014). Thus, preventing infection is an important measure in maintaining well-being among persons with SCD.

Children with SCD also experience complications, sepsis, overt stroke, and fever, which are usually due to viral infections and significant bacterial infections (Fox, 2016). The death rate of SCD has substantially dropped over the years, but sepsis remains a major cause of death overall, with *S. pneumoniae* being the most common cause of mortality linked to bacterial attack in children with SCD (Brown et al., 2017). Another complication among children with sickle cell disease is an overt stroke, a neurological complication in SCD. Quinn (2013) found that, in the absence of primary prevention measures, overt stroke manifested in 11% of children with SCD (Hb SS) before the age of eighteen. Preventing this complication thus requires public health involvement to integrate measures, including transcranial Doppler assessment for overt stroke and self-care practices for viral infections and sepsis.

Sickle cell trait (SCT) is a hereditary component of a gene that causes SCD when two SCT couples reproduce (Bean et al., 2014). Therefore, for an individual to be born with SCD, both parents must be carriers of a sickle cell gene. Most African Americans possess a sickle-cell trait (SCT) and sometimes are unaware of their carrier status (Bean et al., 2014). According to Mayo-Gamble et al. (2017), most African American persons do not understand the genetic pattern and transition of sickle cell disease. Owens (2015) identified that most African American women have limited information on the hereditary patterns of SCD. This results in a genetic metamorphosis of sickle-cell disease when such

individuals marry others of similar carrier status and reproduce (North Alabama Sickle Cell Foundation, 2013). There are also perceptions and information gaps exhibited by African Americans regarding SCT and SCD. The CDC (2014) identified information gaps amongst SCT carriers, which indicated the need for the group to understand the complications, symptoms, and the management choices of the disease. Such information gaps affect self-responsibility and self-efficacy in controlling SCD. According to Mayo-Gamble et al. (2017), the perceptions of African American women of reproductive age on the inheritance patterns of SCT, perceived necessity of SCT, and perception of SCT as an illness could hinder public health practices such screening for the disease. Failure to screen has escalated the occurrence of SCD and SCD health-related outcomes, a phenomenon attributed to marriages among SCT carriers (Ugwu, 2016). Understanding the management choices and practices is very important for individuals with SCD to undertake proper self-care as self-responsibility practices can help seal the gaps.

Most practices to maintain the well-being of SCD patients involve managing the disease to prevent complications. Primarily, most of these management activities occur at home and include prevention of complications and infections, ensuring hydration, and pain management. The frequency of painful events is highest between the age of 19 to 39 years, whereas re-hospitalization and healthcare utilization peak from the age of 18 to 25 years (Matthie et al., 2015). Persons with SCD can also experience psychosocial reactions to their disease due to coping capabilities, painful events, self-confidence, death, and the feeling of being a burden. Crossby et al. (2015) posited that psychosocial factors put young adults and adolescents at risk for challenges with the management of

the illness. Therefore, psychosocial factors and self-care practices largely influence the well-being of an SCD patient and affect the outcome of the disease. Savage et al. (2015) postulate that areas of SCD control such as prevention, screening, priapism, renal disease management, ophthalmologic complications, and multi-system organ breakdown are not backed by sufficient enough investigation to build on management advocacy. The current management recommendations for SCD often rely on poor quality evidence, consensus opinions from experts, or adoption of non-empirical evidence from different patient groups (Savage et al., 2015), which necessitates quality studies to identify barriers to SCD control and management.

The United States has a significantly high number of African Americans, forming the second largest population by race, estimated to be 13.4% of the total population (United States Census Bureau, 2019). With SCD being more common among the African American community, it formed the point of consideration for the study. This research will provide insight into the self-care and psychosocial factors that predict SCD-related outcomes among the African Americans in the USA.

Purpose of the Study

SCD complications are traumatic and are associated with significant morbidities and mortalities. Complications such as overt stroke or silent cerebral infarcts are detrimental. Given their high rates of occurrence (Majumdar et al., 2014), self-care interventions are essential in managing the disease. Psychosocial factors affecting persons with SCD also largely compromise the health outcomes of the patients. According to Crossby et al. (2015), young adults and adolescents experience

psychosocial stressors that negatively influence the management of SCD and increase the risk for poor disease care. Therefore, the purpose of this investigation was to analyze the self-care and psychosocial factors, as well as how they influence SCD-related outcomes among African Americans in the USA.

Research Questions and Hypotheses

The following are research questions and corresponding hypotheses that this study will evaluate.

RQ1: Are there self-care factors that predict SCD-related outcomes of pain (measured by the frequency of sickle cell pain episodes per year), occurrence of severe headaches, self-efficacy and functionality after stroke, and quality of life among African Americans in the USA?

HO: There are no self-care factors that predict SCD-related outcomes of pain (measured by the frequency of sickle cell pain episodes per year), occurrence of severe headaches, self-efficacy and functionality after stroke, and quality of life among African Americans in the USA

H1: There are self-care factors that predict SCD-related outcomes of pain (measured by the frequency of sickle cell pain episodes per year), occurrence of severe headaches, self-efficacy and functionality after stroke, and quality of life among African Americans in the USA.

RQ2: Are there psychosocial factors that predict SCD-related outcomes of pain (as measured by the frequency of sickle cell pain episodes per year), occurrence of severe

headaches, self-efficacy and functionality after stroke, and quality of life among African Americans in the USA?

HO: There are no psychosocial factors that predict SCD-related outcomes of pain (as measured by the frequency of sickle cell pain episodes per year), occurrence of severe headaches, self-efficacy and functionality after stroke, and quality of life among African Americans in the USA.

H1: There are psychosocial factors that predict SCD-related outcomes of pain (as measured by the frequency of sickle cell pain episodes per year), the occurrence of severe headaches, self-efficacy and functionality after stroke, and quality of life among African Americans in the USA?

Theoretical Framework

The founding theory for the study is the self-care management (SCM) theory. Kanter and Kruse-Jarres (2013) used the self-care management concept of SCD (SCMSCD), which postulates that susceptibility factors such as socio-demographic and health requirements negatively affect an individual's health status. Matthie et al. (2015) defined self-care as a perceived capacity to engage in common therapeutic tasks aimed at ameliorating the quality of life and health status, as well as the definite execution of those tasks. Self-care management resources such as communication skills, self-care actions, health status, assertiveness, social support, self-efficacy, as well the way an individual's present coping behaviors affects his or her quality of life. Self-care management is essential in advancing the standard of living and health costs, as well as lessening the medical cost for individuals living with SCD (Matthie et al., 2015). In the SCMSCD

theoretical framework, a susceptibility element is an indispensable crisis among people managed with SCD.

Management of SCD mainly occurs at home, which emphasizes self-responsibility throughout the lifespan. Self-care practices are essential to boost health and well-being, and leads to the prevention of pain crisis through the personal management of pain. In childhood development, Bean et al. (2014) presumed that most parents have insufficient education about SCD, which can result in adverse effects, such as stroke, to these children in adulthood. Pain episodes recur most frequently between the age of 19 and 39 years making self-responsibility a priority among young adults. The common strategies include avoiding temperature extremes, getting ample rest, subscribing to healthy diets, staying hydrated, and receiving frequent checkups (Matthie et al., 2015).

Socio-demographic factors such as ethnicity, marital status, education, sex, age, and the level of income are covariates and influence the quality of life among persons with SCD (Matthie et al., 2015). SCD persons with lower levels of education, low income, African American ethnicity, or who are single parents are more likely to have poor outcomes. Socio-demographic factors also influence psychosocial processes and success coping with the disease. Self-care and psychosocial factors are both independent variables, and any change would influence the dependent variable SCD-related outcomes. This study will investigate which self-care and psychosocial factors predict SCD-related outcomes of frequency of sickle cell pain episodes per year, occurrence of severe headaches, self-efficacy, functionality after stroke, and quality of life among African Americans living with SCD in the USA.

Nature of the Study

The study follows a quantitative research method, which stresses object computation and the numerical, mathematical, or statistical analysis of data. The quantitative approach to be used is a correlational design, which observes and explores associations between uncontrolled variables. Independent variables include self-care and psychosocial factors, while SCD-related outcomes such as pain episodes are dependent variables. Social demographic factors play an important role in SCD management and modifications in self-care and psychosocial factors are expected to influence the outcomes of the disease. The reason for utilizing a quantitative study approach is that the technique yields many study subjects, which enhances generalization of the phenomenon to the large group. In addition, quantitative methods are not as time intensive as qualitative studies are and will provide the capacity to expand data into prognostication.

Definitions

Self-care: Perceived ability of a person to engage in common tasks aimed at ameliorating the quality of life and health status, as well as the definite execution of those activities (Matthie et al., 2015).

Sickle cell trait: An asymptomatic, genetically acquired blood disorder that renders the individual an SCD carrier (University of Maryland Medical Center, 2013).

Sickle cell disease: A group of genetically acquired blood disorders associated with abnormal hemoglobin (MedlinePlus, 2016).

Independent and dependent variable: Dependent variable refers to the element of the investigation being tested and analyzed scientifically by a researcher (O'Sullivan et al., 2016). On the other hand, an independent variable refers to an element of the investigation that is manipulated to establish the value of the dependent object (Flick, 2015). A covariate is a variable that can influence the result of the regressor on the dependent element in research.

Cause-effect relationship: Refers to a relationship in which change in one variable creates an effect on another variable (Flick, 2015).

Sickle cell screening: Refers to laboratory tests to determine the presence of an SCT, or SCD (University of Maryland Medical Center, 2013).

Self-care management: Refers to the support provided to individuals with chronic conditions to inspire them to take an active role in a day-to-day management of their condition (Lillyman, & Farquharson, 2013).

Assumptions

The presumptions for this study include that all volunteers to the study responded truthfully; the number of possible participants is adequate because there is a large population of African Americans in U.S.; and all components within the research study are valid and reliable.

Scope and Delimitations

The research study will use a descriptive research design. This type of study is easier to undertake and is conducive for investigations limited by time. The target population for the research was men and women of African and African descent in the

U.S. The study utilizes the theory of self-care management (SCM) and minimizes confounding elements that can influence the dependent variable, SCD-related outcomes. Confounding factors in the study refer to any other element besides psychosocial and self-care factors that forecast SCD-related outcomes, such as income; pinpointing them enhanced the external and internal validity of the research (Flick, 2015). The study included analysis of datasets to capture quantitative data relating to self-care and psychosocial factors that forecast SCD-related outcomes. Being a quantitative study, the researcher utilized large samples, which allows for possible generalization of the outcome to the African American community.

Limitations

The study uses quantitative data, which can be utilized in elucidating any social phenomena associated with African Americans with SCD. Quantitative methods are excellent in showing what is happening but are not appropriate in providing insights into why it is happening. According to Rahman (2016), a positivism investigation paradigm does not incorporate the usual meanings of social events. The research study consists of self-reported information, which can be prone to social desirability bias (Demetriou et al., 2015). In addition, the research findings may not reflect an exact situation of the condition, and therefore, may not be generalizable to the entire African and African American community within the state. Confounders such as literacy, which can influence both self-care and SCD-related outcomes, can affect internal validity of the research. Further, potential improper misrepresentation of the targeted group can affect the overall validity of the study. These limitations were addressed by avoiding confounders and

ensuring scientific determination of sample size to guarantee proper presentation of target population to guarantee validity.

Significance of the Study

Lengthy and thorough investigations relating to a health phenomenon are imperative in guiding interventions focused on prevention and management of conditions in a population. SCD, self-care management practices, and other related elements have not been widely researched, which has resulted in limited information in the area. Findings from this study may be utilized to establish interventions that can ameliorate the psychosocial wellbeing and self-care of African Americans affected by SCD.

Social change refers to an overtime alteration in relationships and interactions that modifies social and cultural institutions, resulting in lasting consequences (Dunfey, 2017). The study may influence the work of non-governmental organizations with an interest in promoting self-care interventions and intensifying access to education, self-efficacy, and social support for SCD sufferers. Results from this study have the potential to inform public health interventions relating to the prevention of poor outcomes and management of SCD among the African American communities living in the U.S. Authorities can utilize the results of the study to develop informed decisions or modifications of current policy strategies related to SCD. The study may also provide inherent information for learners and people who would wish to undertake investigations relating to SCD and self-care practices.

In addition, the study has a potential to develop positive social change related to SCD. The social issues relating to SCD include knowledge and income disparities that

influence self-care practices and psychosocial events among African Americans, which require patient or family empowerment. Positive social change is a contemplated procedure of developing and applying actions, strategies, and notions to boost the development, dignity, and worth of societies, cultures, organizations, and individuals. Results from the study will be used to depict the factors that boost or impede self-care and psychosocial factors among African Americans with SCD. This has the implication of informing organizations in improving interventions geared to management of sickle-cell related outcomes and febrile illnesses, thus forming a benchmark for future measures. The study is also likely to minimize severe SCD-related outcomes, thus reducing severe complications and hospital emergency visits.

Summary

SCD is a chronic, genetic, blood-borne disorder that leads to abnormal hemoglobin. The disorder is associated with the changing of red blood cells from a normal, biconcave disc shape to sickle form erythrocytes in areas of low oxygen concentration, which are unable to move easily in small blood vessels. This can lead to obstruction of blood vessels or deprivation of blood and oxygen to parts of the body affecting associated organs and tissue, which can lead to life-threatening implications. Both parents must possess SCT to give rise to an SCD offspring. An SCD patient can suffer complications that demand prompt management as SCD is a long-life condition with no cure. Patients are required to undergo life modification to avert pain crises and appropriate management techniques to treat attacks. Persons with SCD undergo various

challenges, including pain crises that can deteriorate the quality of life of an individual and severity is variant among individuals.

The burden of SCD is higher among African American communities, with approximately one in every 500 African American, and one in every 365 of their live births being affected. Self-care is imperative for SCD patients and helps to manage problems and prevent pain crisis. Youths and adults suffering from SCD, as well as parents to SCD children, need to have the necessary skills to manage SCD and a experience self-efficacy and self-care. Imperative home self-care practices for SCD include pain management, prevention of complications and infections, and ensuring constant hydration. Self-care management (SCM) resources such as self-efficacy and support influence the health standard of an SCD person. The theory of self-care management is a good foundation for analyzing susceptibility factors that may influence SCD patients undertaking self-care. In addition, psychosocial elements, including the general image of SCD, also influence SCD related outcomes. Therefore, this study uses the SCM theory to establish the influence of psychosocial and self-care factors on SCD related outcomes. Previously published research detailing this work are reviewed in Chapter 2.

Chapter 2: Literature Review

Introduction

This chapter presents a review of literature relating to SCD, which is a chronic illness associated with life-threatening complications that demand appropriate self-care and adequate management. SCD complications are traumatic and linked to significant morbidities and mortalities. The purpose of this study is to determine self-care and psychosocial factors that forecast SCD-related outcomes among African Americans in the USA. The chapter includes different studies relating to SCD in categories to provide an inherent understanding about the disorder. Search terms utilized include *SCD among African Americans* and *self-care management of SCD*; materials previewed and relevant articles not older than five (5) years were used in the section. The chapter provides information on self-care, SCD and depression, cognitive ability in SCD, transition in SCD adolescents, knowledge, mortality in SCD, and importance of the family physician in SCD.

The literature search strategy involved subject headings, combining terms, concepts and key terms, and phrase searching. Terms and phrases utilized include *self-care management of SCD*, *SCD management practices*, *role of self-care in SCD*, *social and psychological effects of SCD*, and *improving SCD outcomes*. Google scholar was also utilized to refine searches and obtain peer-reviewed journals not older than five (5) years. The software *Docear-The Academic Literature Suite,* a user-friendly tool to discover, make, and organize written works, was also utilized to organize the chapter. The

application sorted works into groups, added annotation into classes within PDFs, and helped address numerous annotations of diverse works in different categories.

The theoretical foundation for the investigation is SCM theory, which elucidates the importance of self-care in the management of chronic diseases. The theory was obtained from the national center for biotechnological information, article, *The role of self-care in sickle cell disease*, authored by Matthie et al. (2015). Borji et al. (2017) utilized this model in *The impact of Orems Self-Care Model on the quality of life in patients with type II diabetes*. The major propositions of the model prioritize self-care in managing chronic conditions by increasing the quality of life of the ailing persons. The rationale for selecting this model is because SCD is a long-life condition that requires self-management to maintain quality of life. Like most life-threatening lifelong conditions, the chronic nature of SCD demands essential information and techniques for appropriate at home self-management to avert complications and morbidities. The research questions build upon the model by analyzing the SCD-related outcomes against psychosocial issues and self-care to establish their influence of the quality of life.

Literature Review Based on Key Concepts

Self-Care

Self-care is an essential component of managing SCD, and home self-care contributes to prevention of pain crises through personal management of pain (Matthie et al., 2015). Self-care is vital, especially among for youths suffering from SCD and helps prevent temperature extremes and encourage healthy nutrition, staying hydrated, and going for regular checkups. However, this group of patients is not financially stable,

experiences changes in insurance, and lacks information about the SCD care system, which all increase the risk of early demise soon after the transition from pediatric to adult care (Matthie et al., 2015). Similarly, Cecilio, et al. (2018) evaluated the hurdles encountered in self-care practice by youths and presumed that pinpointing and approaching elements that result in not performing self-care enable youths with SCD to minimize hospital admissions and ameliorate their quality of living. In addition, youths' ability to surmount SCD obstacles largely depends on their interaction with their own feelings; thus, addressing challenges to self-care among youths increases chances to transform opposing feelings to positive ones. Cecilio et al. (2018) found an interlink between the occurrence of opposing feelings and hurdles, noting that the greater the occurrence of opposing feelings, the more the obstacles are pinpointed in the establishment of self-care. Cecilio et al. (2018) presumed that knowledge about SCD is still a hurdle for both youths and health experts, a situation that can lead to inadequate care. Besides, help received from family is crucial for the motivation to health care, and the author presumed that developing teaching approaches that stimulate adherence to self-care and overcome hurdles in environmental, emotional, and behavioral aspects is imperative (Cecilio et al., 2018).

Ahmadi et al. (2014) presumed that self-efficacy is an essential element for triumphant SCD self-management. Ahmadi et al. associated self-efficacy with better SCD self-management (SM) outcomes, nothing that SM intercessions carried out based on cognitive behavioral therapies increase self-efficacy. Similarly, authors Matthie et al. (2015) examined the elements that influence self-care among SCD adults in a study of

103 youths with SCD. The authors evaluated the link between SCD hospital visits, self-care, socio-demographics, social support, and self-efficacy for pain crises. Matthie et al. (2015) noted that years of education, social support, and self-efficacy were essential to comprehend the purpose of self-care in youths with SCD. Social support had the most notable influence of self-care and utilization of self-care in life-long control of illness, which was affirmatively influenced by care professionals, friends, and family. Utilization of secondary data also indicated that income was negatively linked to pain crisis and hospital visits, which suggested that increased income reduced hospital visits for pain crisis (Matthie et al., 2015). Matthie et al. (2015) proposes that further research relating to self-care strategies to avert and manage pain before seeking care is imperative to inform intervention development. For the study by Matthie et al. (2015), one limitation observed was that the parent study did not gather information regarding the ethnicity of the subjects. This study will address this by gathering data relating to ethnicity of subjects, which is imperative to identifying cultural dissimilarities in self-care.

SCD and Depression

Sehlo and Kamfar (2015) assessed the occurrence of depression in pre-pubertal persons with SCD, evaluated the link between depression, social brace, SCD severity, and effect on health-related quality of life. They posited that children with SCD are at an increased risk of depressive symptoms compared to healthy counterparts (Sehlo & Kamfar, 2015). According to Davis and Brown, (2016), social and mental health surround the quality of life among SCD persons, and the combination of depression and SCD increases mortality and psychological morbidity. Depression and anxiety, as well as

activity and functioning, lowered the quality of living in SCD adults moreso than in other long-term illnesses. Sehlo and Kamfar (2015) also evaluated "the predictive value of social support and disease severity on depression." The investigation was a case-control comprised of 120 children: 60 cases, and 60 controls randomly selected. Prevalence of depression in SCD children was 13 percent, and life quality in all domains was impaired in SCD children compared to their controls (Sehlo & Kamfar, 2015). Despite contemplating the possible damaging effects of family earning on HRQL, children with SCD had notably impaired health-related, quality of life. Negative mood linked to reductions in social and school activity, health-care use, and increased same-day pain (Sehlo & Kamfar, 2015). Thus, depression and severity of SCD were linked to poor quality of life in SCD children (Sehlo & Kamfar, 2015). On the other hand, increased positive mood was linked to reduced health-care utilization, pain, and increased activity participation among SCD adolescents.

Similarly, Cecilio et al. (2018) associated the feelings of sadness to the limitations imposed by SCD, which mirrors the incapacity to perform some recreational actions, thus sometimes leading to anxiety and depression. This reinforced the notion of establishing individualized care plans and approaches that can aid people to take charge of their emotions. Ahmadi et al. (2014) found that SCD SM intercessions positively influence the outcomes of boredom, frustrations, depression, and sleep. Further, Davis and Brown linked passive coping and negative thoughts to frequent hospitalizations and pain crisis (2016). Davis and Brown (2016) presumed that neuropsychology is useful in children; psychological teaching can brace one's awareness and knowledge regarding SCD, while

CBT can challenge and ameliorate behaviors and moods, as well as depressive thoughts. Sehlo and Kamfar, (2015) called for further investigation to give direction for a combined approach to the care of ailing children and youths. The study utilized a cross-sectional design, which does not yield reliable information on the link between increased parental brace and reduced symptoms of depression and better quality of life, which the study does not plan to address. In addition, the investigation did not outline what quality of brace might be most essential. This study will focus on depicting the types of support that are most essential.

Cognitive Ability in SCD

Drazen et al. (2014) posited that children with SCD mainly possess cognitive deficits that can affect academic performance. Similarly, Castro and Viana (2018) presumed that children and youths with SCD have higher risks of cognitive function disruption. Psychomotor slowing is also typical in children with SCD (Jorgensen et al., 2017) and even though less in occurrence, the authors detected mild cognitive disruption in severe genotype. Besides, children with SCD experience delays in development seen in children as young as nine months (Drazen et al., 2014). In addition, children with SCD are at an increased risk of having a cerebrovascular accident, and around 40% have overt stroke or cerebral infarct by adulthood (Drazen et al., 2014).

In their study assessing cognitive capacity among children and youths with SCD, Castro and Viana (2018) found a direct correlation between socioeconomic status and cognitive scores. Children in low economic earning countries are at a higher chance for deficit cognition, lack of school readiness, and language delays (Castro & Viana, 2018).

Thus, the social surroundings of a child play a huge role in their development. Drazen et al. (2014) studied the "feasibility of home-based caregiver education program" for families with toddlers and infants with SCD, which followed the "Born to Learn curriculum" given through the parents as educators. To do away with hurdles to participation in a "hospital-based educational program," Drazen et al. (2014) implemented a "home-based education model," which helped the team to establish elements relating to home surrounding that influenced caregiver capacity to react to the requirements of their ailing SCD children. Drazen et al. (2014) observed that families of SCD ailing children struggled with problems that they did not disclose during clinic visits. Most caregivers have not had the chance to learn parenting approaches and appreciated praise for their work, encouragement, information, and having their hurdles recognized, as well as being provided with apparatus for themselves and their children (Drazen et al., 2014). Besides, caregivers are noted not to comprehend the aim of various therapies, and some confessed not adhering to the rules. The study had limited generalizability because it was a "single center, single arm" intervention. The investigation was also not coordinated with the school system. Drazen et al. (2014) recommends that more investigation is imperative to establish the outcomes and effects of children receiving the intervention. This study focuses on elucidating the outcome of giving in-home services to this group. Castro and Viana called for approaches that can lower cognitive disruption, even in children with less grievous symptoms (2018).

Transition in SCD Adolescents

Most adolescents with SCD have trouble in adjusting from pediatric care to grown-up system. This is because they find themselves in different environments where they need to assimilate self-care knowledge. John-Olabode et al. (2015) evaluated the prevalent morbidities and crises linked to SCD in adolescents, assessed the knowledge relating to SCD that the adolescents possessed, and their emotional response to SCD. 50 subjects were observed in the study in department for various conditions. John-Olabode et al., (2015) noted that the commonest crises encountered (93.1%) was vaso-occlusive crises in the form of bone pain. Self-care management is imperative among adolescents to facilitate a longer and healthier life (John-Olabode et al., 2015). The commonest crises that necessitated hospital admission was bone pain while severe anemia was the commonest indication for gore transfusion. John-Olabode et al. (2015) found malaria the prevalent morbidity, attributed to the endemic nature of malaria in the region. John-Olabode et al. (2015) noted a number of SCD persons suffering from depression and persons with more knowledge about SCD and with strong social support had better adherence to treatment and coping skills thus positive outlook that reduced hospital visits.

Psychosocial Consequences

Adzika et al. (2016) posited that SCD has severe repercussions on individuals and persons ailing from long-term conditions such as SCD have an increased risk for developing mental health problems. According to Obosi and Izedomi (2018), persons with SCD and their caregivers may encounter psychosocial and physical dysfunctions in their daily living, which can affect their quality of life. Persons with SCD have higher

risk of maladjustment to life in a number of practical areas, such as limited athletic capability and interpersonal functioning, poor self-concept, and behavioral and emotional problems. Psychosocial repercussions in SCD include mental health issues, including anxiety and depression. The chances of developing depressive symptoms are higher in persons with grievous forms of SCD. SCD African American adults encounter 32 % depressive symptoms or 26% depression compared to 9.5% in the general population. Schlenz et al. (2016) posited that the considerably divergence of pain in children, including length of disability resulting from pain, duration, intensity, and frequency is a distinct hindrance to effective pain management. Adzika et al. (2016) utilized a cross-sectional design to examine the "socio-demographic distribution and psychosocial consequences of SCD among patients and assessed their quality of life and coping mechanisms". Results indicated that majority of participants had attained vocational school teaching or less and most subjects were female. Adzika et al. (2015) attributed it to the fact that most SCD persons are academically poor performers. In addition, most subjects were single, which is plausible to presume that married patients are more likely to receive or perceive spouse support in relation to treatment and management of SCD. Schlenz et al. (2016) found that biopsychosocial elements may have definite link with pain characteristics in pediatric SCD. Adzika et al. (2015) noted that the subjects were more satisfied with their capacity to enjoy happiness with friends, be creative, play, learn, and work. In a study to evaluate psychosocial influences of leg ulcer in SCD, Umeh et al. (2017) found that persons with leg sores encounter challenges in physical function, intense and frequent ulcer pain, and social isolation. This in turn influences the

psychosocial process of the individual and ultimately the quality of life (Umeh et al., 2017). The limitation to the study included smaller sample size, lack or a more objective evaluation of standard of living to confirm the subjective evaluation of contentment or discontentment, the way the self-report was administered could have caused systematic errors, and not including a control group for comparison purposes. Adzika et al. (2016) suggests that factors that influence psychosocial processes of a patient, including income, age, literacy level, gender, and marital status need considerations and more investigations are essential to increase knowledge on effects of psychosocial life of SCD persons and family. Adzika et al. (2016) found that creativity, learning, money, health, and age notably forecasted depression. In addition, conducive surroundings, number of children, health quality, and education level notably forecasted anxiety indicating that quality neighborhoods, health satisfaction, and education level mitigate levels of anxiety (Adzika et al., 2016). However, Adzika et al. did not find a link within either depression and anxiety and marital status (2016). This study aims at determining the psychosocial impacts of SCD on individuals and family.

Knowledge

Housten et al. (2015) presumed that most SCD patients live into their childbearing ages where they need to make resolutions on whether to have a child and passing along SCT or SCD to their offspring. According to Creary et al. (2017), notwithstanding infancy SCT universal screening, only about 16 percent Americans with SCT know their status. Knowledge affects perception, which influences coping and psychological results. Knowledge yields a portion of what self-management comprise and improves perceptions

and coping. Limited understanding about the inheritance pattern of SCT/SCD can affect informed resolution making when considering. Using a qualitative approach, Housten et al. (2015) evaluated the necessity for and interest in coital health and SCD hereditary teaching initiative for youths with SCD. The study utilized a cross-sectional design and subjects were recruited from clinic group. Housten et al. (2015) found that all subjects were seeking additional knowledge relating to disease genetic pattern within the context of their families. Some subjects understood that they inherited the disorder from their parents but lacked the understanding about their chance of passing along SCT/SCD to their offspring. The participants could not self-generate the genetic probability numbers for persons SCT/SCD. Housten et al. (2015) unearthed that youth did not just seek knowledge but the practical application of expertise based on their growing sense-of-self. Creary et al. (2017) found that teaching increased knowledge regarding SCD among caregivers, which calls for added educational approaches to advance literacy concerning SCD. Housten et al. investigation utilized randomized trial method and called for more research to the matter however, this study tries to elucidate more on the influence of knowledge on self-care.

Mortality in SCD

SCD carrying persons have high risk of early death and multi-organ morbidity (Maitra et al., 2017). However, recent approaches including vaccination against *Streptococcus pneumonia* and *Haemophilus influenza* type b and execution of infancy screening has improved SCD children survival. Arduini, Rodrigues, and Marqui, (2017) posited that the signs and symptoms of SCD include leg ulcers and priapism, stroke,

acute splenic sequestration, acute chest syndrome (ASS), infections, vaso-occlusive crises, chronic hemolytic anemia, and hand-foot syndrome (Arduini et al., 2017). Therapeutic options for SCD include hydroxyurea, chronic transfusion, and bone marrow transplant. Arduini et al. (2017) characterized SCD mortality in respect to causes, age, frequency, and mortality rate or coefficient. The main causes of mortality in infants were ASS and infections, including septicemia and pneumonia (Arduini et al., 2017). Social and economic development and increased awareness about SCD among family and healthcare givers are imperative in overcoming high SCD mortality rates (Arduini et al., 2017). Arduini et al. (2017) noted that hydroxycarbamide therapy decreased the number of deaths among SCD patients. Serjeant et al., (2018) found that the prime causes of demise in hydroxyurea naïve persons were mainly age particular and ductility related at any age. Maitra et al., (2017) found that increased creatinine, age, tricuspid regurgitant jet, and leukocyte count increased the risk of demise in SCD. Compared to female with SCT or general population, females with SCD had an increased risk of maternal and fetal mortality (Arduini et al., 2017). Infections were the most usual cause of mortality in SCD. Arduini et al. (2017) found that SCD neonatal screening did not notably minimize child death. However, the authors presumed that social and economic establishment and an increase in knowledge regarding SCD among families and healthcare givers are imperative in overcoming SCD mortality. This study strives to give inherent information to SCD related outcomes by evaluating the self-care factors, which are imperative to the survival SCD patients.

Family Physicians in SCD

According to Mainous et al. (2015), SCD is a condition that needs a notable level of medical intervention and family physicians are possible giver of care for patients who lack access to experts. Utuama et al. (2015) presumed that family physicians are imperative in the management of SCD. In a survey, Mainous et al. (2015) examined family physicians' attitudes toward control of SCD. The study evaluated the "use of clinical decision support tools on SCD care, willingness to commonage patients with a specialist, complication concerns, and comfort managing of patients" (Mainous et al., 2015). The study indicated that academic family physicians had minimal SCD persons in their ailing person's panel. Mainous et al. (2015) presumed that concerns existed among primary care physicians relating to their capacity to control SCD and associated impediments. Increased interaction with people with SCD or at-risk groups resulted in greater comfort in managing patients with SCD (Mainous et al., 2015). Older physicians were more comfortable with managing and treating SCD while younger physicians embraced tools that would aid managing patients independently.

Utuama et al. (2015) found that management of pain in persons with SCD is the biggest hurdle noted by family physicians and the sense of the obstacle grew with exposure to SCD patients. To address the challenge, Utuama et al. (2015) recommended the establishment of primary care directions emphasizing on transition of care and integration of pain management and SCD care into family medicine. One of the limitations to the research was that the group under investigation was all in academic settings. Despite the research giving room to examine more than a thousand subjects, the

response rate was not surprisingly high thus potential biases in the participants. In addition, the level of teaching given to the care providers was not assessed. Mainous et al. (2015) suggests that future investigations should assess whether a can ameliorate the standard of care and management of complications such as iron overload. This study aims at laying ground to inform future investigations relating to SCD.

Summary

Self-care is imperative in managing chronic disorder, averts reduction in quality of life of ailing persons, is more imperative among groups with limited resources and information mainly youths, and the risk for complications that can result in morbidities and fatalities. Persons with SCD are also at increased risk for depression, which deteriorates the quality of life of patients. Cognitive deficit is common in children with SCD and such children encounter delayed developmental delay and are at higher risk of stroke and cerebral infarct by adulthood. Transition to adolescence comes with hurdles and most adolescents encounter challenges in adjusting from pediatric care to a system where they are required to undertake self-care. SCD persons can also encounter psychosocial effects due to maladjustment increasing the risk of establish mental health problems. Knowledge is an imperative element in SCD and limited knowledge can affect decision making among persons with SCT, influence perceptions related to coping and psychological outcomes, and self-care. Persons with SCT/SCD require appropriate knowledge regarding the disease to avert spread and inform management practices. One gap in the study conducted by Matthie et al. (2015) was lack of information regarding ethnicity of the participants. This bridges the gap by investigating beliefs and lay

conceptions that influence self-care management specifically in the African American population.

Chapter 3: Research Method

Introduction

This chapter elucidates the research methodology utilized in the study. The aim of this quantitative investigation was to evaluate the elements of self-care and psychosocial factors that predict SCD-related outcomes among African Americans in the U.S. This section addresses the study design, exclusion and inclusion basis, operational variables, data analysis, and possible threats to investigation validity.

Research Design

For this investigation, a correlational study method was utilized, which is a kind of non-experimental design that helps to measure two research variables. This type of study design also allows for observation and exploration of relationships between variables without influence from the extraneous variable. With a non-experimental design and utilizing secondary analysis, time factor is not a significant constraint for this investigation. The variables of interest include self-care, psychosocial factors, and SCD-related outcomes. Self-care and psychosocial elements are independent variables, whereas the SCD-related outcomes are dependent variables.

