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Impact of Resilience on Quality of Life in Spinal Cord Injured Clients

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Walden University

College of Health Sciences and Public Policy

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Crystal D. Glover

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the review committee have been made.

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Walden University

2023

Abstract

Impact of Resilience on Quality of Life in Spinal Cord Injured Clients

by

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MSM, Troy University, 2006

BSN, University of North Carolina at Greensboro, 1995

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Public Health

Walden University

August 2023

Abstract

Suffering a spinal cord injury (SCI) brings about life-altering changes to daily living. The rate of people suffering with SCI has increased. Many factors such as quality of life (QoL) resiliency are impacted when someone suffers SCI. The purpose of this retrospective quantitative study was to examine the impact of positive attitude and positive coping resiliency factors on the QoL of people living with SCI for more than 1 year. Theory of self-efficacy was the theoretical framework used to guide the study. Hierarchical linear regression was also used to examine linearity among the variables. Findings indicated a statistically significant relationship between resilience and improved QoL positive attitude. Findings also showed a statistically significant relationship between resilience and improved QoL positive ways to cope. Findings may be used to improve the QoL of people living with SCI by promoting awareness and expanding public health interventions such as community-based peer-mentorship programs.

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Dedication

I dedicate this dissertation to my late father Joseph Garner Jr. who served as a reminder to persevere against all odds! Also, to my beloved sons, Cameron and Zion who gave me the motivation and tenacity to maintain this arduous journey to the end. This is a reminder that God will finish what He has started in you, and despite times when you may grow weary, you will not fail!

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My love to my sons for their never-ending support, encouragement, and prayers throughout this journey. I will forever cherish the bond we share and be committed to leading by example.

To all those I love, cherish, and respect that played a pivotal role throughout this endeavor, no words can express my heartfelt gratitude.

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God is within her she will not fall – Psalm 46: 5

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Chapter 1: Introduction to the Study

Each year thousands of people suffer a spinal cord injury (SCI), which is defined as a damage to the bundle of cells and nerves that receives and transmits signals from the brain to the rest of the body via the vertebrae pathway (National Institute of Health, n.d.). Additionally, SCI can be classified as complete, where there is no nerve communication or motor function below the level of injury, or incomplete, where there remains some message transmission between the brain the rest of the body (National Institute of Health, n.d.; U.S. National Library of Medicine, 2019). Sustaining SCI not only results in physical impairments but also poses psychological challenges (Coker et al., 2019; Gupta & Raja, 2017). The need for lifestyle changes and modified adaptation for people with SCI is real because living with a life-changing injury imposes both physical and psychological burdens that impact people's quality of life (QoL), socialization, and overall well-being (Craig, Perry et al., 2015; Guest et al., 2015; M. Li et al., 2018; Ma et al., 2014; Moreno et al., 2017). It is important to understand not only the magnitude of the adjustment to life for people living with SCI but also the significance of resilience to sustain lifelong optimal functioning (Bernet et al., 2018; Wyndaele, 2017).

Research suggested that the impact of having SCI potentiates compromise to a person's well-being, heightens the risk of secondary complications, and adversely alters psychological adjustment, social isolation, and economic burden (Craig, Perry et al., 2015; K. Li et al., 2018; Moreno et al., 2017). The current study examined the effect of resilience on the QoL elements of positive attitude and positive ways to cope among adults 18 years and older who are paraplegic SCI people more than 1 year after the

injury. This study was needed because people living with SCI had indicated a desire for more community-based resources that promote social reintegration and adaptation (Bhattarai et al., 2020; Bhattarai et al., 2018; Craig, Perry et al., 2015; Guest et al., 2015). Additionally, there was an identified lack of understanding related to SCI QoL care needs among those in the community (Guest et al., 2015; M. Li et al., 2018; Martinez-Mari & Ruch, 2017). In Chapter 1, I outline the background of the study, identify the problem statement, highlight the purpose of this study, introduce the research questions and hypotheses, and explain the theoretical framework, nature of study, definitions, assumptions, scope, delimitations, limitations, and significance. The chapter concludes with a summary.

Background

Resilience

Resilience refers to the process of recovering after adversity and successfully adapting to the adversity (Bhattarai et al., 2020). Additionally, resilience is seen as a mediator between social support and social well-being (Bhattarai et al., 2020; M. Li et al., 2018). The literature indicated that social support has been identified as one of the significant factors contributing to resilience (Bhattarai et al., 2020). People with higher social support are more likely to demonstrate better coping mechanisms and maintain a more optimal state of well-being (Bhattarai et al., 2020; Bhattarai et al., 2018). Research also suggested emotional changes brought about by life-altering circumstances can positively or negatively influence QoL, and with higher resilience comes enhanced QoL (Zhang et al., 2017). A person's level of resilience aids in buffering the effects of

negative emotions such as depression, hopelessness, and anxiety, and promotes skills to harness inner strength and adaptation to adversity (Mayo Clinic, 2022).

Coping

Suffering SCI is a life-changing event. A new way of adaptive living after SCI becomes necessary. Coping is a manner of adjustment that serves as a variable related to QoL. The ability to connect with other individuals who have had personal experiences with SCI to share information, practical skills of adapting, community integration, and empowerment of well-being has been correlated with positive coping strategies (Bhattarai et al., 2020; Chaffey & Bigby, 2018; Parashar, 2015). Ginis et al. (2017) noted that an effective psychosocial coping mechanism for people with SCI focuses on teaching them the ability to identify and adjust to living with barriers as a way to minimize the onset or consumption of negative emotional reactions. Furthermore, emotional support systems have been shown to enhance self-confidence, reduce hospital readmissions, and promote increased satisfaction with life while maintaining active participation and productivity in the community (Byra, 2016; Gassaway, Houlihan et al., 2018; Gassaway, Jones et al., 2016; LaVela et al., 2019).

Attitude

The attitude and belief system of an individual can influence their ability to adapt and cope after suffering SCI (Bellucci et al., 2015). Change brings about the need to adapt, and a person's attitude in navigating adversity plays a pivotal role in how well the person learns to cope in the most successful manner (Yildirim & Belen, 2019).

Satisfaction with life and a positive attitude are indicators reflective of an enhanced QoL (Yildirim & Belen, 2019).

Adaptation

The development of a new norm in daily living is paramount for people with SCI. *Adaptation* is the ability to make necessary changes that best suit the needs of a person's current circumstances. For people with SCI, adaptation warrants the need to consider not only physical needs but also psychological ones. People with SCI also experience unique complications and daily living factors that non-SCI people do not encounter (Charlifue et al., 2016; Sweis & Biller, 2017). Moreover, SCI sufferers who are classified as tetraplegics encounter different functional needs than those identified as paraplegics (Sweis & Biller, 2017; Wolters Klumer Heath, 2018). For instance, depending on a person's level of SCI, the person has to take into account such things as bladder- and bowel-regimented issues, which potentiate psychological and social compromise (Aaby et al., 2020; Sweis & Biller, 2017). Schwartz et al. (2018) acknowledged the need for recalibration and reconceptualization during the 1- to 5-year mark after SCI, as well as the need to enhance adaptation physically and mentally during this time. Community reintegration is another key adaptive skill for SCI people that fosters a sense of belonging and significance while simultaneously boosting their self-esteem and social engagement (Byra, 2016; Caplan et al., 2017).

Paraplegic

Paraplegia is a state of paralysis based on the level of injury to the spinal cord in which the lower half of a person's body is affected, including all or part of the trunk

region, bilateral legs, and pelvic area (Kumar & Gupta, 2016; Mayo Clinic, 2019).

Paraplegics have different needs compared to tetraplegic SCI people. People suffering from SCI, such as paraplegics, are faced with many challenges such as adaptive means of coping (Kumar & Gupta, 2016).

Tetraplegic

Tetraplegia, also referred to as quadriplegia, signifies that the level of injury has impacted the top half and lower half of a person's body, including arms, hands, trunk, legs, and pelvic area (Mayo Clinic, 2019). Incomplete tetraplegia has been identified as the most frequent neurological level of injury (National Spinal Cord Injury Statistical Center [NSCISC], 2021). Tetraplegics require higher physical care and lack the ability to have a greater sense of independence in comparison to paraplegics (Young et al., 2019).

Gap in the Literature

I noticed a lack of information about community-based interventions that promote QoL among people living with SCI for more than 1 year. Well-being has been noted as a significant entity of resilience and has been seen as an integral component that increases longevity (Cosco et al., 2017). There was limited literature on the effectiveness that community-based resources such as peer support have on the resilience of individuals with SCI for more than 1 year. This gap served as a catalyst for the current study to expand knowledge and the development of community-based resources such as peer support programs. As a result of community-based programs, the QoL and the associated health-related factors of SCI people may be improved.

Problem Statement

There are approximately 296,000 people living with SCI in the United States, and roughly 17,900 new cases occur per year (NSCISC, 2021). SCI sufferers experience changes in their QoL and face challenges of adapting to the coping strategies needed for the management of their physical and mental needs (Bernet et al., 2018; Bhattarai et al., 2018; Tulsy et al., 2015). Suffering SCI has life-altering consequences for the individual, such as work-related adjustments, tending to self-care needs, and community access for the individual, their family, and their social environment (Divanoglou & Georgiou, 2017). People living with SCI have been shown to have poorer QoL and lower self-efficacy in comparison to individuals living without SCI (Goraczko et al., 2021). Additionally, living with SCI has been linked to significant outcomes including morbidity, mortality, health care costs, QoL, and community reintegration (Duggan et al., 2016). Research has shown that suffering SCI often leads to the development of an inability to cope, adapt, or demonstrate resilience (Aparicio et al., 2019). Furthermore, living with SCI potentiates the onset of health-compromising issues such as depression, suicide ideation, impaired well-being, and decreased QoL (Bernet et al., 2018; Khazaeipour et al., 2015; Tulsy et al., 2015; Tzanos et al., 2016).

Purpose of the Study

The purpose of this retrospective quantitative study was to evaluate the impact resilience has on positive attitude and positive coping among members of the paraplegic SCI population 18 years of age and older who had been injured for more than 1 year. The independent variable was resilience, the dependent variables were positive attitude and

positive coping, and the covariate variables were age, gender, race, level of injury, post-injury year, occupational status, marital status, and social integration. Participants responded to questions regarding QoL resiliency using the SCI National Statistical Center's Resilience SCI-QoL Short Form (Chen, 2023).

Research Questions and Hypotheses

The research questions for this study were the following:

RQ1: Is there a statistical relationship between resilience and improved QoL positive attitude as defined by the SCI-QoL Resilience Short Form for paraplegic SCI clients injured more than 1 year?

H_01 : There is no statistically significant relationship between resilience and improved QoL positive attitude as defined by the SCI-QoL Resilience Short Form for paraplegic SCI clients injured more than 1 year based on QoL index scoring of 4 (*often*) or 5 (*always*).

H_{a1} : There is a statistically significant relationship between resilience and QoL positive attitude as defined by the SCI-QoL Resilience Short Form for paraplegic SCI clients injured more than 1 year based on QoL index scoring of 4 (*often*) or 5 (*always*).

RQ2: Is there a statistical relationship between resilience and improved QoL positive ways to cope as defined by the SCI-QoL Resilience Short Form for paraplegic SCI clients injured more than 1 year?

H_02 : There is no statistically significant relationship between resilience and improved QoL positive ways to cope as defined by the SCI-QoL Resilience Short Form

for paraplegic SCI clients injured more than 1 year based on QoL index scoring of 4 (*often*) or 5 (*always*).

H_{a2} : There is a statistically significant relationship between resilience and improved QoL positive ways to cope as defined by the SCI-QoL Resilience Short Form for paraplegic SCI clients injured more than 1 year based on QoL index scoring of 4 (*often*) or 5 (*always*).

The alternative hypothesis was resilience improves positive attitude and positive ways to cope for SCI clients based on SCI QoL resilience index scoring of 4 (*often*) or 5 (*always*). The null hypothesis was resilience does not improve positive attitude and positive ways to cope for SCI clients based on QoL resilience index scoring of 4 (*often*) or 5 (*always*). This retrospective quantitative study included secondary data from the 2016-2021 National Spinal Cord Injury Statistical Center database to identify the impact of resilience on QoL for paraplegic SCI clients 1 year or more after their injury (Chen, 2023).

Theoretical Framework

The theory of self-efficacy was the theoretical framework used to examine the influences of biological, psychological, and socioenvironmental factors on QoL and health outcomes (see Cook & Artino, 2016). Cook and Artino (2016) noted that self-efficacy serves as a driving factor that motivates action. The theory of self-efficacy, synonymous with self-confidence, originated from Bandura with the premise that an optimistic self-belief potentiates successfully accomplished tasks and favorable outcomes by initiation of actions (Maddux, 2012). Further, self-determination mediates

psychological well-being that links fundamental blocks of extrinsic or intrinsic motivation geared toward meeting the needs of autonomy, competence, and relatedness/connection linked to increased resilience (Liu & Huang, 2021; Sweet et al., 2018).

The QoL a SCI person achieves and sustains is dependent on factors that include not only those related to the disability (paraplegic versus tetraplegic) but also other modifiable items such as attitude, willingness to take action/engage, and psychological adjustment (Guest et al., 2015; Shah & Hvas, 2017). For people living with SCI, adaptation strategies, self-care activities, and adjustment to coping with newfound life circumstances and stressors are significant predictors of resilience and enhanced QoL (Guest et al., 2015; Rocchi et al., 2018). Additionally, modified ways SCI people learn to cope have been linked to their enhanced physical health and mental well-being, improved independent functioning, and reduction of psychological debilitating factors such as depression (Rocchi et al., 2018). The theoretical principle of self-efficacy was used to examine the relationship between the dependent variables (positive attitude and positive coping) and the independent variable (resilience). Health-related adversities secondary to existing comorbidities, which can be exacerbated by the inclusion of having an SCI, have been shown to be reduced with the incorporation of self-efficacy potentiating positive health-promoting behaviors and practices (Sweet et al., 2016).

