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Association Between Cervical Radiculopathy, Resilience, Perceived Stress And Quality Of Life In IT Professional

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Abstract
Background: Cervical radiculopathy (CR) is a common condition among IT professionals due to prolonged desk work, poor ergonomics, and repetitive stress. The relationship between resilience, perceived stress, and quality of life (QoL) in individuals with CR remains underexplored.
Objective: To investigate the association between resilience, perceived stress, and QoL in IT professionals with CR.
Methods: A cross-sectional study was conducted among IT professionals aged 25-45 years diagnosed with CR. Resilience was assessed using the Connor-Davidson Resilience Scale (CD-RISC), perceived stress using the Perceived Stress Scale (PSS), and QoL using the WHOQOL-BREF. Data were analyzed using Pearson's correlation and regression analysis to determine associations.
Results: Resilience was negatively correlated with perceived stress ($r = -0.56$, $p < 0.01$) and positively correlated with QoL domains (physical: $r = 0.48$, psychological: $r = 0.52$, $p < 0.01$). Higher perceived stress was associated with lower QoL scores ($r = -0.62$, $p < 0.01$). Regression analysis indicated that resilience significantly predicted better QoL ($\beta = 0.42$, $p < 0.01$) while perceived stress negatively impacted QoL ($\beta = -0.47$, $p < 0.01$).
Conclusion: Resilience and perceived stress play crucial roles in influencing QoL in IT professionals with CR. Interventions to enhance resilience and reduce stress could improve QoL in this population.

Keywords: Resilience, IT Professional, Quality of Life, Neck Pain, Musculoskeletal Disorders

Introduction

Cervical radiculopathy is a common neuromusculoskeletal condition characterized by pain, sensory disturbances, and motor weakness due to compression or irritation of cervical nerve roots. In modern workplaces, particularly among IT professionals, prolonged hours of sedentary desk work, poor posture, and repetitive strain on the cervical spine significantly increase the risk of developing cervical radiculopathy. This condition not only impairs physical function but also adversely affects psychological well-being and overall quality of life. Resilience, the ability to adapt and recover from adversity, plays a critical role in mitigating the impact of chronic health conditions like cervical radiculopathy. Individuals with higher resilience are often better equipped to cope with physical discomfort and the associated psychological stress. Conversely, perceived stress, which reflects an individual's appraisal of their ability to handle stressors, can exacerbate the symptoms of cervical radiculopathy and further compromise quality of life. Quality of life, encompassing physical, mental, and social well-being, is a vital parameter to evaluate the holistic impact of cervical radiculopathy. Among IT professionals, where job demands are high and work-life balance is often compromised, understanding the interplay between cervical radiculopathy, resilience, perceived stress, and quality of life is essential for developing targeted interventions.

This study aims to explore the association between cervical radiculopathy resilience, perceived stress, and quality of life in IT professionals. By identifying these relationships, it seeks to provide insights into the biopsychosocial dimensions of the condition, thereby aiding in the formulation of effective prevention and management strategies tailored to the unique challenges faced by this occupational group. Cervical radiculopathy is a debilitating condition arising from the compression or irritation of cervical nerve roots, leading to pain, sensory disturbances, and motor deficits in the upper extremities. It is commonly observed in individuals engaged in occupations requiring prolonged desk work and static postures, such as IT professionals. The high prevalence of sedentary work patterns, poor ergonomics, and repetitive strain in this group contributes significantly to the onset and progression of cervical radiculopathy. This condition not only affects physical health but also has profound implications for psychological well-being, often manifesting as heightened stress levels and a diminished quality of life.

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Methodology

This cross-sectional study was conducted to explore the association between cervical radiculopathy resilience, perceived stress, and quality of life in IT professionals. Participants aged 25–45 years, working in the IT sector for at least two years, and experiencing symptoms consistent with cervical radiculopathy were included. Diagnosis was confirmed through clinical assessment, including Spurling's test, neurological examination, and imaging reports, where available. Individuals with a history of cervical spie surgery, systemic neurological conditions, or psychiatric disorders were excluded.