The design is consistent with other research designs because alteration in the independent variable is expected to yield a positive or negative correlation (Schober et al., 2018). Therefore, I anticipated simultaneous and equivalent change when the variables were altered. With reference to the first research question, better SCD-related outcomes with modifications in the self-care elements were forecasted. With reference to the second research question, better SCD-related outcomes with modifications in the

psychosocial elements were also forecasted. For this investigation, data obtained through primary data collection using a structured questionnaire were utilized.

A correlational quantitative method was appropriate for this investigation because gathered information can be translated into numeric data and utilized to answer research questions, test hypotheses, and assess the link between dependent and independent variables. However, correlational research designs have some limitations, including that they do not elucidate the strength of concurrence between variables (Schober et al., 2018), indicate the direction of interaction, or define causation. The study focuses on African American youths and adults aged 18 to 80 years living with SCD in the U.S. The estimated sample size for the investigation was 200 hundred subjects.

Inclusion and Exclusion Criteria

Defining exclusion and inclusion criteria for the research subjects is necessary when scheming high-standard study procedures (Patino & Ferreira, 2018). Inclusion basis refers to the crucial characteristics of the target group that will be utilized to answer the questions under investigation. Eligibility of participants includes geographic, clinical, and demographic characteristics (Patino & Ferreira, 2018). Demographically, the study recruited African American persons from both genders; clinically, the study employed persons with SCD; and geographically, the study recruited participants living in the U.S. On the other hand, exclusion criteria are characteristics of the possible research participants who attain inclusion criteria but show extra features that could increase the risk for an undesired outcome or affect the success of the study. In this study, persons

with comorbidities, including avascular necrosis and stroke that could sway the results of the investigation exclude were excluded.

Sampling

The research utilized primary data, which were obtained using a structured questionnaire from different sickle cell foundations across the United States. The advantage of utilizing primary data includes gaining first-hand information (Cheng & Philips, 2014), considerable breadth and studies with larger samples that are more representative of the target group, thus higher external validity. In this case, the formal questionnaire used Survey Monkey for distribution to and data collection from sickle cell patients in the United States. To meet the participation criteria for primary data gathering, individuals must have had SCD. The test procedure for the disorder involves screening for hemoglobin S from a person's blood samples. Since the project utilized primary data collection from the association, the application of an IRB approval was considered. Due to the rising control and concern about the utilization of patient information, permission was sought to gain access to the data collection. This process entailed contacting the foundation's administration to notify and seek permission and approval to undertake a data collection in the facility, with the assurance of data safety and sensitivity. A request for consent form was completed and submitted to the Department of Health information services, specifying the purpose of research, duration of study, treatment of patient information, and the IRB approval status.

Computing the sample helped to collect sufficient information with the capacity to make the research projections, which were essential to accomplish the objective of the

study. To conduct a power analysis to estimate the sample size, the study hypothesis was written, from which a decision on determination of what statistical test to utilize was made. Inferential statistics that demand determination of alpha (standard to be .05), power (standard to be .80), and effect size (Wolverton et al., 2016) were employed. Since the selection of a suitable sample size is among the most essential elements of a study design, G power statistical package was utilized for a priori computation of sample size (Charan & Biswas, 2013).

Operationalization of Variables

Independent Variables

The independent variables for the investigation are self-care and psychosocial factors pertaining to persons with SCD. Self-care elements that include self-care actions, assertiveness, social support, and the individual's coping behaviors were studied. Self-care refers to the practices and outlooks that donate to the preservation of personal health and wellbeing among persons with SCD (Cecilio et al., 2018).

Assertiveness is the capacity to express attitudes, feelings, opinions, and rights without unwarranted anxiety, in a manner that does not contravene others. A simple Likert scale (Sarri et al., 2018) was utilized to measure assertiveness. Social support is the emotional and physical comfort provided to SCD patients by co-workers, friends, and family. In this study, social support (Zanini & Peixoto, 2016) was also measured using a Likert scale. Self-efficacy is the person's stance about their capacities to achieve goals triumphantly (Molter & Abrahamson, 2015). Coping behaviors refer to the approaches SCD patients utilize in managing their illness (Hildenbrand et al. 2015). The study

assessed the coping skills of SCD patients using the Likert scale to indicate the level of an individual coping behavior (Rosas-Santiago et al., 2017). Since the study was non-experimental, there was no manipulation of variables. Self-care actions, social support, assertiveness, and coping were all observed in correlation with the reported SCD-outcomes of painful crises, occurrence of severe headaches, self-efficacy and functionality after stroke, and quality of life.

For reference, a crisis of pain (Borhade & Kondamudi, 2018) happens when sickle-shaped erythrocytes obstruct blood flow through tiny vessels to the joints, abdomen, and chest. Quality of life refers to the happiness, comfort, and standard of living encountered by SCD patients (Preto et al., 2016). Psychosocial elements that the study analyzed include feelings of hopelessness, self-esteem, and mood, all of which can indicate depressive symptoms (Wallen et al., 2014). Self-esteem refers to the positive feeling about oneself (Aneke & Okocha, 2017), while feelings of hopelessness include worthless and sad feelings encountered by SCD patients. The feelings of hopelessness, self-esteem, and mood were observed in correlation with the reported SCD-related outcomes. The observation was made by analyzing the emotional and psychosocial elements of the participants in the data. Feelings of hopelessness can result from loss of employment in adults, loss of schooling in children, hospitalizations (Aneke & Okocha, 2017), and frequent pain.

Dependent Variables

The dependent variables assessed include SCD-related outcomes of pain, incidence of severe headaches, level of self-efficacy, treatment compliance, functionality

after stroke, and quality of life all of which were measured on numerical scales during analysis. The research measured and reported self-care and psychosocial factors to assess the strength of relationship between the dependent and independent variables. Fowora (2016) presumed that self-care management ameliorates health quality, and according to Wallen et al. (2014), depression in SCD is linked to lower quality of life, poor treatment compliance, and pain. Any alteration in the self-care practices or psychosocial elements is expected to affect the SCD-related outcomes. Improved self-care will enhance the quality of life (Ahmadi et al. 2015) by reducing pain, incidents of severe headaches, and prevention of complications.

Data Analysis

The following study questions and corresponding hypotheses directed the investigation procedure for this research. The software Statistical Package for Social Scientist (SPSS) version 25 was utilized for the analyses.

Research Question 1

RQ1: Are there self-care factors that predict SCD-related outcomes of pain (measured by the frequency of sickle cell pain episodes per year), occurrence of severe headaches, self-efficacy and functionality after stroke, and quality of life among African Americans in the USA?

H_{O1}: There are no self-care factors that predict SCD-related outcomes of pain (measured by the frequency of sickle cell pain episodes per year), occurrence of severe headaches, self-efficacy and functionality after stroke, and quality of life among African Americans in the USA.

H_{A1}: There are self-care factors that predict SCD-related outcomes of pain (measured by the frequency of sickle cell pain episodes per year), occurrence of severe headaches, self-efficacy and functionality after stroke, and quality of life among African Americans in the USA.

The independent variables (IV) were self-care factors. The definition of self-care is the capacity of a person, families, and communities to maintain health, promote and prevent ailments, and cope with sickness with or without the support by the health care providers (Matthie et al., 2015). In this study, the self-care factors of interest are self-care actions, assertiveness, social support, and the individual's coping behaviors. The self-care factor variable will be measured using a nominal scale. The dependent variables (DVs) were as follows: pain episodes, occurrences of severe headaches, self-efficacy, functionality after a stroke, and quality of life; these will be treated as scale level variables rated on a scale of 1 to 10.

Calculated Sample Size using G*Power. The G*power application was used in determining the sample size needed to test the hypothetical statement, based on a four-group design (for the variable self-care factors). Assuming a two tailed test, and an estimated effect size of 0.25 (medium effect), probability error 0.05 and power 0.8, the estimated total sample size for the study is 180.

Research Question 2

RQ2: Are there psychosocial factors that predict SCD-related outcomes of pain (as measured by the frequency of sickle cell pain episodes per year), occurrence of severe

headaches, self-efficacy and functionality after stroke, and quality of life among African Americans in the USA?

H_{O2}: There are no psychosocial factors that predict SCD-related outcomes of pain (as measured by the frequency of sickle cell pain episodes per year), occurrence of severe headaches, self-efficacy and functionality after stroke, and quality of life among African Americans in the USA.

H_{A2}: There are psychosocial factors that predict SCD-related outcomes of pain (as measured by the frequency of sickle cell pain episodes per year), occurrence of severe headaches, self-efficacy and functionality after stroke, and quality of life among African Americans in the USA.

Psychosocial elements, the independent variables that were examined in the study, included feelings of hopelessness, self-esteem, and mood; some of the attributes are associated with depressive characteristics (Egan et al., 2008) and were measured as nominal scales. Likewise, the dependent variables, which were pain episodes, occurrence of severe headaches, self-efficacy, functionality after a stroke, and quality of life, were treated as scale level dependent variables with rating, with 10 indicating a high level of pain, and 0 depicting a low level of pain.

Calculated Sample Size using G*Power. The G*power application determined the sample size needed to undertake the hypothetical statement based on a four-group design for the dependent variable -psychosocial factors. Assuming a two tailed test, and an estimated effect size of 0.25(medium effect), probability error 0.05 and power 0.8, the estimated total sample size is 180. The first step in the data analysis involves the

computation of a frequency distribution for each variable to unearth any invalid data values, which were recorded as missing values. Also addressed are the possible missing values by replacing the missing values with mean values for each variable (Masconi et al., 2015). A frequency table including the individual variables and their frequencies with imputed values was created when conducting the univariate analyses in order to make descriptions.

The variables in the subset included pain, severe headaches, self-efficacy, treatment compliance, functionality after stroke, and quality of life. Means will be utilized to evaluate the central location of the distribution, followed by an analysis of variance tests (Setyaningsih, 2017) to establish any relationships between the predictor and criterion variables, and to test the study questions and their corresponding hypotheses. In the tests, the assumptions include dependent variables depict interval/ratio scale, where the independent attributes are categorical in nature and homogeneity of variances. Another essential assumption is that the observation depicts no association, no considerable outliers, and the dependent elements assume normal distributions (Laerd Statistic, 2018).

In this study, relationships in each set of the independent variables (self-care psychosocial elements practices) with the dependent variables (quality of life, pain, severe headaches, self-efficacy, treatment compliance, and functionality after stroke) were measured. The analyses elucidated the relationship between self-care and pain management. The analysis also established whether covariates such as income, education level and family support confound the relationship of variables under investigation. In

addition, probability value (p-value) of <.05 was utilized to establish statistical significance.

Threats to Validity

The threats to the validity of the investigation are either internal or external. The threats to the external validity of the investigation include selection biases (Khorsan & Crawford, 2014), confounding elements, history effects, and maturation. Selection bias is the error that can arise when choosing subjects for primary analysis, whereas confounding is a condition in which the link between cause and effect is distorted by the presence of another variable (Khorsan & Crawford, 2014).

Threats to internal validity include sampling effects, instrumentations, history (Torre & Picho, 2016), testing, and effect of external events on investigation outcomes. History is a particular event that happens between the first and second measurements (Torre & Picho, 2016). History becomes a combination when other extrinsic elements happen by virtue of the passage of time. Testing affects validity by sensitizing groups in unanticipated ways and performance. Instrumentation is any change that happens during the investigation in the manner dependent variables were measured (Torre & Picho, 2016). Additional threats to validity included environmental validity, population validity (Khorsan & Crawford, 2014), time validity, and accuracy.

Pilot Study

In alleviating the threat to validity and reliability posed by the instrument used, the research included a pilot study that involved collecting data from a small sample and performing the data analysis to determine if the results aligned with the objectives of the

study. Besides, the pilot study was essential to ensure that there were no issues of duplication or ambiguous questions that would cause problems during the data collection process. In case of any issues with the initial formulation of the questionnaire, various amendments took place, and a repeat of a pilot study took place using a set of independent samples from the first study. Noteworthy, the sample included in the pilot studies was excluded from the project's data collection to minimize bias, one of the threats to the validity of the research.

Ethical Considerations

Since this is a secondary research study, persons whose details were documented in the data were not directly approached for their consent; however, to comply with the Data Protection Act implications, the kind of consent that was secured from the respondents during data gathering was checked. To guarantee protection of rights, approval from Walden University Institutional Review Board (IRB) was considered. Permission was also sought from the investigators who gathered the original data, and they were informed. Data were anonymous, and participants were not identified. The data were stored under password protection to prevent access by other parties.

Summary

This section of the research addresses the intended study method, the purpose, sampling issues, and the logic for undertaking the investigation. In addition, the chapter included information about the inclusion and exclusion criteria for the study participants, and the potential threats that could affect the validity of the investigation. The chapter included a discussion of the study variables and the way in which they were measured,

which gave underlying information on the research questions that directed the study process. The section also provided information regarding the process in which the data were collected and analyzed. The study's results will be presented in Chapter 4.

In the original proposal for this dissertation, the approach was to utilize secondary data from the University of Illinois Hospital at Chicago that were gathered between the year 2012 and 2019 relating to SCD in Illinois. Due to the coronavirus restriction, however, the data were inaccessible. Thus, the study utilized data obtained through primary data collection using a structured questionnaire targeting African American youths and adults aged 18 to 80 years living with SCD in the USA.

Chapter 4: Results

Introduction

Before conducting the study, the data were cleaned, and entries that contained incomplete data were thoroughly reviewed and removed from the dataset, resulting in a set of complete data. From the original 143 coded inputs, only 112 met the criteria for completeness and were utilized in the study. This represents 78.3% of the total coded data.

Table 1

Participants' Demographic Characteristics

Demographic		Frequency	Percent
Age (year)			
	0-20	21	18.8
	21-40	73	65.2
	41-60	18	16.1
Ethnicity			
	African American	96	85.7
	Other	16	14.3
Gender			
	Female	74	66.1
	Male	38	33.9
Working Status			
	Working full time	30	26.8
	Working temporarily	19	17
	Laid off	5	4.5
	Retired	1	0.9
	Keeping house	4	3.6
	Student	45	40.2
	Other (specify)	8	7.1
Qualification			
	Elementary	3	2.7
	Middle	1	0.9
	High School	32	28.6
	College	26	23.2
	University	47	42
	Other (please specify)	3	2.7

A total of 112 respondents participated in the study. Most of the respondents were between the ages of 21-40 (65.2%), followed by those aged 0-20 (18.8%), and those aged 41-60 (16.1%). In terms of ethnicity, most of the respondents identified as African American (85.7%), while 14.3% identified as other. Regarding gender, 66.1% of the respondents were female, and 33.9% were male. Among the respondents, 40.2% were students, followed by 26.8% who were working full time, and 17% who were working temporarily. In terms of educational qualifications, the highest percentage of respondents (42%) reported having a university degree, followed by 28.6% who had completed high school, and 23.2% who had completed college. The remaining respondents had completed elementary school (2.7%), middle school (0.9%), or reported having other qualifications (2.7%).

The study assessed various psychological, self-care, and response variables among individuals with sickle cell disease. The results indicate that participants reported moderate levels of hopelessness ($M = 3.300$, $SD = 1.153$), low self-esteem ($M = 2.380$, $SD = 1.254$), and mood swings ($M = 2.820$, $SD = 1.268$). Regarding self-care factors, participants reported moderate levels of compliance ($M = 2.110$, $SD = 1.034$), assertiveness ($M = 2.220$, $SD = 0.993$), social support ($M = 2.260$, $SD = 1.121$), and coping behavior ability ($M = 2.130$, $SD = 1.066$). In terms of response variables, participants reported moderate levels of self-efficacy and functionality ($M = 2.479$, $SD = 1.109$), quality of life ($M = 2.836$, $SD = 0.590$), and occurrence of severe headaches ($M = 2.542$, $SD = 1.856$). However, participants reported high levels of sickle cell pain frequency ($M = 3.878$, $SD = 1.485$). These findings suggest that individuals with sickle

cell disease experience various psychological and physical symptoms that impact their overall well-being and quality of life. This information is summarized below in Table 2.

Table 2

Descriptive Statistics for Psychological Factors, Self-Care Factors, and Response

Category		Mean	Std. Deviation
Psychological Factors			
	Hopelessness	3.3	1.15
	Low self-esteem	2.38	1.25
	Mood swings	2.82	1.26
Self-care Factors			
	Compliance level	2.11	1.03
	Assertiveness level	2.22	0.99
	Social support level	2.26	1.12
	Coping behavior ability	2.13	1.06
Response Variables			
	Self-efficacy and Functionality	2.47	1.10
	Quality of life	2.83	0.59
	Occurrence of severe headaches	2.54	1.85
	Sickle cell pain frequency	3.87	1.48

Data Analysis

Research Question 1

Are there self-care factors that predict SCD-related outcomes of pain (measured by the frequency of sickle cell pain episodes per year), occurrence of severe headaches, self-efficacy and functionality after stroke, and quality of life among African Americans in the USA?

HO: There are no self-care factors that predict SCD-related outcomes of pain (measured by the frequency of sickle cell pain episodes per year), occurrence of severe headaches, self-efficacy and functionality after stroke, and quality of life among African Americans in the USA

H1: There are self-care factors that predict SCD-related outcomes of pain (measured by the frequency of sickle cell pain episodes per year), occurrence of severe headaches, self-efficacy and functionality after stroke, and quality of life among African Americans in the USA.

Data Analysis Plan for RQ1

The data analysis plan for Research Question 1 involved predicting sickle cell disease (SCD)-related outcomes, including sickle cell pain frequency (SPF), occurrence of severe headaches (OSH), self-efficacy and functionality (SAF), and quality of life (QoL), using self-care factors such as compliance level, assertiveness, social support, and coping behavior ability. Regression analysis was employed to address Research Question 1 and to test Hypothesis 1 at a significance level of .05.

Assumption

Linear regression analysis is a statistical test used to investigate the relationship between two variables, namely the predictor and response variables. One fundamental assumption for utilizing linear regression analysis in a study is that there is a linear relationship between the predictor and response variables meaning that the change in the predictor variable is associated with a constant change in the response variable. This assumption implies that the relationship between the variables can be accurately represented by a straight line (Schneider et al., 2010). Other assumptions were that the errors, or residuals, of the regression model should be independent, meaning that the value of the error for one observation should not depend on the values of errors for other observations. This assumption is important as correlated errors can lead to biased and

inaccurate estimates of the model parameters (Hair et al., 2018). In addition, the errors of the regression model should have constant variance, meaning that the variability of errors should be the same across all levels of the predictor variable. If the variance of errors is not constant, it can lead to heteroscedasticity, which can lead to biased estimates of the model parameters (Tabachnick & Fidell, 2019). Further, the errors of the regression model should be normally distributed, meaning that they should follow a bell-shaped normal distribution. This assumption is important as it affects the accuracy of statistical inference and hypothesis testing based on the model estimates (Tabachnick & Fidell, 2019). Finally, the predictor variables should not be highly correlated with each other, as multicollinearity can lead to difficulties in interpreting the individual contribution of each predictor variable to the model (Pedhazur & Schmelkin, 1991).

Table 3

Summary of Regression Analysis on the Contribution of Self-care Factors to SCD-Related Outcomes (Pain/Frequency of Sickle Cell Pain Episodes) Among African Americans in the USA

Model: a. Pain		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.339	.341		6.850	.000
	Compliance level	.106	.184	.074	.574	.567
	Assertiveness level	.252	.231	.168	1.088	.279
	Social support level	.009	.192	.007	.049	.961
	Coping behavior ability	.346	.174	.249	1.987	.049

The interpretation of the results for each predictor are as follows.

Compliance Level. For every unit increase in Compliance level, there is a concomitant increase of 0.106 units in the criterion variable sickle cell pain frequency, while holding other variables constant. The t-value of 0.574 is not statistically significant

at .05 level of significance, showing that the relationship between Compliance level and sickle cell pain frequency is not likely to be significant (p= .567).

Assertiveness Level. For every unit increase in Assertiveness level, there is a corresponding increase of 0.252 units in the criterion variable Sickle cell pain frequency, while holding other variables constant. The t-value of 1.088 is not statistically significant at .05 level of significance, showing that the relationship between Assertiveness level and Sickle cell pain frequency may not be significant (p=.279).

Social Support Level. For every unit increase in Social support level, there is a corresponding increase of 0.009 units in the criterion variable, sickle cell pain frequency, while holding other variables constant. The t-value of .049 is not statistically significant at .05 level of significance, showing that the relationship between social support level and sickle cell pain frequency may not be significant (p=.961).

Coping Behavior Ability. For every unit increase in Coping behavior ability, there is a corresponding increase of .346 units in the criterion variable sickle cell pain frequency, while holding other variables constant. The t-value of 1.987 is statistically significant at .05 level of significance, showing that the relationship between Coping behavior ability and sickle cell pain frequency may be significant (p=.049).

The model included four self-care factors: compliance level, assertiveness level, social support level, and coping behavior ability as predictor variables. The unstandardized coefficients (B) represent the estimated effect of each predictor variable on the dependent variable (sickle cell pain frequency), after controlling for other variables in the model. The standardized coefficients (Beta) represent the standardized

effect size of each predictor variable on the dependent variable. Based on the results, none of the self-care factors (compliance level, assertiveness level, and social support level) were found to be statistically significant predictors of sickle cell pain frequency, as indicated by their non-significant p-values ($p > .05$). However, coping behavior ability showed a statistically significant positive effect on sickle cell pain frequency ($B = .346$, $Beta = .249$, $p = .049$), suggesting that higher coping behavior ability is associated with increased frequency of sickle cell pain episodes. The above results suggest that all the predictors except coping behavior ability may not have significant relationship with the response variable sickle cell pain frequency, following the t-values and p-values. The analysis of variance was used to confirm these results by examining the overall model fit.

Table 4

Summary of Regression Analysis on the Contributions of Self-care Factors to SCD-related Outcomes (Occurrence of Severe Headaches) Among African Americans in the USA

Model: Severe Headaches		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.914	.439		2.083	.040
	Compliance level	.467	.237	.260	1.973	.051
	Assertiveness level	.013	.297	.007	.044	.965
	Social support level	.044	.246	.026	.177	.860
	Coping behavior ability	.242	.224	.139	1.083	.281

The interpretation of the results for each predictor is as follows:

Compliance Level. For every unit increase in Compliance level, there is a concomitant increase of .467 units in the response variable Occurrence of severe headaches, while holding other variables constant. The t-value of 1.973 is not statistically

significant at .05 level of significance, showing that the relationship between Compliance level and sickle cell pain frequency is barely significant (p=.051).

Assertiveness Level. For every unit increase in Assertiveness level, there is a corresponding increase of .013 units in the criterion variable Occurrence of severe headaches, while holding other variables constant. The t-value of .044 is not statistically significant at .05 level of significance, showing that the relationship between Assertiveness level and Occurrence of severe headaches may not be significant (p=.965).

Social Support Level. For every unit increase in Social support level, there is a corresponding increase of .044 units in the criterion variable Occurrence of severe headaches, while holding other variables constant. The t-value of .177 is not statistically significant at .05 level of significance, showing that the relationship between Social support level and Occurrence of severe headaches may not be significant (p=.860).

Coping Behavior Ability. For every unit increase in Coping behavior ability, there is a corresponding increase of .242 units in the criterion variable Occurrence of severe headaches, while holding other variables constant. The t-value of 1.083 is not statistically significant at .05 level of significance, showing that the relationship between Coping behavior ability and Occurrence of severe headaches may be significant (p=.281).

In summary, the model included four self-care factors: compliance level, assertiveness level, social support level, and coping behavior ability. Based on the results, compliance level showed a slightly statistically significant positive effect on the occurrence of severe headaches (B = 0.467, Beta = 0.260, p = 0.051); although, the p-value is barely above the significance level of 0.05. Assertiveness level, social support

level, and coping behavior ability did not show statistically significant effects on the occurrence of severe headaches, as indicated by their non-significant p-values ($p > 0.05$). The analysis of variance was used to confirm these results by examining the overall model fit.

Table 5

Summary of Regression Analysis on the Contribution of Self-care Factors After Stroke and Quality of Life Among African Americans in the USA

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.183	.271		11.746	.000
	Compliance level	-.105	.146	-.098	-.718	.474
	Assertiveness level	-.198	.183	-.178	-1.082	.282
	Social support level	-.093	.152	-.094	-.614	.541
	Coping behavior ability	.079	.138	.076	.574	.567

Note. Dependent Variable: Self-efficacy and Functionality

The interpretation of the results for each predictor is as follows:

Compliance Level. For every unit decrease in Compliance level, there is a concomitant increase of 0.105 units in the response variable Self-efficacy and Functionality, while holding other variables constant. The t-value of -.718 is not statistically significant at .05 level of significance, showing that the relationship between Compliance level and Self-efficacy and Functionality after stroke is not likely to be significant ($p = .474$).

Assertiveness Level. For every unit increase in Assertiveness level, there is a corresponding decrease of 0.198 units in the criterion variable Self-efficacy and Functionality after stroke, while holding other variables constant. The t-value of -1.082 is not statistically significant at .05 level of significance, showing that the relationship

between Assertiveness level and Self-efficacy and Functionality may not be significant (p=.282).

Social Support Level. For every unit decrease in social support level, there is a corresponding decrease of 0.093 units in the criterion variable Self-efficacy and Functionality after stroke, while holding other variables constant. The t-value of -.614 is not statistically significant at .05 level of significance, showing that the relationship between social support level and Self-efficacy and Functionality may not be significant (p=.541).

Coping Behavior Ability. For every unit increase in Coping behavior ability, there is a corresponding increase of .079 units in the criterion variable Self-efficacy and Functionality after stroke, while holding other variables constant. The t-value of .574 is not statistically significant at .05 level of significance, showing that the relationship between Coping behavior ability and Self-efficacy and Functionality after stroke may be significant (p=.567).

In summary, the model included four self-care factors: compliance level, assertiveness level, social support level, and coping behavior ability. Based on the results, none of the self-care factors showed statistically significant effects on self-efficacy and functionality, as indicated by their non-significant p-values ($p > 0.05$). Compliance level ($B = -0.105$, Beta = -0.098, $p = 0.474$), assertiveness level ($B = -0.198$, Beta = -0.178, $p = 0.282$), social support level ($B = -0.093$, Beta = -0.094, $p = 0.541$), and coping behavior ability ($B = 0.079$, Beta = 0.076, $p = 0.567$) did not show statistically significant effects on self-efficacy and functionality. The above results suggest that all the predictors do not

have a significant relationship with the response variable Self-efficacy and Functionality after stroke, following the t-values and p-values. The analysis of variance was used to confirm these results by examining the overall model fit.

Table 6

Summary of Regression Analysis on the Contributions on Social Support and Quality of Life among African Americans in the USA

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.333	.140		16.721	.000
	Compliance level	.088	.075	.154	1.164	.247
	Assertiveness level	.108	.04	.181	1.141	.256
	Social support level	.072	.078	.137	.918	.361
	Coping behavior ability	-.039	.071	-.071	-.550	.583

Note. Quality of Life

The interpretation of the results for each predictor is as follows:

Compliance Level. For every unit increase in Compliance level, there is a concomitant increase of .088 units in the response variable Quality of Life, while holding other variables constant. The t-value of 1.164 is not statistically significant at .05 level of significance, showing that the relationship between Compliance level and Quality of Life is not likely to be significant (p= .247).

Assertiveness Level. For every unit increase in Assertiveness level, there is a corresponding increase of 1.08 units in the criterion variable Quality of Life, while holding other variables constant. The t-value of 1.141 is not statistically significant at .05 level of significance, showing that the relationship between Assertiveness level and Quality of Life may not be significant (p=.256).

Social Support Level. For every unit increase in social support level, there is a corresponding increase of .072 units in the criterion variable Quality of Life, while holding other variables constant. The t-value of .918 is not statistically significant at .05 level of significance, showing that the relationship between Social support level and Quality of Life may not be significant (p=.361).

Coping Behavior Ability. For every unit decline in Coping behavior ability, there is a corresponding decrease of 0.039 units in the criterion variable Quality of Life, while holding other variables constant. The t-value of -.550 is not statistically significant at .05 level of significance, showing that the relationship between Coping behavior ability and Self-efficacy and Functionality may be significant (p=.583).

Based on the results, compliance level (B = 0.088, Beta = 0.154, p = 0.247), assertiveness level (B = 0.108, Beta = 0.181, p = 0.256), social support level (B = 0.072, Beta = 0.137, p = 0.361), and coping behavior ability (B = -0.039, Beta = -0.071, p = 0.583) did not show statistically significant effects on quality of life, as indicated by their non-significant p-values ($p > 0.05$). The above results suggest that all the predictors may not have significant relationship with the response variable Quality of Life, following the t-values and p-values. The analysis of variance was used to confirm these results by examining the overall model fit.

Table 7

Summary of Regression on the Self-care Factors that Predict SCD-related Outcomes of Pain (Measured by the Frequency of Sickle Cell Pain Episodes per Year), Occurrence of Severe Headaches, Self-Efficacy, and Functionality After Stroke, and Quality of life Among African Americans in the USA

Predictors	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
Y_1: SPF, F=6.146, p=0.00	.432	.187	.156	1.36360	1.909
Y_2: OSH, F=4.365, p=.003	.375	.140	.108	1.75250	1.838
Y_3: SAF, F=2.399, p=.055	.287	.082	.048	1.08246	1.545
Y_4: QoL, F=4.386, p=.003	.375	.141	.109	.55719	1.988

Note. Coping behavior ability X_1, Compliance level X_2, Social support level X_3, Assertiveness level X_4. Key: SPF= Sickle Cell Pain frequency, OSH=Occurrence of Severe Headaches, SAF=Self-Efficacy and Functionality, and QoL=Quality of Life

The table above shows the result of linear regression analysis with each of the Y variables (Y_1-Y_4) and the four predictors, (X_1-X_4), Coping behavior ability, Compliance level, Social support level and Assertiveness level. The table presents the results of a regression analysis with these multiple predictors, including coping behavior ability (X1), compliance level (X2), social support level (X3), and assertiveness level (X4), on four different dependent variables (Y1: SPF - Sickle Cell Pain frequency, Y2: OSH - Occurrence of Severe Headaches, Y3: SAF - Self-Efficacy and Functionality, and Y4: QoL - Quality of Life).

Y_1: SPF

The R-square value of 0.187 indicates that the predictors Coping behavior ability, Compliance level, Social support level, and Assertiveness level contributed about 18.7% to the observed variance in the value of response variable SPF. The Adjusted value of 0.156 provides a more conservative estimate of the goodness of fit. The standard error of estimate of 1.363 is the mean distance between the actual values of the response variable

and the predicted values. Durbin-Watson statistic of 1.909 explores the presence of autocorrelation in the residuals. No significant autocorrelation was found, which indicates that the assumptions of linear regressions are met. The F value of 6.146 and p-value of 0.00 obtained from the table suggest that the model has a weak to moderate fit with 18.7% of the contribution of Coping behavior ability, Compliance level, Social support level, and Assertiveness level to SPF. The result shows that all self-care factors but coping behavior ability could not predicted SCD-related outcome of pain (measured by the frequency of sickle cell pain episodes per year) among African Americans in the USA. In summary, the results indicate for the dependent variable SPF (Sickle Cell Pain frequency), the multiple regression model is statistically significant ($F = 6.146$, $p = 0.00$), and the R-square value is 0.187, which means that the predictors (coping behavior ability, compliance level, social support level, and assertiveness level) explain 18.7% of the variance in Sickle Cell Pain frequency. The adjusted R-square is 0.156, which accounts for the number of predictors in the model. The standard error of the estimate is 1.363, which indicates the average amount of error in predicting the SPF score. The Durbin-Watson statistic is 1.909, which tests for the presence of autocorrelation in the residuals.

Y_2: OSH

The R-square value of 0.140 indicates that the predictors Coping behavior ability, Compliance level, Social support level, and Assertiveness level contributed about 14.0% to the observed variance in the value of response variable OSH. The Adjusted value of 0.108 provides a more conservative estimate of the goodness of fit. The standard error of estimate of 1.75 is the mean distance between the actual values of the response variable

and the predicted values. Durbin-Watson statistic of 1.838 explores the presence of autocorrelation in the residuals. No significant autocorrelation was found, which indicates that the assumptions of linear regressions are met. The F value of 4.365 and p-value of 0.003 obtained from the table suggest that the model has a weak to moderate fit with 14.0% contribution of Coping behavior ability, Compliance level, Social support level, and Assertiveness level to OSH. The result shows that all self-care factors could not predicted SCD-related outcome of OSH among African Americans in the USA. In summary, for the dependent variable OSH (Occurrence of Severe Headaches), the multiple regression model is statistically significant ($F = 4.365$, $p = 0.003$), and the R-square value is 0.140, which means that the predictors explain 14% of the variance in Occurrence of Severe Headaches. The adjusted R-square is 0.108, and the standard error of the estimate is 1.752. The Durbin-Watson statistic is 1.838.

Y_3: SAF

The R-square value of 0.082 indicates that the predictors Coping behavior ability, Compliance level, Social support level, and Assertiveness level contributed about 8.2% to the observed variance in the value of response variable SAF. The Adjusted value of 0.048 provides a more conservative estimate of the goodness of fit. The standard error of estimate of 1.082 is the mean distance between the actual values of the response variable and the predicted values. Durbin-Watson statistic of 1.545 explores the presence of autocorrelation in the residuals. No significant autocorrelation was found, which indicates that the assumptions of linear regressions are met. The F value of 2.399 and p-value of 0.055 obtained from the table suggest that the model has a weak fit with 8.2%

contribution of Coping behavior ability, Compliance level, Social support level, and Assertiveness level to SAF. The result shows that all self-care factors could not predicted SCD-related outcome of OSH among African Americans in the USA. In summary, for the dependent variable SAF (Self-Efficacy and Functionality), the multiple regression model is marginally significant ($F = 2.399$, $p = 0.055$), and the R-square value is 0.082, which means that the predictors explain 8.2% of the variance in Self-Efficacy and Functionality. The adjusted R-square is 0.048, and the standard error of the estimate is 1.082. The Durbin-Watson statistic is 1.545.