Nature of the Study

I used a quantitative research design. Secondary data were retrieved from the National Spinal Cord Injury Statistical Center database to examine the influence of

resilience and positive coping with life among paraplegic SCI people more than 1 year after their injury. The Resilience SCI-QoL Short Form survey served as the instrument that measured participants' subjective perspectives related to positive attitude and positive coping of their perceived QoL outlined by the Likert scale descriptors of response (Chen, 2023; National Spinal Cord Injury Model Systems Database, 2022). The identified variables were assessed using survey that captured the subjective perspectives of the participants (see Creswell, 2014). The participants consisted of a targeted group who conformed with the selection criteria. This research approach reflected alignment with the theoretical framework of this study. The research questions were aimed at minimizing bias and ensuring validity of the findings (see Creswell, 2014). The current study revealed the impact of resilience on QoL as it relates to positive attitude and positive coping among 18 years and older SCI paraplegic people 1 year after their injury as a stimulant for positive social change.

Definitions

The following terms and variables are defined as they were used in the study:

Adaptation: The ability to make necessary changes that best suit the needs of a person's current circumstances. Adaptation is the ability to cope successfully in the mist of adversity by developing a new norm (Martinez-Mari & Ruch, 2017).

Attitude: A feeling, emotion, or mental position toward a state or fact (Merriam-Webster Dictionary, 2022). Reflecting a positive or negative attitude has been shown to be a significant contributor in the way a person adapts to adversity (Monden et al., 2015).

Coping: A manner of adjustment that serves as a variable related to a person's QoL. Coping is the manner in which a person uses thoughts and behaviors to manage internal and external stressors or stressful situations in a conscious and voluntary manner (Algorani & Gupta, 2021).

Emotional well-being: Aun entity that falls under the realm of QoL. Being in a state of happiness, good mental health, satisfied with life, and maintaining a sense of meaningful purpose equates to emotional well-being (Tate et al., 2015).

Paraplegic SCI: A state of paralysis based on the level of injury to the spinal cord in which the lower half of a person's body is affected, including all or part of the trunk region, bilateral legs, and pelvic area (Kumar & Gupta, 2016; Mayo Clinic, 2019).

QoL: An individual's perception of their state of well-being, which includes their physical, psychological, and social functioning (Rainone et al., 2017). QoL consists of a broad range of human experiences correlated to a person's overall well-being. The state of health, comfort, and happiness expressed by an individual is reflective of their QoL (Cosco et al., 2017).

QoL indicators: Determinants that identify a person's ability to live with a sense of satisfaction and well-being. QoL identifies an individual's perception of and satisfaction with their life (Adriaansen et al., 2016). QoL factors aid in gathering a better understanding of a person's overall well-being.

Resilience: The dynamic process of recovering after adversity and/or learning to successfully adjust to adversity (Bhattarai et al., 2020). Resilience involves a person's

ability to recover to achieve (Liu & Huang, 2021). Further, a person's level of resiliency is associated with how well their psychological needs are met (Liu & Huang, 2021).

Social reintegration: The process of separate entities or an individual unifying together for a common or deliberate purpose (APA Dictionary of Psychology, 2022).

Tetraplegic SCI: Also referred to as quadriplegia, the level of injury that impacts the top half and lower half of a person's body, including arms, hands, trunk, legs, and pelvic area (Mayo Clinic, 2019). Incomplete tetraplegia has been identified as the most frequent neurological level of SCI (NSCISC, 2021).

Assumptions

Beyond the institutionalized infrastructures of hospitals and rehabilitation centers, people living with SCI require adaptive techniques to adjust to their way of living (Young et al., 2019). Going forward and continuing to live with SCI demands not only physical modifications but also psychological adjustment, which includes finding social support that promotes reintegrating, developing strategies to minimize feelings of depression or hopelessness, and seeking interventions that nurture the sense of belonging, significance, and self-confidence (Ronca et al., 2017; Shah & Hvas, 2017). Psychosocial adjustment, the behavioral processes that create balance mentally among conflicting social challenges (Kumar & Gupta, 2016), and physical rehabilitation after SCI are realities that promote the longevity and a state of optimal coping in living with SCI. Living with SCI means finding a way to deal with viably existing as a person with a disability in a world where most individuals have limited knowledge and understanding and there is a lack of community-based resources aimed at enhancing well-being (Divanoglou et al., 2018).

Previous research indicated that patients with SCI have decreased QoL in comparison to non-SCI people, with the lowest level of QoL being in tetraplegic SCI people compared to paraplegic SCI people (Bhattarai et al., 2020).

Scope and Delimitations

The severity of SCI is correlated with the location of the injury leading to being classified as paraplegia (thoracic, lumbar, or sacral regions leading to lower limb paralysis) or tetraplegia (synonymous with quadriplegia, which affects the cervical region leading to upper and lower limb paralysis), which impairs motor and sensory function and bladder and bowel function (Shepherd Center, 2019). QoL is a multifaceted concept this is based on “an individual’s perception of their position in life regarding the context of their culture and value system in which they live and in relation to their goals” (Iorio-Morin et al., 2018, p.1003). Further, QoL components encompasses psychological health and physical health, including resilience, social engagement, and well-being (Post et al., 2016).

QoL indicators are determinants that identify a person’s ability to live with a sense of satisfaction and well-being. Specifically, QoL identifies an individual’s perception of and satisfaction with their life (Adriaansen et al., 2016). QoL factors aid in gathering a better understanding of happiness a person has in their daily despite challenges and obstacles (Rivers et al., 2017). In the current study, QoL factors were identified as positive attitude and positive coping due to the relevance and identified correlation with improved adaptability, health, resilience, and overall well-being. QoL indicators help researchers evaluate such factors as the state of satisfaction with living,

supportive social associations, response to injury, and independent functioning as a way to assess the base level of health, adaptation, and well-being (LaVela et al., 2019; Spinal Cord Injury Research Evidence Professional, 2022). For the current study, the population of SCI people 18 years and older was chosen to avoid the selection of individuals in need of parental/guardian consent, and because the highest onset of SCI occurs among people over the age of 18 (NSCISC, 2021).

Limitations

SCI is a life-changing event. Both the incidence and prevalence of people with SCI is on the rise, as well as and the expanded life expectancy of people with SCI (NSCISC, 2021). Research indicated that SCI correlates with increased burden of health issues, both physically and psychologically, SCI-related secondary complications, and decreased QoL and well-being (Alwashmi, 2019; Aparicio et al., 2019; LaVela et al., 2019; Roth et al., 2019; Tzanos et al., 2016). Despite these statistical facts, there was a gap in evidence-based information regarding the effect of community-based peer programs on the resilience of people living with a SCI beyond 1 year of injury. As the SCI population segment continues to expand, there is a need to increase awareness of interventions that improve coping and resilience after SCI, as well as strategies to improve QoL outcomes and well-being factors that aid in living with a lifelong disability such as SCI.

Significance

This study addressed the need to understand the impact of resilience on QoL factors of positive attitude and positive coping among paraplegic SCI people 18 years and

older more than 1 year after injury. I examined whether there are associated strengths that serve to promote the need to enhance accessibility of community-based interventions such as peer mentoring programs aimed at promoting enhanced social reintegration, support, and resiliency. The findings may lead to a broader understanding of community-based interventions to aid people with SCI. Also, the findings may be beneficial in lowering health care costs related to secondary complications among people living with SCI and their rehabilitation needs beyond being institutionalized.

The promotion of functional independence of SCI people offers them the ability to become more productive contributors to the economy, resulting in enhanced mental well-being, coping skills, and psychological balance (Alwashmi, 2019; Aparicio et al., 2019). Such focus creates greater awareness and insight to a population segment previously underserved with unmet needs (Guilcher et al., 2013). The intent of the current study was to foster positive social change by highlighting the unique health needs and concerns of this targeted population to stimulate the formulation of more community-based peer support programs to eradicate the disparity faced by this vulnerable population. With the noted paucity of research regarding this topic, this study may serve as a catalyst for future scholarly research on how community-based resources can contribute to the QoL for paraplegic SCI people on a global level (see Ferdiana et al., 2018; Rocchi et al., 2018).

Summary

The care needs for individuals living with SCI differ from those of non-SCI people. Additionally, the care needs of paraplegic SCI people differ from those identified

as tetraplegics. Post-injury functioning and adaptability are important factors associated with QoL and the holistic enhancement of a person's physical, mental, and social sustainability (Bernet et al., 2018; Chaffey & Bigby, 2018; Skeels et al., 2017). Studies indicated that people living with SCI for more than 1 year report unmet needs related to access, workplace reintegration, and social adaptability (Moreno et al., 2017). Peer support has been acknowledged as a key rehabilitative intervention that aims to mitigate the psychological and social strains of living with SCI (Alwashmi, 2019; Houlihan et al., 2016; Inge et al., 2015; Shaw et al., 2018). The current study served the purpose of assessing the effectiveness of resilience on QoL variables of satisfaction and importance among 18 years and older SCI paraplegics injured 1 year or longer.

Data for this research came from a secondary data set that included a population-specific questionnaire with a Likert scoring scale to determine whether resilience improved satisfaction and importance of QoL. The theoretical framework for this study served as a way to highlight interrelated influences on QoL and health outcomes. The identified intention was that greater awareness and insight regarding this underserved population may be enhanced, and that community-based interventions such as peer support programs may be instituted as a means to assist with the life-altering effects of SCI. Chapter 2 provides a review of recent literature. I explain the relevance of the problem, the literature search strategy, the theoretical foundation, the conceptual framework, the literature related to key variables and concepts, and the linear regression statistical analysis used for this study.

Chapter 2: Literature Review

The purpose of this retrospective quantitative study was to evaluate the impact resilience has on positive attitude and positive coping among members of the paraplegic, SCI population 18 years of age and older who had been injured for more than a year. The goal of this study was to determine whether there was a significant relationship between the variables of positive attitude and positive ways to cope regarding resilience and overall QoL. QoL is a multifaceted concept; it associates the state of an individual's happiness and well-being with factors of significance among social, health, economic, and environmental conditions (Iorio-Morin et al., 2018). QoL is an essential variable that can be used to evaluate the progress and outcomes of health-related interventions through identifying the relationship between resilience (as demonstrated by socialization and adaptation skills) and indicating having a positive attitude and positive ways to cope as a person living with SCI (Goulet et al., 2019).

Several studies affirmed that increased QoL is a major determinant of achieving optimal adaptation, well-being, social integration, and functionality among people with SCI (Gupta, 2019; Kumar & Gupta, 2016; Moreno et al., 2017; Wyndaele, 2017; Young et al., 2019). For instance, Gupta (2019) highlighted the fact that, globally, the health needs of people with SCI are substandard or unmet due to a lack of expertise, a lack of specialized rehabilitative services, and a lack of accessibility to essential care services. Moreover, the lack of knowledge and understanding of needs beyond institutionalized care and the scarcity of community-based resources that aid in adaptation of living with SCI are factors that are associated with a decrease in the QoL (Bhattarai et al., 2020).

Therefore, it is crucial to ensure that SCI needs are addressed in a manner that focuses not only on physical needs but also on psychosocial needs to optimize QoL for people living with SCI (Moreno et al., 2017). Young et al. (2019) drew attention to the fact that level of injury and length of time from onset of injury have been shown to affect QoL in people living with SCI.

The current study included confounding variables and the identified demographic characteristics (age, gender, level of injury, occupational status, post-injury years, marital status, and social support) to examine the factors that impact QoL indicators of (a) positive attitude and (b) positive ways to cope in relationship to the independent variable of resilience. Previous research highlighted the importance of addressing and prioritizing the physical and psychological needs of people after SCI (Kisala et al., 2015; Krause et al., 2016; Middleton et al., 2014). However, few studies addressed the impact of long-term care needs more than a year after SCI injury. Kisala et al. (2015) showed that suffering SCI is a traumatic event that brings about psychological disturbances and psychosocial compromise. Research demonstrated that long-term survival after SCI has increased over the years, resulting in patients living for years if not decades after the initial injury (Battalio et al., 2019; Michas, 2020). This enduring disability has been shown to correlate with social, psychological, and environmental deficits that mitigate the highest level of viability (Krause et al., 2016).

Resilience was identified as the “process of adapting well in the face of adversity, trauma, tragedy, threats, or significant sources of stress; bouncing back from difficult situations” (Bhattarai et al., 2020, p. 222). Research indicated that greater resilience

equates to better ability to cope with stressors and enhanced emotional well-being (American Psychological Association, 2014; Fenwick-Smith et al., 2018; Southwick et al., 2014). Moreover, resilience has been shown to be a significant predictor of psychological well-being (American Psychological Association, 2014; Monden et al., 2015; Rohn et al., 2020). Coping and adjusting to life changes, traumatic events, and stressors can be challenging. Research suggested social support systems play a key role in improving the ability to adaptively cope and endure to stressors and life-altering events (Bonanno et al., 2012; Monden et al., 2015).