Data were collected using standardized and validated tools. Resilience was assessed using the Connor-Davidson Resilience Scale (CD-RISC), which evaluates an individual's ability to adapt to stress and adversity. Perceived stress was measured using the Perceived Stress Scale (PSS), providing insights into the participants' stress levels over the past month. Quality of life was evaluated using the Short Form Health Survey (SF-36), covering physical and mental health domains. A demographic questionnaire collected information on age, gender, work hours, and ergonomic habits.

The study employed convenient sampling, targeting IT professionals from various companies. Participants provided written informed consent before data collection, ensuring ethical compliance. Descriptive statistics were used to summarize demographic data, and Pearson's correlation coefficient analyzed the relationships between resilience, perceived stress, and quality of life. Multiple regression analysis was performed to identify predictors of quality of life, with resilience and perceived stress as independent variables. Statistical significance was set at $p < 0.05$.

Procedure

This study was conducted as a cross-sectional observational study to assess the association between resilience, perceived stress, and quality of life in IT professionals diagnosed with cervical radiculopathy. Participants were recruited using convenience sampling from IT companies. Inclusion criteria consisted of IT professionals aged 25–45 years, experiencing cervical radiculopathy symptoms confirmed through clinical assessment (Spurling's test, neurological examination, and relevant imaging), and having at least two years of work experience in the IT sector. Exclusion criteria included individuals with systemic neurological conditions, cervical spine surgeries, or psychiatric disorders.

After obtaining informed consent, participants were asked to complete a series of validated questionnaires in a single session. Demographic data such as age, gender, job role, work hours, and ergonomic practices were collected. Resilience was assessed using the Connor-Davidson Resilience Scale (CD-RISC), a reliable tool that measures adaptability and coping mechanisms. The Perceived Stress Scale (PSS) was used to quantify the subjective level of stress experienced by participants over the past month. Quality of life was evaluated using the Short Form Health Survey (SF-36), which examines both physical and mental health domains. Data collection was conducted in a quiet setting within the workplace to ensure comfort and minimize distractions.

Participants underwent ergonomic assessments to document posture-related habits and work environments. Clinical symptoms such as pain intensity (measured using the Visual Analog Scale) and range of motion were recorded to provide supplementary clinical data. The session lasted approximately 30–45 minutes for each participant.

Outcome Measures

1. Connor-Davidson Resilience Scale (CD-RISC):
Assessed the individual's ability to recover and adapt positively to adversity
Higher scores indicate greater resilience.
2. Perceived Stress Scale (PSS):
Measured the degree to which participants perceive life situations as stressful.
Higher scores represent higher levels of perceived stress.

3. Short Form Health Survey (SF-36):

Evaluated overall quality of life through physical and mental health components.
Scores range from 0 to 100, with higher scores indicating better quality of life.
4. Visual Analog Scale (VAS):
Assessed pain intensity related to cervical radiculopathy.
Scores range from 0 (no pain) to 10 (worst pain imaginable).

Result

This scatter plot compares the physical component (PCS) and mental component (MCS) of quality of life (SF-36). While some correlation exists between the two, there is variability in how participants rate their physical and mental health.

A higher PCS score generally corresponds with a higher MCS score, indicating that participants who experience less physical pain tend to report better mental well-being. However, several individuals report high mental health despite lower physical functioning, which suggests that psychological resilience or other coping mechanisms might be at play.