Y_4: QoL

The R-square value of 0.141 indicates that the predictors Coping behavior ability, Compliance level, Social support level, and Assertiveness level contributed about 14.1% to the observed variance in the value of response variable QoL. The Adjusted value of 0.109 provides a more conservative estimate of the goodness of fit. The standard error of estimate of .557 is the average distance between the actual values of the response variable and the predicted values. Durbin-Watson statistic of 1.988 explores the presence of autocorrelation in the residuals. No significant autocorrelation was found, which indicates that the assumptions of linear regressions are met. The F value of 4.386and p-value of 0.003 obtained from the table suggest that the model has a weak to moderate fit with 14.1% contribution of Coping behavior ability, Compliance level, Social support level, and Assertiveness level to QoL. The result shows that all self-care factors could not predicted SCD-related outcome of OSH among African Americans in the USA. In summary, for the dependent variable QoL (Quality of Life), the multiple regression

model is statistically significant (F = 4.386, p = 0.003), and the R-square value is 0.141, which means that the predictors explain 14.1% of the variance in Quality of Life. The adjusted R-square is 0.109, and the standard error of the estimate is 0.55719. The Durbin-Watson statistic is 1.988.

Research Question 2

Are there psychosocial factors that predict SCD-related outcomes of pain (as measured by the frequency of sickle cell pain episodes per year), occurrence of severe headaches, and self-efficacy and functionality after stroke among African Americans in the USA?

HO: There are no psychosocial factors that predict SCD-related outcomes of pain (as measured by the frequency of sickle cell pain episodes per year), occurrence of severe headaches, and self-efficacy and functionality after stroke, among African Americans in the USA.

H1: There are psychosocial factors that predict SCD-related outcomes of pain (as measured by the frequency of sickle cell pain episodes per year), the occurrence of severe headaches, and self-efficacy and functionality after stroke among African Americans in the USA

Data Analysis Plan for RQ2

The study also examined the relationship between psychological factors (Hopelessness, Low self-esteem, and Mood swings) and SCD-related outcomes, including Sickle Cell Pain frequency (SPF), Occurrence of Severe Headaches (OSH), and Self-Efficacy and Functionality (SAF). Regression analysis was used to address the

research question two, to test hypothesis two at a significance level of 0.05. The summary of the findings was reported at the end of the analysis.

Table 8

Summary of Regression Analysis on the Contribution of Psychosocial Factors that Predict SCD-related Outcomes of Pain (As Measured by the Frequency of Sickle Cell Pain Episodes per Year) Among African Americans in the USA

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.239	.736		5.757	.000
	Hopelessness	-.418	.135	-.325	-3.096	.002
	Low self-esteem	.022	.134	.019	.165	.869
	Mood swings	.343	.127	.293	2.696	.008

Note. Dependent Variable: Sickle cell pain frequency

The interpretation of the results for each predictor is as follows:

Hopelessness. For every unit decrease in Hopelessness, there is a concomitant decrease of 0.418 units in the criterion variable Sickle cell pain frequency, while holding other variables constant. The t-value of -3.096 is statistically significant at .05 level of significance, showing that the relationship between Hopelessness and Sickle cell pain frequency is likely to be significant (p= .002).

Low Self-Esteem. For every unit increase in Low self-esteem, there is a corresponding increase of .022 units in the criterion variable Sickle cell pain frequency, while holding other variables constant. The t-value of .165 is not statistically significant at .05 level of significance, showing that the relationship between Low self-esteem and Sickle cell pain frequency may not be significant (p=.869).

Mood Swings. For every unit increase in Mood Swings, there is a corresponding increase of .343 units in the criterion variable Sickle cell pain frequency, while holding

other variables constant. The t-value of 2.696 is statistically significant at .05 level of significance, showing that the relationship between Mood swing and Sickle cell pain frequency is statistically significant (p=.008).

In summary, the coefficient for Hopelessness is -0.418 (B), with a standard error of 0.135, and a standardized coefficient (Beta) of -0.325. This suggests that for every one-unit increase in Hopelessness, there is an estimated decrease of 0.418 units in Sickle Cell Pain Frequency, after controlling for other variables. The t-value of -3.096 indicates that this relationship is statistically significant at a significance level of .002 (Sig.), which suggests that Hopelessness is a significant predictor of Sickle Cell Pain Frequency. On the other hand, the coefficients for Low Self-Esteem and Mood Swings are 0.022 (B) and 0.343 (B), respectively, with standard errors of 0.134 and 0.127, and standardized coefficients (Beta) of 0.019 and 0.293, respectively. However, neither of these predictor variables is statistically significant, as their t-values of 0.165 and 2.696, respectively, do not exceed the critical value at the chosen significance level of .05 (Sig.). The results of this linear regression analysis suggest that Hopelessness is a significant predictor of Sickle Cell Pain Frequency, while Low Self-Esteem and Mood Swings do not have a significant relationship with Sickle Cell Pain Frequency in this model.

Table 9

Summary of Regression Analysis on the Contribution of Psychosocial Factors that Predict SCD-related Outcome of Occurrence of Severe Headaches Among African Americans in the USA (n=112)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.538	.967		3.659	.000
	Hopelessness	-.558	.177	-.347	-3.145	.002
	Low self-esteem	-.015	.176	-.010	-.086	.932
	Mood swings	.313	.167	.214	1.875	.064

Note. Dependent Variable: Occurrence of severe headaches

The interpretation of the results for each predictor is as follows:

Hopelessness. For every unit decrease in Hopelessness, there is a concomitant decrease of 0.558 units in the criterion variable Occurrence of severe headaches, while holding other variables constant. The t-value of -3.145 is statistically significant at .05 level of significance, showing that the relationship between Hopelessness and Occurrence of severe headaches is significant (p=.002).

Low Self-Esteem. For every unit decrease in Low self-esteem, there is a corresponding decrease of 0.015 units in the criterion variable Occurrence of severe headaches, while holding other variables constant. The t-value of -.086 is not statistically significant at .05 level of significance, showing that the relationship between Low self-esteem and Occurrence of severe headaches is significant (p=.932).

Mood Swings. For every unit increase in Mood Swings, there is a corresponding increase of .313 units in the criterion variable Occurrence of severe headaches, while holding other variables constant. The t-value of 1.875 is statistically significant at .05

level of significance, showing that the relationship between Mood swing and Occurrence of severe headaches is significant (p=.064).

In summary, the coefficient for Hopelessness is -0.558 (B), with a standard error of 0.177, and a standardized coefficient (Beta) of -0.347. This suggests that for every one-unit increase in Hopelessness, there is an estimated decrease of 0.558 units in the Occurrence of Severe Headaches, after controlling for other variables. The t-value of -3.145 indicates that this relationship is statistically significant at a significance level of .002 (Sig.), which suggests that Hopelessness is a significant predictor of Occurrence of Severe Headaches. However, the coefficients for Low Self-Esteem and Mood Swings are -0.015 (B) and 0.313 (B), respectively, with standard errors of 0.176 and 0.167, and standardized coefficients (Beta) of -0.010 and 0.214, respectively. Neither of these predictor variables is statistically significant, as their t-values of -0.086 and 1.875, respectively, do not exceed the critical value at the chosen significance level of .05 (Sig.). The results of this linear regression analysis suggest that Hopelessness is a significant predictor of Occurrence of Severe Headaches, while Low Self-Esteem and Mood Swings do not have a significant relationship with Occurrence of Severe Headaches in this model. The analysis of variance was used to confirm these results by examining the overall model fit.

Table 10

Summary of Regression Analysis on the Contribution of Psychosocial Factors that Predict SCD-related Outcome of Occurrence of Self-efficacy and Functionality After Stroke Among African Americans in the USA

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.339	.619		5.395	.000
	Hopelessness	.013	.114	.014	.115	.909
	Low self-esteem	-.057	.113	-.064	-.506	.614
	Mood swings	-.272	.107	-.311	-2.542	.012

Note. Dependent Variable: Self-efficacy and functionality after a stroke

The interpretation of the results for each predictor is as follows:

Hopelessness. For every unit increase in Hopelessness, there is a concomitant increase of .013 units in the criterion variable Self-efficacy and Functionality after stroke, while holding other variables constant. The t-value of .115 is not statistically significant at .05 level of significance, showing that the relationship between Hopelessness and Self-efficacy and Functionality is not likely to be significant (p=.909).

Low Self-Esteem. For every unit decrease in Low self-esteem, there is a corresponding decrease of 0.057 units in the response variable Self-efficacy and Functionality after stroke, while holding other variables constant. The t-value of -.506 is not statistically significant at .05 level of significance, showing that the relationship between Low self-esteem and Self-efficacy and Functionality after a stroke is significant (p=.614).

Mood Swings: For every unit decrease in Mood Swings, there is a corresponding decrease of 0.272 units in the criterion variable Self-efficacy and Functionality after stroke, while holding other variables constant. The t-value of -2.542 is statistically

significant at .05 level of significance, showing that the relationship between Mood Swings and Self-efficacy and Functionality after a stroke is significant (p=.012).

In summary, the coefficient for Hopelessness is 0.013 (B), with a standard error of 0.114, and a standardized coefficient (Beta) of 0.014. This indicates that for every one-unit increase in Hopelessness, there is an estimated increase of 0.013 units in Self-efficacy and Functionality after a stroke, after controlling for other variables. However, the coefficient is very small and not statistically significant, as the standard error is larger than the coefficient itself, and the standardized coefficient is close to zero. Similarly, the coefficients for Low Self-Esteem and Mood Swings are -0.057 (B) and -0.272 (B), respectively, with standard errors of 0.113 and 0.107, and standardized coefficients (Beta) of -0.064 and -0.311, respectively. These coefficients also indicate small negative relationships between the predictor variables and Self-efficacy and Functionality after a stroke. However, like Hopelessness, these coefficients are not statistically significant, as the standard errors are larger than the coefficients themselves, and the standardized coefficients are close to zero. The results of this linear regression analysis suggest that none of the predictor variables, including Hopelessness, Low Self-Esteem, and Mood Swings, have a statistically significant relationship with Self-efficacy and Functionality after a stroke in this model. Further investigation may be needed to determine if there are other factors that influence Self-efficacy and Functionality after a stroke. The analysis of variance was used to confirm these results by examining the overall model fit.

Table 11

Summary of Regression Psychosocial Factors that Predict SCD-related Outcomes of

Pain (as Meausred by the Frequency of Sickle Cell Pain Episodes per Year), Occurrence of Severe Headaches, and Self-Efficacy and Functionality After Stroke Among African Americans in the USA (n=112)

Predictors	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
Y_1: SPF, F=16.506, p=.00	.561	.314	.295	1.24630	2.307
Y_2: OSH, F=11.573, p=.00	.493	.243	.222	1.63657	2.141
Y_3: SAF, F=5.504, p=.00	.364	.133	.109	1.04750	1.692

Note. Hopelessness X_1, Low self-esteem X_2, and Mood Swings X_3. **Key:** SPF= Sickle Cell Pain frequency, OSH=Occurrence of Severe Headaches, & SAF=Self-Efficacy and Functionality

The table provides the results of a multiple linear regression analysis with three predictor variables: Hopelessness (X1), Low Self-Esteem (X2), and Mood Swings (X3), and three dependent variables: Sickle Cell Pain Frequency (SPF or Y1), Occurrence of Severe Headaches (OSH or Y2), and Self-Efficacy and Functionality (SAF or Y3). The coefficient of determination, R-square, is a measure of the proportion of variance in the dependent variable that can be explained by the predictor variables. The standard error of the estimate provides an estimate of the variability of the dependent variable that is not explained by the predictor variables.

Y_1: SPF

The R-square value of 0.314 indicates that the psychological predictors Hopelessness X_1, Low self-esteem X_2, and Mood Swings X_3 contributed about 31.4% to the observed variance in the value of response variable SPF. The Adjusted value of 0.295 provides a more conservative estimate of the goodness of fit. The standard error of estimate of 1.246 is the average distance between the actual values of the criterion variable and the predicted values. Durbin-Watson statistic of 2.31 explores the presence of autocorrelation in the residuals. A significant autocorrelation was found, which indicates that the assumptions of linear regressions are not met. The value *F*(16.506),

$p<0.05$, suggest that the model has a strong fit with 31.4% of the contribution of Hopelessness, Low self-esteem, and Mood Swings to SPF. The result shows that the psychosocial factors jointly predict SCD-related outcome of SPF (measured by the frequency of sickle cell pain episodes per year) among African Americans in the USA.

Y_2: OSH

The R-square value of 0.243 indicates that the psychological predictors Hopelessness, Low self-esteem, and Mood Swings contributed about 24.3% to the observed variance in the value of response variable OSH. The Adjusted value of 0.222 provides a more conservative estimate of the goodness of fit. The standard error of estimate of 1.636 is the average distance between the actual values of the response variable and the predicted values. Durbin-Watson statistic of 2.10 explores the presence of autocorrelation in the residuals. A significant autocorrelation was found, which indicates that the assumptions of linear regressions are not met. The value $F(11.57)$, $p<0.05$ obtained from the table suggest that the model has a strong fit with 24.3% contribution of Hopelessness, Low self-esteem, and Mood Swings to OSH. The result shows that the psychosocial factors jointly predict SCD-related outcome of OSH among African Americans in the USA.

Y_3: SAF

The R-square value of 0.133 indicates that the psychological predictors Hopelessness, Low self-esteem, and Mood Swings contributed about 13.3% to the observed variance in the value of response variable SAF. The Adjusted value of .109 provides a more conservative estimate of the goodness of fit. The standard error of

estimate of 1.047 is the average distance between the actual values of the response variable and the predicted values. Durbin-Watson statistic of 1.692 explores the presence of autocorrelation in the residuals. No significant autocorrelation was found, which indicates that the assumptions of linear regressions are met. The value $F(5.54)$, $p<0.05$, obtained from the table suggest that the model has a strong fit with 30.8% contribution of Hopelessness, Low self-esteem, and Mood Swings to SAF. The result shows that the psychosocial factors jointly predict SCD-related outcome of SAF among African Americans in the USA.

In summary, the R-squares for the three dependent variables are 0.314 (Y1), 0.243 (Y2), and 0.133 (Y3), indicating that the predictor variables collectively explain approximately 31.4%, 24.3%, and 13.3% of the variance in SPF, OSH, and SAF, respectively. The adjusted R-squares, which account for the number of predictor variables and sample size, are 0.295 (Y1), 0.222 (Y2), and 0.109 (Y3). These values are slightly lower than the R-squares, suggesting that the model may be slightly overfit due to the inclusion of multiple predictor variables. In this analysis, the standard errors of the estimate are 1.24630 (Y1), 1.63657 (Y2), and 1.04750 (Y3), indicating the average amount of error in predicting SPF, OSH, and SAF, respectively. The Durbin-Watson statistic is a test for autocorrelation, which assesses whether there is systematic error in the residuals of the model. The values reported in the table are 2.307 (Y1), 2.141 (Y2), and 1.692 (Y3), which are close to 2, suggesting that there is little evidence of autocorrelation in the residuals.

Additionally, the results indicate that there are statistically significant differences in the dependent variables (SPF, OSH, SAF) based on the F-test statistics (F=16.506, F=11.573, F=5.504) and the associated p-values (p=.00), indicating that the overall regression models are significant.

Overall, the results suggest that the predictor variables (Hopelessness, Low Self-Esteem, and Mood Swings) collectively explain a significant proportion of the variance in the three dependent variables (Sickle Cell Pain Frequency, Occurrence of Severe Headaches, Self-Efficacy and Functionality), although the adjusted R-squares indicate that the models slightly overfit.

Table 12

Summary of Findings

Factors	Variable	Response variable			
		SPF	OSH	SAF	QoL
Self-care factors					
	Compliance level	p=.567	p=.051	p=.474	p=.247
	Assertiveness level	p=.279	p=.965	p=.282	p=.256
	Social support level	p=.961	p=.860	p=.541	p=.361
	Coping behavior ability	p=.049*	P=.281	p=.567	p=.583
Psychological factors					
	Hopelessness	p=.002*	p=.002*	p=.909	
	Low self-esteem	p=.869	p=.932	p=.614	
	Mood Swings	p=.008*	p=.064	p=.012*	

Note: *Significant at .05 level.

The findings are that as follows:

- All the self-care predictors but coping behavior ability may not have significant relationship with the response variable Sickle cell pain frequency.

- All the self-care predictors may not have significant relationship with the response variable Occurrence of severe headaches.
- All the self-care predictors may not have significant relationship with the response variable Self-efficacy and Functionality after stroke.
- All the self-care predictors may not have significant relationship with the response variable Quality of Life.
- All the psychological predictors except low self-esteem have significant relationship with the response variable Sickle cell pain frequency.
- All the psychological predictors except hopelessness do not have significant relationship with the response variable Occurrence of severe headaches.
- All the psychological predictors except Mood Swings do not have significant relationship with the response variable Self-efficacy and Functionality after a stroke.

For self-care factors, the compliance level is not statistically significant for SPF (p=.567), OSH (p=.051), SAF (p=.474), and QoL (p=.247). The assertiveness level is not statistically significant for SPF (p=.279), OSH (p=.965), SAF (p=.282), and QoL (p=.256). The social support level is not statistically significant for SPF (p=.961), OSH (p=.860), SAF (p=.541), and QoL (p=.361). However, coping behavior ability is statistically significant for SPF (p=.049*), but not for OSH (p=.281), SAF (p=.567), and QoL (p=.583).

For psychological factors, hopelessness is statistically significant for SPF (p=.002*) and OSH (p=.002*), but not for SAF (p=.909) and QoL (p-value not reported).

Low self-esteem is not statistically significant for SPF (p=.869), OSH (p=.932), SAF (p=.614), and QoL (p-value not reported). Mood Swings is statistically significant for SPF (p=.008*), but not for OSH (p=.064) and SAF (p=.012*). The results suggest that coping behavior ability, hopelessness, and Mood Swings may be important factors related to SPF and SAF, but not necessarily for OSH and QoL.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

In this chapter, the results are extensively discussed in relation to the peer-reviewed publications in Chapter 2. Findings from the results were used to draw inferences whether these complements or contrast the published research works of others. A conclusion, recommendations, and contributions to knowledge will also be addressed in this chapter.

Sickle cell disease (SCD) is a genetic disorder that affects millions of people globally, with a high prevalence in African Americans. The purpose of this study was to analyze how self-care and psychosocial factors influence SCD-related outcomes among African Americans in the USA. SCD complications are traumatic and associated with significant morbidities and mortalities. Self-care interventions are essential in managing the disease; additionally, psychosocial factors affecting persons with SCD largely compromise the outcomes of their health. Specifically, young adults and adolescents experience psychosocial stressors that negatively influence the management of SCD by increasing the risk for poor disease care.

The study used a cross-sectional design and employed regression analysis to investigate how self-care factors (such as compliance level, assertiveness, social support, and coping ability) and psychological factors (like hopelessness, low self-esteem, and mood swings) predict outcomes related to sickle cell disease (SPF, OSH, SAF, and QoL). Hypotheses were tested at a significance level of .05 using regression analyses. The results of the study indicated that coping behavior ability had a significant positive effect

on sickle cell pain frequency; however, compliance level, assertiveness level, and social support level did not significantly affect sickle cell pain frequency. Regarding the occurrence of severe headaches, coping behavior ability had a significant positive effect, whereas compliance level, assertiveness level, and social support level did not significantly affect it. Additionally, hopelessness and Mood Swings had significant effects on the occurrence of severe headaches. The study also found that hopelessness, low self-esteem, and mood swings had significant effects on self-efficacy and functionality after a stroke. Compliance level, assertiveness level, and social support level, however, did not have significant effects on self-efficacy and functionality after a stroke. Further, the study found that the predictors (coping behavior ability, compliance level, social support level, and assertiveness level) had significant effects on the quality of life.

The results indicated that self-care predictors, with the exception of coping behavior ability, were not significantly associated with sickle cell pain frequency, occurrence of severe headaches, self-efficacy and functionality after stroke, or quality of life. On the other hand, psychological predictors were significantly related to sickle cell pain frequency, except for low self-esteem, and were not significantly associated with occurrence of severe headaches or self-efficacy and functionality after stroke, except for hopelessness. Lastly, mood swings did not exhibit a significant relationship with self-efficacy and functionality after stroke.

Interpretation of Findings

Self-Care Factors, Psychological Factors, and Sickle Cell Pain Frequency

The findings show that no self-care factors (compliance β=0.074, p=.567, assertiveness β=0.168, p=.279, social support β=0.007, p=.961) except coping behavior (β=0.249, p=.049) had a significant relationship with sickle cell pain frequency. The above is in line with the works of Majumdar et al. (2014) and Crossby et al. (2015), who stated that self-care interventions and psychosocial factors are essential in managing SCD because complications such as overt stroke or silent cerebral infarcts are detrimental. Given their high rates of occurrence, psychosocial factors affecting persons with SCD also largely compromise the health outcomes of the patients. Finally, young adults and adolescents experience psychosocial stressors that negatively influence the management of SCD by increasing the risk for poor disease care.

Self-Care Factors and Occurrence of Severe Headache

The findings shows that all the self-care factors (compliance β=0.60, p=.051, assertiveness β=0.007, p=.965, social support β=0.026, p=.0860 and coping behavior β=0.139, p=.281) did not have a significant relationship with occurrence of severe headache. This research corroborates the findings of Ceglie et al. (2019), whose research work revealed that SCD patients suffer from sickle cell disease related outcomes such as pain severity, severe headaches, number of emergency visits to the hospital, hospitalizations, frequency of pain attacks, feelings of hopelessness, and mood swings.

Self-Care Factors and Self-Efficacy, and Functionality

The findings shows that the self-care factors (compliance β=-0.098, p=0.474, assertiveness β=-0.178, p=.282, social support β=-0.094, p=.541 and coping behavior β=0.076, p=.567) did not have significant relationship with self-efficacy, and functionality. This work contradicts the findings of Barakat et al. (2008), who reported significantly diminished physical functioning among patients of SCD as compared with other chronic illness.

Psychological Factors and Sickle Cell Pain Frequency

The findings shows that all the psychological factors (hopelessness β=-0.325, p=0.002 and mood swings β=0.293 p=0.008) except low self-esteem β=0.019 p=0.869) had a significant relationship with sickle cell pain frequency. This finding conforms with that of Bhagat et al. (2014), who carried out an investigation to determine the poor health related quality of life among patients of sickle cell disease. They concluded that SCD results in a significantly lowered health-related quality of life among SCD patients as compared with other chronically ill patients and the general population.

Psychological Factors and Occurrence of Severe Headache

The findings shows that all the psychological factors (low self-esteem, β=-0.10, p=0.932, and mood swings, β=0.214, p=0.064) except hopelessness β=-0.347 p=0.002) had no significant relationship with occurrence of severe headache. This research corroborates with the findings of Ceglie et al. (2019), whose research work revealed that SCD patients suffer from sickle cell disease related outcomes such as pain severity,

severe headaches, number of emergency visits to the hospital, hospitalizations, frequency of pain attacks, feelings of hopelessness and mood swings.

Psychological Factors and Self-Efficacy and Functionality

The findings show that the psychological factors (hopelessness, $\beta=0.014$, , $p=0.909$, & low self-esteem, $\beta=-0.064$, $p=0.614$), with the exception of mood swings ($\beta=0.214$, $p=0.064$) had no significant relationship with self-efficacy and functionality. This work contradicts with the findings of Barakat et al. (2008), who reported significantly diminished physical functioning among patients of SCD as compared with other chronic illnesses.

Limitations of the Study

The study may have some limitations such as the number of independent variables included in the model, the small sample size, the lack of exploration of other potential factors that may impact self-efficacy, functionality, quality of life, and education of SCD carriers. Additionally, the study was conducted on a specific population (African Americans in the USA with sickle cell disease), so the findings may not be generalizable to other populations or countries. Further research is needed to address these limitations and to provide a more comprehensive understanding of the factors that impact SCD carriers' well-being and quality of life.

Recommendations

The study results indicate that independent variables in the current model have no significant impact on self-efficacy and functionality among African Americans with sickle cell disease in the USA; however, it is important to note that other factors not

included in the model may influence self-efficacy and functionality. Future research should explore additional variables and alternative models to better understand the factors that impact self-efficacy and functionality among this population, such as whether females experience more SCD-related outcomes than males.

Further, caregivers, teachers, and parents should be aware of the psychosocial factors that may affect individuals with SCD, such as feelings of hopelessness, mood swings, and lowered self-esteem. This research finding emphasizes the need to address these factors as they play a critical role in helping SCD carriers cope with their health condition. It is important to focus on self-care factors such as understanding personal coping behavior ability for SCD carriers, as they play a significant role in managing the condition. Coping behavior ability and compliance levels are critical self-care factors that predict SCD-related outcomes. Thus, healthcare professionals should prioritize improving coping behavior and compliance in patients with SCD to reduce the frequency of sickle cell pain episodes and occurrence of severe headaches.

Further research is needed to better understand the role of self-care factors in improving quality of life and self-efficacy among individuals with SCD. Although self-care factors have a modest impact on the quality of life among African Americans with SCD in the USA, this study suggests that assertiveness, compliance, and social support levels can be targeted to improve their quality of life. Further research is necessary to explore other factors that may influence quality of life in this population. Enhancing the self-esteem of SCD carriers can improve their ability to cope after an episode of pain. This is crucial because it is the only self-care parameter surveyed in this study that helped

SCD carriers remain functional after a stroke attack. Future research could explore the role of self-esteem in improving coping ability and overall functionality among individuals with SCD. The frequency of pain episodes, hospitalizations, and missed school days due to SCD have a negative impact on the education of individuals with SCD. Therefore, alternative education methods such as virtual learning and catch-up programs should be made available where possible. This would help individuals with SCD to manage their condition and achieve their educational goals. Further research could explore the effectiveness of these alternative education methods in improving educational outcomes for individuals with SCD.

Implications

This study has made significant contributions to our understanding of SCD in several ways. First, it highlights the importance of self-care measures in managing SCD-related pain, with the most effective measure being the patient's ability to manage symptoms and continue to engage in enjoyable activities. This finding can help guide healthcare providers when educating SCD patients on effective pain management strategies. Second, the study sheds light on the impact of psychosocial factors on SCD patients' ability to cope with the disease. Navigating feelings of hopelessness, mood swings, and lowered self-esteem resulting from SCD was found to play a role in helping patients cope better with their health condition. This finding highlights the importance of considering psychosocial support in the treatment of SCD patients. Third, the study emphasizes the critical role of coping ability in SCD patients after an episode of pain. This ability is crucial in helping patients remain functional after a stroke attack. These

insights could guide healthcare providers in developing more effective strategies for managing SCD-related pain and improving patients' quality of life.

Focusing on improving coping behavior and compliance in patients with sickle cell disease could improve their self-care abilities. Targeting assertiveness, compliance, and social support levels could improve the quality of life of African Americans with sickle cell disease, and working on their self-esteem could enhance their ability to cope after an episode of pain. These findings and recommendations could have positive impacts at various levels. At the individual level, they could provide more personalized and effective interventions for African Americans with sickle cell disease. At the family level, they could inform the development of more supportive and understanding home environments. At the organizational level, they could inform the development of more inclusive and effective treatment plans. At the societal/policy level, they could inform the development of policies and guidelines that better address the needs of African Americans with sickle cell disease.

Conclusions

The study found that gender, age, and education level did not significantly affect self-efficacy, functionality, and quality of life among African Americans with SCD. However, the study revealed that knowing how to navigate psychosocial factors such as feelings of hopelessness, mood swings, and lowered self-esteem resulting from SCD could play a vital role in helping carriers of SCD to cope with their health condition. The study also found that self-care factors such as coping behavior ability and compliance level are important in managing the condition and predicting SCD-related outcomes.

Healthcare professionals should focus on improving coping behavior and compliance in patients with SCD to reduce the frequency of sickle cell pain episodes and occurrence of severe headaches. Parents, teachers, and caregivers should pay attention to psychosocial factors, as they play a vital role in helping carriers of SCD cope with their health condition. Assertiveness, compliance, and social support levels can be targeted to improve the quality of life of this population.

Future research should explore additional variables or alternative models to better understand the factors that impact self-efficacy, functionality, and quality of life among African Americans with SCD. The study's findings have significant implications for positive social change, such as improving the quality of life of individuals with SCD, reducing the frequency of sickle cell pain episodes, and enhancing the coping ability of SCD carriers.

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Appendix A: Questionnaire

This questionnaire is part of my Ph. D. thesis being conducted as a university requirement in partial fulfillment for the degree. The aim is to collect information about self-care and psychosocial factors to predict sickle cell disease-related outcomes. You are invited to complete this questionnaire, as your response will help inform the research and the comprehension of various factors that influence care. The survey is divided into FOUR sections; please fill all parts where appropriate.

Note: All information is anonymous and will be kept confidential at all times.

Part A: Demographics

1. What is your gender?

[ ] Male

[ ] Female

2. What is your age?

[ ] 0-20 years

[ ] 21-40 years

[ ] 41-60 years

[ ] 61-80 years

[ ] 81 year +

3. What is your ethnic origin?

[ ] African American

[ ] White

[ ] Asian

[ ] Hispanic

[ ] Others

4. What are your working status/ what you do on a daily basis? Please select one from the choices provided below.

[ ] Working full-time

[ ] Working temporally

[ ] Laid off

[ ] Retired

[ ] Keeping house

[ ] Student

[ ] Other (Specify)

5. What is the highest level of education you have completed?

[ ] Elementary school

[ ] Middle school

[ ] High school

[ ] College

[ ] University

[ ] Did not attend school

[ ] Other (please specify)

Part B: Care Information

6. In the last one month, how many hospitalizations do you have due to sickle cell?
   Number of times (_)

7. In the last 6 months, how many times did you visit an emergency room because of a sickle cell painful event?
   Number of times (_)

8. In the last 12 months, how many times were you admitted to a hospital because of a sickle cell painful event?
   Number of times (_)

9. In the last 6 months, have you had a painful episode severe enough to keep you from doing the usual daily activities, but without being seen by a doctor?
   [ ] Yes
   [ ] No

   a. How many episodes
   [ ] <4
   [ ] >=4

b. How many days were missed?

[ ] <= a week

[ ] > a week

PART C: Sickle Cell Disease Management Outcomes

Pain Crisis Management Rating Score

1. In the past 1 month, how many sickle cell pain attacks did you have?

[ ] I did not have a pain attack

[ ] 1

[ ] 2

[ ] 3

[ ] 4 or more

2. When was your last pain attack?

[ ] I have never had a pain attack

[ ] 7 to 11 months ago

[ ] 1 to 6 months ago

[ ] 1 to 3 weeks ago

[ ] Less than a week ago

[ ] I have one right now

3. On a scale of 0 to 10, where 0 is no pain and 10 is the worst pain, how severe was your pain during your last Pain attack?

[ ] 0 No pain

[ ] 1

[ ] 2

[ ] 3

[ ] 4

[ ] 5

[ ] 6

[ ] 7

[ ] 8

[ ] 9

[ ] 10 Worst pain imaginable

[ ] I have never had a pain attack (crisis)

Severe headache Scoring

1. In 7 days, how many severe headaches do you have?

[ ] I do not have severe headache

[ ] 1

[ ] 2

[ ] 3

[ ] 4 or more

2. When was your last severe headache crisis?

[ ] I have never had a pain attack

[ ] 7 to 11 months ago

[ ] 1 to 6 months ago

[ ] 1 to 3 weeks ago

[ ] Less than a week ago

[ ] I have one right now

3. Using any number from 0 to 10, where 0 is no severe head, and 10 is the worst severe headache, how critical was your headache during your last severe headache crisis?

[ ] 0 No severe headache

[ ] 1

[ ] 2

[ ] 3

[ ] 4

[ ] 5

[ ] 6

[ ] 7

[ ] 8

[ ] 9

[ ] 10 Worst severe headache

[ ] I have never had a severe headache

Self-efficacy

How sure are you that you can	5 Very Sure	4 Sure	3 Neither	2 Not Sure	1 Not Sure at All
1. Do something to reduce on most of the pain.					
2. Keep going on with your daily activities.					
3. Cut down your sickle cell disease pain by using methods other than taking medications.					
4. Can control how often or when you get tired.					
5. Do something to help yourself feel better if you are feeling sad or blue.					
6. Manage your sickle cell disease symptoms so that you can do the things you enjoy doing.					
7. Deal with the frustration of having sickle cell disease.					

Functionality after a Stroke

1. Have you had a sickle cell-related stroke crisis?

[ ] Yes

[ ] No

2. If you have had a stroke episode, please answer the questions below otherwise move to the next questions.

How challenging was it for you to	5. Not Challenging at all	4. A little Challenging	3. Somewhat Challenging	2. Very Challenging	1. Extremely Challenging
1. Remember things that occurred the previous day					
2. Remember to do things such as keeping a scheduled appointment					
3. Concentrate					
4. Think quickly					
5. Solve problems					

Part D: Quality of Life Measurement

Psychosocial Factors

1. In a week, how often do you feel entirely hopeless because of your health status?

[ ] 5. Always

[ ] 4. Often

[ ] 3. Sometimes

[ ] 2. Rarely

[ ] 1. Never

2. In a week, how often do you have lowered self-esteem due to your health condition?

[ ] 1. Not at all

[ ] 2. A little

[ ] 3. Somewhat

[ ] 4. Quite

[ ] 5. Very

3. How often do your moods vary from being happy to sad due to your health condition?

[ ] 1. Not at all

[ ] 2. A little

[ ] 3. Somewhat

[ ] 4. Quite

[ ] 5. Very

Self-Care Factors

1. How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?

[ ] 5. Very well

[ ] 4. Well

[ ] 3. Unsure

[ ] 2. Not well

[ ] 1. Not well at all

2. How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?

[ ] 5. Very well

[ ] 4. Well

[ ] 3. Unsure

[ ] 2. Not well

[ ] 1. Not well at all

3. How well do you agree with your level of managing your social support in managing your health condition?

[ ] 5. Very well

[ ] 4. Well

[ ] 3. Unsure

[ ] 2. Not well

[ ] 1. Not well at all

4. How well do you agree with your personal coping behavior ability, given your health condition?

[ ] 5. Very well

[ ] 4. Well

[ ] 3. Unsure

[ ] 2. Not well

[ ] 1. Not well at all

Appendix B: Health Information Services

REQUEST FOR MEDICAL RECORDS OR STATISTICAL DATA
(For Non-Patient Care Purposes)

Review activities include, but are not limited to, access for clinical studies and research, quality/utilization review, billing and coding review, clinical guideline development.