Peer mentoring is an intervention that tailors and personalizes social interaction, serves as a socially engaging rehabilitative strategy, and links health promotion and disease prevention tactics (Braaf et al., 2018; Chang et al., 2018; Divanoglou et al., 2018). Community-based resources such as peer programs serve a role of promoting integration, networking, self-efficacy, sense of belonging, self-management, self-worth, and enhanced life satisfaction to enhance a person's level of resilience (Divanoglou et al., 2019; Fenwick-Smith et al., 2018; Skeels et al., 2017; Sweet et al., 2018). Additionally, community-based resources benefit people with SCI by improving their independent functioning skills, enhancing their physical ability to be productive citizens of the workforce, building their self-confidence, and fostering a positive attitude that ignites engagement in social reintegration within their community (Carr et al., 2017; Divanoglou et al., 2019).

Beyond the institutionalized infrastructures of hospitals and rehabilitation centers, people with SCI require adaptive techniques to adjust to living with a life-altering

disability (Carr et al., 2017; Young et al., 2019). Living a sustained life with SCI demands not only physical modifications but also emotional adjustment, which includes finding community-based social outlets to promote reintegration, developing strategies to minimize feelings such as depression or hopelessness, and seeking interventions that nurture the sense of belonging and significance (Ronca et al., 2017). Psychosocial adjustment, the behavioral processes that create balance mentally among conflicting social challenges, and physical rehabilitation after SCI are factors that promote the longevity and a state of optimally coping with SCI (Kumar & Gupta, 2016). Living with SCI means finding a way to deal with existing as a person with a disability in a world where most individuals have limited knowledge, understanding, and ability to relate firsthand to what living with SCI entails (Divanoglou et al., 2018). This study was intended to raise awareness and offer a deeper understanding of the relationship between resilience and QOL factors of resilience and the role they play in the well-being of paraplegics more than 1 year after SCI.

Literature Search Strategy

Over the years, the life expectancy of people with SCI has increased, which impacts such factors as SCI-related secondary complications, social reintegration, psychological well-being, employment status, and overall QoL (Battalio et al., 2019; NSCISC, 2021; Rabinstein, 2018; Rucker, 2016). Rabinstein (2018) estimated that over 300,000 people live with SCI in the United States, and approximately 17,000 new cases of SCI are diagnosed each year. A literature search was performed using relevant key terms, which produced 411 peer-reviewed and non-peer-reviewed articles offering similar

and differing insights. The expansive sources of articles obtained were generated from the initial search and from cited primary references. Published dissertations were also searched, which provided references of relevant literature based on the key terms of this study.

The main databases used to acquire 90% of the peer-reviewed and evidence-based sources for this study were accessed through the Walden University Library, which produced the following literary matches from the identified databases: ProQuest (176), Embase (105), PubMed (54), and CINAHL and Medline combined (76). Of the 411 initially identified articles, 345 met my inclusion criteria, and 66 did not. In addition to the keyword searches used to retrieve relevant sources, other variables, such as adults over 18 and male and female gender identifiers, were used to pinpoint the most relevant and significant sources that aligned with my topic of study. Additional sources were identified through the reference list of retrieved articles that met the selection criteria of this study, such as published dissertations and organizational publications related to SCI. Most of the literature searches focused on a qualitative research format identifying common themes and firsthand accounts of adjustment after SCI and the impact of positive attitude and positive ways to cope related to resilience. Some studies older than five years were also included due to relevance and expansion of points made from the recent literature.

The other 10% of acquired articles for this study were obtained from ancillary databases, including Google Scholar, Research Gate, Veterans Affairs National Library Network (VALNET), Elsevier, Wiley online library, Public Library of Science (PLoS),

and the NSCISC, along with regional, national, and global organizational websites (i.e., Shepherd Center, World Health Organization, International Spinal Cord Society, National Institutes of Health, National Rehabilitation Information Center, Spinal Cord Injury Association, SpinalCord.com, and the Christopher Reeves Foundation). These ancillary databases were used to provide an exhaustive way to obtain sources to substantiate the validity and accuracy of prior information.

To identify relevant sources, the following key terms were applied: *spinal cord injury, SCI, level of injury (paraplegic and tetraplegic), QoL, self-efficacy, self-determination, resilience, SCI predisposing factors, life after a SCI, well-being, happiness, hope, life satisfaction, social reintegration, post-SCI employment, community peer support, social support, SCI psychological needs, SCI physical needs, and SCI rehabilitation*. Additionally, search efforts used a two- and three-tier approach to capture studies that were quantitative and qualitative with a focus on addressing the search words, research design, and theoretical framework, and to identify secondary data of the target population.

Non-peer-reviewed literature was obtained to expand the information obtained from the peer-reviewed sources and to highlight points made throughout the chapter. Most sources obtained for this study were based upon significance and relevance to the topic of study, fell with the parameters of a publication timeframe of five years or less and branded as reputable sources (e.g., World Health Organization, National Institutes of Health, NSCISC). Additionally, referenced articles in this study were written by qualified subject matter experts and included evidence from other scholarly sources. Evaluations of

the sources obtained were based on literary substance, reliability, accuracy, relevance, and significance to the topic of study.

Theoretical Foundation

The theory of self-efficacy was the theoretical foundation used in this study to identify a correlation between SCI QoL factors and health outcomes. The theory of self-efficacy was developed by Bandura on the premise that how a person believes in their capabilities directly influences how well they will deal with or adapt to a particular situation (Lopez-Garrido, 2020). Additionally, the theory of self-efficacy was used to understand how a person's mindset and belief in their abilities can promote behavioral changes and adaptations that lead to behavioral changes and enhanced overall well-being (see Skarin et al., 2019).

Previous research addressed the association between QoL and SCI. However, most researchers did not use a QoL measurement scale that focused on the unique needs of the SCI population. For instance, Palimaru et al. (2017) examined the health-related QoL among people living with SCI using population samples from the United States and the United Kingdom. This study focused on the level of SCI injury (cervical versus thoracic using a generic QoL health survey) to discover that psychological adjustment after suffering SCI is major contributor to QoL and adaptation. Schwartz et al. (2018) sought to highlight adaptation of response in people with SCI one to five years after injury by incorporating the 36-item Short Form Health Survey. Schwartz et al. identified the need for more social support and engagement measures, which aid to improve sustained satisfaction with life and resilience. In a similar study, Rivers et al. (2017) used

the 36-question Short Form Health Survey instrument to assess health-related QoL as a way to determine the significance of this variable, among others, on the rehabilitative state of people with SCI.

Most researchers assessed the QoL of a person with SCI from an inpatient hospitalized perspective or for no more than 18 months after discharge. The researchers of these studies acknowledged performing their research in one generalized setting (Rivers et al., 2017; Rocchi et al., 2018; Schwartz et al., 2018; Zhang et al., 2017). The theory of self-efficacy has been shown to highlight the importance of how a person's self-regulatory behaviors during challenging and/or problematic situations serve to enhance or impede their psychological well-being (Maddux, 2012). Self-determination has been seen as a vital component to a person's well-being and optimal function in relationship to self-awareness, decision making, and goal attainment (Ackerman & Tran, 2018). To understand the association between positive attitude, positive ways to cope, and QoL among paraplegic SCI suffers, the theory of self-efficacy was used to address the importance of this research related to the significance of adjustment and coping mechanisms of people with SCI in the community setting injured for more than 1 year among multisite locations.

The theory of self-efficacy was used in this study to understand the premise that internal factors elicit external results, which affect biological, psychological, and social aspects of the health (see CARF International, 2019; Garrin, 2014). Bandura's theory of self-efficacy takes into account a person's ability to activate an internal belief process within themselves that ignites coping strategies that allow them to optimally function and

develop a sense of hope and enjoyment/fulfillment of life (Schwartz et al., 2018).

Additionally, the theory of self-efficacy aids in understanding how paraplegic people with SCI adapt toward bridging the gap between the demands of a situation and their physical capabilities (Rocchi et al., 2018). The theory of self-efficacy was incorporated in this study to explain how self-confidence and an attitude to take action correlates with the fundamentals of optimizing QoL for people with SCI and promoting social reintegration (see Coker et al., 2019; Hillebregt et al., 2018). This theoretical principle was used to explain the impact resilience has on improving QoL and how the incorporation of community-based resources enhances the viability of the paraplegic SCI population through the development of greater determination, hope, perseverance, self-worth, self-confidence, and desire to live (see Michalovic et al., 2019; Monden et al., 2015; Rocchi et al., 2018).

Predisposing Factors

Predisposing factors include an individual's demographic characteristics and social identifiers that elevate their susceptibility to a situation (NSCISC, 2021). In the current study, demographic components included age, gender, and educational attainment, and social identifiers included coping strategies, social support, socioeconomic status, and employment status (see Fyffe et al., 2011; NSCISC, 2021).

Predisposing determinants are significant because they increase the risk of suffering SCI. Additionally, increased severity of secondary health factors based on things such as age, education, gender, race/ethnicity, marital status, and lifestyle behaviors makes living with SCI more challenging (Battalio et al., 2019; Migliorini et al., 2011; Shaw et al., 2018).

Predisposing determinants help healthcare professionals to gauge the level of resiliency demonstrated by an individual, and the environmental factors that influence coping (Rohn et al., 2020). For instance, the age range that suffers the most from SCI suffers is the late 20s to early 40s grouping (NSCISC, 2021). Currently, the most prominent age at time of injury is 43 with non-Hispanic white male dominating at 53% (Johns Hopkins Medical Institute, 2019; NSCISC, 2021). The four leading causes of SCI include motor vehicle accidents (39.3%), falls (31.78%) which becomes the leading cause of SCI after the age of 65, acts of violence primarily gunshot wounds (13.5%), and recreational/sporting activities (8.0%; Mayo Clinic, 2019; NSCISC, 2021). Less than five years ago 25% of persons with SCI had college education, and at the time of injury approximately 50% were single and 8.6% divorced, whereas 10 years post-injury, 37.6% were single and 20.1% were divorced (NSCISC, 2021).

Enabling Factors

Various factors contribute to the onset of acquiring an SCI. These factors are considered enabling factors and bring a greater understanding to people most susceptible to acquiring an SCI. Enabling factors included accessibility, age, socioeconomic status, support system, and post-injury years (Krause et al., 2016). Sustaining a new SCI, being older at the onset of injury, aging with an SCI, lacking a supportive social system, lacking access to essential health related resources, and demanding more psychological needs have been shown to correlate with lower life satisfaction among the SCI population segment (LaVela et al., 2019). Previous research indicated the inability to understand that factors associated with being a new SCI person, lower socioeconomic status, and lacking

access to health promoting resources puts SCI sufferers at greater risk for health-related complications, increased morbidity and mortality (Quadir et al., 2017).

Literature Review of QoL Indicators and SCI

SCI

A SCI occurs in response to either an acute or chronic traumatic injury and is considered a permanent disability with the leading causes being associated with falls and motor vehicle accidents (Johns Hopkins Medical Institute, 2019). Moreover, an SCI can result in temporary or permanent sensory and/or motor compromise or loss depending on the region of the spinal cord that has been damaged (Kumar & Gupta, 2016; Young et al., 2019). An SCI leads to damage to the targeted spinal cord area and the correlating nerves at the site of injury, which leads to a deficiency in movement, sensation, strength, and bodily functions below the level of injury (Mayo Clinic, 2019). Mobility and sensation after a SCI are dependent on such factors as the level of injury (cervical, thoracic, lumbar, sacral or cauda equina) and the severity of the injury, classified as *complete* or *incomplete* (Mayo Clinic, 2019; Rabinstein, 2018; Shepherd Center, 2019). The defining aspect of a complete injury is that all sensory function and movement is lost below the level of injury, while an incomplete injury is considered to be one where some movement and/or sensory function below the level of injury is maintained (Mayo Clinic, 2019; Rabinstein, 2018).

The American Spinal Injury Association (ASIA) utilizes an impairment scale to identify the levels of SCI severity based on both motor and sensory impairments (Ferdiana et al., 2018; Richard-Denis et al., 2018; Roberts et al., 2017). The ASIA grade

of A indicates the highest level of impairment, which occurs when both motor and sensory function are completely lost below the level of injury (Roberts et al., 2017). ASIA B, the second highest level of impairment, indicates only the preservation of sensory function (Roberts et al., 2017). ASIA C identifies some preservation of motor function with compromise to movement against gravity (Roberts et al., 2017). ASIA D is the level when some level of motor function is retained and able to move against gravity (Roberts et al., 2017). ASIA E refers to when full neurological function is restored to a level of normalcy (Roberts et al., 2017). Previous studies showed that the higher an individual's ASIA grade of impairment, the greater loss of independence and decreased QoL (Aaby et al., 2020; Iorio-Morin et al., 2018; Mayo Clinic, 2019; Ronca et al., 2017).

Physical Needs

Approximately, 30% of people with SCI encounter readmission to the hospital in any given year post-injury with the average length of stay around 20 days; the leading causes associated with readmission are genitourinary system issues, skin related issues, and respiratory issues (NSCISC, 2021). The lifetime costs associated with being a paraplegic 25 years post-injury is roughly \$2,450,000 with a life expectancy going from 30% (at time of injury age 40) to 16.4% (at time of injury age 60; NSCISC, 2021).

Secondary complications associated with an SCI are likely. Survival post-injury of two years after onset has increased over the last 10 years; however, long-term SCI related mortality remains greater than in non-SCI suffers (Krause et al., 2016). Research demonstrated that as years of living with an SCI increases, SCI-related secondary complications are more likely to occur (Houlihan et al., 2016). The physical needs of

people with SCI warrants attention to such things as activities of daily living (e.g. bathing, dressing, and eating), bowel and bladder management, skin care and wound prevention, and mobility. Studies showed that people with SCI suffer greater occurrences of SCI related secondary complications and a decline in community reintegration due to a lack of adaptation skills and resilience that potentiates unhealthy coping mechanisms (Gupta, 2019).