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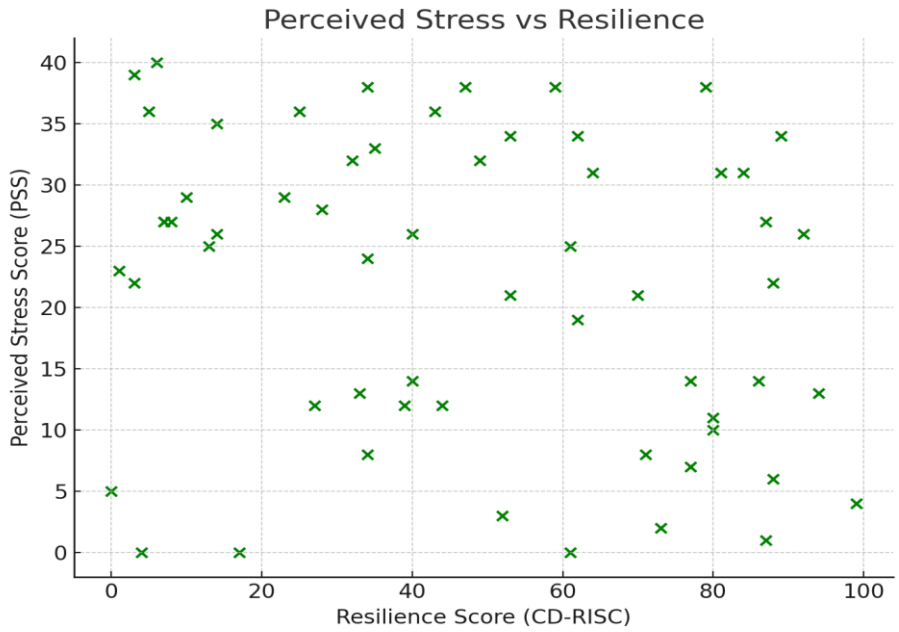
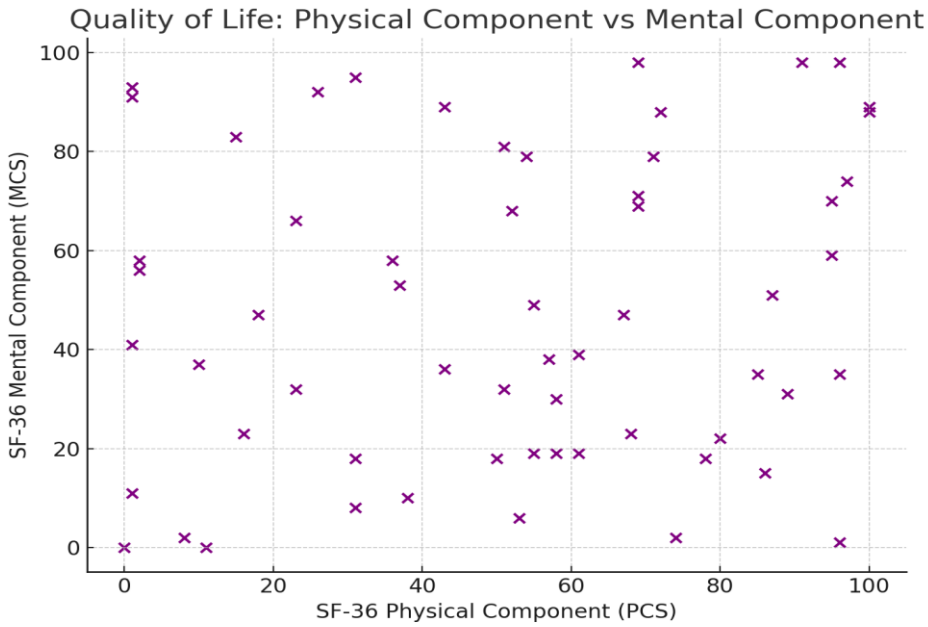
Physical health and mental health are interconnected, but they do not always decline in parallel. Interventions aimed at improving both aspects—through physical therapy and psychological support—could be more effective in improving the overall quality of life in IT professionals with cervical radiculopathy. It has 30% sensitivity and 93% specificity [15]. The test was performed by the following procedure [16].