1. Submit requests by completing this form. HIS will not accept requests over the phone.
    a. This form must be completed and submitted for <u>all</u> reviews, published or unpublished.
    b. This form must be completed and submitted even if you review charts directly in EMR.
2. For access to EMR, it is the responsibility of the requesting person/Department to complete and submit an HS/CS "Access Request Form" for all users, both internal and external, prior to the review. The Information Security Office will assign a temporary User ID and password within few days of the request.
3. Complete either the Medical Record Request List (page 3) to review specific medical records OR the Statistical/Report Request form (page 4) to request statistical data. Please fill out the forms as completely as possible.
    a. Statistical/Report Request forms ONLY may be sent via email

Purpose of Review:	**Requestor:**
☐ Study/Research IRB # _____ ☐ Review Preparatory to Research* ☐ Research on Decedent's Information* ☐ Statistical/Report Request ☐ Billing ☐ QA/QI ☐ Review performed directly in EMR ☐ Other _____ *These reviews require that you complete and submit the additional form on Page 2 of these instructions.	Date of request: _____ Requested by: _____ Clinic/Dep't: _____ Phone #: _____ Supervising Attending Physician or Responsible Party: _____

For HIS Use Only

Date Received: _____ Date Forwarded: _____ HIS Initials: _____

Forwarded to: □ Document Management □ Systems □ Other: ____

Reported By: _____ Report Date: _____

HEALTH INFORMATION SERVICES

REPRESENTATION FOR REVIEWS PREPARATORY TO RESEARCH AND RESEARCH ON DECEDENT'S INFORMATION

(An IRB number is not required)

☐ Reviews Preparatory to Research

I affirm that the requested access is sought solely to review protected health information, as necessary, to prepare a research protocol or for similar purposes preparatory to research, and that this information is necessary for research purposes.

I affirm that I will collect only de-identified information. This means I will NOT record any HIPPA identifier listed under the NOTE section below.

☐ Research on Decedent's Information

I affirm that the requested access to a decedent's protected health information is solely for research, and that the information requested is necessary for research purposes.

I will provide documentation of the deaths of such individuals at the request of Health Information Services.

NOTE:

If data taken from review of medical records will include, any of the following identifiers this form may not be used. In order to review medical records an application must be submitted to the Institutional Review Board for Health Sciences Research (IRB-HSR) or Institutional Review Board for Social and Behavioral Sciences (IRB-SBS):

1.Name
2. All geographic subdivisions smaller than a state, including street address, city, county, precinct, zip code, and their equivalent geocodes, except for the initial three digits of the zip code if, according to the

current publicly available data from the Bureau of the Census: (1) The geographic unit formed by combining all zip codes with the same 3 initial digits contains more than 20,000 people and (2) The initial 3 digits of a zip code for all such geographic units containing 20,000 is changed to 000.
3. All elements of dates (except year) for dates directly related to an individual, including birth date, admission date, discharge date, date of death; and all ages over 89 and all elements of dates (including year) indicative of such age, except that such ages and elements may be aggregated into a single category of age 90 or older. *[This means you may record the year but not record the month or day of any date related to the subject if the subject is under the age of 89. In addition if the subject is over the age of 89 you may not record their age and you may not record the month, day or year of any date related to the subject]*
4. Telephone numbers
5. Fax numbers
6. Electronic mail addresses
7. Social Security number
8. Medical Record number
9. Health plan beneficiary numbers
10. Account numbers
11. Certificate/license numbers
12. Vehicle identifiers and serial numbers, including license plate numbers
13. Device identifiers and serial numbers
14. Web Universal Resource Locators (URLs)
15. Internet Protocol (IP) address numbers
16. Biometric identifiers, including finger and voice prints
17. Full face photographic images and any comparable images
18. Any other unique identifying number, characteristic, code that is derived from or related to information about the individual (e.g. initials, last 4 digits of Social Security #, mother's maiden name, first 3 letters of last name.)
19. Any other information that could be used alone or in combination with other information to identify an individual. (*e.g. rare disease, study team or company has access to the health information and a HIPAA identifier or the key to the code*.)

_____ _____

Signature of Requestor Date

_____

Print Name

STATISTICAL/REPORT REQUEST

Search Criteria			
□ Admit Date(s) (or Range)		□ Other	
□ Discharge Date(s) (or Range)		□ Other	
□ Patient Type (I, E, O, or All)		□ Other	
□ Service Code(s)		□ Other	
□ Attending Physician(s)		□ Other	
□ Admitting Physician(s)		□ Other	
□ Procedure Physician(s)		□ Other	
□ Nursing Unit(s)		□ Other	

Display Fields			
□ Statistical Summary Only	□ Service	□ Other	
□ MRN	□ Nursing Unit	□ Other	
□ Account Number	□ Patient Type	□ Other	
□ Admit and/or Discharge Date(s)	□ Diagnosis	□ Other	
□ Attending Physician	□ Procedure	□ Other	
□ Admitting Physician	□ Discharge Disposition	□ Other	
□ Procedure Physician	□ Admit Diagnosis	□ Other	

Other Information Pertinent to the Request

Appendix C: Statistical Analysis

What is your age (in years)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0-20	31	21.7	21.7	21.7
	21-40	91	63.6	63.6	85.3
	41-60	21	14.7	14.7	100.0
	Total	143	100.0	100.0	

What is your ethnic origin?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	African American	121	84.6	84.6	84.6
	Other	22	15.4	15.4	100.0
	Total	143	100.0	100.0	

What is your gender?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	91	63.6	63.6	63.6
	Male	52	36.4	36.4	100.0
	Total	143	100.0	100.0	

What are your working status/ what you do on a daily basis? Please select one from the choices provided below.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Working full time	35	24.5	25.0	25.0
	Working temporally	24	16.8	17.1	42.1
	Laid off	5	3.5	3.6	45.7
	Retired	1	.7	.7	46.4
	Keeping house	4	2.8	2.9	49.3
	Student	61	42.7	43.6	92.9
	Other (specify):	10	7.0	7.1	100.0
	Total	140	97.9	100.0	
Missing	System	3	2.1		
Total		143	100.0		

In the last 12 months, how many times were you admitted to a hospital because of a sickle cell painful event? Number of times

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	34	23.8	23.8	23.8
	1	23	16.1	16.1	39.9
	2	21	14.7	14.7	54.5
	3	16	11.2	11.2	65.7
	4	9	6.3	6.3	72.0
	5	6	4.2	4.2	76.2
	6	5	3.5	3.5	79.7
	9	1	.7	.7	80.4
	10	2	1.4	1.4	81.8
	11	1	.7	.7	82.5
	12	1	.7	.7	83.2
	N/A	22	15.4	15.4	98.6
	15	1	.7	.7	99.3
	24	1	.7	.7	100.0
	Total	143	100.0	100.0	

In the last 6 months, have you had a painful episode severe enough to keep you from doing the usual daily activities, but without being seen by a doctor? (if yes please answer question 8 and 9)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	96	67.1	67.1	67.1
	No	25	17.5	17.5	84.6
	N/A	22	15.4	15.4	100.0
	Total	143	100.0	100.0	

If you answer yes to # 7, how many episodes

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<4	79	55.2	65.3	65.3
	>4	42	29.4	34.7	100.0
	Total	121	84.6	100.0	
Missing	System	22	15.4		
Total		143	100.0		

If you answer yes to #7, how many days were missed?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<= a week	68	47.6	56.2	56.2
	> a week	53	37.1	43.8	100
	Total	121	84.6	100	
Missing	System	22	15.4		
Total		143	100		

In the past 1 month, how many sickle cell pain attacks did you have?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	44	30.8	38.6	38.6
	1	30	21	26.3	64.9
	2	19	13.3	16.7	81.6
	3	14	9.8	12.3	93.9
	4 or more	7	4.9	6.1	100
	Total	114	79.7	100	
Missing	System	29	20.3		
Total		143	100		

When was your last pain attack?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	14	9.8	12.3	12.3
	7 to 11 months ago	15	10.5	13.2	25.4
	1 to 6 months ago	33	23.1	28.9	54.4
	1 to 3 weeks ago	22	15.4	19.3	73.7
	Less than a week ago	17	11.9	14.9	88.6
	I have one right now	13	9.1	11.4	100
	Total	114	79.7	100	
Missing	System	29	20.3		
Total		143	100		

On a scale of 0 to 10, where 0 is no pain and 10 is the worst pain, how severe was your pain during your last Pain attack?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No Pain	9	6.3	6.3	6.3
	1	5	3.5	3.5	9.8
	2	3	2.1	2.1	11.9
	3	7	4.9	4.9	16.8
	4	9	6.3	6.3	23.1
	5	10	7	7	30.1
	6	14	9.8	9.8	39.9
	7	22	15.4	15.4	55.2
	8	15	10.5	10.5	65.7
	9	7	4.9	4.9	70.6
	10	10	7	7	77.6
	I have never had a pain attack (crisis)	3	2.1	2.1	79.7
	N/A	29	20.3	20.3	100
	Total	143	100	100	

Severe headache Scoring In 7 days, how many severe headaches do you have?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	50	35	35	35
	1	25	17.5	17.5	52.4
	2	11	7.7	7.7	60.1
	3	18	12.6	12.6	72.7
	4>	10	7	7	79.7
	N/A	29	20.3	20.3	100
	Total	143	100	100	

When was your last severe headache crisis?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	None	33	23.1	23.1	23.1
	7 to 11 months ago	14	9.8	9.8	32.9
	1 to 6 months ago	19	13.3	13.3	46.2
	1 to 3 weeks ago	25	17.5	17.5	63.6
	Less than a week ago	19	13.3	13.3	76.9
	I have one right now	4	2.8	2.8	79.7
	N/A	29	20.3	20.3	100
	Total	143	100	100	

Using any number from 0 to 10, where 0 is no severe head, and 10 is the worst severe headache, how critical was your headache during your last severe headache crisis?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No Severe Headache	31	21.7	21.7	21.7
	1	1	0.7	0.7	22.4
	2	8	5.6	5.6	28
	3	5	3.5	3.5	31.5
	4	8	5.6	5.6	37.1
	5	13	9.1	9.1	46.2
	6	9	6.3	6.3	52.4
	7	12	8.4	8.4	60.8
	8	17	11.9	11.9	72.7
	9	4	2.8	2.8	75.5
	Worst severe headache	5	3.5	3.5	79
	I have never had a severe headache	1	0.7	0.7	79.7
	N/A	29	20.3	20.3	100
	Total	143	100	100	

Functionality after a Stroke Sickle

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	28	19.6	25	25
	No	84	58.7	75	100
	Total	112	78.3	100	
Missing	System	31	21.7		
Total		143	100		

1. Remember things that occurred the previous day

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	N/A	95	66.4	66.4	66.4
	Extremely Challenging	2	1.4	1.4	67.8
	Very Challenging	9	6.3	6.3	74.1
	Somewhat Challenging	10	7	7	81.1
	A little Challenging	9	6.3	6.3	87.4
	Not Challenging at all	18	12.6	12.6	100
	Total	143	100	100	

2. Remember to do things such as keeping a scheduled appointment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	N/A	92	64.3	64.3	64.3
	Extremely Challenging	4	2.8	2.8	67.1
	Very Challenging	8	5.6	5.6	72.7
	Somewhat Challenging	9	6.3	6.3	79
	A little Challenging	8	5.6	5.6	84.6
	Not Challenging at all	22	15.4	15.4	100
	Total	143	100	100	

3. Concentrate

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	N/A	92	64.3	64.3	64.3
	Extremely Challenging	6	4.2	4.2	68.5
	Very Challenging	7	4.9	4.9	73.4
	Somewhat Challenging	13	9.1	9.1	82.5
	A little Challenging	9	6.3	6.3	88.8
	Not Challenging at all	16	11.2	11.2	100
	Total	143	100	100	

4. Think quickly

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	N/A	91	63.6	63.6	63.6
	Extremely Challenging	4	2.8	2.8	66.4
	Very Challenging	8	5.6	5.6	72
	Somewhat Challenging	12	8.4	8.4	80.4
	A little Challenging	9	6.3	6.3	86.7
	Not Challenging at all	19	13.3	13.3	100
	Total	143	100	100	

5. Solve problems

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	N/A	91	63.6	63.6	63.6
	Extremely Challenging	7	4.9	4.9	68.5
	Very Challenging	4	2.8	2.8	71.3
	Somewhat Challenging	14	9.8	9.8	81.1
	A little Challenging	10	7	7	88.1
	Not Challenging at all	17	11.9	11.9	100
	Total	143	100	100	

In the last 6 months, how many times did you visit an emergency room because of a sickle cell painful event? Number of times

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	74	51.7	51.7	51.7
	1	23	16.1	16.1	67.8
	14	1	0.7	0.7	68.5
	2	24	16.8	16.8	85.3
	3	11	7.7	7.7	93
	4	6	4.2	4.2	97.2
	6	1	0.7	0.7	97.9
	9	1	0.7	0.7	98.6
	Always	2	1.4	1.4	100
	Total	143	100	100	

1. Do something to reduce on most of the pain.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	N/A	30	21	21	21
	Not sure at all	8	5.6	5.6	26.6
	Not sure	27	18.9	18.9	45.5
	Neither	9	6.3	6.3	51.7
	Sure	47	32.9	32.9	84.6
	Very Sure	22	15.4	15.4	100
	Total	143	100	100	

2. Keep going on with your daily activities.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	N/A	30	21	21	21
	Not sure at all	7	4.9	4.9	25.9
	Not sure	20	14	14	39.9
	Neither	12	8.4	8.4	48.3
	Sure	51	35.7	35.7	83.9
	Very Sure	23	16.1	16.1	100
	Total	143	100	100	

3. Cut down your sickle cell disease pain by using methods other than taking medications.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	N/A	30	21	21	21
	Not sure at all	16	11.2	11.2	32.2
	Not sure	25	17.5	17.5	49.7
	Neither	14	9.8	9.8	59.4
	Sure	33	23.1	23.1	82.5
	Very Sure	25	17.5	17.5	100
	Total	143	100	100	

4. Can control how often or when you get tired.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	N/A	30	21	21	21
	Not sure at all	24	16.8	16.8	37.8
	Not sure	23	16.1	16.1	53.8
	Neither	19	13.3	13.3	67.1
	Sure	31	21.7	21.7	88.8
	Very Sure	16	11.2	11.2	100
	Total	143	100	100	

5. Do something to help yourself feel better if you are feeling sad or blue.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	N/A	31	21.7	21.7	21.7
	Not sure at all	10	7	7	28.7
	Not sure	17	11.9	11.9	40.6
	Neither	15	10.5	10.5	51
	Sure	40	28	28	79
	Very Sure	30	21	21	100
	Total	143	100	100	

6. Manage your sickle cell disease symptoms so that you can do the things you enjoy doing.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	N/A	31	21.7	21.7	21.7
	Not sure at all	10	7	7	28.7
	Not sure	11	7.7	7.7	36.4
	Neither	12	8.4	8.4	44.8
	Sure	57	39.9	39.9	84.6
	Very Sure	22	15.4	15.4	100
	Total	143	100	100	

7. Deal with the frustration of having sickle cell disease.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	N/A	30	21	21	21
	Not sure at all	10	7	7	28
	Not sure	23	16.1	16.1	44.1
	Neither	11	7.7	7.7	51.7
	Sure	51	35.7	35.7	87.4
	Very Sure	18	12.6	12.6	100
	Total	143	100	100	

In the last one month, how many hospitalizations do you have due to sickle cell? Number of times

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	103	72	72	72
	1	24	16.8	16.8	88.8
	2	9	6.3	6.3	95.1
	20	1	0.7	0.7	95.8
	3	2	1.4	1.4	97.2
	4	4	2.8	2.8	100
	Total	143	100	100	

In a week, how often do you feel entirely hopeless because of your health status?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Always	6	4.2	4.2	4.2
	Often	23	16.1	16.1	20.3
	Sometimes	36	25.2	25.2	45.5
	Rarely	27	18.9	18.9	64.3
	Never	22	15.4	15.4	79.7
	N/A	29	20.3	20.3	100
	Total	143	100	100	

In a week, how often do you have lowered self-esteem due to your health condition?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at all	35	24.5	24.5	24.5
	A little	31	21.7	21.7	46.2
	Somewhat	25	17.5	17.5	63.6
	Quite	15	10.5	10.5	74.1
	Very	8	5.6	5.6	79.7
	N/A	29	20.3	20.3	100
	Total	143	100	100	

How often do your moods vary from being happy to sad due to your health condition?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at all	18	12.6	12.6	12.6
	A little	34	23.8	23.8	36.4
	Somewhat	26	18.2	18.2	54.5
	Quite	22	15.4	15.4	69.9
	Very	14	9.8	9.8	79.7
	N/A	29	20.3	20.3	100
	Total	143	100	100	

Self-Care Factors

How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very well	37	25.9	25.9	25.9
	Well	46	32.2	32.2	58
	Unsure	15	10.5	10.5	68.5
	Not well	15	10.5	10.5	79
	Not well at all	1	0.7	0.7	79.7
	N/A	29	20.3	20.3	100
	Total	143	100	100	

How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very well	28	19.6	19.6	19.6
	Well	50	35	35	54.5
	Unsure	19	13.3	13.3	67.8
	Not well	17	11.9	11.9	79.7
	N/A	29	20.3	20.3	100
	Total	143	100	100	

How well do you agree with your level of managing your social support in managing your health condition?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very well	28	19.6	19.6	19.6
	Well	55	38.5	38.5	58
	Unsure	10	7	7	65
	Not well	16	11.2	11.2	76.2
	Not well at all	5	3.5	3.5	79.7
	N/A	29	20.3	20.3	100
	Total	143	100	100	

How well do you agree with your personal coping behavior ability, given your health condition?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very well	35	24.5	24.5	24.5
	Well	50	35	35	59.4
	Unsure	11	7.7	7.7	67.1
	Not well	16	11.2	11.2	78.3
	Not well at all	2	1.4	1.4	79.7
	N/A	29	20.3	20.3	100
	Total	143	100	100	

Crosstabs

[DataSet1] C:\Users\Lewis\Desktop\Sickle Cell Disease Self-Care.sav

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
What is your age (in years) * In the last 12 months, how many times were you admitted to a hospital because of a sickle cell painful event? Number of times	143	100.00%	0	0.00%	143	100.00%
What is your age (in years) * On a scale of 0 to 10, where 0 is no pain and 10 is the worst pain, how severe was your pain during your last Pain attack?	143	100.00%	0	0.00%	143	100.00%
What is your age (in years) * When was your last severe headache crisis?	143	100.00%	0	0.00%	143	100.00%
What is your age (in years) * In the last 6 months, how many times did you visit an emergency room because of a sickle cell painful event? Number of times	143	100.00%	0	0.00%	143	100.00%
What is your age (in years) * In the last one month, how many hospitalizations do you have due to sickle cell? Number of times	143	100.00%	0	0.00%	143	100.00%
What is your age (in years) * In the past 1 month, how many sickle cell pain attacks did you have?	114	79.70%	29	20.30%	143	100.00%
What is your age (in years) * When was your last pain attack?	114	79.70%	29	20.30%	143	100.00%
What is your age (in years) * In a week, how often do you feel entirely hopeless because of your health status?	143	100.00%	0	0.00%	143	100.00%
What is your age (in years) * How often do your moods vary from being happy to sad due to your health condition?	143	100.00%	0	0.00%	143	100.00%
What is your gender? * In the last 12 months, how many times were you admitted to a hospital because of a sickle cell painful event? Number of times	143	100.00%	0	0.00%	143	100.00%

What is your gender? * On a scale of 0 to 10, where 0 is no pain and 10 is the worst pain, how severe was your pain during your last Pain attack?	143	100.00%	0	0.00%	143	100.00%
What is your gender? * When was your last severe headache crisis?	143	100.00%	0	0.00%	143	100.00%
What is your gender? * In the last 6 months, how many times did you visit an emergency room because of a sickle cell painful event? Number of times	143	100.00%	0	0.00%	143	100.00%
What is your gender? * In the last one month, how many hospitalizations do you have due to sickle cell? Number of times	143	100.00%	0	0.00%	143	100.00%
What is your gender? * In the past 1 month, how many sickle cell pain attacks did you have?	114	79.70%	29	20.30%	143	100.00%
What is your gender? * When was your last pain attack?	114	79.70%	29	20.30%	143	100.00%
What is your gender? * In a week, how often do you feel entirely hopeless because of your health status?	143	100.00%	0	0.00%	143	100.00%
What is your gender? * How often do your moods vary from being happy to sad due to your health condition?	143	100.00%	0	0.00%	143	100.00%

Analysis of Variance (ANOVA)

Anova: Single Factor

age of respondents and number of hospitalizations within twelve months

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
0-20	14	31	2.214286	7.565934
21-40	14	91	6.5	47.34615
41-60	14	21	1.5	2.884615

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*

Between Groups	204.7619	2	102.381	5.314193	0.00909959	3.238096
Within Groups	751.3571	39	19.26557			
Total	956.119	41				

Anova: Single Factor

age of respondents and severity of pain

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
0-20	13	31	2.384615	7.089744
21-40	13	91	7	21.83333
41-60	13	21	1.615385	2.423077

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	220.5128	2	110.2564	10.55215	0.0002474	3.259446
Within Groups	376.1538	36	10.44872			
Total	596.6667	38				

Anova: Single Factor

age of respondents and frequency of severe headaches

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
0-20	7	31	4.428571	10.28571
21-40	7	91	13	39.33333
41-60	7	21	3	3

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	409.5238	2	204.7619	11.67421	0.00056146	3.554557
Within Groups	315.7143	18	17.53968			
Total	725.2381	20				

Anova: Single Factor

age of respondents and number of emergency room visit within six months

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
0-20	9	31	3.444444	40.27778
21-40	9	91	10.11111	211.1111
41-60	9	21	2.333333	10.75

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	318.5185	2	159.2593	1.822613	0.18327073	3.402826
Within Groups	2097.111	24	87.37963			
Total	2415.63	26				

Anova: Single Factor

age of respondents and number hospitalizations in one month

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
0-20	6	31	5.166667	105.7667
21-40	6	91	15.16667	558.5667
41-60	6	21	3.5	35.5

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	477.7778	2	238.8889	1.024053	0.38292461	3.68232
Within Groups	3499.167	15	233.2778			
Total	3976.944	17				

Anova: Single Factor

age of respondents and frequency of pain attacks within one month

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
0-20	5	21	4.2	7.2
21-40	5	75	15	90
41-60	5	18	3.6	7.3

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	411.6	2	205.8	5.908134	0.01636233	3.885294
Within Groups	418	12	34.83333			
Total	829.6	14				

Anova: Single Factor

age of respondents and time of last pain

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
0-20	6	21	3.5	3.5
21-40	6	75	12.5	39.5
41-60	6	18	3	3.2

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	343	2	171.5	11.13636	0.00108455	3.68232
Within Groups	231	15	15.4			
Total	574	17				

Anova: Single Factor

age of respondents and frequency of feelings of hopelessness in a week

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
0-20	6	31	5.166667	14.16667

21-40	6	91	15.16667	28.96667
41-60	6	21	3.5	5.5

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	477.7778	2	238.8889	14.73612	0.00028841	3.68232
Within Groups	243.1667	15	16.21111			
Total	720.9444	17				

Anova: Single Factor

age of respondents and mood wings

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
0-20	6	31	5.166667	6.966667
21-40	6	91	15.16667	30.56667
41-60	6	21	3.5	1.1

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	477.7778	2	238.8889	18.55047	0.0000880	3.68232
Within Groups	193.1667	15	12.87778			
Total	670.9444	17				

Anova: Single Factor

gender of respondents and frequency of hospitalizations in the last twelve months

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Female	14	91	6.5	57.5
Male	14	52	3.714286	18.21978

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	54.32143	1	54.32143	1.434802	0.241789	4.225201
Within Groups	984.3571	26	37.85989			
Total	1038.679	27				

Anova: Single Factor

gender of respondents and severity of pain

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Female	13	91	7	26.33333
Male	13	52	4	14.5

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	58.5	1	58.5	2.865306	0.103452	4.259677
Within Groups	490	24	20.41667			
Total	548.5	25				

Anova: Single Factor

gender of respondents and frequency of severe headaches

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Female	7	91	13	38.33333
Male	7	52	7.428571	21.61905

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	108.6429	1	108.6429	3.624305	0.081194	4.747225
Within Groups	359.7143	12	29.97619			
Total	468.3571	13				

Anova: Single Factor

gender of respondents and number of emergency room visit within six months

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Female	9	91	10.11111	214.8611
Male	9	52	5.777778	85.19444

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	84.5	1	84.5	0.563229	0.463857	4.493998
Within Groups	2400.444	16	150.0278			
Total	2484.944	17				

Anova: Single Factor

gender of respondents and number hospitalizations in one month

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Female	6	91	15.16667	566.5667
Male	6	52	8.666667	256.6667

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	126.75	1	126.75	0.307932	0.591147	4.964603
Within Groups	4116.167	10	411.6167			
Total	4242.917	11				

Anova: Single Factor

gender of respondents and frequency of pain attacks within one month

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Female	5	75	15	68.5
Male	5	39	7.8	57.2

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	129.6	1	129.6	2.062053	0.188932	5.317655
Within Groups	502.8	8	62.85			
Total	632.4	9				

Anova: Single Factor

gender of respondents and time of last pain

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Female	6	75	12.5	24.3
Male	6	39	6.5	25.1

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	108	1	108	4.37247	0.063018	4.964603
Within Groups	247	10	24.7			
Total	355	11				

Anova: Single Factor

gender of respondents and frequency of feelings of hopelessness in a week

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Female	6	91	15.16667	42.96667
Male	6	52	8.666667	20.66667

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	126.75	1	126.75	3.983761	0.073887	4.964603
Within Groups	318.1667	10	31.81667			
Total	444.9167	11				

Anova: Single Factor

gender of respondents and mood wings

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Female	6	91	15.16667	17.36667
Male	6	52	8.666667	13.06667

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	126.75	1	126.75	8.329682	0.016215	4.964603
Within Groups	152.1667	10	15.21667			
Total	278.9167	11				

Appendix D: Regression Analysis

Regression analysis of Self-Care factors

Descriptive Statistics

	Mean	Std. Deviation	N
In the last 12 months, how many times were you admitted to a hospital because of a sickle cell painful event? Number of times	4.10	4.885	143
How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?	2.89	1.824	143
How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?	2.99	1.760	143
How well do you agree with your level of managing your social support in managing your health condition?	3.01	1.808	143
How well do you agree with your personal coping behavior ability, given your health condition?	2.91	1.827	143

Correlations

		In the last 12 months, how many times were you admitted to a hospital because of a sickle cell painful event? Number of times	How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?	How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?	How well do you agree with your level of managing your social support in managing your health condition?	How well do you agree with your personal coping behavior ability, given your health condition?
Pearson Correlation	In the last 12 months, how many times were you admitted to a hospital because of a sickle cell painful event? Number of times	1	0.635	0.637	0.582	0.612
	How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?	0.635	1	0.932	0.879	0.866
	How well do you agree with your assertiveness level associated with your health condition (Expression of	0.637	0.932	1	0.923	0.898

	attitude, feeling, opinions)?					
	How well do you agree with your level of managing your social support in managing your health condition?	0.582	0.879	0.923	1	0.915
	How well do you agree with your personal coping behavior ability, given your health condition?	0.612	0.866	0.898	0.915	1
	In the last 12 months, how many times were you admitted to a hospital because of a sickle cell painful event? Number of times	.	0	0	0	0
	How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?	0	.	0	0	0
Sig. (1-tailed)	How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?	0	0	.	0	0
	How well do you agree with your level of managing your social support in managing your health condition?	0	0	0	.	0
	How well do you agree with your personal coping behavior ability, given your health condition?	0	0	0	0	.

N	In the last 12 months, how many times were you admitted to a hospital because of a sickle cell painful event? Number of times	143	143	143	143	143
	How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?	143	143	143	143	143
	How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?	143	143	143	143	143
	How well do you agree with your level of managing your social support in managing your health condition?	143	143	143	143	143
	How well do you agree with your personal coping behavior ability, given your health condition?	143	143	143	143	143

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	How well do you agree with your personal coping behavior ability, given your health condition? How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?, How well do you agree with your level of managing your social support in managing your health condition?, How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?[b]	.	Enter

a. Dependent Variable: In the last 12 months, how many times were you admitted to a hospital because of a sickle cell painful event? Number of times

b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.655[a]	0.43	0.413	3.743	0.43	25.976	4	138	0

a. Predictors: (Constant), How well do you agree with your personal coping behavior ability, given your health condition?, How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?, How well do you agree with your level of managing your social support in managing your health condition?, How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?

b. Dependent Variable: In the last 12 months, how many times were you admitted to a hospital because of a sickle cell painful event? Number of times

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	-1.158	0.624		-1.857	0.065	-2.391	0.075
	How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?	0.783	0.484	0.292	1.619	0.108	-0.173	1.739
	How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?	0.934	0.627	0.337	1.491	0.138	-0.305	2.173
	How well do you agree with your level of managing your social support in managing your health condition?	-0.622	0.526	-0.23	-1.181	0.24	-1.662	0.419
	How well do you agree with your personal coping behavior ability, given your health condition?	0.714	0.458	0.267	1.559	0.121	-0.192	1.621

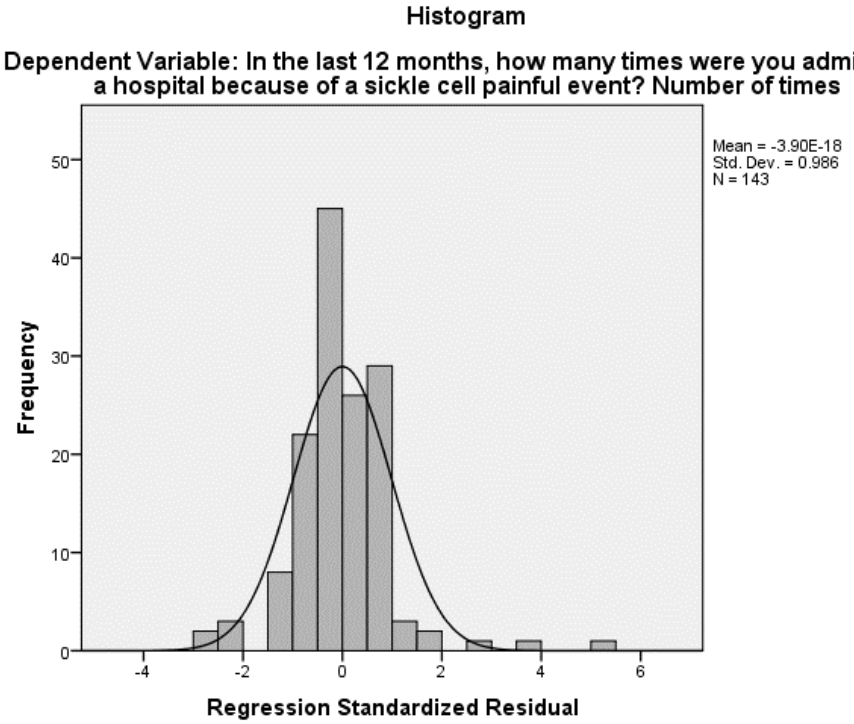
a. Dependent Variable: In the last 12 months, how many times were you admitted to a hospital because of a sickle cell painful event? Number of times

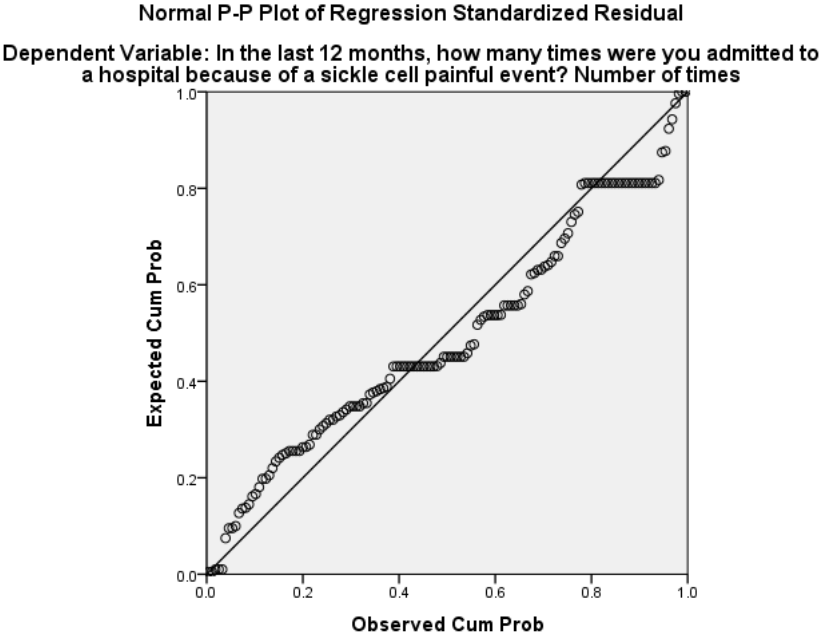
ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1455.515	4	363.879	25.976	.000[b]
	Residual	1933.114	138	14.008		
	Total	3388.629	142			

a. Dependent Variable: In the last 12 months, how many times were you admitted to a hospital because of a sickle cell painful event? Number of times

b. Predictors: (Constant), How well do you agree with your personal coping behavior ability, given your health condition?, How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?, How well do you agree with your level of managing your social support in managing your health condition?, How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?