Psychological Needs

Previous studies found that people with spinal cord injuries suffer life-altering effects both physically and psychologically (Bhattarai et al., 2020; Coker et al., 2019). Psychological compromise was shown to have direct correlation to physical compromise (Gupta & Raja, 2017). The mental state of a person with an SCI and the expectations they have post-SCI have been shown to be significant predictors to their satisfaction with life (Gupta & Raja, 2017). Moreover, research showed that a key contributor to the enhancement of QoL and management of secondary complications in people with SCI is the ability to foster psychosocial well-being, which is a subset of overall QoL (Divanoglou et al., 2018).

Literature Review Related to Key Variables and/or Concepts

QoL

Previous research utilizing the World Health Organization's QoL measurement tool indicated that patients with spinal cord injuries have a decreased QoL in comparison to non-SCI persons, with the lowest level of QoL being in tetraplegic (synonymous with quadriplegia, signifying that the level of injury has impacted the top half and lower half

of one's body including arms, hands, trunk, legs and pelvic area) people with SCI compared to paraplegic people with SCI (Boakye et al., 2012). One research study assessed particular functional abilities and health related QoL utilizing the Spinal Cord Independence Measurement tool (Wolters Klumer Health, 2018). This study included 195 paraplegic (41.9%) and tetraplegic (52.7%) SCI individuals injured at six and 12 months post-injury. The sample was predominantly male (79.7%). The results revealed that tetraplegic and paraplegic patients had differing levels of health-related QoL dependent upon the factor being assessed (Goulet et al., 2019; Wolters Klumer Health, 2018). In seeking to gain greater insight and understanding of the significance health related QoL variables play, this particular study dismissed the need to assess QoL factors such as depression, hopelessness, and feelings of self-worth (Goulet et al., 2019).

Research also showed that accurate and valid assessments related to QoL are heavily dependent upon the QoL measurement tool/instrument used and whether it is specifically outlined to take into consideration the SCI population (Jahan et al., 2016). Generic QoL measurement tools not adapted specifically to people with SCI may prove to be inadequate in some instances, leading to erroneous data outcomes (Iorio-Morin et al., 2018). Thus, this research sought to highlight the relevance of resilience on the overall QoL in relation to importance and satisfaction of life among paraplegic people with SCI.

QoL Indicators

QoL indicators are determinants that identify one's ability to live with a sense of satisfaction and well-being. Specifically, QoL refers to an individual's perception of and

satisfaction with their life (Adriaansen et al., 2016). QoL factors aid in gathering a better understanding of happiness one has in their daily despite challenges or obstacles (Rivers et al., 2017). Additionally, QoL indicators help to evaluate such factors as the state of satisfaction with living, supportive social associations, and resilience to injury as a way to evaluate and assess such things as the base level of health, adaptation, well-being (LaVela et al., 2019). In this study, QoL factors considered were positive attitude and positive ways to cope due to identified correlation with improved adaptability, health, and all over well-being.

Paraplegic SCI

Paraplegia is a state of paralysis based on the level of injury to the spinal cord in which the lower half of one's body is affected inclusive of all or part of the trunk region, bilateral legs, and the pelvic area (Kumar & Gupta, 2016; Mayo Clinic, 2019). Paraplegic individuals have different needs in comparison to tetraplegic persons. People suffering from an SCI, such as paraplegics, are faced with a multitude of challenges such as the need to develop adaptive means of coping (Kumar & Gupta, 2016).

Tetraplegic SCI

Tetraplegia, also referred to as quadriplegia signifies that the level of injury has impacted the top half and lower half of one's body inclusive of arms, hands, trunk, legs, and pelvic area (Mayo Clinic, 2019; University of Alabama at Birmingham, 2022). Incomplete tetraplegia has been identified as the most frequent neurological level of injury (National Spinal Cord Injury Center, 2019). Tetraplegics require higher demands

of physical care and lack the ability to have a greater sense of independence in comparison to paraplegics (Young et al., 2019).

QoL Measurement Instrument

In this study, I focused on significant factors that impact QoL, such as positive attitude, positive ways to cope, social support, and resilience for the SCI person over 18 years of age 1 year post-injury. The use of Resilience SCI-QoL Short Form measurement instrument was used since this instrument was tailored to the target population. The QoL measurement index chosen captured two QoL indicators: positive attitude and positive ways to cope. The Resilience SCI-QoL Short Form items are scored using a Likert scale with responses range from 1 (*never*) to 5 (*always*) (Chen, 2023; National Spinal Cord Injury Model Systems Database, 2022). The Resilience SCI-QoL Short Form instrument consists of eight questions that focus on feeling good about coping, getting through a difficult time, the positive side of things, confident overcoming limitations, actions to improve life, and seeking new things to enjoy (Chen, 2023). This instrument was used to obtain the secondary data set for this study.

SCI Rehabilitative Services

Rehabilitative needs and services for people with SCI differ from those of non-SCI sufferers. The viability and adaptive functioning of a person with SCI can be sustained for many years post-injury with rehabilitative services that provide holistic coverage and enhancement at the physical, mental, and social levels (Bernet et al., 2018; Chaffey & Bigby, 2018; Skeels et al., 2017). About 30% of people with SCI are re-hospitalized each year with the leading cause being associated with genitourinary system

issues (NSCISC, 2021). Research showed that SCI sufferers report unmet needs in acquiring accessible housing, workplace reintegration, and social adaptability (Moreno et al., 2017). Thus, attitude and coping mechanisms have been acknowledged as key contributing factors that impact resilience and adaptation and overall QoL due to mitigating health-related secondary complications and lessening the social strain of living with a SCI (Alwashmi, 2019; Houlihan et al., 2016; Inge et al., 2015; Monden et al., 2015; Shaw et al., 2018).

Peer Mentorship

An SCI significantly impacts a person's physical and psychological needs, which requires modification and adjustment to both. Thus, key strategies are needed to help people with an SCI adjust to their new realities, and peer-mentorship has proven to have positive effects on the health outcomes and QoL post-injury (Chemtob et al., 2018). Peer mentors help people with SCIs gain heightened practical skills, coping skills, adaptive skills, and emotional balance by providing a sense of understanding, empathy, and firsthand knowledge of what it is like to live with a SCI (Chemtob et al., 2018; Divanoglou & Georgiou, 2017; Rocchi et al., 2018). Peer-mentoring is a key rehabilitative intervention that offers the assistance and support of an experienced individual to encourage and support a less experienced individual to develop their functioning and coping potential through a shared area of interest (Morris et al., 2017).

Research completed by Divanoglou and Georgiou (2017) concluded that community peer-based programs provided persons with SCIs a unique learning environment with ideal resources, learning processes and a can-do attitude. Previous

studies also showed that peer mentors are a unique and invaluable resource due to their intrinsic and extrinsic abilities to relate to and empower mentees (Divanoglou & Georgiou, 2017; O'Dell et al., 2019; Wobma et al., 2019). Peer-mentorship can also facilitate a model of adaptation, enhancement of self-care, health promotion, problem solving, and fulfillment with life post SCI (Chaffey & Bigby, 2018; O'Dell et al., 2019). The ability to connect with people who have personal experiences with what it is like to live with an SCI, shared information experiences, practical skills of adapting, community integration, and empowerment of well-being has been correlated with the impact of peer-mentorship programs (Chaffey & Bigby, 2018; Gainforth et al., 2019; Parashar, 2015).

Peer-mentorship experiences potentiate an educational sharing environment that provides insight into ways to avoid secondary complications, such as urinary infections, wound development, and psychological compromise that stimulates such things as depression and lack of self-worth (Craig, Rodrigues et al., 2016; Craig, Perry et al., 2014; Gupta & Raja, 2017). Emotional support systems that foster personal relationships, societal productivity (returning to work or school), and navigating new psychological challenges which requires a certain level of resiliency are crucial for adapting to life after suffering an SCI. These factors have been shown to formulate a system that boots self-confidence, reduces hospital readmissions, and promotes increased satisfaction with life while maintaining active participation within the community and society (Gassaway, Houlihan et al., 2018; Gassaway, Jones et al., 2016; LaVela et al., 2019).

Coping Skills

An SCI is a life-changing event. A new way of managing life after a SCI is a reality for this population. Coping is a manner of adjustment that is related to QoL. Coping strategies can be enhanced by peer support systems, which promote shared life experiences and provide a medium for empathetic understanding, practical advice, and emotional support (Gainforth et al., 2019; Rocchi et al., 2018). The attitude and belief system of an individual can directly influence their ability to adapt and cope after suffering an SCI (Bellucci et al., 2015; Klebine et al., 2016). Ginis et al. Science Research group (2017) reiterated the notion that an effective psychosocial coping mechanism for people with SCI focuses on teaching them the ability to identify and adjust to living with barriers as a way to minimize the onset or consumption of negative emotional reactions.

Hope is another essential coping strategy that correlates with psychological adjustment, acceptance, levels of distress, and life satisfaction. For instance, Dorsett et al. (2017) acknowledged high levels of hope are associated with decreased levels of depression, increased social engagement, increased life satisfaction, increased acceptance of disability, and a buffer to distress. In their research study, over 70% of SCI research respondents branded hope as a key contributor to the enhanced adjustment to their disability (Dorsett et al., 2017).

Adaptive Skills

The development of a new norm in day-to-day living is paramount for people with SCI. Adaptation is the ability to make necessary changes that best suit the needs of

one's current circumstance or situation. For people with SCI, adaptation includes considering physical and psychological needs. People with SCI experience unique complications and daily living factors that people with SCI do not encounter (Klebine, 2016; Sweis & Biller, 2017). Moreover, SCI sufferers who are classified as tetraplegics encounter different functional needs than those identified as paraplegics (Sweis & Biller, 2017; Wolters Klumer Health, 2018). For instance, depending on one's level of injury, a person with a SCI has to take into account such things as bladder and bowel regimented issues, which potentiate psychological and social compromise (Aaby et al., 2020; Sweis & Biller, 2017).

Emotional Well-Being

Well-being is an aspect of QoL. Being in a state of happiness, good mental health, satisfied with life, and maintaining a sense of meaningful purpose are all factors of emotional well-being (Tate, Forchheimer et al., 2015). Craig, Perry et al. (2015) acknowledged psychological morbidity is associated with people living with an SCI. According to the literature, people with SCIs have lower emotional well-being than the general population: 37% have depression, 30% have anxiety, 40% have post-traumatic stress disorder, 50% have chronic fatigue, 14% have an alcohol abuse disorder, and 11% have an illicit and prescription drug use disorder (Craig, Perry et al., 2015; Lim et al., 2017).

Community Reintegration

Community reintegration concerns finding a sense of belonging by becoming an active participant in community life post-injury. Active community participation has been

shown to have a direct correlation with improved QoL after SCI. Community reintegration is vital to promoting an individual with an SCI as a productive asset to society, such as by returning to work. Community reintegration fosters a sense of belonging and significance while simultaneously boosting one's self-esteem, social engagement/participation, and sense of belonging (McGarity et al., 2017). Factors that can promote or hinder social engagement and reintegration include limited access to community or social supports, age at time of injury, and race/ethnicity, and level of injury (Quadir et al., 2017). Therefore, a key rehabilitative goal for people with SCI is to promote an active social role and optimize their participation as a vital and productive citizen in their communities (Suttiwong et al., 2015).

Understanding SCI and QoL

The severity of an SCI is correlated with the location of the injury leading to being classified as *paraplegia* (i.e., thoracic, lumbar, or sacral regions leading to lower limb paralysis) or *tetraplegia* (i.e., quadriplegia which affects the cervical region leading to upper and lower limb paralysis) which impairs motor and sensory function, and bladder and bowel function (American Association of Neurological Surgeons, 2019; Shepherd Center, 2019). QoL is a multifaceted concept referring to “an individual's perception of their position in life regarding the context of their culture and value system in which they live and in relation to their goals” (Iorio-Morin et al., 2018, p.999). QoL encompasses psychological health and physical health, including social engagement and well-being (Post et al., 2016). Acceptance of the disability post-injury has been shown to impact the QoL for people with SCI. For instance, Aaby et al.'s (2020) study raised

awareness that the intensity of negative psychological adjustments and outcomes are influenced by acceptance of the injury wherein greater acceptance equated to enhanced QoL (Aaby et al., 2020).

Summary and Conclusions

The literature review provided an overview of existing published information on the factors that impact the QoL of people with a SCI. The chapter also explored the impact resilience plays in life-long adaptation and the development of coping strategies. The aim of this study was to measure the impact of resilience on positive attitude and positive ways to cope among paraplegics 18 years and older one or more years post-injury in regard to QoL. As demonstrated in this literature review, physical adaptation and independence, accessibility, acceptance, adaptive coping and emotional well-being, self-confidence, psychosocial adaptation, and community reintegration, and resilience are crucial aspects of QoL. Thus, the literature supported and validated the necessity of this study.

The incidence and prevalence of people with SCI is on the rise as well as the life expectancy. Studies showed that living with an SCI correlates with increased burden of both physical and psychological health issues and SCI-related secondary complications as well as decreased QoL, satisfaction, and well-being. Despite this knowledge, there remains a gap in the quantity of evidence-based information regarding how resilience impacts QoL in people living with an SCI 1 year or more post-injury as a means to improve sustained life of satisfaction and overall well-being in this population.