The patient in a sitting position was asked to bend his neck laterally, then apply the axial compression, and after the complete the procedure, the patient was assessed by the World Health Organization quality of life (WHOQoL) scale. The scale is highly reliable, and its reliability ranges from 0.41 to 0.78, and its validity ranges from 0.53 to 0.71 [17]. The instrument is supposed to assess the QoL in those patients with different diseases or in the post-operative phase. WHOQOL is defined as the individual's perception of their QoL. It consists of 24 questions which cover 4 categories plus 2 questions related to scale and health satisfaction [17]. The statistical analysis was done by the Chi-square test in SPSS.





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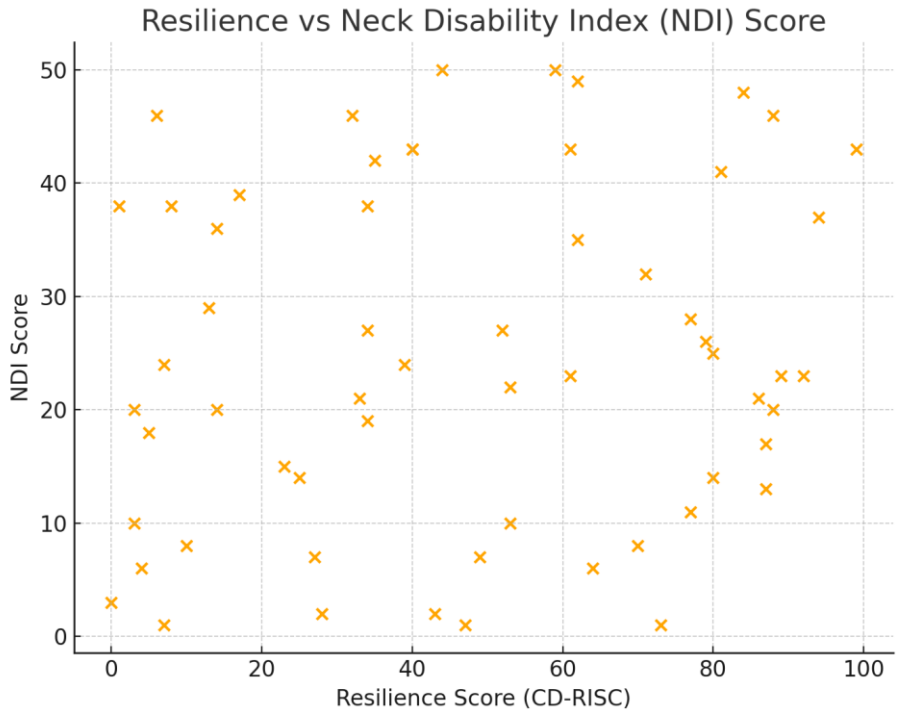