Histogram
Dependent Variable: In the last 12 months, how many times were you admitted to a hospital because of a sickle cell painful event? Number of times
Mean = -3.90E-18
Std. Dev. = 0.986
N = 143
Frequency
Regression Standardized Residual


Normal P-P Plot of Regression Standardized Residual
Dependent Variable: In the last 12 months, how many times were you admitted to a hospital because of a sickle cell painful event? Number of times
Expected Cum Prob
Observed Cum Prob

Descriptive Statistics			
	Mean	Std. Deviation	N
In the last 6 months, have you had a painful episode severe enough to keep you from doing the usual daily activities, but without being seen by a doctor? (if yes please answer question 8 and 9)	1.48	0.749	143
How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?	2.89	1.824	143
How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?	2.99	1.76	143
How well do you agree with your level of managing your social support in managing your health condition?	3.01	1.808	143
How well do you agree with your personal coping behavior ability, given your health condition?	2.91	1.827	143

Correlations

		In the last 6 months, have you had a painful episode severe enough to keep you from doing the usual daily activities, but without being seen by a doctor? (if yes please answer question 8 and 9)	How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?	How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?	How well do you agree with your level of managing your social support in managing your health condition?	How well do you agree with your personal coping behavior ability, given your health condition?
Pearson Correlation	In the last 6 months, have you had a painful episode severe enough to keep you from doing the usual daily activities, but without being seen by a doctor? (if yes please answer question 8 and 9)	1	0.55	0.544	0.52	0.542
	How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?	0.55	1	0.932	0.879	0.866
	How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?	0.544	0.932	1	0.923	0.898
	How well do you agree with your level of managing your social support in managing your health condition?	0.52	0.879	0.923	1	0.915
	How well do you agree with your personal coping behavior ability, given your health condition?	0.542	0.866	0.898	0.915	1

	In the last 6 months, have you had a painful episode severe enough to keep you from doing the usual daily activities, but without being seen by a doctor? (if yes please answer question 8 and 9)	.	0	0	0	0
	How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?	0	.	0	0	0
Sig. (1-tailed)	How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?	0	0	.	0	0
	How well do you agree with your level of managing your social support in managing your health condition?	0	0	0	.	0
	How well do you agree with your personal coping behavior ability, given your health condition?	0	0	0	0	.
N	In the last 6 months, have you had a painful episode severe enough to keep you from doing the usual daily activities, but without being seen by a doctor? (if yes please answer question 8 and 9)	143	143	143	143	143

	How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?	143	143	143	143	143
	How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?	143	143	143	143	143
	How well do you agree with your level of managing your social support in managing your health condition?	143	143	143	143	143
	How well do you agree with your personal coping behavior ability, given your health condition?	143	143	143	143	143

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	How well do you agree with your personal coping behavior ability, given your health condition? How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?, How well do you agree with your level of managing your social support in managing your health condition?, How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?[b]	.	Enter

a. Dependent Variable: In the last 6 months, have you had a painful episode severe enough to keep you from doing the usual daily activities, but without being seen by a doctor? (if yes please answer question 8 and 9)

b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.566[a]	0.321	0.301	0.626	0.321	16.301	4	138	0

a. Predictors: (Constant), How well do you agree with your personal coping behavior ability, given your health condition?, How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?, How well do you agree with your level of managing your social support in managing your health condition?, How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?

b. Dependent Variable: In the last 6 months, have you had a painful episode severe enough to keep you from doing the usual daily activities, but without being seen by a doctor? (if yes please answer question 8 and 9)

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	25.577	4	6.394	16.301	.000[b]
	Residual	54.13	138	0.392		
	Total	79.706	142			

a. Dependent Variable: In the last 6 months, have you had a painful episode severe enough to keep you from doing the usual daily activities, but without being seen by a doctor? (if yes please answer question 8 and 9)

b. Predictors: (Constant), How well do you agree with your personal coping behavior ability, given your health condition?, How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?, How well do you agree with your level of managing your social support in managing your health condition?, How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	.781	.104		7.488	.000	.575	.988
	How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?	.113	.081	.276	1.399	.164	-.047	.273
	How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?	.049	.105	.116	.472	.638	-.158	.257
	How well do you agree with your level of managing your social support in managing your health condition?	-.029	.088	-.069	-.324	.746	-.203	.146
	How well do you agree with your personal coping behavior ability, given your health condition?	.107	.077	.262	1.400	.164	-.044	.259

a. Dependent Variable: In the last 6 months, have you had a painful episode severe enough to keep you from doing the usual daily activities, but without being seen by a doctor? (if yes please answer question 8 and 9)

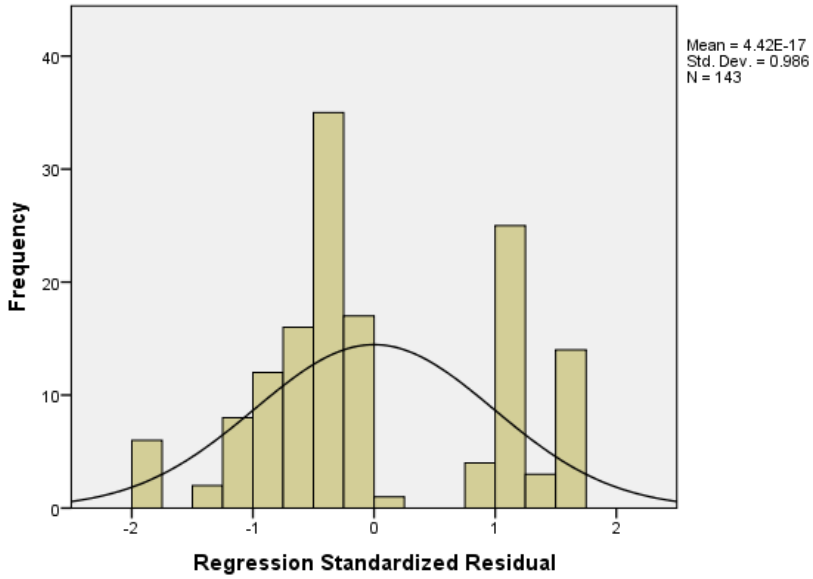
Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	.99	2.23	1.48	.424	143
Residual	-1.231	.977	.000	.617	143
Std. Predicted Value	-1.150	1.763	.000	1.000	143
Std. Residual	-1.965	1.560	.000	.986	143

a. Dependent Variable: In the last 6 months, have you had a painful episode severe enough to keep you from doing the usual daily activities, but without being seen by a doctor? (if yes please answer question 8 and 9)

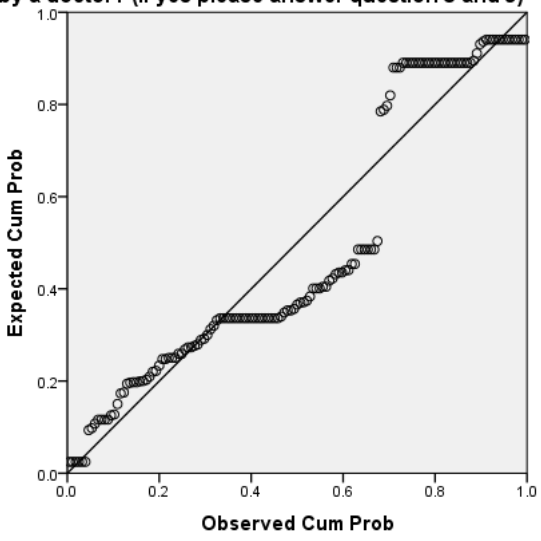
Histogram

Dependent Variable: In the last 6 months, have you had a painful episode severe enough to keep you from doing the usual daily activities, but without being seen by a doctor? (if yes please answer question 8 and 9)



Normal P-P Plot of Regression Standardized Residual

Dependent Variable: In the last 6 months, have you had a painful episode severe enough to keep you from doing the usual daily activities, but without being seen by a doctor? (if yes please answer question 8 and 9)



Descriptive Statistics

	Mean	Std. Deviation	N
When was your last pain attack?	3.46	1.500	114
How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?	2.10	1.030	114
How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?	2.22	.984	114
How well do you agree with your level of managing your social support in managing your health condition?	2.25	1.112	114
How well do you agree with your personal coping behavior ability, given your health condition?	2.12	1.057	114

Correlations

		When was your last pain attack?	How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?	How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?	How well do you agree with your level of managing your social support in managing your health condition?	How well do you agree with your personal coping behavior ability, given your health condition?
Pearson Correlation	When was your last pain attack?	1.000	.223	.345	.259	.255
	How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?	.223	1.000	.729	.566	.485
	How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?	.345	.729	1.000	.725	.603
	How well do you agree with your level of managing your social support in managing your health condition?	.259	.566	.725	1.000	.704
	How well do you agree with your personal coping behavior ability, given your health condition?	.255	.485	.603	.704	1.000
Sig. (1-tailed)	When was your last pain attack?	.	.008	.000	.003	.003
	How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?	.008	.	.000	.000	.000
	How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?	.000	.000	.	.000	.000
	How well do you agree with your level of managing your social support in managing your health condition?	.003	.000	.000	.	.000
	How well do you agree with your personal coping behavior ability, given your health condition?	.003	.000	.000	.000	.
N	When was your last pain attack?	114	114	114	114	114

How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?	114	114	114	114	114
How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?	114	114	114	114	114
How well do you agree with your level of managing your social support in managing your health condition?	114	114	114	114	114
How well do you agree with your personal coping behavior ability, given your health condition?	114	114	114	114	114

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	How well do you agree with your personal coping behavior ability, given your health condition?, How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?, How well do you agree with your level of managing your social support in managing your health condition?, How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?[b]		. Enter

a. Dependent Variable: When was your last pain attack?

b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.353[a]	.125	.093	1.429	.125	3.890	4	109	.005

a. Predictors: (Constant), How well do you agree with your personal coping behavior ability, given your health condition?, How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?, How well do you agree with your level of managing your social support in managing your health condition?, How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?

b. Dependent Variable: When was your last pain attack?

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	31.766	4	7.942	3.890	.005[b]
	Residual	222.515	109	2.041		
	Total	254.281	113			

a. Dependent Variable: When was your last pain attack?

b. Predictors: (Constant), How well do you agree with your personal coping behavior ability, given your health condition?, How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?, How well do you agree with your level of managing your social support in managing your health condition?, How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	2.258	.356		6.339	.000	1.552	2.964
	How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?	-.098	.192	-.067	-.512	.610	-.478	.282
	How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?	.548	.242	.360	2.268	.025	.069	1.027
	How well do you agree with your level of managing your social support in managing your health condition?	-.036	.201	-.026	-.177	.860	-.434	.363
	How well do you agree with your personal coping behavior ability, given your health condition?	.126	.183	.089	.689	.492	-.236	.488

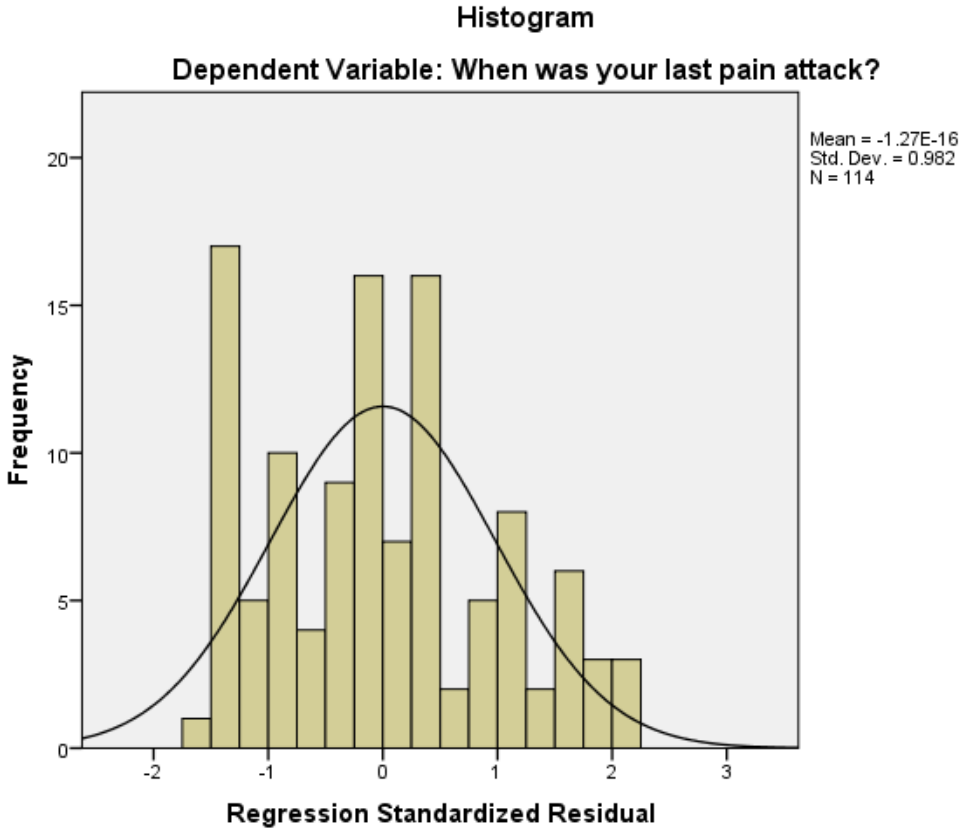
a. Dependent Variable: When was your last pain attack?

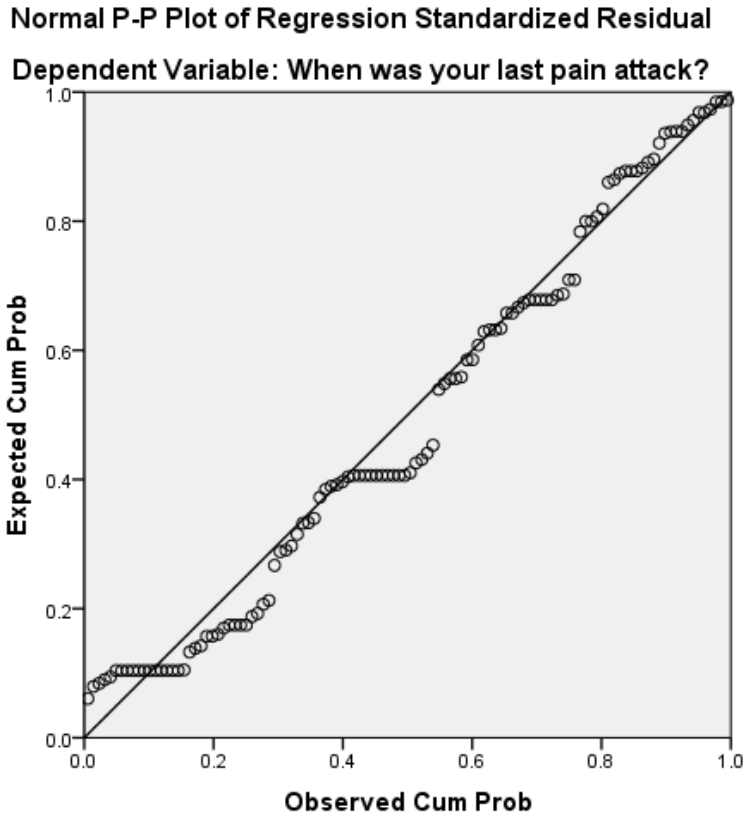
Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2.66	4.62	3.46	.530	114
Residual	-2.213	3.202	.000	1.403	114
Std. Predicted Value	-1.492	2.188	.000	1.000	114
Std. Residual	-1.549	2.241	.000	.982	114

a. Dependent Variable: When was your last pain attack?

Charts


Histogram
Dependent Variable: When was your last pain attack?
Mean = -1.27E-16
Std. Dev. = 0.982
N = 114
Frequency
Regression Standardized Residual



Descriptive Statistics

	Mean	Std. Deviation	N
Functionality after a Stroke Sickle cell disease patient can experience stroke, were blood flow cannot get to certain area of the brain	1.75	.435	112
How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?	2.11	1.034	112
How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?	2.22	.993	112
How well do you agree with your level of managing your social support in managing your health condition?	2.26	1.113	112
How well do you agree with your personal coping behavior ability, given your health condition?	2.13	1.061	112

Correlations

		Functionality after a Stroke Sickle cell disease patient can experience stroke, were blood flow cannot get to certain area of the brain	How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?	How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?	How well do you agree with your level of managing your social support in managing your health condition?	How well do you agree with your personal coping behavior ability, given your health condition?
Pearson Correlation	Functionality after a Stroke Sickle cell disease patient can experience stroke, were blood flow cannot get to certain area of the brain	1.000	-.421	-.433	-.368	-.415
	How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?	-.421	1.000	.731	.563	.479
	How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?	-.433	.731	1.000	.730	.604
	How well do you agree with your level of managing your social support in managing your health condition?	-.368	.563	.730	1.000	.703
	How well do you agree with your personal coping behavior ability, given your health condition?	-.415	.479	.604	.703	1.000
Sig. (1-tailed)	Functionality after a Stroke Sickle cell disease patient can experience stroke, were blood flow cannot get to certain area of the brain	.	.000	.000	.000	.000
	How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?	.000	.	.000	.000	.000
	How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?	.000	.000	.	.000	.000
	How well do you agree with your level of managing your social support in managing your health condition?	.000	.000	.000	.	.000
	How well do you agree with your personal coping behavior ability, given your health condition?	.000	.000	.000	.000	.
N	Functionality after a Stroke Sickle cell disease patient can experience stroke, were blood flow cannot get to certain area of the brain	112	112	112	112	112

	How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?	112	112	112	112	112
	How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?	112	112	112	112	112
	How well do you agree with your level of managing your social support in managing your health condition?	112	112	112	112	112
	How well do you agree with your personal coping behavior ability, given your health condition?	112	112	112	112	112

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	How well do you agree with your personal coping behavior ability, given your health condition?, How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?, How well do you agree with your level of managing your social support in managing your health condition?, How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?[b]		. Enter

a. Dependent Variable: Functionality after a Stroke Sickle cell disease patient can experience stroke, were blood flow cannot get to certain area of the brain

b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.494[a]	.244	.216	.385	.244	8.654	4	107	.000

a. Predictors: (Constant), How well do you agree with your personal coping behavior ability, given your health condition?, How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?, How well do you agree with your level of managing your social support in managing your health condition?, How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?

b. Dependent Variable: Functionality after a Stroke Sickle cell disease patient can experience stroke, were blood flow cannot get to certain area of the brain

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5.133	4	1.283	8.654	.000[b]
	Residual	15.867	107	.148		
	Total	21.000	111			

a. Dependent Variable: Functionality after a Stroke Sickle cell disease patient can experience stroke, were blood flow cannot get to certain area of the brain

b. Predictors: (Constant), How well do you agree with your personal coping behavior ability, given your health condition?, How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?, How well do you agree with your level of managing your social support in managing your health condition?, How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?

Coefficients[a]

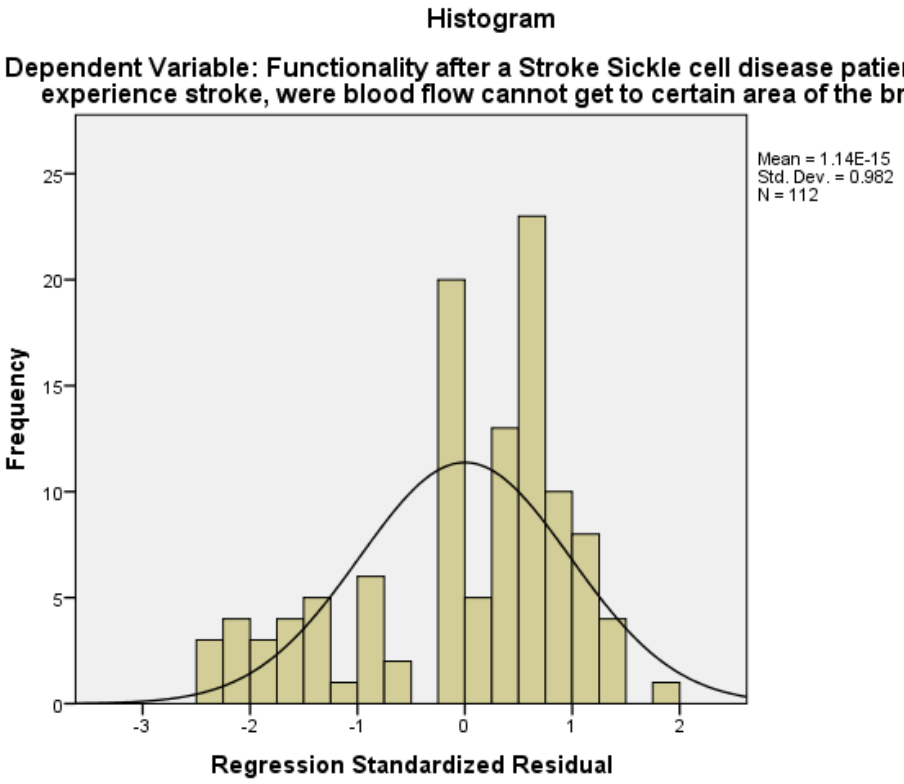
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	2.271	.097		23.475	.000	2.079	2.463
	How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?	-.087	.052	-.206	-1.670	.098	-.190	.016
	How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?	-.071	.066	-.163	-1.082	.282	-.202	.059
	How well do you agree with your level of managing your social support in managing your health condition?	.016	.055	.040	.285	.776	-.093	.124
	How well do you agree with your personal coping behavior ability, given your health condition?	-.101	.049	-.246	-2.040	.044	-.198	-.003

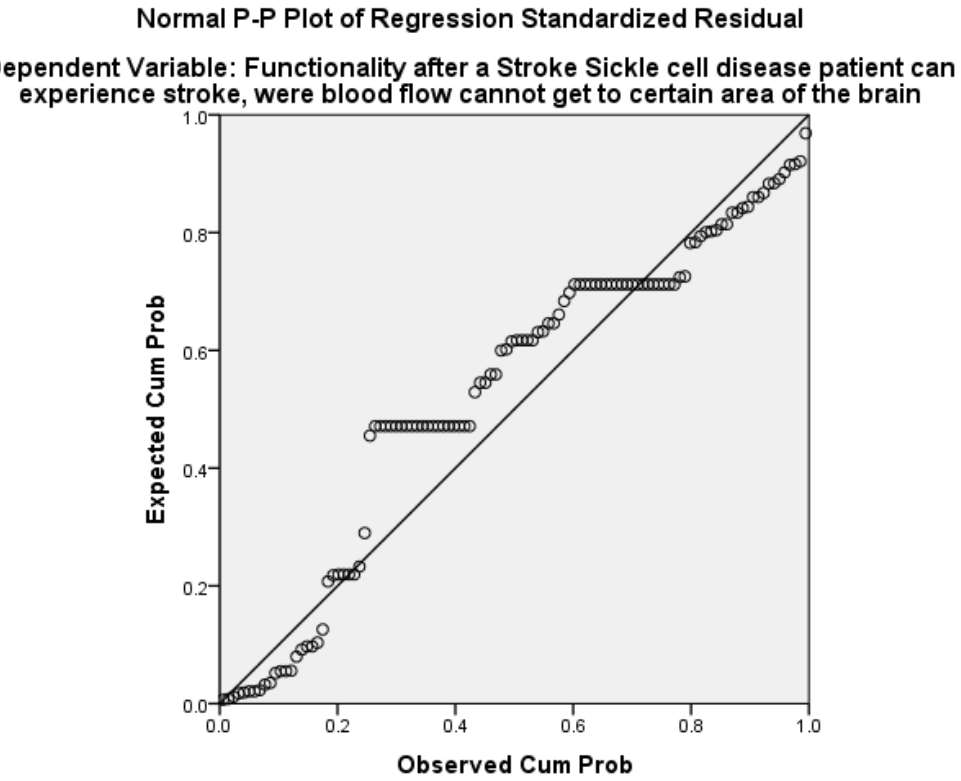
a. Dependent Variable: Functionality after a Stroke Sickle cell disease patient can experience stroke, were blood flow cannot get to certain area of the brain

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	1.21	2.04	1.75	.215	112
Residual	-.957	.717	.000	.378	112
Std. Predicted Value	-2.496	1.365	.000	1.000	112
Std. Residual	-2.484	1.863	.000	.982	112

a. Dependent Variable: Functionality after a Stroke Sickle cell disease patient can experience stroke, were blood flow cannot get to certain area of the brain


Histogram
Dependent Variable: Functionality after a Stroke Sickle cell disease patient can experience stroke, were blood flow cannot get to certain area of the brain
Mean = 1.14E-15
Std. Dev. = 0.982
N = 112
Frequency
25
20
15
10
5
0
-3
-2
-1
0
1
2
Regression Standardized Residual



Descriptive Statistics

	Mean	Std. Deviation	N
1. Remember things that occurred the previous day	1.23	1.887	143
How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?	2.89	1.824	143
How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?	2.99	1.760	143
How well do you agree with your level of managing your social support in managing your health condition?	3.01	1.808	143
How well do you agree with your personal coping behavior ability, given your health condition?	2.91	1.827	143

Correlations

		1. Remember things that occurred the previous day	How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?	How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?	How well do you agree with your level of managing your social support in managing your health condition?	How well do you agree with your personal coping behavior ability, given your health condition?
Pearson Correlation	1. Remember things that occurred the previous day	1.000	-.302	-.321	-.292	-.251
	How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?	-.302	1.000	.932	.879	.866
	How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?	-.321	.932	1.000	.923	.898
	How well do you agree with your level of managing your social support in managing your health condition?	-.292	.879	.923	1.000	.915
	How well do you agree with your personal coping behavior ability, given your health condition?	-.251	.866	.898	.915	1.000
Sig. (1-tailed)	1. Remember things that occurred the previous day	.	.000	.000	.000	.001
	How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?	.000	.	.000	.000	.000
	How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?	.000	.000	.	.000	.000
	How well do you agree with your level of managing your social support in managing your health condition?	.000	.000	.000	.	.000
	How well do you agree with your personal coping behavior ability, given your health condition?	.001	.000	.000	.000	.
N	1. Remember things that occurred the previous day	143	143	143	143	143
	How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?	143	143	143	143	143
	How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?	143	143	143	143	143

How well do you agree with your level of managing your social support in managing your health condition?	143	143	143	143	143
How well do you agree with your personal coping behavior ability, given your health condition?	143	143	143	143	143

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	How well do you agree with your personal coping behavior ability, given your health condition?, How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?, How well do you agree with your level of managing your social support in managing your health condition?, How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?[b]	.	Enter

a. Dependent Variable: 1. Remember things that occurred the previous day
b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.335[a]	.112	.086	1.803	.112	4.355	4	138	.002

a. Predictors: (Constant), How well do you agree with your personal coping behavior ability, given your health condition?, How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?, How well do you agree with your level of managing your social support in managing your health condition?, How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?
b. Dependent Variable: 1. Remember things that occurred the previous day

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	56.648	4	14.162	4.355	.002[b]
	Residual	448.736	138	3.252		
	Total	505.385	142			

a. Dependent Variable: 1. Remember things that occurred the previous day
b. Predictors: (Constant), How well do you agree with your personal coping behavior ability, given your health condition?, How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?, How well do you agree with your level of managing your social support in managing your health condition?, How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?

Coefficients[a]

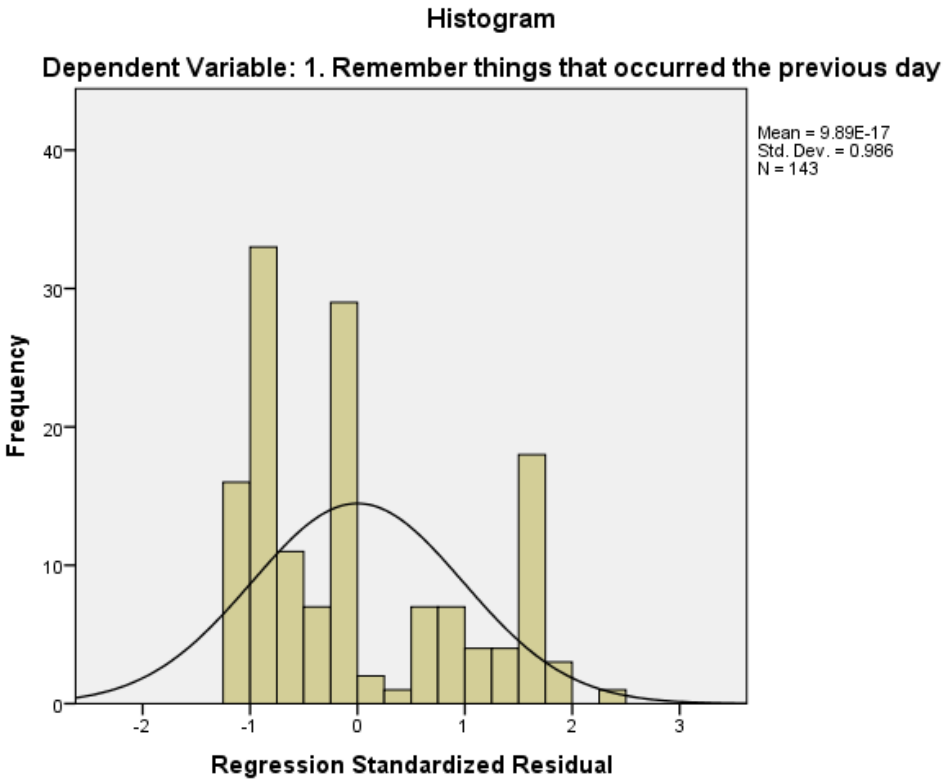
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	2.248	.300		7.481	.000	1.653	2.842
	How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?	-.058	.233	-.056	-.248	.805	-.518	.403
	How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?	-.420	.302	-.392	-1.391	.166	-1.017	.177
	How well do you agree with your level of managing your social support in managing your health condition?	-.113	.254	-.108	-.445	.657	-.614	.389
	How well do you agree with your personal coping behavior ability, given your health condition?	.256	.221	.248	1.158	.249	-.181	.692

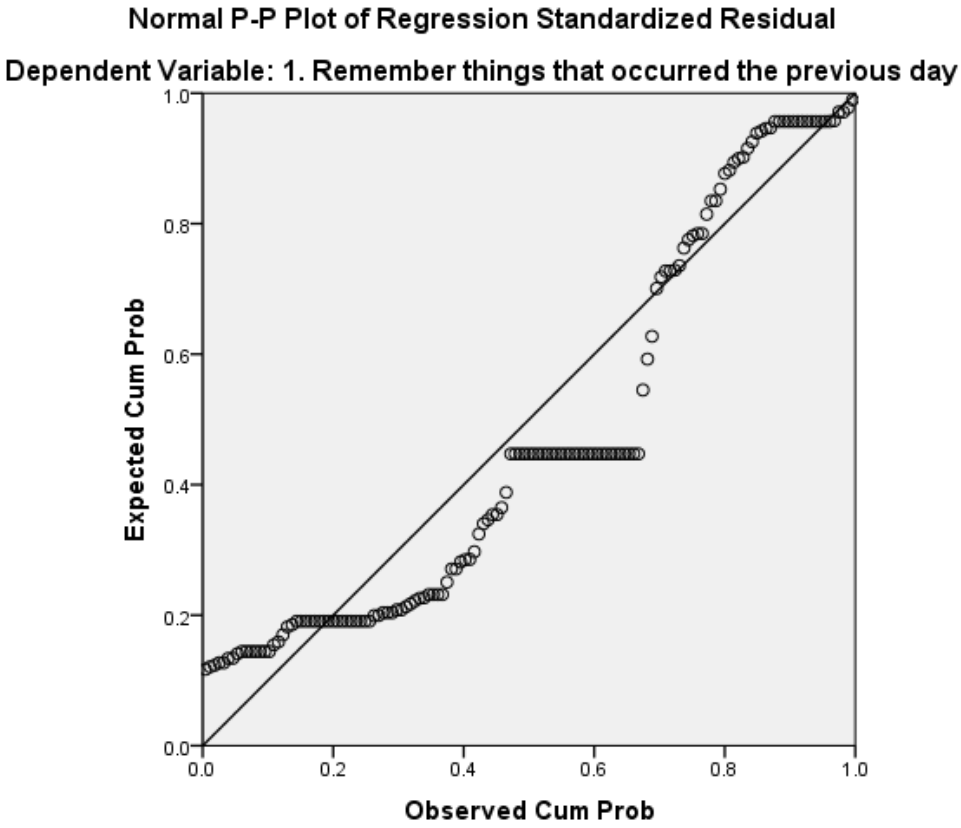
a. Dependent Variable: 1. Remember things that occurred the previous day

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	.24	2.17	1.23	.632	143
Residual	-2.147	4.183	.000	1.778	143
Std. Predicted Value	-1.570	1.485	.000	1.000	143
Std. Residual	-1.191	2.320	.000	.986	143

a. Dependent Variable: 1. Remember things that occurred the previous day


Histogram
Dependent Variable: 1. Remember things that occurred the previous day
Mean = 9.89E-17
Std. Dev. = 0.986
N = 143
Frequency
0
10
20
30
40
-2
-1
0
1
2
3
Regression Standardized Residual



Descriptive Statistics			
	Mean	Std. Deviation	N
2. Remember to do things such as keeping a scheduled appointment	1.32	1.959	143
How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?	2.89	1.824	143
How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?	2.99	1.760	143
How well do you agree with your level of managing your social support in managing your health condition?	3.01	1.808	143
How well do you agree with your personal coping behavior ability, given your health condition?	2.91	1.827	143

Correlations

		2. Remember to do things such as keeping a scheduled appointment	How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?	How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?	How well do you agree with your level of managing your social support in managing your health condition?	How well do you agree with your personal coping behavior ability, given your health condition?
Pearson Correlation	2. Remember to do things such as keeping a scheduled appointment	1.000	-.335	-.354	-.331	-.281
	How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?	-.335	1.000	.932	.879	.866
	How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?	-.354	.932	1.000	.923	.898
	How well do you agree with your level of managing your social support in managing your health condition?	-.331	.879	.923	1.000	.915
	How well do you agree with your personal coping behavior ability, given your health condition?	-.281	.866	.898	.915	1.000
Sig. (1-tailed)	2. Remember to do things such as keeping a scheduled appointment	.	.000	.000	.000	.000
	How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?	.000	.	.000	.000	.000
	How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?	.000	.000	.	.000	.000
	How well do you agree with your level of managing your social support in managing your health condition?	.000	.000	.000	.	.000
	How well do you agree with your personal coping behavior ability, given your health condition?	.000	.000	.000	.000	.
N	2. Remember to do things such as keeping a scheduled appointment	143	143	143	143	143

How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?	143	143	143	143	143
How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?	143	143	143	143	143
How well do you agree with your level of managing your social support in managing your health condition?	143	143	143	143	143
How well do you agree with your personal coping behavior ability, given your health condition?	143	143	143	143	143

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	How well do you agree with your personal coping behavior ability, given your health condition? How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?, How well do you agree with your level of managing your social support in managing your health condition?, How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?[b]		. Enter

a. Dependent Variable: 2. Remember to do things such as keeping a scheduled appointment
b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.370[a]	.137	.112	1.847	.137	5.475	4	138	.000

a. Predictors: (Constant), How well do you agree with your personal coping behavior ability, given your health condition? How well do you agree with your ability to comply with the provided self-care actions to manage your health condition? How well do you agree with your level of managing your social support in managing your health condition? How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?
b. Dependent Variable: 2. Remember to do things such as keeping a scheduled appointment

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	74.677	4	18.669	5.475	.000[b]
	Residual	470.526	138	3.410		
	Total	545.203	142			

a. Dependent Variable: 2. Remember to do things such as keeping a scheduled appointment

b. Predictors: (Constant), How well do you agree with your personal coping behavior ability, given your health condition? How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?, How well do you agree with your level of managing your social support in managing your health condition?, How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?