As the SCI population expands, there is a pertinent need to increase awareness and understanding of interventions that aim to improve coping and adapting post SCI, as well as measures to improve QoL outcomes, resiliency, and overall well-being for persons living with the life-long disability of an SCI. Therefore, this literature review aimed to bring attention and awareness to the impact resilience has on QoL and the need to develop community-based social reintegration resources, such as community-based peer mentorship programs. Chapter 3 addresses the research design, the research methodology inclusive of variables, data collection and analysis, along with instrumentation, setting, study sample, and threats to validity.

Chapter 3: Research Method

The purpose of this retrospective quantitative study was to evaluate the impact resilience has on positive attitude and positive coping among members of the paraplegic, SCI population 18 years of age and older who had been injured for more than a year. Resilience correlates with a person's ability to adapt to a life-changing event (Zarzaur et al., 2017). Resilience is associated with psychological well-being because the state of a person's resilience impacts their QoL; specifically, an increased state of resilience equates to a higher level of QoL (Pardeller et al., 2020). People with SCI have been shown to have decreased QoL in comparison to those without SCI (Chuang et al., 2015; Hearn & Cross, 2020). SCI people face challenges reintegrating in their community due to a lack of adaptive coping interventions such as community-based peer support programs (Barclay et al., 2021; Gupta, 2019). The lack of community-based services leads to unmet health-related needs both physically and psychologically. According to Rocchi et al. (2018), SCI community-based mentorship programs are not readily used and marginally exist. This lack of community-based adaptive coping intervention has been shown to have an effect on the long-term viability of people with SCI, particularly their QoL (Ferdiana et al., 2018).

In the current retrospective quantitative study, I examined the relationship between resilience and patient satisfaction among members of the paraplegic, SCI population 18 years of age and older who had been injured for 1 year or more. The research design outlined in this chapter includes the research questions, purpose, and rationale for the study design. The role of the researcher is identified and discussed. Also

included in Chapter 3 are the target population, participant selection, instrumentation, and data analysis. Further, I address the threats to validity and ethical considerations that influenced my study.

Research Design and Rationale

Quantitative research is the dominant methodology used in the social sciences that incorporates a set of strategies, techniques, and assumptions using a variation of processes to identify numeric patterns (Ahmed et al., 2018). Quantitative research involves statistical analysis of aggregated data to show correlation or relationship between variables in a sample population (Tramonti et al., 2015; University of Texas Arlington, 2023). By gathering a range of numeric data, quantitative researchers are able to study psychological, social, and economic processes through the exploration of numeric patterns (Ahmed et al., 2018). Quantitative data collection allows researchers to perform statistical analysis that aggregate data using methodologies such as surveys, questionnaires, and experiments to observe occurrences or phenomena that affect a sample population (Ahmed et al., 2018). The relevance of the outcomes of quantitative research in health care includes the ability to improve quality of client care needs, improve patient reported outcomes, close existing knowledge deficits and/or service gaps, and strategize interventions to optimize client QoL (Hannigan, 2018).

Target Population

In the current study, retrospective secondary data analysis was used to identify the relationship between resilience (independent variable) and the dependent variables (QoL positive attitude and QoL positive ways to cope) using the covariates of age, gender, race,

level of injury, post-injury year, occupational status, marital status, and social integration. The confounding variables and the identified demographic characteristics were incorporated in this study to examine the relationship between (a) QoL among this population segment and (b) the independent variable of resilience based on previously collected data.

Participants for this retrospective quantitative study were chosen using secondary data from the NSCISC database, which included over 26,000 participants throughout 18 SCI Model System Centers, to examine the impact of resilience and QoL variables of positive attitude and positive ways to cope for paraplegic SCI people more than 1 year after injury (Chen, 2023). Due to COVID-19 restrictions, this methodology was deemed most feasible and provided greater access to the targeted population segment, which consisted of paraplegics age 18 and over who were male and female, White, Black, Hispanic, Asian, American Indian, and other. Degree of education was also identified from high school through doctoral level degree attainment. Years of injury were identified with a focus on the targeted population living with SCI for 1 year or more. Marital status, social reintegration, and QoL variables of positive attitude and positive ways to cope were assessed in the target population. Paraplegia is a state of paralysis based on the level of injury to the spinal cord in which the lower half of a person's body is affected, including all or part of the trunk region, bilateral legs, and pelvic area (Kumar & Gupta, 2016; Mayo Clinic, 2019). Paraplegics have different needs in comparison to tetraplegic SCI people. People suffering from SCI, such as paraplegics, are faced with multiple challenges such as adaptive means of coping (Kumar & Gupta, 2016).

Sampling and Sampling Procedures

A quantitative design using secondary data from the NSCISC was used to examine the impact of resilience and QoL variables of positive attitude and positive coping mechanisms for paraplegic SCI people more than 1 year after injury. Sample size was determined using participants from the public data set (18 SCI Model System Centers) who met the selection criteria of more than 1 year after injury. The Resilience SCI-QoL Short Form served as the instrument to measure the participants' subjective perspectives, state of being, and experiences of importance and significance in regard to QoL descriptors using a Likert scale (1 [*never*] to 5 [*always*]) method of response (Chen, 2023).

The identified variables were assessed using data that captured the subjective perspectives of the participants as a means to foster replication of the findings (see Creswell, 2014). The participants consisted of a group of individuals selected according to the confounding variables identified as a way of testing the research hypotheses. This research approach aligned with the theoretical framework of this study. The research questions were aimed at minimizing bias and ensuring validity of the findings (see Creswell, 2014). Through new insight and enhanced awareness, this study may reveal the impact of resilience on QoL among SCI paraplegic persons 1 year after injury as a stimulant for positive social change and development of community-based social reintegration resources such as peer support mentorship programs.

Setting and Sample Size

This study was guided by a retrospective design used to evaluate the effectiveness of resilience among members of the paraplegic spinal cord injury (SCI) population 18 years of age and older who had been injured for more than a year. The study's goal was to determine how this particular well-being-associated variable impacts the QoL of paraplegic SCI clients as it relates to importance and satisfaction. Resilience was used to measure the level of QoL variables among paraplegic SCI people 18 years and older injured for 1 year or more. The sample size for this study was based on October 2016 to October 2021 responses obtained from a public de-identified database. As of June 2022, the National Spinal Cord Injury Model Systems Database (2022) contained information for over 35,000 people living with SCI.

Instrumentation and Operationalization of Constructs

The Resilience SCI-QoL Short Form served as the instrument to measure the participants' subjective perspectives, state of being, and experiences of importance and significance in regard to QoL descriptors using a Likert scale (1 [*never*] to 5 [*always*]) method of response (Chen, 2023; National Spinal Cord Injury Model Systems Database, 2022), and the participants' perceived QoL outlined by the Likert scale descriptors of response. Additionally, the Resilience SCI-QoL Short Form instrument identified variables that were tailored to the population segment being studied. Specifically, the QoL measurement index captured two essential QoL segments (satisfaction and importance) using a Likert scale ranging from 1 (*never*) to 5 (*always*) (Chen, 2023; National Spinal Cord Injury Model Systems Database, 2022). Each component of the

formatted questionnaire QoL index instrument tool consisted of eight questions with a focus on feeling good with coping strategies, getting through difficult times, seeing the positive side of things, confident overcoming limitations, actions to improve life, and seeking new things to enjoy (Chen, 2023) (see Table 1).

Table 1

Operational Measures of Study Independent, Dependent, and Covariate Variables

Variable	Survey question	Data code	Variable type
QoL positive attitude	Lately I had a positive attitude? 1. Never 2. Rarely 3. Sometimes 4. Often 5. Always	@BRsPosAt	Dependent
QoL positive ways to cope	Lately I used positive ways to cope? 1. Never 2. Rarely 3. Sometimes 4. Often 5. Always	@BRsPosCp	Dependent
Resilience			Independent
Age	Date of birth Mm/dd/yyyy	@PDOB	Covariate
Gender	Are you male or female? 1. Male 2. Female 3. Other, Transgender	@RSex	Covariate
Race	What is your race? 1. White 2. African American or Black 3. Native American, Eskimo, Aleutian	@RRace	Covariate
Level of injury (para or tetra)	Is your spinal cord injury described as paraplegic or tetraplegic? 1. Paraplegic 2. Tetraplegic	@BSFPaTe	Covariate
Post-injury year	Date of injury Mm/dd/yyyy	@AlnjDt	Covariate
Occupational status	Currently, what is your occupational status? 1. Working 2. Homemaker 3. On-the-job training 4. Sheltered workshop 5. Retired 6. Student 7. Unemployed 8. Retired, pension 9. Retired, non-disability 10. Other, unclassified	@BPvLvISt	Covariate
Marital status	What is your marital status? 1. Never married (single) 2. Married 3. Divorced	@BMarStat	Covariate

Social integration	4. Separated 5. Widowed 6. Other, unclassified 7. Living with significant other, partner, unmarried couple How many friends (nonrelatives) do you visit, phone, or write to at least once a month? 0. None 1 to 4. One to four 5. Five or more	@BCHConFr	Covariate
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Procedure for Recruitment, Participation, and Data Collection

The impact of resilience was used to measure the level of QoL variables among paraplegic SCI people 18 years and older who were injured 1 year or longer as a predictive factor of the effectiveness of adaptive coping interventions such as community-based peer mentorship programs and the impact on overall well-being. The intent of this study was to determine whether there is a relationship between the identified variables of positive attitude and positive ways to cope in regard to resilience and overall QoL. The participants had their level of resilience measured based upon the assessed QoL domains of positive attitude and positive ways to cope within the SCI QoL index based upon a scoring range of 4 (*often*) to 5 (*always*). Positive attitude and positive ways to cope are adequate measures of effectiveness associated with a state of well-being as it relates to QoL, which has been shown to indicate strong coping abilities and enhanced adaption/functioning (Barclay et al., 2021; Burckhardt & Anderson, 2003; Ferdiana et al., 2018). Participants' information was gathered from questionnaire responses related to specifically QoL resiliency.

Sample size for this study was determined by respondents who met the criteria of more than 1 after injury based on de-identified data collected October 2016 to October 2021. Such understanding served to help determine the factors that impact the long-term

state of well-being among this targeted population segment. Associated strengths related to resilience, positive attitude, and positive coping mechanisms were captured in this study. The noted research design was chosen for this study because it aligned with the theoretical framework that involved events that had taken place in the lives of SCI clients over time, processes the factors that have impacted the QoL and health outcomes of this population segment, and links fundamental intrinsic and extrinsic factors that correlate to the adaptation of living with a life altering condition (Cook & Artino, 2016; Maddux, 2012; Rocchi et al., 2018; Sweet et al., 2018). Additionally, data for this study were extrapolated from the National Spinal Cord Injury Database collected over a period from 2016 to 2021 based on the identified variables. With this being retrospective using a secondary data set, there were no incentives offered to participants.

Statistical Analysis

The use of multivariate analysis hypothesis testing was the operational basis for this study. Specifically, multiple linear regression was used to answer the research questions and address the assumptions of statistical significance. Data were entered into SPSS statistical software.

Research questions and hypotheses included the following:

RQ1: Is there a statistical relationship between resilience and improved QoL positive attitude as defined by Resilience SCI-QoL Short Form for paraplegic SCI clients injured more than 1 year?

H_0 1: There is no statistically significant relationship between resilience and improved QoL positive attitude as defined by the SCI-QoL Resilience Short Form for

paraplegic SCI clients injured more than 1 year based on QoL index scoring of 4 (*often*) or 5 (*always*).

H_{a1} : There is a statistically significant relationship between resilience and QoL positive attitude as defined by the SCI-QoL Resilience Short Form for paraplegic SCI clients injured more than 1 year based on QoL index scoring of 4 (*often*) or 5 (*always*).

The dependent variable for RQ1 was QoL positive attitude, the independent variable was resilience, the covariates were sociodemographics, and the statistical test used to test the hypothesis was multiple linear regression. The conditions for rejecting the null hypothesis were $p > .001$.

RQ2: Is there a statistical relationship between resilience and improved QoL positive ways to cope as defined by Resilience SCI-QoL Short Form for paraplegic SCI clients injured more than 1 year?

H_{o2} : There is no statistically significant relationship between resilience and improved QoL positive ways to cope as defined by the SCI-QoL Resilience Short Form for paraplegic SCI clients injured more than 1 year based on QoL index scoring of 4 (*often*) or 5 (*always*).

H_{a2} : There is a statistically significant relationship between resilience and improved QoL positive ways to cope as defined by the SCI-QoL Resilience Short Form for paraplegic SCI clients injured more than 1 year based on QoL index scoring of 4 (*often*) or 5 (*always*).

The dependent variable for RQ2 was quality of life positive ways to cope, the independent variable was resilience, and the covariates were socio-demographics. The

statistical test used to test the hypothesis was a multiple linear regression. The conditions for rejecting the null hypothesis were $p > .001$

Linear Regression Analysis

Simple and multiple linear regression are methods of statistical inference in which hypothesis testing establishes whether an independent variable(s) predicts a dependent variable (Constantin, 2017; Hanley, 2016). Simple linear regression statistical analysis comprises one independent variable (categorical or continuous) and one dependent variable (continuous), whereas multiple linear regression statistical analysis can include more than one independent variable (categorical or continuous). For both simple and multiple linear regression analyses, the dependent variable must be a continuous measure and assemble key assumptions that align with sensitivity analysis (Constantin, 2017). These key assumptions include linearity, normality, multicollinearity, and homoscedasticity. If any of the key assumptions were not met or could not be achieved with modifications, then it was planned to use nonlinear regression for statistical analysis.