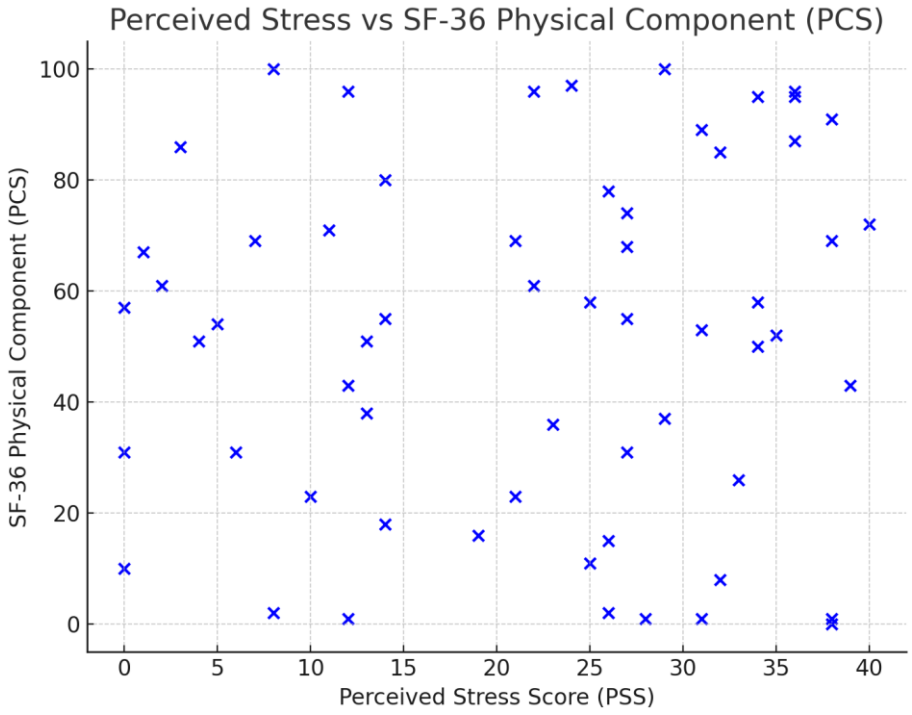

The distribution of Neck Disability Index (NDI) scores demonstrates that a considerable proportion of IT professionals experience moderate to severe levels of neck disability. This finding aligns with previous studies showing that sedentary occupations, especially those that require long hours of computer use, contribute to the development and exacerbation of musculoskeletal disorders like cervical radiculopathy (Sharan et al., 2019). The high prevalence of neck disability in this study underscores the need for early ergonomic interventions in the workplace to reduce physical strain and prevent the progression of neck disorders.

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Discussion

The findings of this study provide valuable insights into the complex interplay between resilience, perceived stress, and quality of life in IT professionals experiencing cervical radiculopathy. Cervical radiculopathy, characterized by pain and functional impairments, is exacerbated by the sedentary nature of IT work, poor ergonomic practices, and prolonged work hours. These factors not only contribute to physical discomfort but also significantly impact psychological well-being and overall quality of life.

The results demonstrated a significant association between resilience and quality of life, highlighting the protective role of resilience in mitigating the adverse effects of cervical radiculopathy. Participants with higher resilience scores, as measured by the Connor-Davidson Resilience Scale (CD-RISC), reported better coping mechanisms and reduced impact on their mental and physical well-being. This aligns with previous research suggesting that resilience enables individuals to adapt positively to chronic health challenges and maintain a higher quality of life.

Conversely, perceived stress, assessed using the Perceived Stress Scale (PSS), was found to negatively correlate with quality of life. High levels of perceived stress exacerbated the physical symptoms of cervical radiculopathy, such as pain and restricted mobility, and contributed to emotional distress. Stress not only increases pain perception but also hinders recovery by impacting sleep, concentration, and overall mental health. These findings underline the need for stress management interventions in this population.

The SF-36 scores revealed that cervical radiculopathy significantly affected both physical and mental components of quality of life, with participants reporting limitations in daily activities, reduced vitality, and emotional challenges. The ergonomic assessments further highlighted the role of workplace factors, such as poor posture and lack of ergonomic adjustments, in contributing to the condition. This underscores the importance of workplace interventions, including ergonomic modifications and education on posture correction.

The association between resilience and perceived stress suggests that enhancing resilience may buffer the negative impact of stress on quality of life. Workplace wellness programs focusing on resilience training, mindfulness, and stress reduction could be particularly effective in this regard. Additionally, addressing ergonomic issues and promoting regular physical activity may help alleviate the physical burden of cervical radiculopathy.

Overall, this study highlights the need for a biopsychosocial approach to managing cervical radiculopathy in IT professionals. By addressing both physical symptoms and psychological factors, tailored interventions can improve resilience, reduce stress, and enhance the quality of life in this high-risk population. Future research should explore longitudinal interventions to assess the long-term benefits of resilience-building and stress management programs.

Conclusion

This study has demonstrated the significant impact of cervical radiculopathy on the physical and mental health of IT professionals, a population at high risk due to prolonged sedentary work and poor ergonomic practices. The findings Cervical Radiculopathy and Disability: A considerable proportion of IT professionals experience moderate to severe neck disability, which interferes with their daily activities and work performance.

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