Coefficients[a]

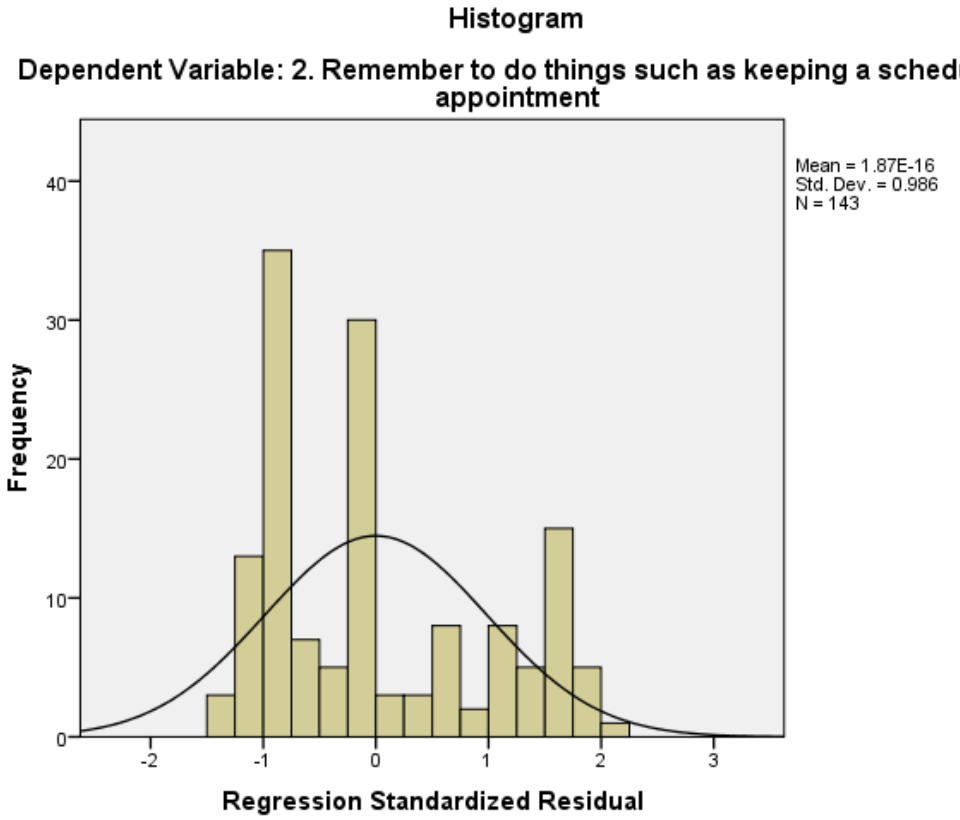
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	2.497	.308		8.117	.000	1.889	3.106
	How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?	-.080	.239	-.074	-.335	.738	-.552	.392
	How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?	-.407	.309	-.366	-1.317	.190	-1.018	.204
	How well do you agree with your level of managing your social support in managing your health condition?	-.205	.260	-.189	-.789	.431	-.718	.308
	How well do you agree with your personal coping behavior ability, given your health condition?	.305	.226	.285	1.350	.179	-.142	.752

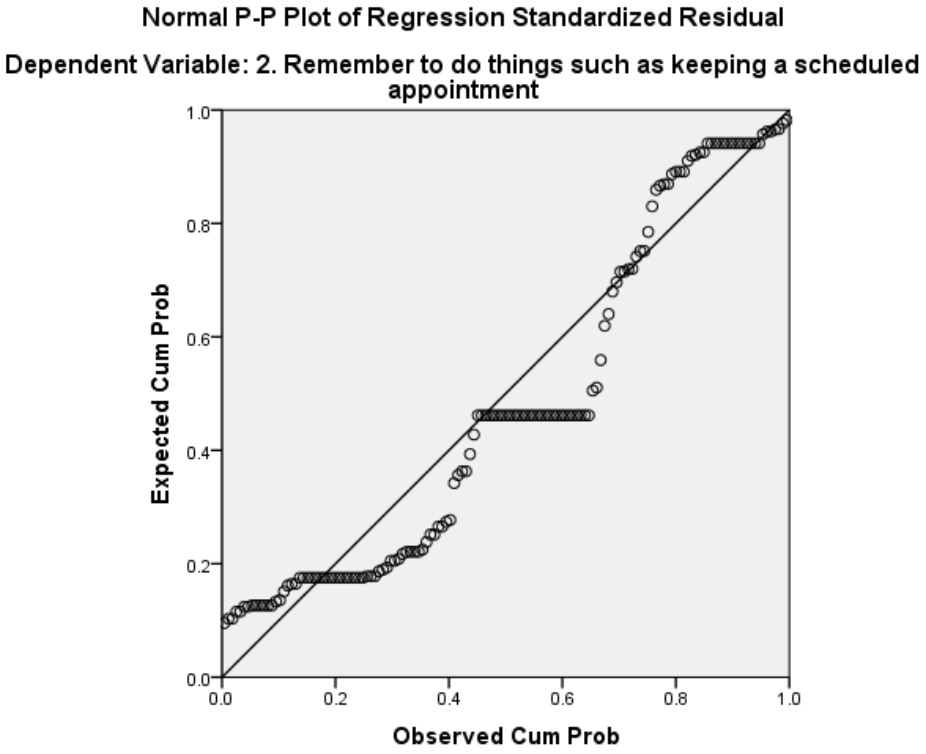
a. Dependent Variable: 2. Remember to do things such as keeping a scheduled appointment

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	.18	2.42	1.32	.725	143
Residual	-2.415	3.869	.000	1.820	143
Std. Predicted Value	-1.577	1.509	.000	1.000	143
Std. Residual	-1.308	2.095	.000	.986	143

a. Dependent Variable: 2. Remember to do things such as keeping a scheduled appointment


Histogram
Dependent Variable: 2. Remember to do things such as keeping a scheduled appointment
Mean = 1.87E-16
Std. Dev. = 0.986
N = 143
Frequency
40
30
20
10
0
-2
-1
0
1
2
3
Regression Standardized Residual



Descriptive Statistics

	Mean	Std. Deviation	N
3. Concentrate	1.22	1.840	143
How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?	2.89	1.824	143
How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?	2.99	1.760	143
How well do you agree with your level of managing your social support in managing your health condition?	3.01	1.808	143
How well do you agree with your personal coping behavior ability, given your health condition?	2.91	1.827	143

Correlations

		3. Concentrate	How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?	How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?	How well do you agree with your level of managing your social support in managing your health condition?	How well do you agree with your personal coping behavior ability, given your health condition?
Pearson Correlation	3. Concentrate	1.000	-.328	-.345	-.340	-.300
	How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?	-.328	1.000	.932	.879	.866
	How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?	-.345	.932	1.000	.923	.898
	How well do you agree with your level of managing your social support in managing your health condition?	-.340	.879	.923	1.000	.915
	How well do you agree with your personal coping behavior ability, given your health condition?	-.300	.866	.898	.915	1.000
Sig. (1-tailed)	3. Concentrate	.	.000	.000	.000	.000
	How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?	.000	.	.000	.000	.000
	How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?	.000	.000	.	.000	.000
	How well do you agree with your level of managing your social support in managing your health condition?	.000	.000	.000	.	.000
	How well do you agree with your personal coping behavior ability, given your health condition?	.000	.000	.000	.000	.
N	3. Concentrate	143	143	143	143	143
	How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?	143	143	143	143	143
	How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?	143	143	143	143	143

How well do you agree with your level of managing your social support in managing your health condition?	143	143	143	143	143
How well do you agree with your personal coping behavior ability, given your health condition?	143	143	143	143	143

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	How well do you agree with your personal coping behavior ability, given your health condition? How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?, How well do you agree with your level of managing your social support in managing your health condition?, How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?[b]		. Enter

a. Dependent Variable: 3. Concentrate
b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.355[a]	.126	.100	1.745	.126	4.966	4	138	.001

a. Predictors: (Constant), How well do you agree with your personal coping behavior ability, given your health condition? How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?, How well do you agree with your level of managing your social support in managing your health condition?, How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?
b. Dependent Variable: 3. Concentrate

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	60.500	4	15.125	4.966	.001[b]
	Residual	420.339	138	3.046		
	Total	480.839	142			

a. Dependent Variable: 3. Concentrate
b. Predictors: (Constant), How well do you agree with your personal coping behavior ability, given your health condition? How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?, How well do you agree with your level of managing your social support in managing your health condition?, How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
(Constant)	2.323	.291		7.988	.000	1.748	2.898
How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?	-.058	.226	-.057	-.255	.799	-.503	.388
How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?	-.232	.292	-.222	-.794	.429	-.810	.346

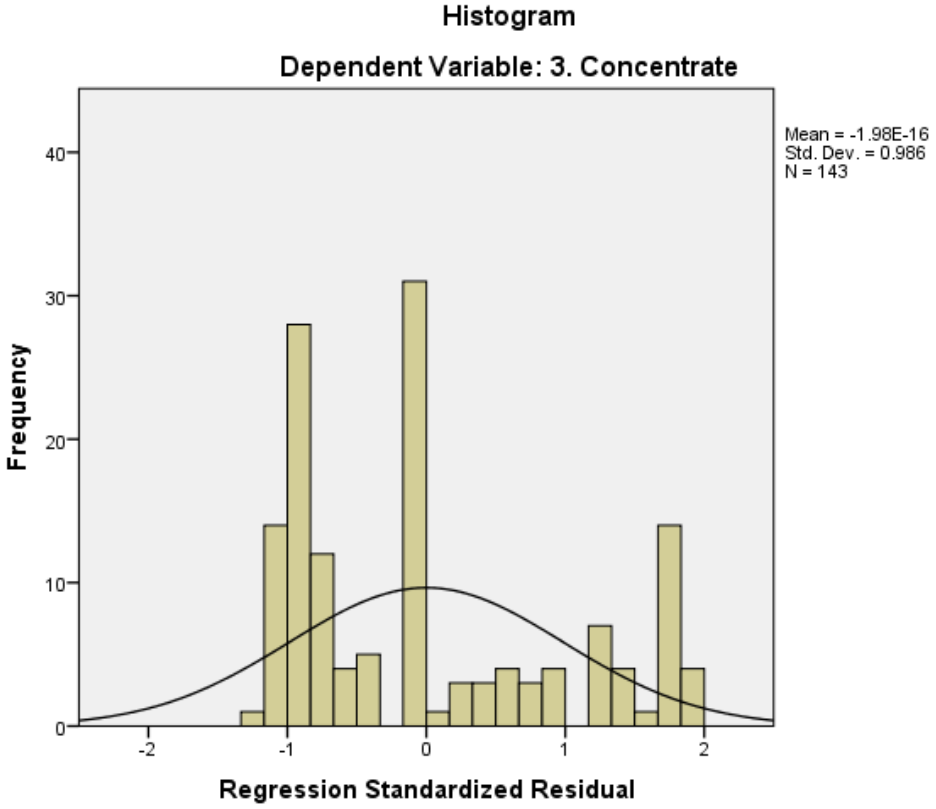
How well do you agree with your level of managing your social support in managing your health condition?	-.238	.245	-.234	-.969	.334	-.723	.247
How well do you agree with your personal coping behavior ability, given your health condition?	.164	.214	.163	.766	.445	-.259	.586

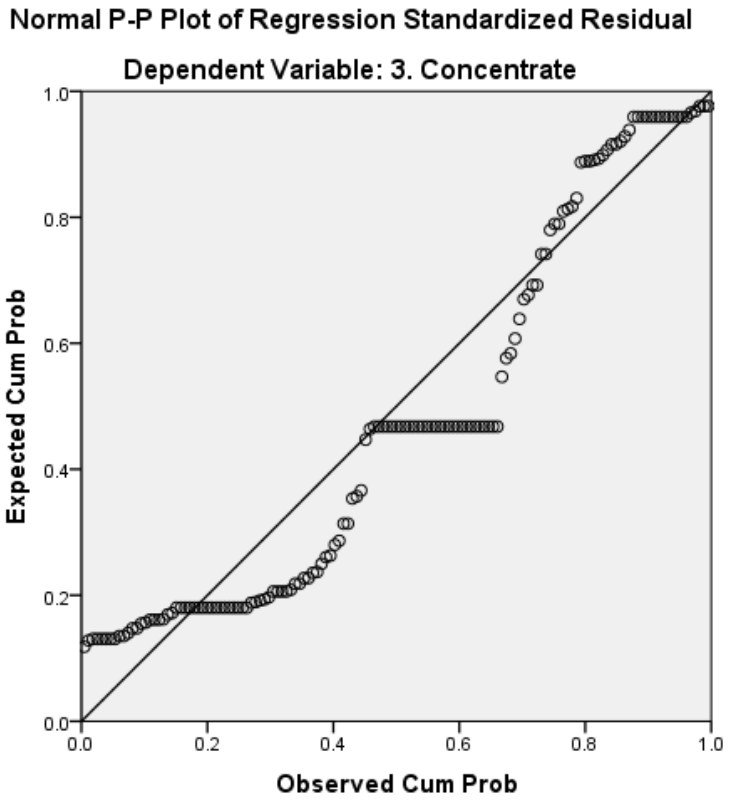
a. Dependent Variable: 3. Concentrate

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	.14	2.12	1.22	.653	143
Residual	-2.066	3.472	.000	1.721	143
Std. Predicted Value	-1.658	1.378	.000	1.000	143
Std. Residual	-1.184	1.990	.000	.986	143

a. Dependent Variable: 3. Concentrate





Descriptive Statistics

	Mean	Std. Deviation	N
4. Think quickly	1.31	1.911	143
How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?	2.89	1.824	143
How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?	2.99	1.760	143
How well do you agree with your level of managing your social support in managing your health condition?	3.01	1.808	143
How well do you agree with your personal coping behavior ability, given your health condition?	2.91	1.827	143

Correlations

		4. Think quickly	How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?	How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?	How well do you agree with your level of managing your social support in managing your health condition?	How well do you agree with your personal coping behavior ability, given your health condition?
Pearson Correlation	4. Think quickly	1.000	-.336	-.344	-.338	-.295
	How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?	-.336	1.000	.932	.879	.866
	How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?	-.344	.932	1.000	.923	.898
	How well do you agree with your level of managing your social support in managing your health condition?	-.338	.879	.923	1.000	.915
	How well do you agree with your personal coping behavior ability, given your health condition?	-.295	.866	.898	.915	1.000
Sig. (1-tailed)	4. Think quickly	.	.000	.000	.000	.000
	How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?	.000	.	.000	.000	.000
	How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?	.000	.000	.	.000	.000
	How well do you agree with your level of managing your social support in managing your health condition?	.000	.000	.000	.	.000
	How well do you agree with your personal coping behavior ability, given your health condition?	.000	.000	.000	.000	.
N	4. Think quickly	143	143	143	143	143
	How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?	143	143	143	143	143

How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?	143	143	143	143	143
How well do you agree with your level of managing your social support in managing your health condition?	143	143	143	143	143
How well do you agree with your personal coping behavior ability, given your health condition?	143	143	143	143	143

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	How well do you agree with your personal coping behavior ability, given your health condition? How well do you agree with your ability to comply with the provided self-care actions to manage your health condition? How well do you agree with your level of managing your social support in managing your health condition?, How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?[b]	.	Enter

a. Dependent Variable: 4. Think quickly
b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.358[a]	.128	.103	1.810	.128	5.059	4	138	.001

a. Predictors: (Constant), How well do you agree with your personal coping behavior ability, given your health condition? How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?, How well do you agree with your level of managing your social support in managing your health condition?, How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?
b. Dependent Variable: 4. Think quickly

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	66.299	4	16.575	5.059	.001[b]
	Residual	452.163	138	3.277		
	Total	518.462	142			

a. Dependent Variable: 4. Think quickly

b. Predictors: (Constant), How well do you agree with your personal coping behavior ability, given your health condition? How well do you agree with your ability to comply with the provided self-care actions to manage your health condition? How well do you agree with your level of managing your social support in managing your health condition?, How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?

Coefficients[a]

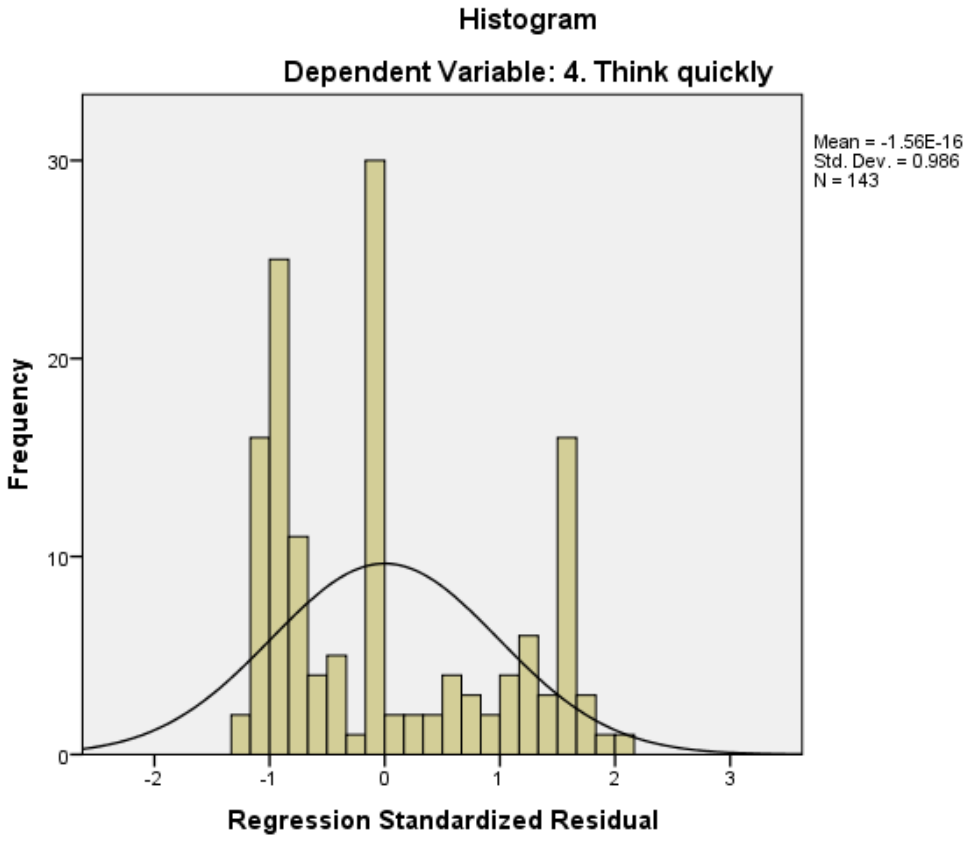
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	2.443	.302		8.101	.000	1.847	3.040
	How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?	-.130	.234	-.125	-.558	.578	-.593	.332
	How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?	-.204	.303	-.188	-.675	.501	-.804	.395
	How well do you agree with your level of managing your social support in managing your health condition?	-.249	.255	-.236	-.979	.329	-.753	.254
	How well do you agree with your personal coping behavior ability, given your health condition?	.207	.222	.198	.935	.352	-.231	.646

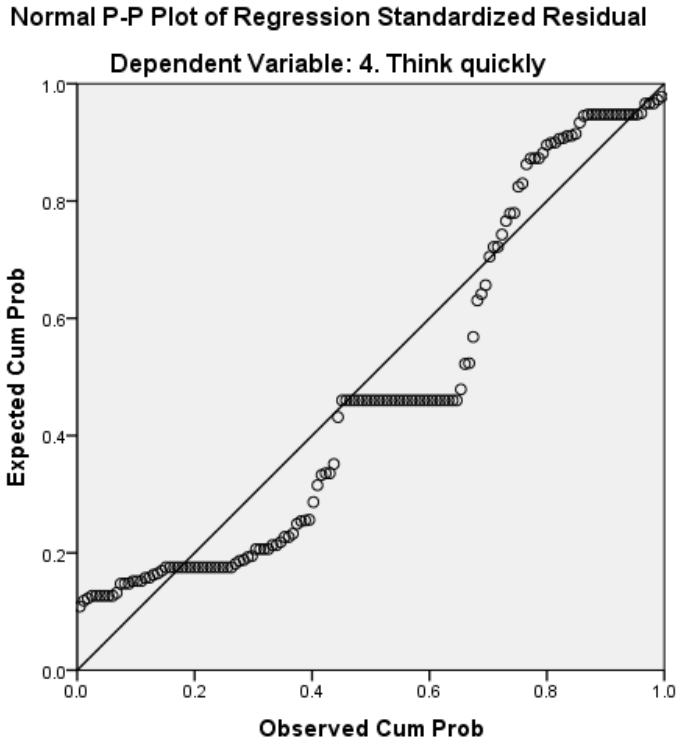
a. Dependent Variable: 4. Think quickly

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	.18	2.27	1.31	.683	143
Residual	-2.234	3.645	.000	1.784	143
Std. Predicted Value	-1.648	1.414	.000	1.000	143
Std. Residual	-1.234	2.014	.000	.986	143

a. Dependent Variable: 4. Think quickly


Histogram
Dependent Variable: 4. Think quickly
Mean = -1.56E-16
Std. Dev. = 0.986
N = 143
Frequency
30
20
10
0
-2
-1
0
1
2
3
Regression Standardized Residual



Descriptive Statistics

	Mean	Std. Deviation	N
5. Solve problems	1.27	1.881	143
How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?	2.89	1.824	143
How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?	2.99	1.760	143
How well do you agree with your level of managing your social support in managing your health condition?	3.01	1.808	143
How well do you agree with your personal coping behavior ability, given your health condition?	2.91	1.827	143

Correlations

	5. Solve problems	How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?	How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?	How well do you agree with your level of managing your social support in managing your health condition?	How well do you agree with your personal coping behavior ability, given your health condition?
5. Solve problems	1.000	-.328	-.343	-.339	-.296

Pearson Correlation	How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?	-.328	1.000	.932	.879	.866
	How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?	-.343	.932	1.000	.923	.898
	How well do you agree with your level of managing your social support in managing your health condition?	-.339	.879	.923	1.000	.915
	How well do you agree with your personal coping behavior ability, given your health condition?	-.296	.866	.898	.915	1.000
Sig. (1-tailed)	5. Solve problems	.	.000	.000	.000	.000
	How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?	.000	.	.000	.000	.000
	How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?	.000	.000	.	.000	.000
	How well do you agree with your level of managing your social support in managing your health condition?	.000	.000	.000	.	.000
	How well do you agree with your personal coping behavior ability, given your health condition?	.000	.000	.000	.000	.
N	5. Solve problems	143	143	143	143	143
	How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?	143	143	143	143	143
	How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?	143	143	143	143	143
	How well do you agree with your level of managing your social support in managing your health condition?	143	143	143	143	143
	How well do you agree with your personal coping behavior ability, given your health condition?	143	143	143	143	143

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	How well do you agree with your personal coping behavior ability, given your health condition? How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?, How well do you agree with your level of managing your social support in managing your health condition?, How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?[b]	.	Enter

a. Dependent Variable: 5. Solve problems
b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.355[a]	.126	.101	1.784	.126	4.974	4	138	.001

a. Predictors: (Constant), How well do you agree with your personal coping behavior ability, given your health condition? How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?, How well do you agree with your level of managing your social support in managing your health condition?, How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?
b. Dependent Variable: 5. Solve problems

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	63.305	4	15.826	4.974	.001[b]
	Residual	439.059	138	3.182		
	Total	502.364	142			

a. Dependent Variable: 5. Solve problems
b. Predictors: (Constant), How well do you agree with your personal coping behavior ability, given your health condition? How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?, How well do you agree with your level of managing your social support in managing your health condition?, How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?

Coefficients[a]

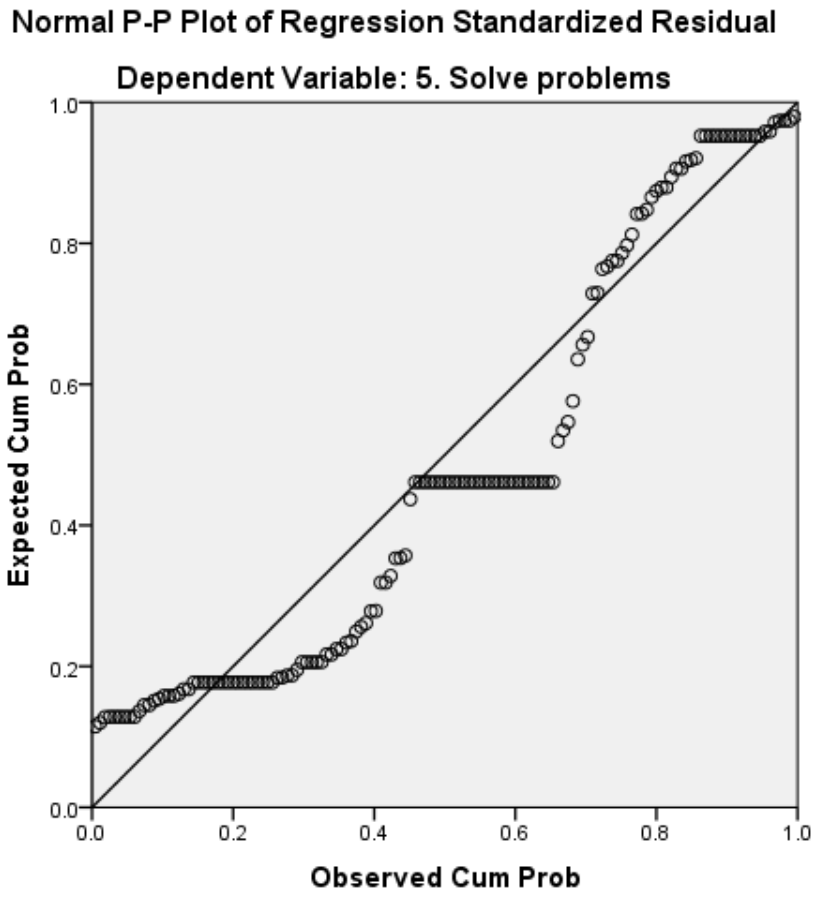
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	2.392	.297		8.048	.000	1.804	2.980
	How well do you agree with your ability to comply with the provided self-care actions to manage your health condition?	-.067	.230	-.065	-.291	.772	-.523	.389
	How well do you agree with your assertiveness level associated with your health condition (Expression of attitude, feeling, opinions)?	-.235	.299	-.219	-.785	.434	-.825	.356
	How well do you agree with your level of managing your social support in managing your health condition?	-.256	.251	-.246	-1.021	.309	-.752	.240
	How well do you agree with your personal coping behavior ability, given your health condition?	.188	.218	.182	.860	.392	-.244	.620

a. Dependent Variable: 5. Solve problems

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	.17	2.21	1.27	.668	143
Residual	-2.143	3.649	.000	1.758	143
Std. Predicted Value	-1.647	1.404	.000	1.000	143
Std. Residual	-1.201	2.046	.000	.986	143

a. Dependent Variable: 5. Solve problems


Normal P-P Plot of Regression Standardized Residual
Dependent Variable: 5. Solve problems
Expected Cum Prob
Observed Cum Prob
0.0
0.2
0.4
0.6
0.8
1.0

Regression analysis for psychosocial factors

Descriptive Statistics

	Mean	Std. Deviation	N
In the last 12 months, how many times were you admitted to a hospital because of a sickle cell painful event? Number of times	4.10	4.885	143
How often do your moods vary from being happy to sad due to your health condition?	3.47	1.707	143
In a week, how often do you feel entirely hopeless because of your health status?	3.86	1.495	143
In a week, how often do you have lowered self-esteem due to your health condition?	3.12	1.833	143

Correlations

		In the last 12 months, how many times were you admitted to a hospital because of a sickle cell painful event? Number of times	How often do your moods vary from being happy to sad due to your health condition?	In a week, how often do you feel entirely hopeless because of your health status?	In a week, how often do you have lowered self-esteem due to your health condition?
Pearson Correlation	In the last 12 months, how many times were you admitted to a hospital because of a sickle cell painful event? Number of times	1.000	.633	.372	.564
	How often do your moods vary from being happy to sad due to your health condition?	.633	1.000	.285	.856
	In a week, how often do you feel entirely hopeless because of your health status?	.372	.285	1.000	.322
	In a week, how often do you have lowered self-esteem due to your health condition?	.564	.856	.322	1.000
Sig. (1-tailed)	In the last 12 months, how many times were you admitted to a hospital because of a sickle cell painful event? Number of times	.	.000	.000	.000
	How often do your moods vary from being happy to sad due to your health condition?	.000	.	.000	.000
	In a week, how often do you feel entirely hopeless because of your health status?	.000	.000	.	.000
	In a week, how often do you have lowered self-esteem due to your health condition?	.000	.000	.000	.
N	In the last 12 months, how many times were you admitted to a hospital because of a sickle cell painful event? Number of times	143	143	143	143
	How often do your moods vary from being happy to sad due to your health condition?	143	143	143	143
	In a week, how often do you feel entirely hopeless because of your health status?	143	143	143	143
	In a week, how often do you have lowered self-esteem due to your health condition?	143	143	143	143

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	In a week, how often do you have lowered self-esteem due to your health condition? In a week, how often do you feel entirely hopeless because of your health status?, How often do your moods vary from being happy to sad due to your health condition?[b]	.	Enter

a. Dependent Variable: In the last 12 months, how many times were you admitted to a hospital because of a sickle cell painful event? Number of times

b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.664[a]	.441	.429	3.692	.441	36.532	3	139	.000

a. Predictors: (Constant), In a week, how often do you have lowered self-esteem due to your health condition? In a week, how often do you feel entirely hopeless because of your health status?, How often do your moods vary from being happy to sad due to your health condition?

b. Dependent Variable: In the last 12 months, how many times were you admitted to a hospital because of a sickle cell painful event? Number of times

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1493.911	3	497.970	36.532	.000[b]
	Residual	1894.718	139	13.631		
	Total	3388.629	142			

a. Dependent Variable: In the last 12 months, how many times were you admitted to a hospital because of a sickle cell painful event? Number of times

b. Predictors: (Constant), In a week, how often do you have lowered self-esteem due to your health condition? In a week, how often do you feel entirely hopeless because of your health status?, How often do your moods vary from being happy to sad due to your health condition?