Linearity

Linearity testing requires that the relationship between the independent and dependent variables is linear. To visualize whether the relationships between the independent and dependent variables are linear, scatter plots and boxplots were used. Soneji et al. (2017) asserted that detection of non-linearity can be identified through examination of residual plots wherein the plots of the standardized residuals coincide with standardized predicted values.

Normality

Normality refers to the shape of data distribution for an individual variable. Normality testing necessitates that the errors between the predictor (independent variable) and overall outcome are normally distributed, or that the regression residuals equate to approximately 0. The posture of normality was proven using a histogram, a fitted normal curve, skewedness, kurtosis, or a Q-Q-probability plot. Outlier data can be seen through visual inspection of histograms or frequency distributions. According to Lee and Lee (2018), the probability of Type I and Type II errors can be reduced by removing outliers and ensuring that balance is maintained between statistical power and error rate, which in turn helps to improve accuracy estimates. The use of square root, log, or inverse transformation can potentiate the improvement of normality. Normality can also be checked with a goodness of fit test, such as the Pearson Chi-Square statistic, and Hosmer-Lemeshow, which determines how the used model reflects real data (Zhang et al., 2017).

Multicollinearity

Multicollinearity is an assumption predominately applicable to multiple linear regression research. Specifically, multicollinearity is identified as the case when two or more of the independent variables are correlated. Multicollinearity among independent variables potentiate a decrease in reliability of statistical inference. Highly correlated independent variables with a coefficient greater than 0.80 were identified with the use of a correlation matrix. SPSS contains procedures that aid in detecting independence, the variance inflation factor (VIF) and tolerance level (TOL) more accurately (Constantin, 207). Ideal VIF is below 10.00 but preferably under 5.00.

Homoscedasticity

Homoscedasticity, or homogeneity of variances, refers to the statistical assumption of when equal or similar variance of different groups are being compared. Additionally, heteroscedasticity is identified when the proportion of error differs across values of the independent variable causing a scattering further away from 0 leading to a depiction of a bow-tie or fan shape visual outline. The presence of heteroscedasticity is indicative of distorted and weakened findings that can increase the possibility of a Type I error. The assumption of homoscedasticity was established using visual examination of a scatterplot of residuals versus predicted values. A lack of clear pattern distribution within the scatterplot was preferred. Non-linear modification can correct unequal variance error (Zhang et al., 2017).

Statistical Plan

The first research questions had two key variables: resilience (predictor variable, binomial) and quality of life positive attitude (dependent variable, continuous). A simple linear regression was performed to determine whether resilience predicts quality of life positive attitude. With the use of multiple linear regression, the predictor was adjusted in accordance with the socio-demographics confounders; the null hypothesis was rejected at $p < .001$.

The second research questions had two key variables: resilience (predictor variable, binomial) and quality of life positive ways to cope (dependent variable, continuous). A simple linear regression was performed to determine whether resilience predicts quality of life positive ways to cope. With the use of multiple linear regression,

the predictor was adjusted in accordance with the socio-demographics confounders; the null hypothesis was rejected at $p < .001$.

Research questions were initially developed based on questions derived from the Resilience SCI-QoL Short Form questionnaire from the period of 2016 to 2021.

Multivariate analysis, which focused on hypothesis testing, was the basis of the data analysis plan for this study. Multiple linear regression testing was used to address the research questions and assumptions of statistical significance. Data were entered using SPSS statistical software.

Archival Data

Participant recruitment and data were already obtained from prior researchers. No permission was required to access and use data from public database. No historical or legal documents were required since data had been previously collected and published for the purposes of statistical analysis.

Protection of Human Participants

Within this study, I maintained a responsibility to be transparent and fully disclose all supportive results of data in alignment with the study's theoretical framework as a way to enhance the development of future research (Moravcsik, 2019). I also extrapolated data from the National Spinal Cord Injury Database based upon the identified variables as outlined using de-identified information (Chen, 2023). I have no conflict of interest to disclose related to this study. The confidentiality of the participants was maintained using data stripped of HIPPA-defined identifiers, and no ethical compromise of data occurred. Research studies, in particular ones that involve human

participants, warrant adherence to formal ethical guidelines and procedures. Ethics committees play a vital role in ensuring that ethical standards are outlined and met to help mitigate against potential harm to the research participants (Brown et al., 2020). To ensure ethical considerations were followed, such as the principles of beneficence and non-maleficence, I used retrospective data and already established survey questions that had already received Institutional Review Board (IRB) approval.

It is imperative when using human subjects in research that proper informed consent is obtained, and full disclosure of the study purpose is provided to participants to alleviate dishonesty (Creswell, 2014). Ethical concerns were prioritized within this study to ensure approval by the IRB and to maintain confidentiality through anonymity. After the completion of all proper documentation, the IRB approval number was issued which allowed the retrospective study to proceed with the collection of historical data related to the participants' satisfaction and importance of life satisfaction as a means of evaluating their QoL. The participants for this study were not identified by personally associated information, voluntarily agreed to participate, and chosen in a manner that optimized objectivity and equity through the initial research process. Participants also had no obligation to answer all of the questions and were able to select "no answer" on the survey.

Threats to Validity

The purpose of establishing validity in research is essential to ensure that presented data are sound, replicable, and the results are accurate (Chuang et al., 2015; Creswell, 2014). In comparison to qualitative research, a quantitative approach often

warrants a larger population sample, which produces a higher level of reliability and validity (Chuang et al., 2015). Validity is synonymous with the research question(s) being appropriately aligned for the intended outcome, the methodology being appropriately aligned for the research question(s), the design being appropriately aligned for the methodology, the participant selection and data analysis being appropriately aligned with the topic of study, and the results being appropriately aligned for the intent and purpose of the study (Connelly, 2016). Therefore, it is imperative that a researcher take into account the potential threats to validity in regard to their study. This study used secondary data from the National Spinal Cord Injury data set from the SCI population specific participants using a retrospective questionnaire. The interrelated variables included questions linked with the identified covariates and QoL variables of satisfaction and importance. The use of a selected group from an established secondary data set promoted objectivity and curtailed potential bias.

Summary

This chapter provided an overview of factors that impact QoL for people living with SCIs with a specific emphasis on resilience. Data analysis was performed to measure the effectiveness of resilience on QoL factors in the SCI population to identify future interventions to improve their QoL. Future QoL interventions could improve this population's adjustment to a sustainable life post-SCI. Through new insight and enhanced awareness, this study revealed the impact of resilience on QoL factors related to positive attitude and positive ways to cope on the overall well-being among SCI paraplegic clients 1 year or more post-injury. This newfound insight and awareness further served as a

stimulant to promote positive social change and ignite community-based program development.

Chapter 4 addressed the research results. In the result chapter, the data collection time frame was identified, data discrepancies noted, sample demographic characteristics described, and statistical assumptions identified. Additionally, in this chapter research questions were summarized, and the transitional material from the findings were presented to the reader.

Chapter 4: Results

The purpose of this retrospective quantitative study was to evaluate the impact resilience had on positive attitude and positive coping among members of the paraplegic SCI population 18 years of age and older who had been injured for more than a year. The independent variable was resilience, the dependent variables were positive attitude and positive coping, and the covariate variables were age, gender, level of injury, post-injury year, occupational status, marital status, and social integration.

Research Questions

The research questions for this study were the following:

RQ1: Is there a statistical relationship between resilience and improved QoL positive attitude as defined by the SCI-QoL Resilience Short Form for paraplegic SCI clients injured more than 1 year?

H_o1 : There is a statistically significant relationship between resilience and improved QoL positive attitude as defined by the SCI-QoL Resilience Short Form for paraplegic SCI clients injured more than 1 year based on QoL index scoring of 4 (*often*) or 5 (*always*).

H_a1 : There is no statistically significant relationship between resilience and QoL positive attitude as defined by the SCI-QoL Resilience Short Form for paraplegic SCI clients injured more than 1 year based on QoL index scoring of 4 (*often*) or 5 (*always*).

RQ2: Is there a statistical relationship between resilience and improved QoL positive ways to cope as defined by the SCI-QoL Resilience Short Form for paraplegic SCI clients injured more than 1 year?

H_{o2} : There is a statistically significant relationship between resilience and improved QoL positive ways to cope as defined by the SCI-QoL Resilience Short Form for paraplegic SCI clients injured more than 1 year based on QoL index scoring of 4 (*often*) or 5 (*always*).

H_{a2} : There is no statistically significant relationship between resilience and improved QoL positive ways to cope as defined by the SCI-QoL Resilience Short Form for paraplegic SCI clients injured more than 1 year based on QoL index scoring of 4 (*often*) or 5 (*always*).

Chapter 4 present a summary of the data collection and descriptive data for the sample. Univariate and inferential statistical test results are presented in narrative and chart format. The chapter conclude with an overview of the results for each research question regarding hypothesis testing.

Data Collection

The impact of resilience was used to measure the level of QoL variables among paraplegic SCI people 18 years and older more than 1 year after injury. The sample size was determined based on October 2016–2021 responses obtained from a public de-identified database.

Results

Demographics of Sample

A total of 4,486 people met the inclusion criteria and had completed data in the secondary data file. All people who met the criteria were included in the sample.

Demographic data including age, gender, occupational status, marital status, post-injury

year, and social support were used in this study. Table 2 displays the continuous demographic variables of age at injury, post-injury years, age, and social support.

Table 2

Descriptive Statistics for Continuous Demographic Variables

Variable	Min	Max	<i>M</i>	<i>SD</i>
Age at injury	1	88	31.97	14.099
Post-injury years	1	45	15.55	12.935
Age	18	93	47.52	15.338
Social support	0.00	5.00	3.80	1.56

Note. Min = minimum; Max = maximum; M = mean; SD = standard deviation.

Table 3 offers a summary of the descriptive statistics for categorical demographic variables including gender, occupational status, marital status, and race.

Table 3*Descriptive Statistics for Categorical Demographic Variables*

Variable	<i>n</i>	%
Gender		
Male	3473	77.4%
Female	1013	22.6%
Marital status		
Single, never married	1648	36.7%
Married	1622	36.2%
Divorced	766	17.1%
Separated	99	2.2%
Widowed	145	3.2%
Other, unclassified	7	0.2%
Living with significant other, partner, unmarried	199	4.4%
Occupational status		
Working	1225	27.3%
Homemaker	83	1.9%
On the job training	2	0.0%
Sheltered workshop	1	0.0%
Retired	76	1.7%
Student	116	2.6%
Unemployed	1752	39.1%
Retired, disability pension	701	15.6%
Retired, nondisability (age-related)	355	7.9%
Other, unclassified	175	3.9%
Race		
White	3070	68.4
Black, African American	976	21.8
American Indian, Alaska Native	32	0.7
Asian, Pacific Islander	72	1.6
Some other race, multiracial	143	3.2
Declined	4	0.1
Unknown	189	4.2

Note. *n* = count; % = percentage.

Variables of Interest

The descriptive statistics for the two dependent variables and the independent variable are displayed in Table 4. Positive attitude had a mean score of 4.14 ($SD = .85$) with a range from 1 to 5. Positive coping had a mean score of 4.19 ($SD = .89$) with a range from 1 to 5. Resilience was computed as a score with a possible range from 0 to 100. The mean was 52.39 ($SD = 9.11$) with a range from 16.40 to 66.40.

Table 4

Descriptive Statistics for Variables of Interest

Variable	Min	Max	<i>M</i>	<i>SD</i>
Positive attitude	1.00	5.00	4.14	0.85
Positive coping	1.00	5.00	4.19	0.89
Resilience	16.40	66.40	52.39	9.11

Note. Min = minimum; Max = maximum; *M* = mean; *SD* = standard deviation.

Statistical Assumptions

To conduct the hierarchical multiple regression, I tested four primary assumptions including linearity between the predictor and dependent variables by conducting Pearson r correlations and residual plots. For RQ1, the Pearson r correlations are displayed in Table 5 and showed an association of $r(4484) = .770, p < .001$. For RQ2, the Pearson r correlation showed an association of $r(4484) = .771, p < .001$ indicating a positive linear association between the independent variable of resilience and the dependent variables of positive attitude and positive ways to coping (positive coping).

Table 5

Pearson r Correlations for Independent and Dependent Variables

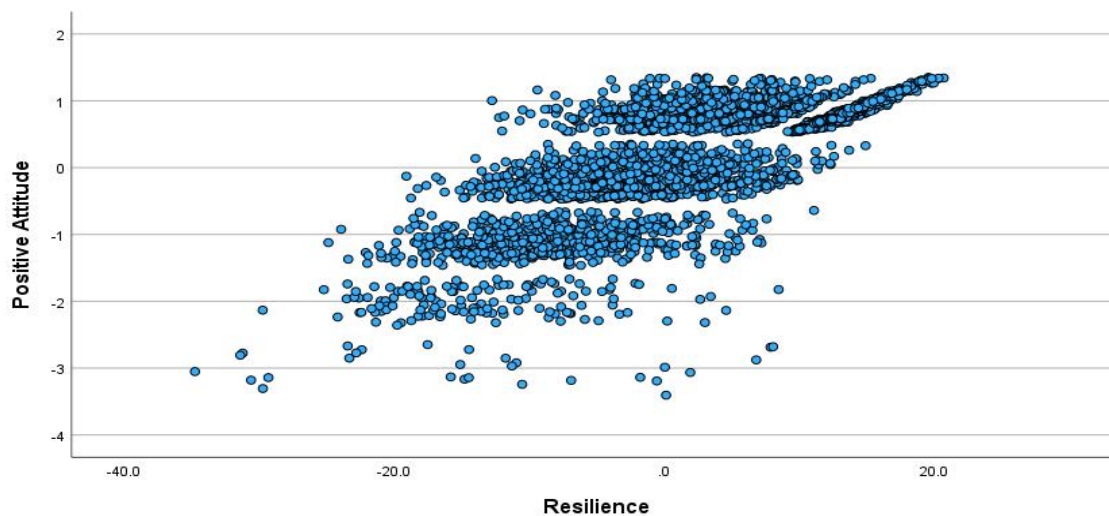
Variable	Positive attitude	Positive coping
Positive coping	.570**	--
Resilience	.770**	.771**

Note. ** indicates $p < .001$.

