International Journal of Science and Research (IJSR)
ISSN: 2319-7064
Impact Factor 2024: 7.101

Assessing Proficiency in Patient Handling and Support among SCI Caregivers in a Rural Area: A Baseline Study

Dr. Aadit Rajendra More[1], Dr. Kurapati Shyam[2]

[1]UG Student, Dr APJ AK COPT, Pravara Institute of Medical Sciences

[2]Head of Department of Neurophysiotherapy, Dr APJ AK COPT, Pravara Institute of Medical Sciences

Abstract: ***Background: Spinal cord injury (SCI) care in rural areas is often provided by family caregivers with limited formal training, leading to suboptimal patient handling and increased burden. Assessing their baseline proficiency is essential to identify gaps and design training programs. Objective: To evaluate the baseline caregiving proficiency of SCI caregivers in rural settings. Methodology: A cross-sectional study was conducted among 32 caregivers using a structured questionnaire covering six domains of SCI care. Responses were rated on a 5-point Likert scale and categorized into proficiency levels. Data were analyzed using SPSS and JASP; reliability was assessed with Cronbach's alpha. Results: Overall, 65.63% of caregivers showed satisfactory proficiency, while 34.38% required improvement. Competency was highest in patient handling and medication management, and lowest in emergency response and SCI-specific knowledge. The tool demonstrated acceptable reliability (Cronbach's alpha = 0.668). Conclusion: Although most caregivers displayed satisfactory proficiency, critical gaps remain in emergency care and advanced SCI management. Structured, context-specific training is needed to enhance caregiver competency and improve patient outcomes.***

Keywords: Spinal cord injury, caregivers, patient handling, rural healthcare, caregiver training

1. Introduction

Caring for individuals with spinal cord injury (SCI) is a complex and demanding responsibility that requires specialized knowledge, practical skills, and a compassionate approach. The sudden onset of SCI often transforms family members into primary caregivers, compelling them to rapidly acquire competencies in mobility assistance, personal care, medication administration, and management of emergencies. The proficiency of caregivers in fulfilling these roles directly influences patient outcomes, safety, and quality of life. [1]

Spinal cord injury refers to damage to the spinal cord that results in partial or complete loss of motor, sensory, and autonomic functions below the level of lesion. It may be traumatic, caused by road traffic accidents, falls, sports injuries, or violence, or non-traumatic, due to tumors, infections, vascular disorders, or degenerative diseases. [1] Depending on severity and level of lesion, SCI may result in paraplegia or tetraplegia, causing profound limitations in daily activities. Globally, the incidence of SCI is estimated to be 40 to 80 cases per million people, with variations based on regional and socioeconomic factors.[1]

The consequences of SCI extend beyond physical impairments, affecting multiple aspects of an individual's life and secondary complications. These may involve pressure ulcers, urinary tract infections, bowel and bladder dysfunction, respiratory problems, osteoporosis, spasticity, and cardiovascular disorders. [1,2] Psychological sequelae are equally significant, with depression affecting 20–30% of individuals, along with high prevalence of anxiety and post-traumatic stress disorder. [3,4] The sudden dependency on caregivers for basic needs often contributes to social withdrawal, reduced motivation for rehabilitation, and diminished quality of life. [5]

Caregivers, often family members, play a pivotal role in supporting individuals with SCI, but this responsibility brings significant mental and physical burdens to them as well, their responsibilities include safe transfers, mobility support, wound care, medication management, and providing emotional support to help patients adapt to disability. [2] However, the constant demands of caregiving can result in physical exhaustion, chronic stress, sleep disturbances, and financial strain. [4,6] Caregivers may themselves experience anxiety, depressive symptoms, and social isolation, particularly when family dynamics are altered and intimate relationships strained. [7]

The challenges are further increased in rural settings, where caregivers often lack access to specialized healthcare services, training programs, and social support networks. Lower literacy levels, geographic isolation, and economic constraints make it difficult for caregivers to manage the complex demands of SCI care. Consequently, patients in these communities face an increased risk of preventable complications, hospital readmissions, and reduced quality of life. [4,7]

Despite the critical role caregivers in SCI management, limited research has focused on systematically assessing their baseline proficiency levels prior to training interventions. Most existing training programs are generalized, lacking the practical, context-specific elements needed to build confidence and skill. [8] Establishing caregivers' current level of competence across domains such as patient handling, communication, medication administration, and emergency response is vital to designing effective, targeted interventions that improve both patient outcomes and caregiver well-being. [9,10]

Recognizing these challenges, this research aimed to assess the proficiency of caregivers supporting individuals with SCI of rural communities. The study seeks to identify knowledge gaps, evaluate practical skills, and provide insights into areas requiring targeted interventions. By understanding caregiver's current competencies, appropriate training programs which was designed to enhance caregiving efficacy and patient outcomes.