Coefficients[a]

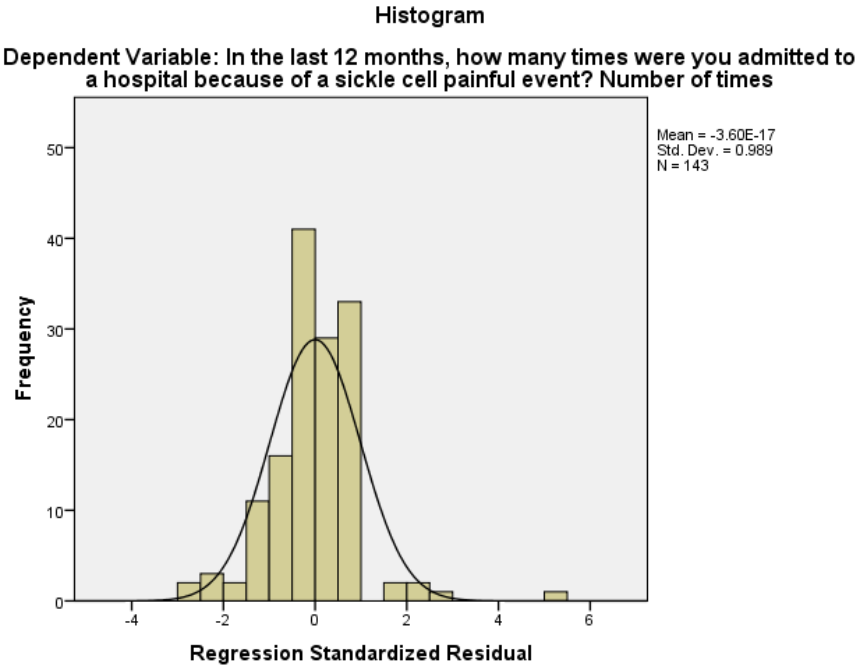
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	-4.203	.963		-4.366	.000	-6.107	-2.300
	How often do your moods vary from being happy to sad due to your health condition?	1.584	.351	.553	4.516	.000	.891	2.278
	In a week, how often do you feel entirely hopeless because of your health status?	.675	.219	.207	3.082	.002	.242	1.108
	In a week, how often do you have lowered self-esteem due to your health condition?	.064	.331	.024	.194	.846	-.590	.718

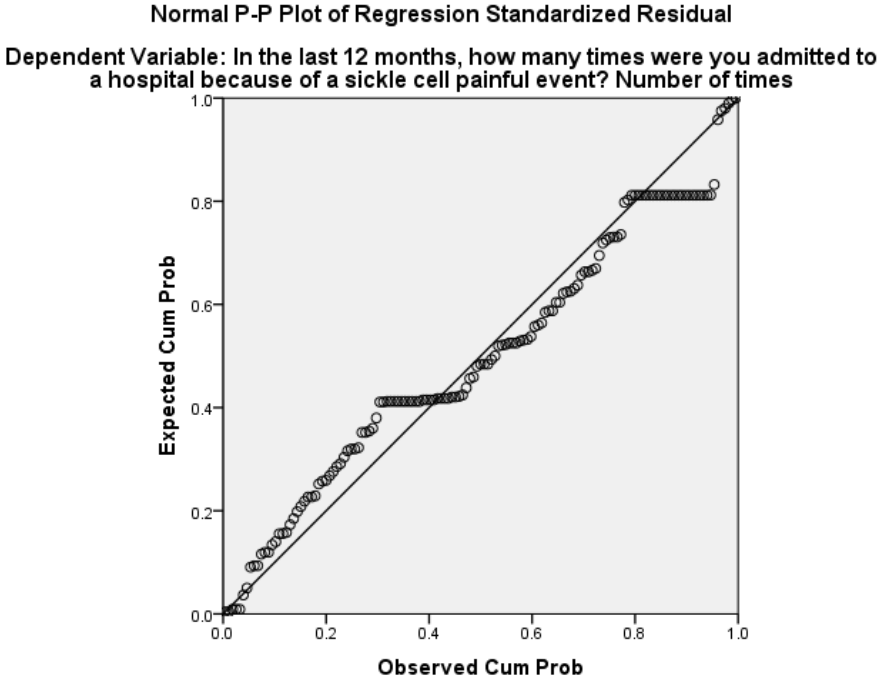
a. Dependent Variable: In the last 12 months, how many times were you admitted to a hospital because of a sickle cell painful event? Number of times

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	-1.14	9.74	4.10	3.244	143
Residual	-9.738	19.543	.000	3.653	143
Std. Predicted Value	-1.615	1.739	.000	1.000	143
Std. Residual	-2.638	5.293	.000	.989	143

a. Dependent Variable: In the last 12 months, how many times were you admitted to a hospital because of a sickle cell painful event? Number of times





Descriptive Statistics

	Mean	Std. Deviation	N
In the last 6 months, have you had a painful episode severe enough to keep you from doing the usual daily activities, but without being seen by a doctor? (if yes please answer question 8 and 9)	1.48	.749	143
How often do your moods vary from being happy to sad due to your health condition?	3.47	1.707	143
In a week, how often do you feel entirely hopeless because of your health status?	3.86	1.495	143
In a week, how often do you have lowered self-esteem due to your health condition?	3.12	1.833	143

Correlations

		In the last 6 months, have you had a painful episode severe enough to keep you from doing the usual daily activities, but without being seen by a doctor? (if yes please answer question 8 and 9)	How often do your moods vary from being happy to sad due to your health condition?	In a week, how often do you feel entirely hopeless because of your health status?	In a week, how often do you have lowered self-esteem due to your health condition?
Pearson Correlation	In the last 6 months, have you had a painful episode severe enough to keep you from doing the usual daily activities, but without being seen by a doctor? (if yes please answer question 8 and 9)	1.000	.406	.664	.471
	How often do your moods vary from being happy to sad due to your health condition?	.406	1.000	.285	.856
	In a week, how often do you feel entirely hopeless because of your health status?	.664	.285	1.000	.322
	In a week, how often do you have lowered self-esteem due to your health condition?	.471	.856	.322	1.000
Sig. (1-tailed)	In the last 6 months, have you had a painful episode severe enough to keep you from doing the usual daily activities, but without being seen by a doctor? (if yes please answer question 8 and 9)	.	.000	.000	.000
	How often do your moods vary from being happy to sad due to your health condition?	.000	.	.000	.000
	In a week, how often do you feel entirely hopeless because of your health status?	.000	.000	.	.000
	In a week, how often do you have lowered self-esteem due to your health condition?	.000	.000	.000	.
N	In the last 6 months, have you had a painful episode severe enough to keep you from doing the usual daily activities, but without being seen by a doctor? (if yes please answer question 8 and 9)	143	143	143	143
	How often do your moods vary from being happy to sad due to your health condition?	143	143	143	143
	In a week, how often do you feel entirely hopeless because of your health status?	143	143	143	143
	In a week, how often do you have lowered self-esteem due to your health condition?	143	143	143	143

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	In a week, how often do you have lowered self-esteem due to your health condition? In a week, how often do you feel entirely hopeless because of your health status? How often do your moods vary from being happy to sad due to your health condition?[b]	.	Enter

a. Dependent Variable: In the last 6 months, have you had a painful episode severe enough to keep you from doing the usual daily activities, but without being seen by a doctor? (if yes please answer question 8 and 9)
b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.718[a]	.515	.505	.527	.515	49.199	3	139	.000

a. Predictors: (Constant), In a week, how often do you have lowered self-esteem due to your health condition? In a week, how often do you feel entirely hopeless because of your health status?, How often do your moods vary from being happy to sad due to your health condition?
b. Dependent Variable: In the last 6 months, have you had a painful episode severe enough to keep you from doing the usual daily activities, but without being seen by a doctor? (if yes please answer question 8 and 9)

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	41.049	3	13.683	49.199	.000[b]
	Residual	38.658	139	.278		
	Total	79.706	142			

a. Dependent Variable: In the last 6 months, have you had a painful episode severe enough to keep you from doing the usual daily activities, but without being seen by a doctor? (if yes please answer question 8 and 9)
b. Predictors: (Constant), In a week, how often do you have lowered self-esteem due to your health condition? In a week, how often do you feel entirely hopeless because of your health status?, How often do your moods vary from being happy to sad due to your health condition?

Coefficients[a]

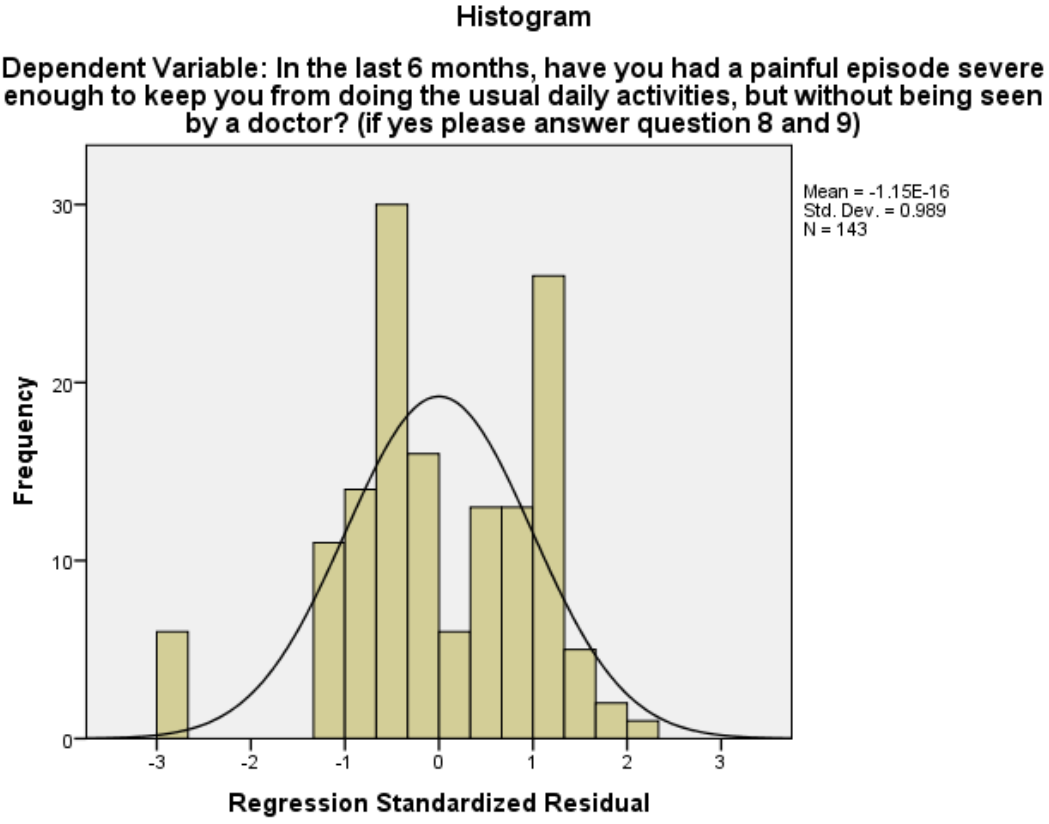
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	.014	.138		.104	.917	-.258	.286
	How often do your moods vary from being happy to sad due to your health condition?	-.004	.050	-.010	-.084	.933	-.103	.095
	In a week, how often do you feel entirely hopeless because of your health status?	.287	.031	.572	9.169	.000	.225	.349
	In a week, how often do you have lowered self-esteem due to your health condition?	.120	.047	.295	2.549	.012	.027	.214

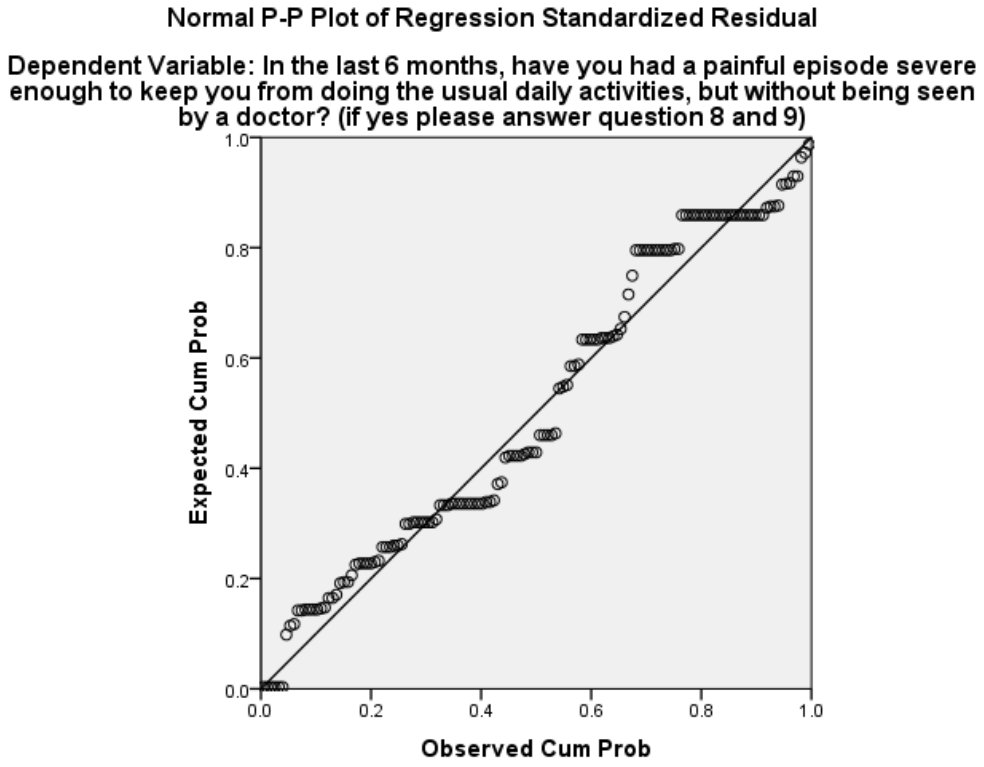
a. Dependent Variable: In the last 6 months, have you had a painful episode severe enough to keep you from doing the usual daily activities, but without being seen by a doctor? (if yes please answer question 8 and 9)

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	.40	2.43	1.48	.538	143
Residual	-1.433	1.175	.000	.522	143
Std. Predicted Value	-2.012	1.767	.000	1.000	143
Std. Residual	-2.717	2.229	.000	.989	143

a. Dependent Variable: In the last 6 months, have you had a painful episode severe enough to keep you from doing the usual daily activities, but without being seen by a doctor? (if yes please answer question 8 and 9)





Descriptive Statistics

	Mean	Std. Deviation	N
When was your last pain attack?	3.46	1.500	114
How often do your moods vary from being happy to sad due to your health condition?	2.82	1.264	114
In a week, how often do you feel entirely hopeless because of your health status?	3.32	1.155	114
In a week, how often do you have lowered self-esteem due to your health condition?	2.39	1.245	114

Correlations

		When was your last pain attack?	How often do your moods vary from being happy to sad due to your health condition?	In a week, how often do you feel entirely hopeless because of your health status?	In a week, how often do you have lowered self-esteem due to your health condition?
Pearson Correlation	When was your last pain attack?	1.000	.467	-.426	.431
	How often do your moods vary from being happy to sad due to your health condition?	.467	1.000	-.568	.645
	In a week, how often do you feel entirely hopeless because of your health status?	-.426	-.568	1.000	-.609
	In a week, how often do you have lowered self-esteem due to your health condition?	.431	.645	-.609	1.000
Sig. (1-tailed)	When was your last pain attack?	.	.000	.000	.000
	How often do your moods vary from being happy to sad due to your health condition?	.000	.	.000	.000
	In a week, how often do you feel entirely hopeless because of your health status?	.000	.000	.	.000
	In a week, how often do you have lowered self-esteem due to your health condition?	.000	.000	.000	.
N	When was your last pain attack?	114	114	114	114
	How often do your moods vary from being happy to sad due to your health condition?	114	114	114	114
	In a week, how often do you feel entirely hopeless because of your health status?	114	114	114	114
	In a week, how often do you have lowered self-esteem due to your health condition?	114	114	114	114

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	In a week, how often do you have lowered self-esteem due to your health condition? In a week, how often do you feel entirely hopeless because of your health status? How often do your moods vary from being happy to sad due to your health condition?[b]	.	Enter

a. Dependent Variable: When was your last pain attack?

b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.517[a]	.267	.247	1.302	.267	13.353	3	110	.000

a. Predictors: (Constant), In a week, how often do you have lowered self-esteem due to your health condition? In a week, how often do you feel entirely hopeless because of your health status?, How often do your moods vary from being happy to sad due to your health condition?
b. Dependent Variable: When was your last pain attack?

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	67.882	3	22.627	13.353	.000[b]
	Residual	186.398	110	1.695		
	Total	254.281	113			

a. Dependent Variable: When was your last pain attack?
b. Predictors: (Constant), In a week, how often do you have lowered self-esteem due to your health condition? In a week, how often do you feel entirely hopeless because of your health status?, How often do your moods vary from being happy to sad due to your health condition?

Coefficients[a]

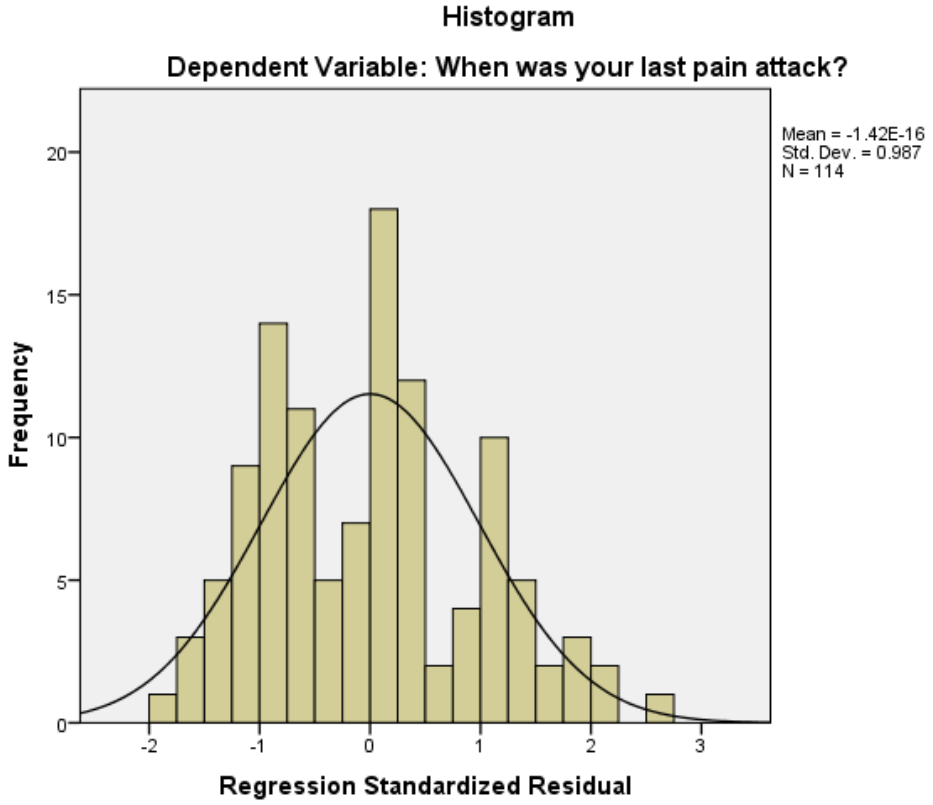
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	2.939	0.765		3.842	0	1.423	4.455
	How often do your moods vary from being happy to sad due to your health condition?	0.319	0.133	0.269	2.405	0.018	0.056	0.581
	In a week, how often do you feel entirely hopeless because of your health status?	-0.241	0.14	-0.186	-1.726	0.087	-0.518	0.036
	In a week, how often do you have lowered self-esteem due to your health condition?	0.174	0.14	0.145	1.249	0.214	-0.102	0.451

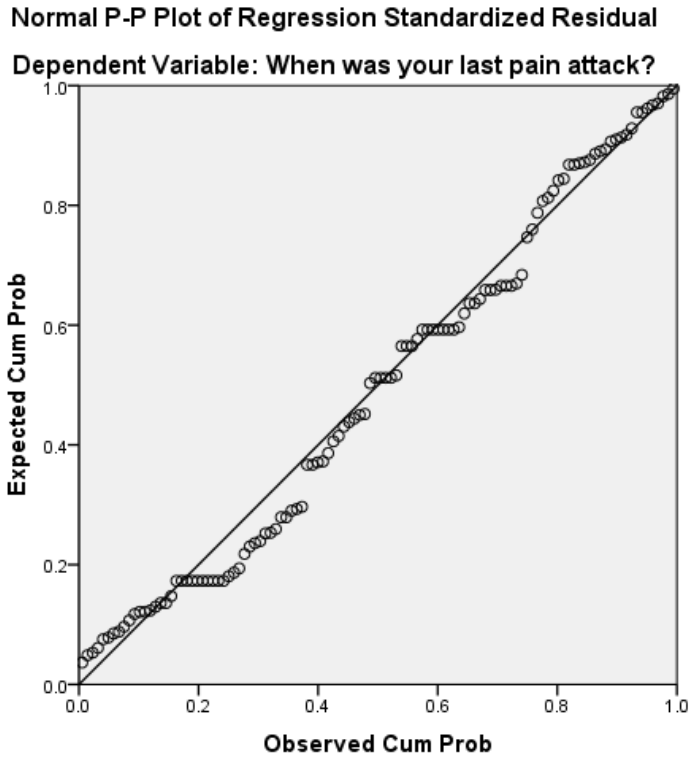
a. Dependent Variable: When was your last pain attack?

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2.23	5.16	3.46	.775	114
Residual	-2.333	3.358	.000	1.284	114
Std. Predicted Value	-1.586	2.203	.000	1.000	114
Std. Residual	-1.792	2.579	.000	.987	114

a. Dependent Variable: When was your last pain attack?





Descriptive Statistics

	Mean	Std. Deviation	N
Functionality after a Stroke Sickle cell disease patient can experience stroke, were blood flow cannot get to certain area of the brain	1.75	.435	112
How often do your moods vary from being happy to sad due to your health condition?	2.83	1.273	112
In a week, how often do you feel entirely hopeless because of your health status?	3.31	1.163	112
In a week, how often do you have lowered self-esteem due to your health condition?	2.38	1.254	112

Correlations

		Functionality after a Stroke Sickle cell disease patient can experience stroke, were blood flow cannot get to certain area of the brain	How often do your moods vary from being happy to sad due to your health condition?	In a week, how often do you feel entirely hopeless because of your health status?	In a week, how often do you have lowered self-esteem due to your health condition?
Pearson Correlation	Functionality after a Stroke Sickle cell disease patient can experience stroke, were blood flow cannot get to certain area of the brain	1.000	-.208	.263	-.136
	How often do your moods vary from being happy to sad due to your health condition?	-.208	1.000	-.567	.651
	In a week, how often do you feel entirely hopeless because of your health status?	.263	-.567	1.000	-.615
	In a week, how often do you have lowered self-esteem due to your health condition?	-.136	.651	-.615	1.000
Sig. (1-tailed)	Functionality after a Stroke Sickle cell disease patient can experience stroke, were blood flow cannot get to certain area of the brain	.	.014	.003	.076
	How often do your moods vary from being happy to sad due to your health condition?	.014	.	.000	.000
	In a week, how often do you feel entirely hopeless because of your health status?	.003	.000	.	.000
	In a week, how often do you have lowered self-esteem due to your health condition?	.076	.000	.000	.
N	Functionality after a Stroke Sickle cell disease patient can experience stroke, were blood flow cannot get to certain area of the brain	112	112	112	112
	How often do your moods vary from being happy to sad due to your health condition?	112	112	112	112
	In a week, how often do you feel entirely hopeless because of your health status?	112	112	112	112
	In a week, how often do you have lowered self-esteem due to your health condition?	112	112	112	112

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	In a week, how often do you have lowered self-esteem due to your health condition? In a week, how often do you feel entirely hopeless because of your health status? How often do your moods vary from being happy to sad due to your health condition?[b]	.	Enter

a. Dependent Variable: Functionality after a Stroke Sickle cell disease patient can experience stroke, were blood flow cannot get to certain area of the brain

b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.282[a]	.080	.054	.423	.080	3.109	3	108	.029

a. Predictors: (Constant), In a week, how often do you have lowered self-esteem due to your health condition? In a week, how often do you feel entirely hopeless because of your health status? How often do your moods vary from being happy to sad due to your health condition?

b. Dependent Variable: Functionality after a Stroke Sickle cell disease patient can experience stroke, were blood flow cannot get to certain area of the brain

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.670	3	.557	3.109	.029[b]
	Residual	19.330	108	.179		
	Total	21.000	111			

a. Dependent Variable: Functionality after a Stroke Sickle cell disease patient can experience stroke, were blood flow cannot get to certain area of the brain

b. Predictors: (Constant), In a week, how often do you have lowered self-esteem due to your health condition? In a week, how often do you feel entirely hopeless because of your health status?, How often do your moods vary from being happy to sad due to your health condition?

Coefficients[a]

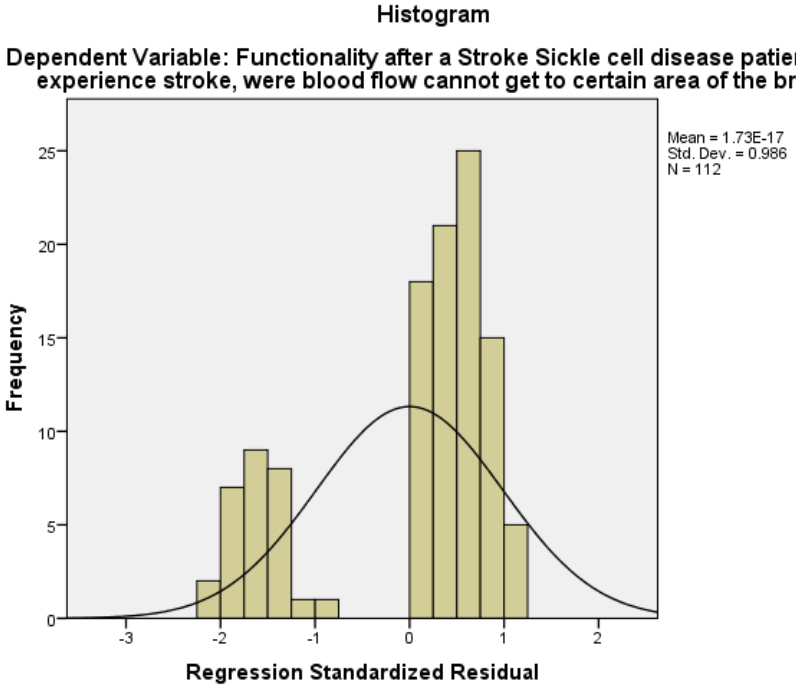
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	1.480	.249		5.936	.000	.986	1.974
	How often do your moods vary from being happy to sad due to your health condition?	-.046	.043	-.133	-1.053	.295	-.131	.040
	In a week, how often do you feel entirely hopeless because of your health status?	.094	.046	.252	2.068	.041	.004	.185
	In a week, how often do you have lowered self-esteem due to your health condition?	.037	.046	.105	.796	.428	-.054	.127

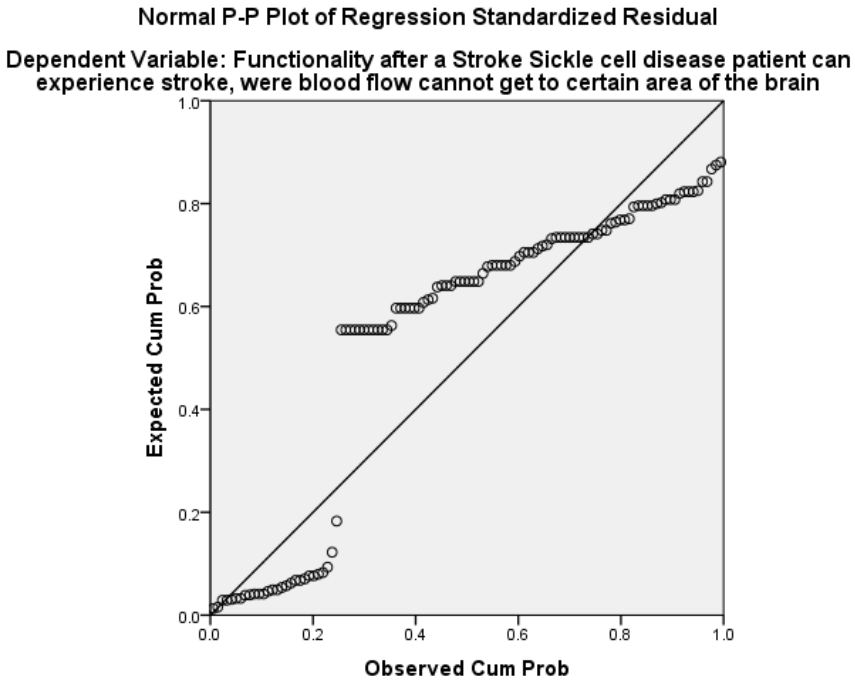
a. Dependent Variable: Functionality after a Stroke Sickle cell disease patient can experience stroke, were blood flow cannot get to certain area of the brain

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	1.38	1.94	1.75	.123	112
Residual	-.942	.499	.000	.417	112
Std. Predicted Value	-2.995	1.564	.000	1.000	112
Std. Residual	-2.226	1.179	.000	.986	112

a. Dependent Variable: Functionality after a Stroke Sickle cell disease patient can experience stroke, were blood flow cannot get to certain area of the brain


Histogram
Dependent Variable: Functionality after a Stroke Sickle cell disease patient can experience stroke, were blood flow cannot get to certain area of the brain
Mean = 1.73E-17
Std. Dev. = 0.986
N = 112
Frequency
Regression Standardized Residual


Normal P-P Plot of Regression Standardized Residual
Dependent Variable: Functionality after a Stroke Sickle cell disease patient can experience stroke, were blood flow cannot get to certain area of the brain
Expected Cum Prob
Observed Cum Prob

Descriptive Statistics

	Mean	Std. Deviation	N
1. Remember things that occurred the previous day	1.23	1.887	143
How often do your moods vary from being happy to sad due to your health condition?	3.47	1.707	143
In a week, how often do you feel entirely hopeless because of your health status?	3.86	1.495	143
In a week, how often do you have lowered self-esteem due to your health condition?	3.12	1.833	143

Correlations

		1. Remember things that occurred the previous day	How often do your moods vary from being happy to sad due to your health condition?	In a week, how often do you feel entirely hopeless because of your health status?	In a week, how often do you have lowered self-esteem due to your health condition?
Pearson Correlation	1. Remember things that occurred the previous day	1.000	-.373	-.151	-.385
	How often do your moods vary from being happy to sad due to your health condition?	-.373	1.000	.285	.856
	In a week, how often do you feel entirely hopeless because of your health status?	-.151	.285	1.000	.322
	In a week, how often do you have lowered self-esteem due to your health condition?	-.385	.856	.322	1.000
Sig. (1-tailed)	1. Remember things that occurred the previous day	.	.000	.036	.000
	How often do your moods vary from being happy to sad due to your health condition?	.000	.	.000	.000
	In a week, how often do you feel entirely hopeless because of your health status?	.036	.000	.	.000
	In a week, how often do you have lowered self-esteem due to your health condition?	.000	.000	.000	.
N	1. Remember things that occurred the previous day	143	143	143	143
	How often do your moods vary from being happy to sad due to your health condition?	143	143	143	143
	In a week, how often do you feel entirely hopeless because of your health status?	143	143	143	143
	In a week, how often do you have lowered self-esteem due to your health condition?	143	143	143	143

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	In a week, how often do you have lowered self-esteem due to your health condition? In a week, how often do you feel entirely hopeless because of your health status? How often do your moods vary from being happy to sad due to your health condition?[b]	.	Enter

a. Dependent Variable: 1. Remember things that occurred the previous day
b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.395[a]	.156	.138	1.752	.156	8.556	3	139	.000

a. Predictors: (Constant), In a week, how often do you have lowered self-esteem due to your health condition? In a week, how often do you feel entirely hopeless because of your health status? How often do your moods vary from being happy to sad due to your health condition?
b. Dependent Variable: 1. Remember things that occurred the previous day

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	78.775	3	26.258	8.556	.000[b]
	Residual	426.610	139	3.069		
	Total	505.385	142			

a. Dependent Variable: 1. Remember things that occurred the previous day
b. Predictors: (Constant), In a week, how often do you have lowered self-esteem due to your health condition? In a week, how often do you feel entirely hopeless because of your health status? How often do your moods vary from being happy to sad due to your health condition?