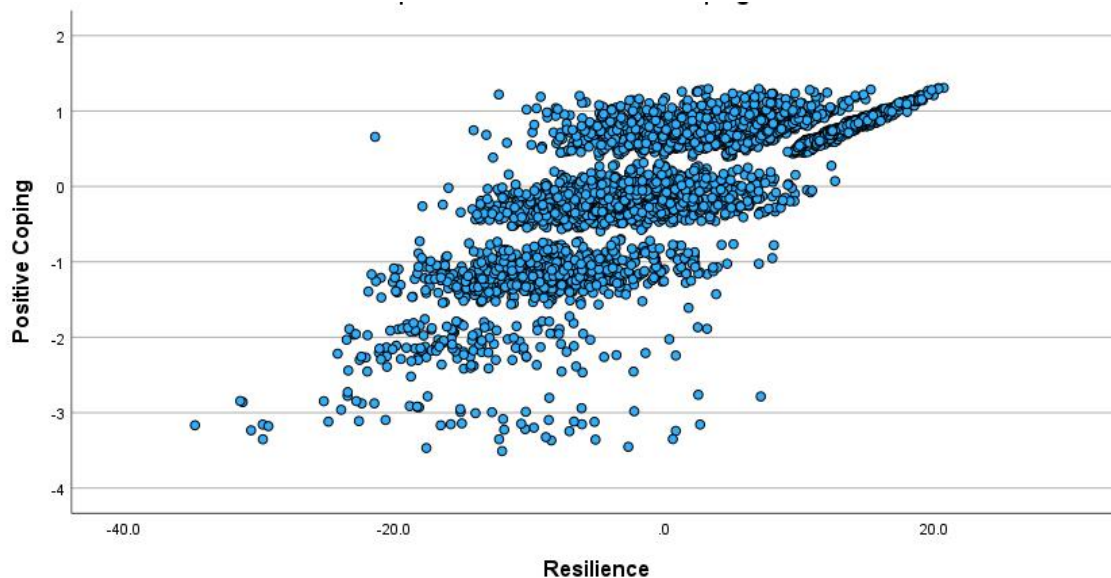
The residual plots also indicated a linear relationship between the independent and dependent variables. Figure 1 displays the residual plots for resilience and positive attitudes, and the pattern of positive linear residuals is evident.

Figure 1

Residual Plot for Positive Attitude and Resilience



Similarly, the residual plot for resilience and positive coping (see Figure 2) shows a positive linear relationship for the residuals.

Figure 2*Residual Plot for Resilience and Positive Coping*

Normality of the dependent variables (positive attitude and positive coping) was examined using skewness/kurtosis evaluations. For positive attitude (see Table 6), the skewness value was between -1 and +1, and the kurtosis value was between -3 and +3.0, indicating an approximate normal distribution.

Table 6*Normality Testing Evaluation for Positive Attitude*

Variable	Min	Max	<i>M</i>	<i>SD</i>	Skewness	Kurtosis
Positive Attitude	1	5	4.14	.848	-.826	.420

Note. Min = minimum; Max = maximum; *M* = mean; *SD* = standard deviation.

In the evaluation of normality using skewness and kurtosis in positive coping (see Table 7), the skewness value was between -1 and +1, and the kurtosis value was between -3 and +3.0, indicating an approximate normal distribution.

Table 7*Normality Testing Evaluation for Positive Coping*

Variable	Min	Max	<i>M</i>	<i>SD</i>	Skewness	Kurtosis
Positive Coping	1	5	4.19	.894	-.989	.891

Note. Min = minimum; Max = maximum; *M* = mean; *SD* = standard deviation.

Multicollinearity was examined using variance inflation factor (VIF) and tolerance level in the regression models. The findings showed this assumption was met for RQ1 and RQ2. Table 8 displays the findings for RQ1 and shows a VIF of < 10 for the predictor variables and > .10 for all tolerance values.

Table 8*Multicollinearity Values for Positive Attitude Regression Model*

Variable	Collinearity statistics	
	Tolerance	VIF
Gender	.987	1.013
Age	.505	1.980
Post-injury years	.713	1.403
Single	.548	1.825
Married	.640	1.563
Working	.663	1.509
Unemployed	.615	1.627
Social support	.920	1.087
Race	.862	1.160
Resilience	.930	1.075

Note. VIF = variance inflation factor.

For RQ2, Table 9 shows that the data met the assumption of multicollinearity. The tolerance values were all > .10, and the VIF values were less than 10.

Table 9*Multicollinearity Statistics for Positive Coping Model*

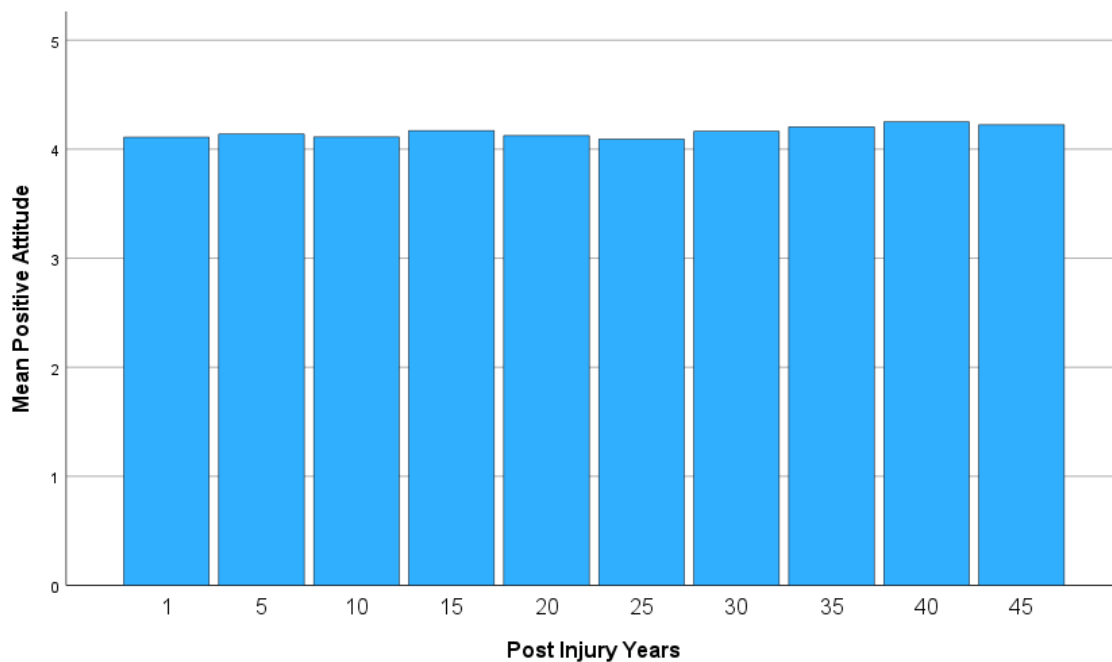
Variable	Collinearity statistics	
	Tolerance	VIF
Gender	.987	1.013
Age	.505	1.980
Post-injury years	.713	1.403
Single	.548	1.825
Married	.640	1.563
Working	.663	1.509
Unemployed	.615	1.627
Social support	.920	1.087
Race	.862	1.160
Resilience	.930	1.075

Note. VIF = variance inflation factor.

To explore the changes over time from injury and positive attitude, I computed the mean scores for number of years after injury. The findings are presented in Figure 3 and show similar mean scores for positive attitude across post-injury years.

Figure 3

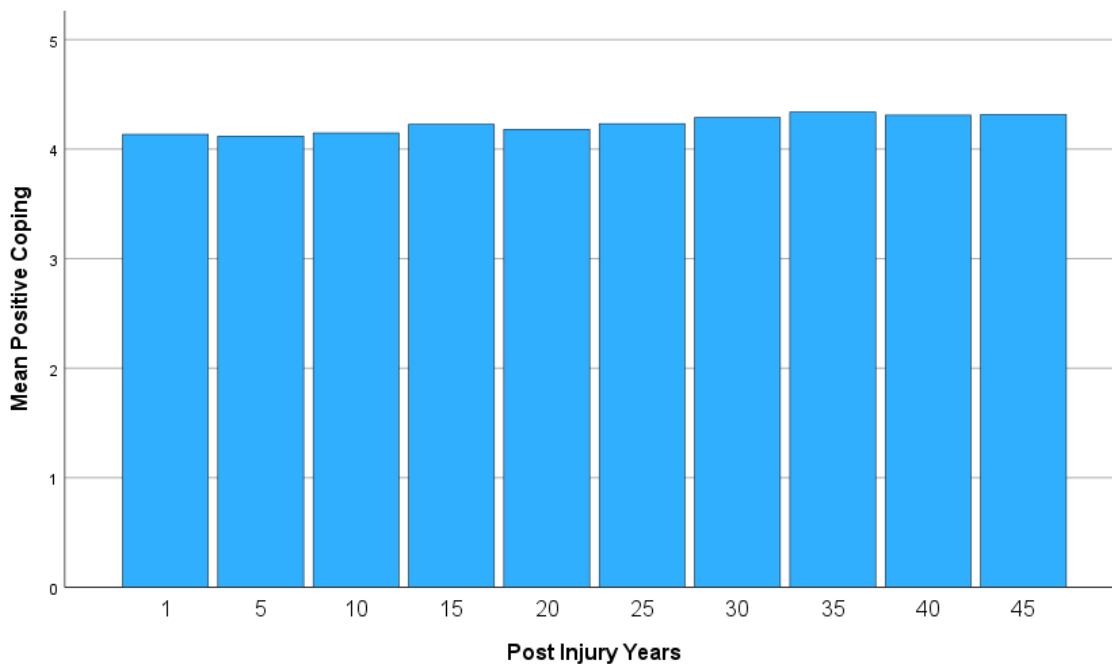
Mean Positive Attitude Scores for Post-Injury Years



To explore the changes over time from injury and positive ways to cope (positive coping), I computed the mean scores for number of years after injury. The findings are presented in Figure 4 and show similar mean scores for positive coping across post-injury years.

Figure 4

Mean Positive Coping Scores for Post-Injury Years



To address *RQ1*: Is there a statistical relationship between resilience and improved quality of life *positive attitude* as defined by the SCI-QoL Resilience Short Form for paraplegic SCI clients injured more than 1 year, a hierarchical multiple linear regression was conducted using the covariates in Block 1 and the predictor variable of interest (Resilience) in Block 2. Categorical variables of marital status and occupational status were coded as dummy variables since they had more than two categories. The R^2 change and associated p-value were evaluated to determine if resilience predicts positive attitude when accounting for the covariates. The results are displayed in Table 10. The findings support the alternative hypothesis that resilience is significantly associated with improved quality of life when accounting for the covariates. The first block accounted for

5.1% of the variance in positive attitude scores, whereas the addition of resilience in Block 2 improved the model to account for 59.5% of the variance in positive attitude (R^2 change $p < .001$).

Table 10

Model Summary for Positive Attitude

Model	<i>R</i>	<i>R</i> square	Adjusted <i>R</i> square	Std. error of the estimate	Change statistics				
					<i>R</i> square change	<i>F</i> change	<i>df</i> 1	<i>df</i> 2	Sig. <i>F</i> change
1	.225a	.051	.049	.827	.051	26.55	9	4476	<.001
2	.772b	.595	.595	.540	.545	6026.65	1	4475	<.001

a. Predictors: (Constant), Social Support, Gender, Married, Post-Injury Years, Working, Unemployed, Single, Age;

b. Predictors: (Constant), Social Support, Gender, Married, Post-Injury Years, Working, Unemployed, Single, Age, Resilience

An assessment of the significance values for the beta scores shows that resilience was a significant predictor ($p < .001$), in addition to age, years since injury, and social support (Table 11).

Table 11*Regression Coefficients for Covariates and Resilience in Positive Attitude Model*

Model	Unstandardized coefficients		Standardized coefficients		
	B	Std. Error	Beta	<i>t</i>	<i>p</i>
1 (Constant)	3.833	.085		44.977	<.001
Gender	-.013	.030	-.006	-.422	.673
Age	.000	.001	-.002	-.100	.920
Post-injury years	.002	.001	.025	1.451	.147
Single	-.020	.035	-.011	-.568	.570
Married	.132	.032	.075	4.105	<.001
Working	.087	.034	.046	2.561	.010
Unemployed	-.091	.032	-.052	-2.813	.005
Social support	.093	.008	.172	11.537	<.001
Race	-.115	.029	-.063	-4.025	<.001
2 (Constant)	.333	.072		4.645	<.001
Gender	-.020	.019	-.010	-1.028	.304
Age	.002	.001	.037	2.742	.006
Post-injury years	-.002	.001	-.036	-3.194	.001
Single	.016	.023	.009	.716	.474
Married	.024	.021	.014	1.163	.245
Working	-.009	.022	-.005	-.389	.697
Unemployed	-.037	.021	-.021	-1.747	.081
Social support	.012	.005	.022	2.238	.025
Race	-.001	.019	-.001	-.059	.953
Resilience	.071	.001	.765	77.632	<.001

To address RQ2: Is there a statistical relationship between resilience and improved quality of life *positive ways to cope* as defined by the SCI-QoL Resilience Short Form for paraplegic SCI clients injured more than 1 year? A hierarchical multiple linear regression was conducted using the covariates in Block 1 and the predictor variable of interest (Resilience) in Block 2. Similar to the RQ1 model, categorical variables of marital status and occupational status were coded as dummy variables since they had more than two categories. The R^2 change and associated p-value were evaluated to

determine if resilience predicts positive ways to cope (positive coping) when accounting for the covariates. The results are displayed in Table X. The findings support the alternative hypothesis that resilience is significantly associated with improved quality of life when accounting for the covariates. The first block (Model 1) accounted for 4.2% of the variance in positive attitude scores, whereas the addition of resilience in Block 2 (Model 2) improved the model to account for 59.6% of the variance in positive attitude (R^2 change $p < .001$).