2. Material and methodology

Study Design
A cross-sectional descriptive study was conducted to assess the baseline proficiency levels of caregivers handling patients with spinal cord injuries (SCI) in a rural setting.

Study Area
The study was conducted in rural healthcare facilities and community settings where SCI patients receive care.

Ethical Considerations
Ethical approval for the study was obtained from the Institutional Ethics Committee. Written informed consent was secured from all participants, and confidentiality was maintained throughout the study.

Study Population
a) **Participants:** Primary caregivers (family members or hired caregivers) of individuals diagnosed with SCI.

Inclusion Criteria:
- Caregivers who are currently providing direct care to individuals diagnosed with spinal cord injuries.
- Caregivers aged 18 years or older.
- Caregivers who have consented to participate in the study.
- Caregivers who are able to comprehend and respond to study questionnaires or interviews.
- Caregivers who are willing to attend training sessions or interventions related to patient handling and support.
- Caregivers who are proficient in the language of the study materials.
- Caregivers who have not participated in similar training programs within the past six months.

Exclusion Criteria:
- Caregivers who do not provide direct care to individuals with spinal cord injuries.
- Caregivers who are under the age of 18.
- Caregivers who are unwilling or unable to provide informed consent.
- Caregivers who have cognitive or physical impairments that hinder their ability to participate in the study.
- Caregivers who are currently undergoing other formal training programs or interventions unrelated to the study.
- Caregivers who are unable to comprehend or respond to study questionnaires or interviews due to language barriers or other reasons.
- Caregivers who have a conflict of interest, such as employment in a healthcare or rehabilitation facility involved in the study.

Sample Size
32 Primary caregivers (family members or hired caregivers) of individuals diagnosed with SCI.

Sampling Technique
A purposive sampling method was used to select participants who met the inclusion criteria.

Data Collection Tool
A structured questionnaire was developed to assess six domains of caregiver proficiency:
1) Communication Skills: Assesses the ability to interact effectively with patients, particularly those with communication impairments.
2) Patient Care Techniques: Evaluates practical skills in assisting with mobility, personal hygiene, and injury prevention.
3) Medication Administration: Measures understanding of medication schedules, dosage accuracy, and handling discrepancies.
4) Emotional Support: Assesses methods for providing psychological support and building patient trust.
5) Emergency Response: Tests knowledge of basic first aid and management of medical emergencies.
6) Practical Knowledge: Gauges general awareness of SCI-related care needs.

The questionnaire comprises 10 open-ended questions, each rated on a 5-point Likert scale assessing completeness, accuracy, and applicability. Scores range from 10 to 50 points, with proficiency levels classified as follows:
- **Excellent (45–50):** Highly skilled; minimal training required.
- **Good (35–44):** Competent with minor areas for improvement.
- **Satisfactory (25–34):** Adequate; training recommended to enhance proficiency.
- **Needs Improvement (15–24):** Requires focused skill development.
- **Unsatisfactory (<15):** Immediate comprehensive training needed.

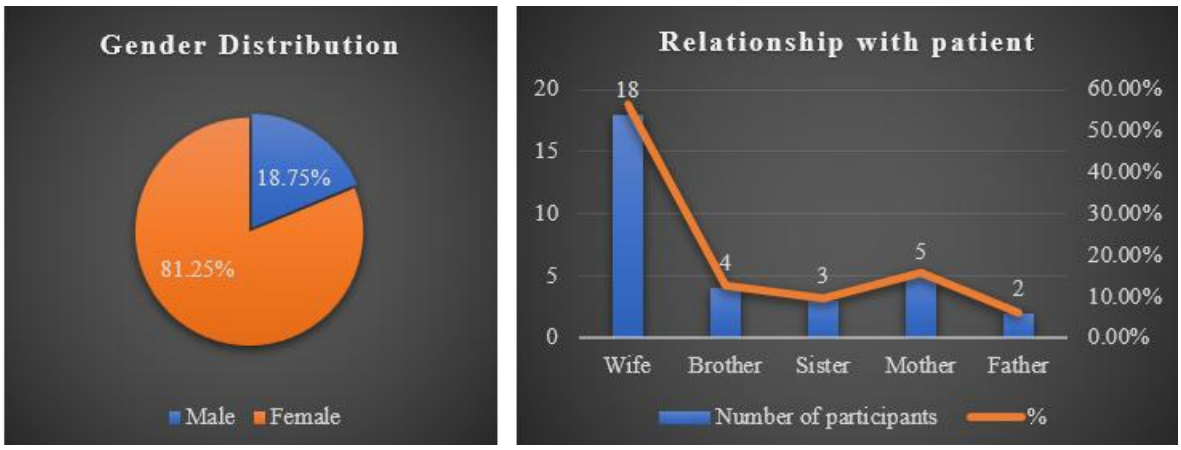
Eligible caregivers were enrolled after providing informed consent. Data collection was carried out through face-to-face interviews conducted in the local language to ensure clarity. In addition to questionnaire responses, practical demonstrations of patient handling were observed, and scenario-based questions were used to assess emergency response and emotional support skills.