Coefficients[a]

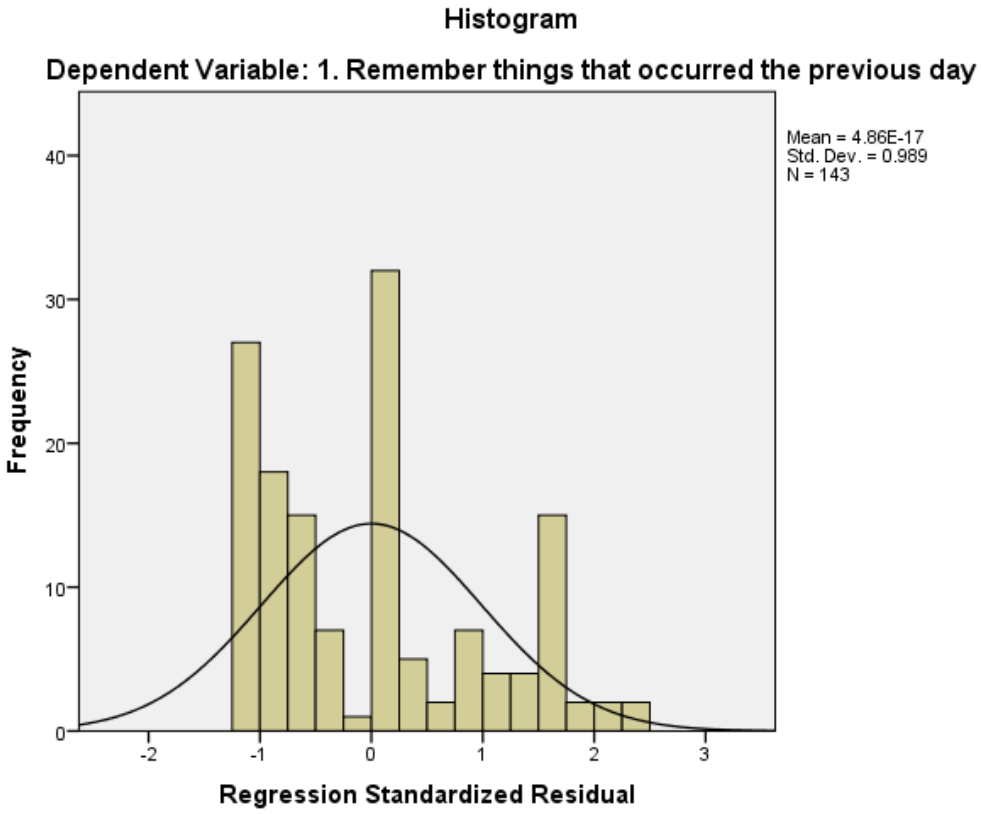
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	2.750	.457		6.020	.000	1.847	3.653
	How often do your moods vary from being happy to sad due to your health condition?	-.179	.166	-.162	-1.074	.285	-.508	.150
	In a week, how often do you feel entirely hopeless because of your health status?	-.036	.104	-.028	-.342	.733	-.241	.170
	In a week, how often do you have lowered self-esteem due to your health condition?	-.244	.157	-.237	-1.557	.122	-.555	.066

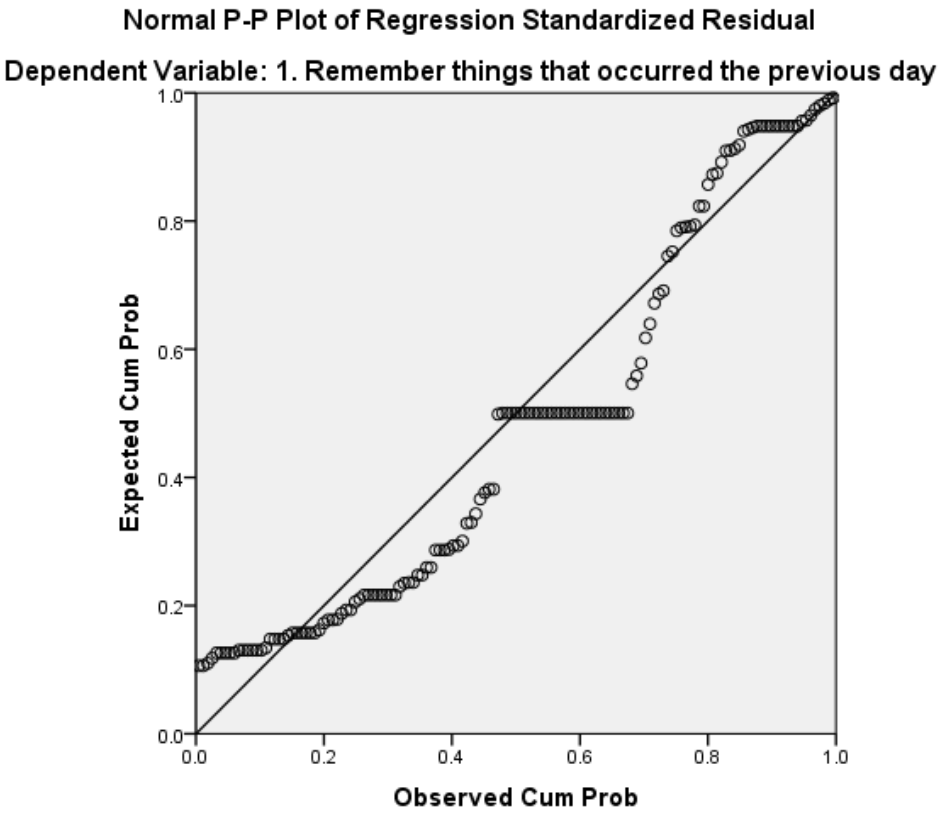
a. Dependent Variable: 1. Remember things that occurred the previous day

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	.00	2.22	1.23	.745	143
Residual	-2.185	4.222	.000	1.733	143
Std. Predicted Value	-1.655	1.329	.000	1.000	143
Std. Residual	-1.247	2.410	.000	.989	143

a. Dependent Variable: 1. Remember things that occurred the previous day





Descriptive Statistics			
	Mean	Std. Deviation	N
2. Remember to do things such as keeping a scheduled appointment	1.32	1.959	143
How often do your moods vary from being happy to sad due to your health condition?	3.47	1.707	143
In a week, how often do you feel entirely hopeless because of your health status?	3.86	1.495	143
In a week, how often do you have lowered self-esteem due to your health condition?	3.12	1.833	143

Correlations

		2. Remember to do things such as keeping a scheduled appointment	How often do your moods vary from being happy to sad due to your health condition?	In a week, how often do you feel entirely hopeless because of your health status?	In a week, how often do you have lowered self-esteem due to your health condition?
Pearson Correlation	2. Remember to do things such as keeping a scheduled appointment	1.000	-.399	-.148	-.368
	How often do your moods vary from being happy to sad due to your health condition?	-.399	1.000	.285	.856
	In a week, how often do you feel entirely hopeless because of your health status?	-.148	.285	1.000	.322
	In a week, how often do you have lowered self-esteem due to your health condition?	-.368	.856	.322	1.000
Sig. (1-tailed)	2. Remember to do things such as keeping a scheduled appointment	.	.000	.039	.000
	How often do your moods vary from being happy to sad due to your health condition?	.000	.	.000	.000
	In a week, how often do you feel entirely hopeless because of your health status?	.039	.000	.	.000
	In a week, how often do you have lowered self-esteem due to your health condition?	.000	.000	.000	.
N	2. Remember to do things such as keeping a scheduled appointment	143	143	143	143
	How often do your moods vary from being happy to sad due to your health condition?	143	143	143	143
	In a week, how often do you feel entirely hopeless because of your health status?	143	143	143	143
	In a week, how often do you have lowered self-esteem due to your health condition?	143	143	143	143

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	In a week, how often do you have lowered self-esteem due to your health condition? In a week, how often do you feel entirely hopeless because of your health status?, How often do your moods vary from being happy to sad due to your health condition?[b]		. Enter

a. Dependent Variable: 2. Remember to do things such as keeping a scheduled appointment
b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics			
					R Square Change	F Change	df1	df2	Sig. F Change
1	.403[a]	.163	.145	1.812	.163	9.001	3	139	.000

a. Predictors: (Constant), In a week, how often do you have lowered self-esteem due to your health condition? In a week, how often do you feel entirely hopeless because of your health status?, How often do your moods vary from being happy to sad due to your health condition?
b. Dependent Variable: 2. Remember to do things such as keeping a scheduled appointment

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	88.683	3	29.561	9.001	.000[b]
	Residual	456.520	139	3.284		
	Total	545.203	142			

a. Dependent Variable: 2. Remember to do things such as keeping a scheduled appointment
b. Predictors: (Constant), In a week, how often do you have lowered self-esteem due to your health condition? In a week, how often do you feel entirely hopeless because of your health status?, How often do your moods vary from being happy to sad due to your health condition?

Coefficients[a]

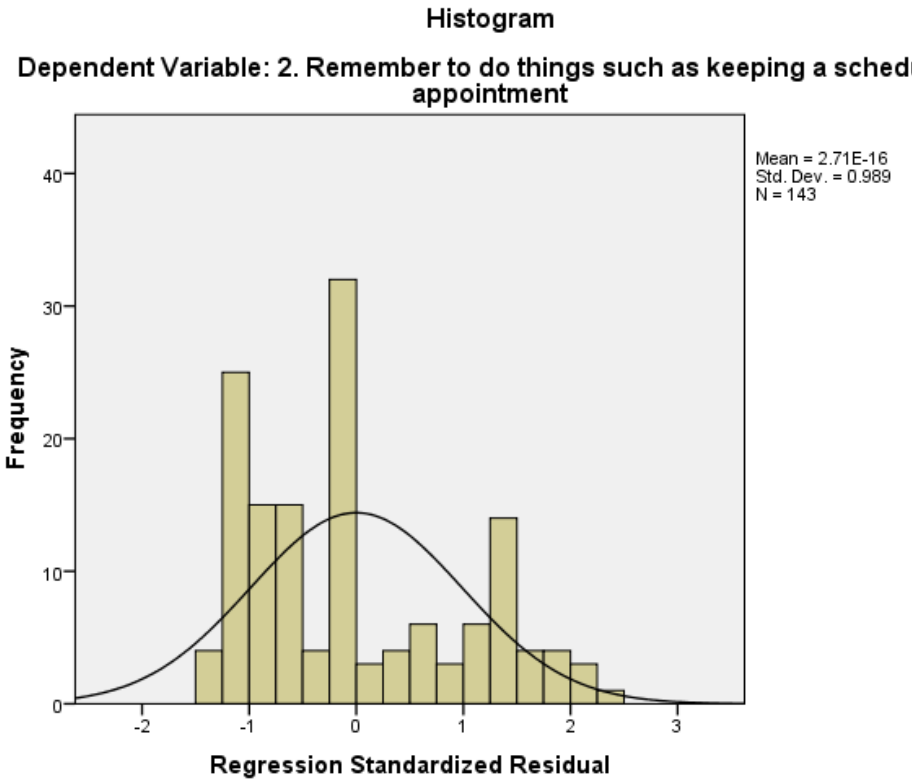
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
(Constant)	3.021	.473		6.393	.000	2.087	3.955
How often do your moods vary from being happy to sad due to your health condition?	-.361	.172	-.315	-2.099	.038	-.702	-.021
In a week, how often do you feel entirely hopeless because of your health status?	-.039	.108	-.030	-.361	.719	-.251	.174
In a week, how often do you have lowered self-esteem due to your health condition?	-.095	.162	-.089	-.584	.560	-.416	.226

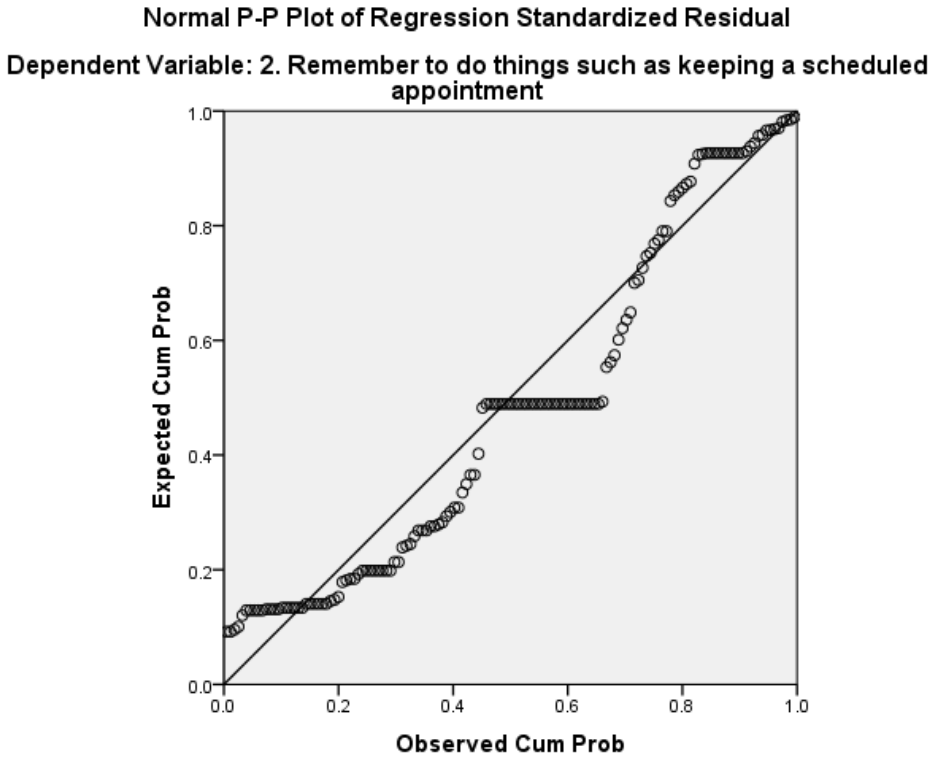
a. Dependent Variable: 2. Remember to do things such as keeping a scheduled appointment

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	.05	2.45	1.32	.790	143
Residual	-2.409	4.187	.000	1.793	143
Std. Predicted Value	-1.609	1.426	.000	1.000	143
Std. Residual	-1.330	2.310	.000	.989	143

a. Dependent Variable: 2. Remember to do things such as keeping a scheduled appointment


Histogram
Dependent Variable: 2. Remember to do things such as keeping a scheduled appointment
Mean = 2.71E-16
Std. Dev. = 0.989
N = 143
Frequency
40
30
20
10
0
-2
-1
0
1
2
3
Regression Standardized Residual



Descriptive Statistics

	Mean	Std. Deviation	N
3. Concentrate	1.22	1.840	143
How often do your moods vary from being happy to sad due to your health condition?	3.47	1.707	143
In a week, how often do you feel entirely hopeless because of your health status?	3.86	1.495	143
In a week, how often do you have lowered self-esteem due to your health condition?	3.12	1.833	143

Correlations

		3. Concentrate	How often do your moods vary from being happy to sad due to your health condition?	In a week, how often do you feel entirely hopeless because of your health status?	In a week, how often do you have lowered self-esteem due to your health condition?
Pearson Correlation	3. Concentrate	1.000	-.381	-.147	-.373
	How often do your moods vary from being happy to sad due to your health condition?	-.381	1.000	.285	.856
	In a week, how often do you feel entirely hopeless because of your health status?	-.147	.285	1.000	.322
	In a week, how often do you have lowered self-esteem due to your health condition?	-.373	.856	.322	1.000
Sig. (1-tailed)	3. Concentrate	.	.000	.040	.000
	How often do your moods vary from being happy to sad due to your health condition?	.000	.	.000	.000
	In a week, how often do you feel entirely hopeless because of your health status?	.040	.000	.	.000
	In a week, how often do you have lowered self-esteem due to your health condition?	.000	.000	.000	.
N	3. Concentrate	143	143	143	143
	How often do your moods vary from being happy to sad due to your health condition?	143	143	143	143
	In a week, how often do you feel entirely hopeless because of your health status?	143	143	143	143
	In a week, how often do you have lowered self-esteem due to your health condition?	143	143	143	143

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	In a week, how often do you have lowered self-esteem due to your health condition? In a week, how often do you feel entirely hopeless because of your health status?, How often do your moods vary from being happy to sad due to your health condition?[b]	.	Enter

a. Dependent Variable: 3. Concentrate

b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.393[a]	.154	.136	1.710	.154	8.454	3	139	.000

a. Predictors: (Constant), In a week, how often do you have lowered self-esteem due to your health condition? In a week, how often do you feel entirely hopeless because of your health status?, How often do your moods vary from being happy to sad due to your health condition?

b. Dependent Variable: 3. Concentrate

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	74.196	3	24.732	8.454	.000[b]
	Residual	406.643	139	2.925		
	Total	480.839	142			

a. Dependent Variable: 3. Concentrate

b. Predictors: (Constant), In a week, how often do you have lowered self-esteem due to your health condition? In a week, how often do you feel entirely hopeless because of your health status? How often do your moods vary from being happy to sad due to your health condition?

Coefficients[a]

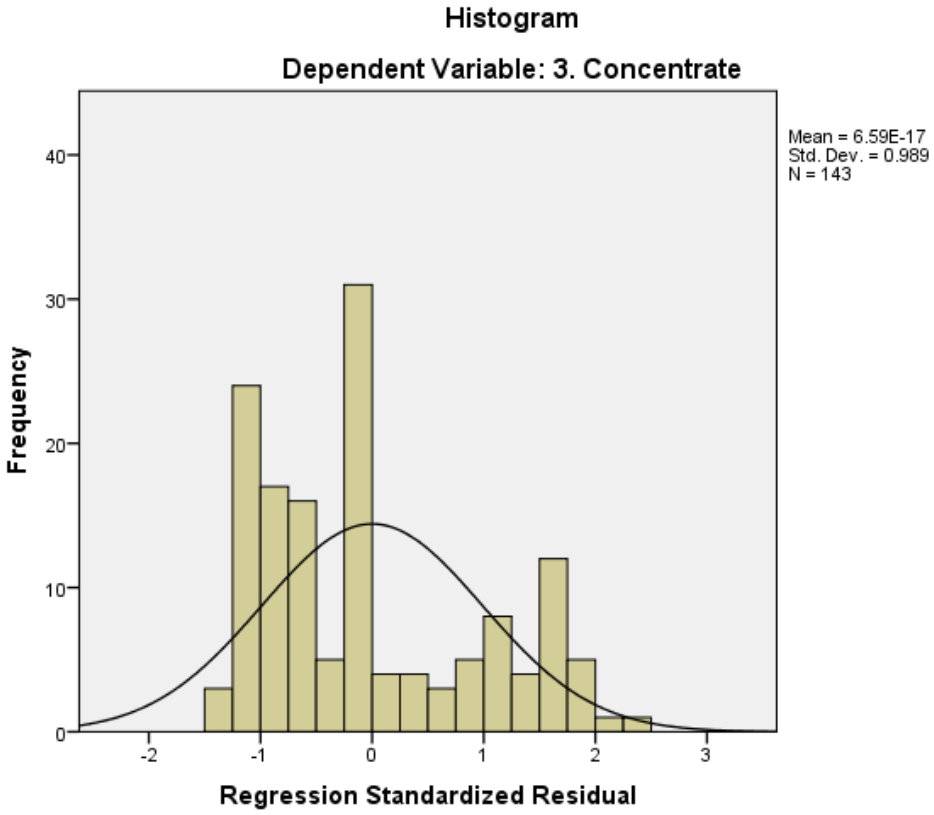
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	2.740	.446		6.143	.000	1.858	3.621
	How often do your moods vary from being happy to sad due to your health condition?	-.247	.163	-.229	-1.522	.130	-.569	.074
	In a week, how often do you feel entirely hopeless because of your health status?	-.034	.101	-.028	-.335	.738	-.235	.167
	In a week, how often do you have lowered self-esteem due to your health condition?	-.169	.153	-.168	-1.102	.272	-.472	.134

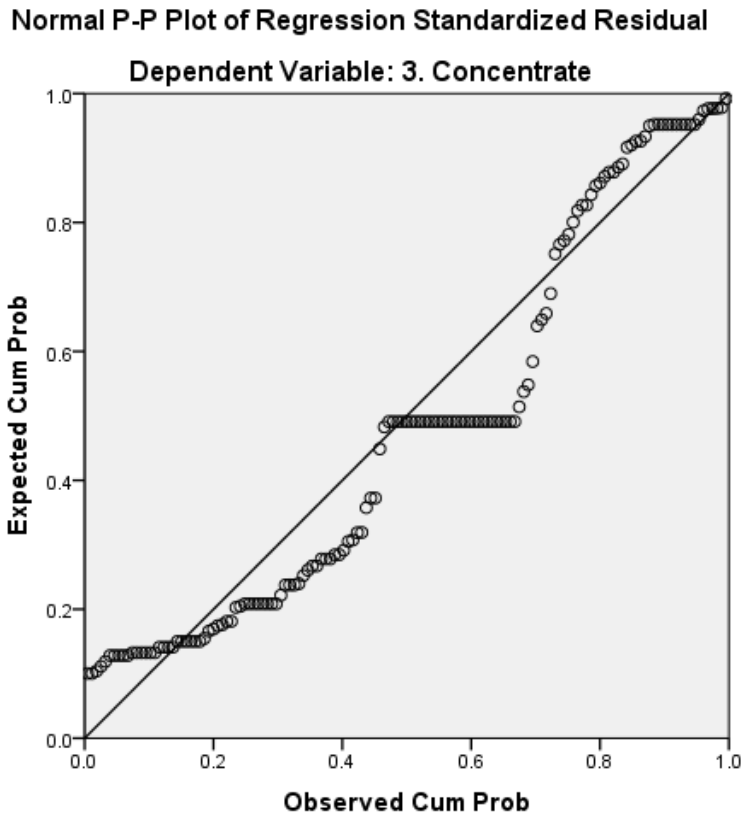
a. Dependent Variable: 3. Concentrate

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	.04	2.22	1.22	.723	143
Residual	-2.187	4.128	.000	1.692	143
Std. Predicted Value	-1.640	1.380	.000	1.000	143
Std. Residual	-1.279	2.413	.000	.989	143

a. Dependent Variable: 3. Concentrate


Histogram
Dependent Variable: 3. Concentrate
Mean = 6.59E-17
Std. Dev. = 0.989
N = 143
Frequency
40
30
20
10
0
-2
-1
0
1
2
3
Regression Standardized Residual



Descriptive Statistics

	Mean	Std. Deviation	N
4. Think quickly	1.31	1.911	143
How often do your moods vary from being happy to sad due to your health condition?	3.47	1.707	143
In a week, how often do you feel entirely hopeless because of your health status?	3.86	1.495	143
In a week, how often do you have lowered self-esteem due to your health condition?	3.12	1.833	143

Correlations

		4. Think quickly	How often do your moods vary from being happy to sad due to your health condition?	In a week, how often do you feel entirely hopeless because of your health status?	In a week, how often do you have lowered self-esteem due to your health condition?
Pearson Correlation	4. Think quickly	1.000	-.390	-.165	-.368
	How often do your moods vary from being happy to sad due to your health condition?	-.390	1.000	.285	.856
	In a week, how often do you feel entirely hopeless because of your health status?	-.165	.285	1.000	.322
	In a week, how often do you have lowered self-esteem due to your health condition?	-.368	.856	.322	1.000
Sig. (1-tailed)	4. Think quickly	.	.000	.025	.000
	How often do your moods vary from being happy to sad due to your health condition?	.000	.	.000	.000
	In a week, how often do you feel entirely hopeless because of your health status?	.025	.000	.	.000
	In a week, how often do you have lowered self-esteem due to your health condition?	.000	.000	.000	.
N	4. Think quickly	143	143	143	143
	How often do your moods vary from being happy to sad due to your health condition?	143	143	143	143
	In a week, how often do you feel entirely hopeless because of your health status?	143	143	143	143
	In a week, how often do you have lowered self-esteem due to your health condition?	143	143	143	143

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	In a week, how often do you have lowered self-esteem due to your health condition? In a week, how often do you feel entirely hopeless because of your health status?, How often do your moods vary from being happy to sad due to your health condition?[b]	.	Enter

a. Dependent Variable: 4. Think quickly

b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.398[a]	.159	.141	1.771	.159	8.742	3	139	.000

a. Predictors: (Constant), In a week, how often do you have lowered self-esteem due to your health condition? In a week, how often do you feel entirely hopeless because of your health status? How often do your moods vary from being happy to sad due to your health condition?
b. Dependent Variable: 4. Think quickly

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	82.297	3	27.432	8.742	.000[b]
	Residual	436.165	139	3.138		
	Total	518.462	142			

a. Dependent Variable: 4. Think quickly
b. Predictors: (Constant), In a week, how often do you have lowered self-esteem due to your health condition? In a week, how often do you feel entirely hopeless because of your health status? How often do your moods vary from being happy to sad due to your health condition?

Coefficients[a]

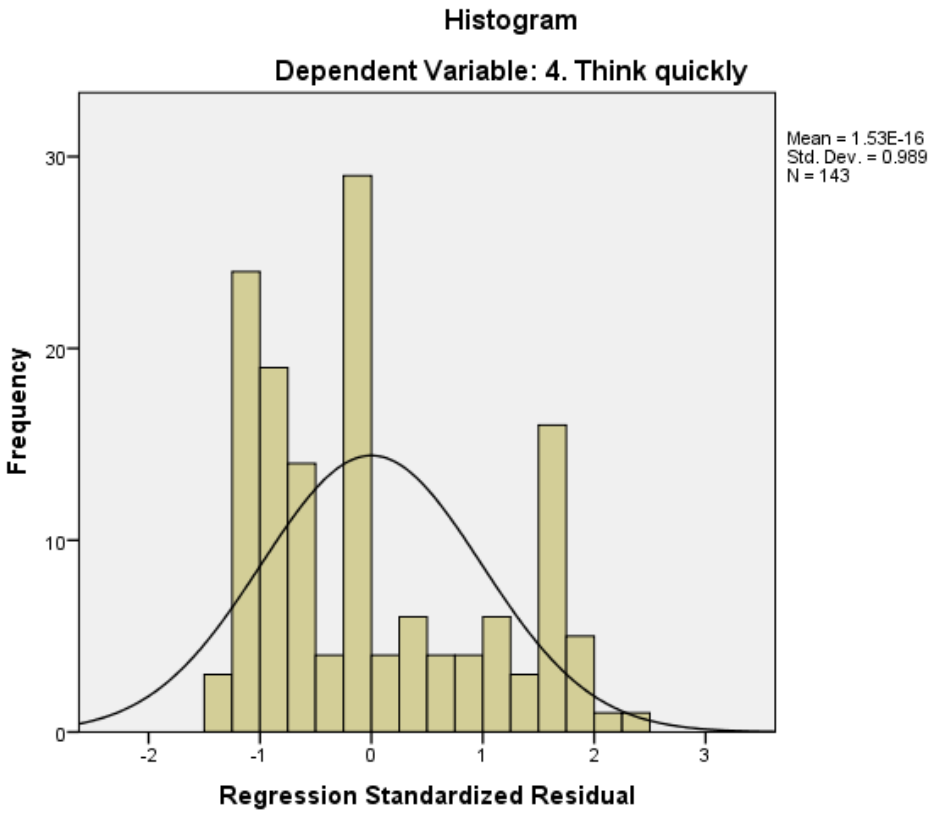
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
(Constant)	3.000	.462		6.494	.000	2.086	3.913
How often do your moods vary from being happy to sad due to your health condition?	-.311	.168	-.277	-1.845	.067	-.643	.022
In a week, how often do you feel entirely hopeless because of your health status?	-.062	.105	-.048	-.589	.557	-.270	.146
In a week, how often do you have lowered self-esteem due to your health condition?	-.120	.159	-.116	-.759	.449	-.434	.193

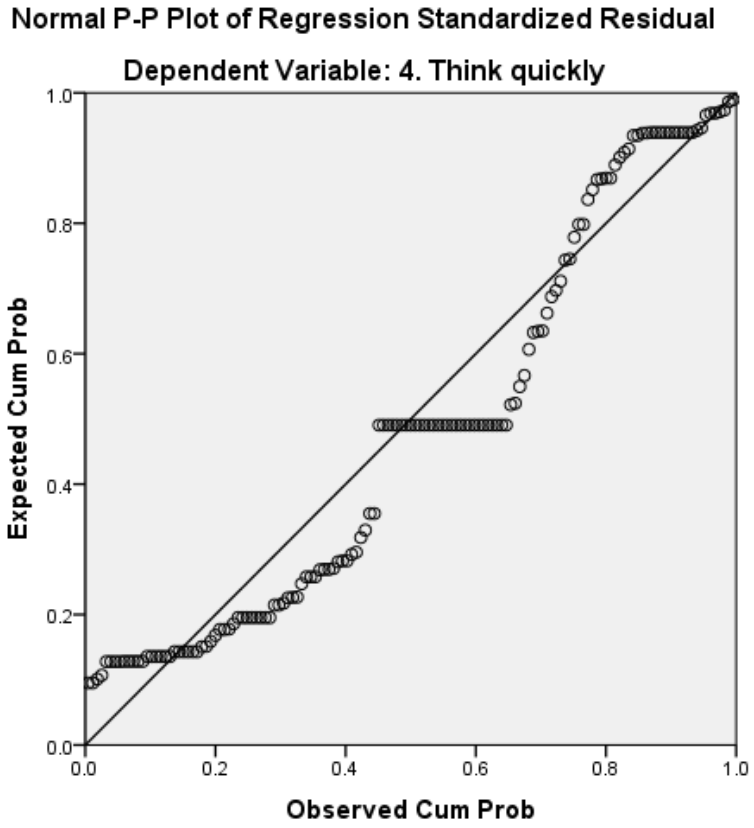
a. Dependent Variable: 4. Think quickly

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	.04	2.38	1.31	.761	143
Residual	-2.321	4.100	.000	1.753	143
Std. Predicted Value	-1.663	1.412	.000	1.000	143
Std. Residual	-1.310	2.315	.000	.989	143

a. Dependent Variable: 4. Think quickly





Descriptive Statistics

	Mean	Std. Deviation	N
5. Solve problems	1.27	1.881	143
How often do your moods vary from being happy to sad due to your health condition?	3.47	1.707	143
In a week, how often do you feel entirely hopeless because of your health status?	3.86	1.495	143
In a week, how often do you have lowered self-esteem due to your health condition?	3.12	1.833	143

Correlations

		5. Solve problems	How often do your moods vary from being happy to sad due to your health condition?	In a week, how often do you feel entirely hopeless because of your health status?	In a week, how often do you have lowered self-esteem due to your health condition?
Pearson Correlation	5. Solve problems	1.000	-.400	-.144	-.369
	How often do your moods vary from being happy to sad due to your health condition?	-.400	1.000	.285	.856
	In a week, how often do you feel entirely hopeless because of your health status?	-.144	.285	1.000	.322
	In a week, how often do you have lowered self-esteem due to your health condition?	-.369	.856	.322	1.000
Sig. (1-tailed)	5. Solve problems	.	.000	.043	.000
	How often do your moods vary from being happy to sad due to your health condition?	.000	.	.000	.000
	In a week, how often do you feel entirely hopeless because of your health status?	.043	.000	.	.000
	In a week, how often do you have lowered self-esteem due to your health condition?	.000	.000	.000	.
N	5. Solve problems	143	143	143	143
	How often do your moods vary from being happy to sad due to your health condition?	143	143	143	143
	In a week, how often do you feel entirely hopeless because of your health status?	143	143	143	143
	In a week, how often do you have lowered self-esteem due to your health condition?	143	143	143	143

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	In a week, how often do you have lowered self-esteem due to your health condition? In a week, how often do you feel entirely hopeless because of your health status?, How often do your moods vary from being happy to sad due to your health condition?[b]	.	Enter

a. Dependent Variable: 5. Solve problems

b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics			
					R Square Change	F Change	df1	df2	Sig. F Change
1	.404[a]	.163	.145	1.739	.163	9.033	3	139	.000

a. Predictors: (Constant), In a week, how often do you have lowered self-esteem due to your health condition? In a week, how often do you feel entirely hopeless because of your health status?, How often do your moods vary from being happy to sad due to your health condition?

b. Dependent Variable: 5. Solve problems

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	81.957	3	27.319	9.033	.000[b]
	Residual	420.407	139	3.025		
	Total	502.364	142			

a. Dependent Variable: 5. Solve problems

b. Predictors: (Constant), In a week, how often do you have lowered self-esteem due to your health condition? In a week, how often do you feel entirely hopeless because of your health status?, How often do your moods vary from being happy to sad due to your health condition?

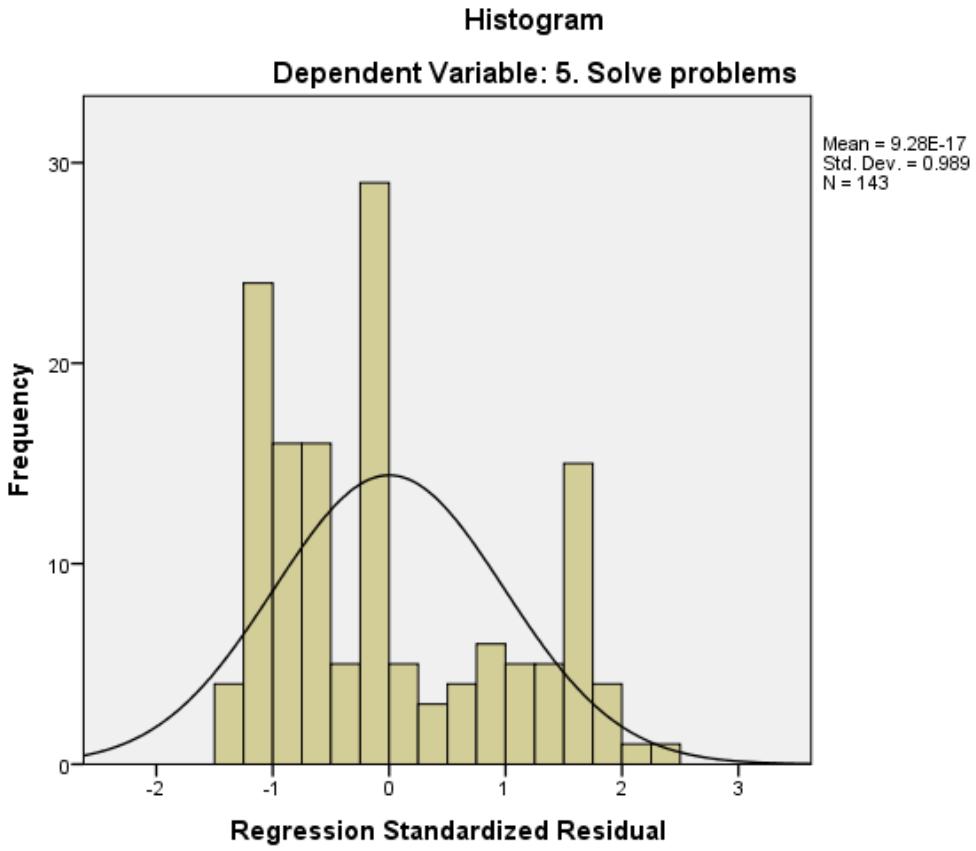
Coefficients[a]

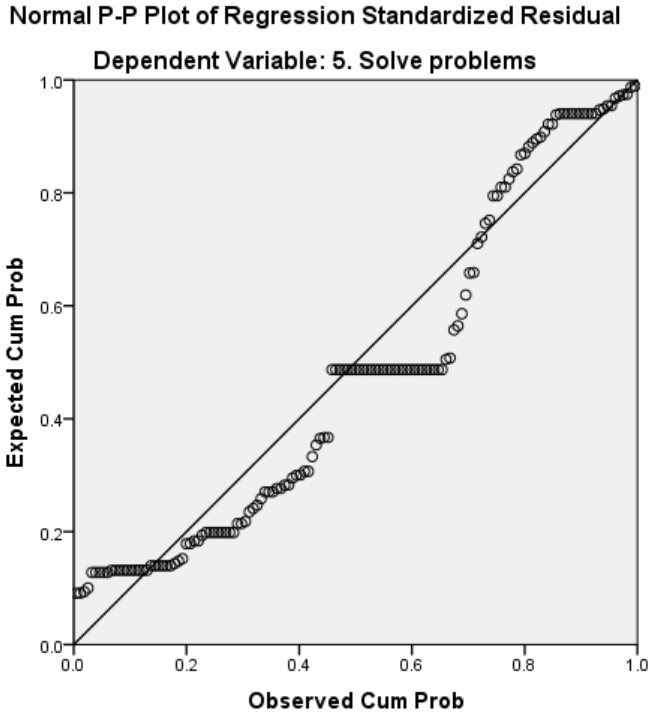
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	2.888	.453		6.369	.000	1.992	3.785
	How often do your moods vary from being happy to sad due to your health condition?	-.345	.165	-.313	-2.088	.039	-.672	-.018
	In a week, how often do you feel entirely hopeless because of your health status?	-.031	.103	-.025	-.302	.763	-.235	.173
	In a week, how often do you have lowered self-esteem due to your health condition?	-.096	.156	-.093	-.613	.541	-.404	.212

a. Dependent Variable: 5. Solve problems

Residuals Statistics[a]					
	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	.06	2.35	1.27	.760	143
Residual	-2.323	4.001	.000	1.721	143
Std. Predicted Value	-1.600	1.423	.000	1.000	143
Std. Residual	-1.336	2.301	.000	.989	143

a. Dependent Variable: 5. Solve problems




Normal P-P Plot of Regression Standardized Residual
Dependent Variable: 5. Solve problems
Expected Cum Prob
Observed Cum Prob
0.0
0.2
0.4
0.6
0.8
1.0