Table 12

Sample Table Title

Model	<i>R</i>	<i>R</i> square	Adjusted <i>R</i> square	Std. error of the estimate	Change statistics				
					<i>R</i> square change	<i>F</i> change	<i>df</i> 1	<i>df</i> 2	Sig. <i>F</i> change
1	.205a	.042	.040	.876	.042	21.7	9	4476	<.001
2	.772b	.596	.596	.568	.555	6149.06	1	4475	<.001

a. Predictors: (Constant), Social Support, Gender, Married, Post-Injury Years, Working, Unemployed, Single, Age

b. Predictors: (Constant), Social Support, Gender, Married, Post-Injury Years, Working, Unemployed, Single, Age, Resilience

An assessment of the significance values for the regression coefficients for positive coping (Table 13) showed that resilience was a significant predictor ($p < .001$), in addition to gender.

Table 13*Regression Coefficients for Covariates and Resilience in Positive Coping Model*

Model	Unstandardized coefficients		Standardized coefficients		<i>p</i>
	B	Std. Error	Beta	<i>t</i>	
1 (Constant)	3.821	.090		42.34	<.001
Gender	.058	.031	.027	1.85	.063
Age	-.001	.001	-.015	-.74	.455
Post-injury years	.005	.001	.076	4.41	<.001
Single	-.011	.037	-.006	-.29	.766
Married	.116	.034	.062	3.42	<.001
Working	.078	.036	.039	2.17	.030
Unemployed	-.084	.034	-.046	-2.44	.014
Social support	.083	.009	.145	9.69	<.001
Race	-.116	.030	-.060	-3.83	<.001
2 (Constant)	.099	.075		1.31	.189
Gender	.051	.020	.024	2.47	.013
Age	.001	.001	.024	1.77	.076
Post-injury years	.001	.001	.015	1.33	.189
Single	.027	.024	.015	1.14	.253
Married	.002	.022	.001	.096	.924
Working	-.023	.023	-.012	-1.00	.316
Unemployed	-.026	.022	-.014	-1.18	.237
Social support	-.003	.006	-.006	-.59	.550
Race	.005	.020	.003	.25	.800
Resilience	.076	.001	.772	78.42	< .001

Summary

This study utilized hierarchical linear regression to address two clinical questions. The first research question was: Is there a statistical relationship between resilience and improved quality of life *positive attitude* as defined by the SCI-QoL Resilience Short Form for paraplegic SCI clients injured more than 1 year? As shown in the regression

model results, there is a statistically significant relationship between resilience and improved quality of life *positive attitude*. The results were similar for *RQ2*: Is there a statistical relationship between resilience and improved quality of life *positive ways to cope* as defined by the SCI-QoL Resilience Short Form for paraplegic SCI clients injured more than 1 year? The regression model summary and evaluation of coefficient significant values showed a statistically significant relationship between resilience and improved quality of life *positive ways to cope*.

Chapter 5 will offer a summary of the data analysis and interpretation of the findings regarding statistical significance. The implications for future research are offered. The chapter will conclude with the interpretations, limitations, recommendations, implications and an overall conclusion of the study.

Chapter 5: Discussion, Conclusions, and Recommendations

The purpose of this retrospective quantitative study was to evaluate the impact resilience has on positive attitude and positive coping among people living with paraplegic SCI injury 18 years of age and older who had been injured for more than a year. Resilience is the process of successfully adapting to life-changing experiences or challenges through mental, emotional, and behavioral adaptation to internal and external demands (American Psychological Association, 2023). The state of a person's resilience has been shown to impact their QoL and has been linked to their overall psychological well-being; a high level of resilience leads to a higher level of QoL (Pardeller et al., 2020). The current study was conducted with the intent to understand the magnitude of adjustment to life for people living with SCI by assessing the significance of resilience on their ability to sustain lifelong quality functioning (see Bernet et al., 2018).

The research study was driven by two research questions:

RQ1: Is there a statistical relationship between resilience and improved QoL positive attitude as defined by the SCI-QoL Resilience Short Form for paraplegic SCI clients injured more than 1 year?

RQ2: Is there a statistical relationship between resilience and improved QoL positive ways to cope as defined by the SCI-QoL Resilience Short Form for paraplegic SCI clients injured more than 1 year?

Key Findings

This retrospective study included the quantitative method involving retrieving previously collected data from a national public database of individuals living with SCI

(Chen, 2023; National Spinal Cord Injury Model Systems Database, 2022). The data were obtained through survey questions in which participants provided their subjective perspectives on positive attitude and positive coping related to resilience QoL descriptors. Research has shown that resilience, or the ability to overcome negative effects to achieve some form of baseline or improved function, is associated with enhanced QoL (Zarzaur et al., 2017). Two key findings in this study indicated that resilience had statistical significance of improved QoL factors of both positive attitude and positive ways of coping. These findings validate the argument that individuals living with SCI experience varying psychological adjustments as time goes on, and greater acceptance of this new way of living correlates with enhanced QoL (see Aaby et al., 2020).

Interpretation of the Findings

This study contributes to the current body of knowledge regarding resilience on QoL in people living with SCI. Resilience is a significant psychological factor that aids in adjustment after adversity. The severity of negative psychological adaptation after a life-altering event such as SCI impacts such things as acceptance of the injury, sustainable coping strategies, and long-term QoL (Aaby et al., 2020). Empirical research has shown that mental health is a key element that affects a person's well-being with a greater influence as the progression into older age and living with a long-term SCI evolves (Jorgensen et al., 2017). Efforts to enhance the psychological adjustment after someone acquires SCI extends beyond the brick-and-mortar inpatient facilities. The findings of the current study confirm the results of peer-reviewed literature reviewed in Chapter 2. Specifically, the development for change has a profound calling and dependency for

community-based engagement that plays a significant role in improving the QoL of people living with SCI throughout their life span. Community-based strategies play a key role in fostering social engagement, enhancing perceived value and significance, and promoting improved mental and physical health that brings about a greater sense of optimal well-being (Jorgensen et al., 2017).

I analyzed and interpreted the findings with a strong contextual correlation of the theoretical framework of self-efficacy using the QoL variables of positive attitude and positive ways to cope. The study's findings support the proposition that people living with SCI experience an optimal level of adapting and coping when their internal perception of QoL factors is heightened (see Smedema, 2017). Through subjective acknowledgment of a positive attitude and positive ways to cope, the theoretical framework of this study was supported by the statistically significant results that correlated with improved QoL and optimal coping strategies. Such correlation was a crucial interpretation associated with the findings that validated the importance of community-based interventions aimed at promoting the adaptation and coping strategies of people living with SCI (see Barclay et al., 2021).

Recent research supported the positive correlation between QoL enhancement and the theoretical principle of self-efficacy by noting that people with disabilities such as SCI reported lower levels of well-being, a component of life satisfaction, in comparison to their non-disabled counterparts (Smedema, 2017). I used the self-efficacy theoretical principle to measure effectiveness of social coping related to the level of SCI acceptance and found that greater social support and interpersonal self-efficacy equated to greater

life satisfaction (see Smedema, 2017). Additionally, Schwartz et al. (2018) validated the fact that prioritizing improvement of QoL in people living with SCI more than 1 year initiated improved coping strategies and fulfillment with life at a more optimal level.

According to Walden University (2023), positive social change is a “deliberate process of creating and applying ideas, strategies, and actions to promote the worth, dignity, and development of individuals, cultures, and societies [resulting in improved] human and social conditions” (para. 1). The current study expanded knowledge from previous research by bringing greater understanding of the impact resilience has for people living with SCI to promote the perceptions of life-satisfying positive attitude and positive ways to cope to live a longer and more optimal QoL through increased community-based strategies. Community-based strategies such as peer mentoring programs aim to promote knowledge and skills that enhance self-efficacy, self-worth, emotional and physical well-being, and self-management in people living with SCI so they can become more viable and contributing citizens.

Limitations of the Study

Scientific research is a way to conduct systematic and in-depth inquiries focused on discovering and interpreting facts of a certain reality (Queiros et al., 2017). I used quantitative methodology to obtain precise and reliable components of measurement from a multiple linear regression data analysis. This study captured a large population of people living with SCI in the United States and included a survey technique to obtain participants' responses. A key limitation with surveys is that participants' responses are limited to the structured selections provided and the truthfulness of their answers

(Queiros et al., 2017). Further, the study instrument used required SCI-specific self-reporting measures that may not be associated with the generalized population living without SCI (Ferdiana et al., 2018; Smedema, 2017).

People identified as paraplegic SCI were the target population of this study. Including tetraplegic SCI people may or may not have elicited similar results. Tetraplegia is often correlated with more health-related complexities, increased psychological distress, decreased adaptive coping strategies, and reports of lower QoL in comparison to paraplegia (Ferdiana et al., 2018; Jorgensen et al., 2017; Kennedy et al., 2016).

Another limitation of this study was the generalization of the sample. Though the sample size was expansive, the sample was limited to SCI people in the United States. In other developing countries that have an interest in this topic of study, there are limited resources, knowledge, and accessibility issues that make conducting similar research challenging (Barclay et al., 2021; Ferdiana et al., 2018). Such a study on a global platform would provide expansive insight of this area of study to identify widespread impact and implications for change.

Recommendations

Several recommendations can be made for future research based on the current study. Research has shown that SCI people face challenges reintegrating in their community due to a lack of coping interventions that align with their life-altering changes to living such as community-based peer support programs (Barclay et al., 2021; Gupta, 2019). The lack of community-based services has led to unmet physical and psychological health-related needs. Rocchi et al. (2018) concluded that SCI community-

based mentorship programs marginally exist, and where they do, they are not readily used. This lack of community-based adaptive coping intervention has been shown to have an effect on the long-term viability of people with SCI, particularly their QoL (Ferdiana et al., 2018). Additionally, years of living with SCI are correlated with differing functionality, adaptation, and coping needs that warrant strategies that will enhance optimal long-term outcomes (Anderson et al., 2016; Dvorak et al., 2017; Van Wyk et al., 2015). Further research should be carried out to enhance the limited research on this topic of study as a way to enhance awareness of the care needs for SCI people beyond institutionalized infrastructures. To justify the need for developing more community-based support programs, further research should be done to show the significance such interventions play in reducing adversities of living long term with SCI, and the impact interventions play in adjusting to and coping with this new way of life. Rocchi et al. (2018) highlighted the argument that community-based peer support mentoring programs had a more substantial influence on people with longer years of living with SCI.

Implications

The life span of a person living with SCI has increased over the years. As the life span of people living with SCI lengthens, so will their physical, mental, psychological, and social needs. For example, people living with SCI have been associated with having a decreased QoL in comparison to those without SCI (Chuang et al., 2015; Hearn & Cross, 2020). Therefore, it is imperative that people living with SCI have their care needs met both at the onset of acquiring this life-altering condition and throughout the duration of their life.

The findings of the current study show the impact QoL factors have on SCI-related resiliency. Resiliency is a psychological element structured around a person's ability to adapt to change and uncertainty using mental strength to problem solve (Sutton, 2019). Further, the current study findings suggest the need for structuring institutionalized plans of care for SCI people that include enhanced education related to living longer and ways to improve long-term QoL. Through the enhancement of more population-specific education regarding this topic of study, the development of more community-based programs and interventions can be initiated as a way to counteract things that can negatively impact the well-being of people living with SCI. Health care practitioners understand the importance of promoting healthy living and healthy aging for all, and people living with SCI should not be exempt due to a lack of understanding or ability to relate. There is a demand for understanding the consequences of living long term with SCI.

Conclusion

For many, the world of SCI is uncharted territory that comes with a lot of unknowns and lacks resources to use as navigational guides. The purpose of this quantitative study was to examine the impact resilience had on positive attitude, and positive ways of coping among individuals of the paraplegic SCI population 18 years of age and older who had been injured for more than a year. I examined the QoL factors of positive attitude and positive ways to cope and the influence they had on resiliency for SCI people injured more than 1 year in the community setting. Literature was reviewed that revealed the current status of the QoL among people living with SCI for considerable

lengths of time and their current state of resilience. The literature review indicated a gap in evidence-based information regarding how resilience impacts QoL in people living with SCI beyond 1 year of injury.

More insight and understanding of this topic of study is warranted through evidence-based research to identify ideal ways of promoting the highest level of well-being among the quadriplegic SCI population. The results of the current study provide a foundation to create opportunities for institutions and community organizations to partner in an effort to develop more community-based programs such as peer support mentorships that can meet the care needs of this unique population. The development of community-based entities may enhance the well-being of SCI people individually and collectively as productive and viable assets to society. This topic of study warrants a prioritization of attention from all levels of health care to minimize the health disparities of an underserved population deserving the highest level of care and concern.

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