3. Data Analysis and results

Data were analyzed using IBM SPSS version 20 (Chicago, USA) and JASP version 0.19. Descriptive statistics (mean, standard deviation, frequencies) were calculated. Internal consistency of the questionnaire was assessed using Cronbach's alpha. Proficiency levels were interpreted according to the scoring system. A significance level of $p < 0.05$ with a 95% confidence interval was considered for statistical reliability testing.

Table 1: Baseline Data

Variables	Mean±SD / n (%)
Age	35.0312±7.489
Gender Male Female	 6 (18.75%) 26 (81.25%)
Relationship with Patient Wife Brother Sister Mother Father	 18 (56.25%) 4 (12.5%) 3 (9.375%) 5 (15.625%) 2 (6.25%)

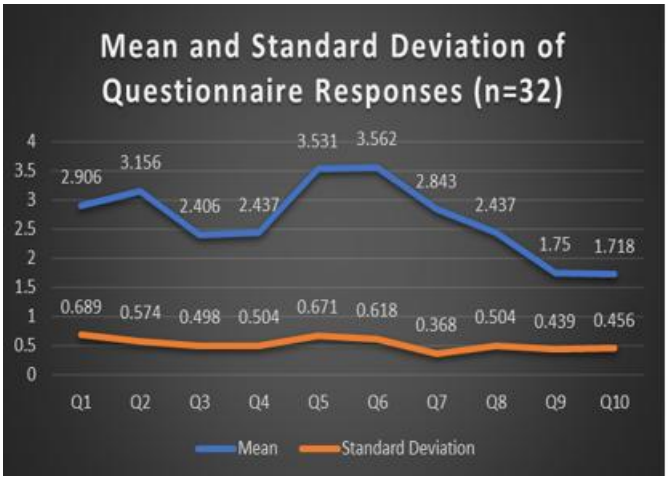


Graph 1: Gender disribution among the Caregivers and their relationship with patients

Interpretation: From Table No. 1 and Graph No 1, we can conclude that female caregivers were more in number as compared to male, with percentage of 81.25% females and 18.75% males amongst the caregivers. Additionally, regarding the caregivers' relationship to the patients, wives were the most common caregivers, followed by mothers, brothers, sisters, and fathers in descending order.

Table 2: Mean and Standard deviation of Questionnaire items

Question Code	Mean	Standard Deviation
Q1	2.906	0.689
Q2	3.156	0.574
Q3	2.406	0.498
Q4	2.437	0.504
Q5	3.531	0.671
Q6	3.562	0.618
Q7	2.843	0.368
Q8	2.437	0.504
Q9	1.75	0.439
Q10	1.718	0.456

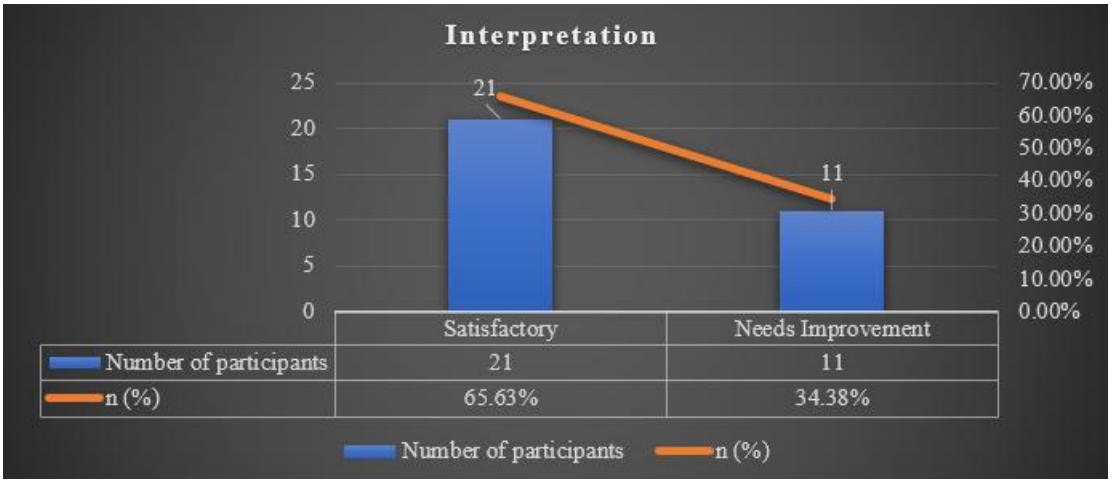


Graph 2: Graphical representation of Mean and Standard deviation of questionnaire responses.

Interpretation: From table No. 2 and Graph No. 2 we can conclude that among the ten items questionnaire, Q6 (Mean = 3.562, SD = 0.618) and Q5 (Mean = 3.531, SD = 0.671) recorded the highest mean scores, indicating greater proficiency in those areas. In contrast, Q10 (Mean = 1.718, SD = 0.456) and Q9 (Mean = 1.75, SD = 0.439) had the lowest means, suggesting areas where caregivers may need improvement. The standard deviation values range from 0.368 (Q7) to 0.689 (Q1), reflecting moderate variability in responses across the items

Table 3: Baseline proficiency level interpretation of SCI caregivers

Interpretation	Number of participants, n (%)
Satisfactory	21 (65.625%)
Needs Improvement	11 (34.375%)

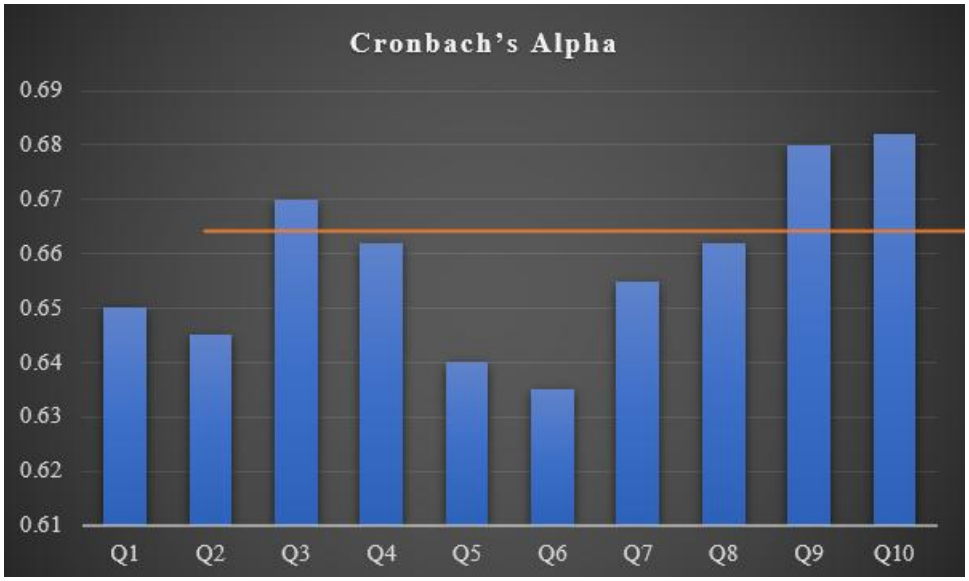


Graph 3: Graphical representation of proficiency level of Sci caregivers

Interpretation: The table No.3 and Graph No.3 shows the distribution of participants based on their proficiency levels. Out of the total participants, 21 (65.625%) demonstrated satisfactory proficiency, while 11 (34.375%) were categorized as needing improvement. This indicates that although the majority of caregivers performed satisfactorily, there remains a significant proportion requiring further training and support.

Table 4: Internal consistency reliability Analysis of SCI Caregiver Proficiency assessment tool by item wise Cronbach's alpha calculation

Question Code	Cronbach's Alpha
Q1	0.65
Q2	0.645
Q3	0.67
Q4	0.662
Q5	0.64
Q6	0.635
Q7	0.655
Q8	0.662
Q9	0.68
Q10	0.682
Overall	0.668



Graph 4: Graphical representation of Internal consistency reliability Analysis of SCI Caregiver Proficiency assessment tool by item wise Cronbach's alpha calculation

Interpretation: The Table No. 4 and Graph No. 4 presents the Cronbach's alpha values for each questionnaire item and the overall scale. Item-wise alpha values range from 0.635 (Q6) to 0.682 (Q10), indicating moderate internal consistency across the items. The overall Cronbach's alpha of 0.668 suggests that the questionnaire has an acceptable level of reliability for assessing caregiver proficiency, considering its exploratory nature.

4. Discussion

The present study assessed the baseline proficiency of caregivers supporting individuals with spinal cord injuries (SCI) in a rural setting. Findings revealed that while 65.62% of caregivers demonstrated satisfactory proficiency, a significant proportion (34.38%) required improvement. Emergency response and specialized SCI care knowledge were the weakest domains, whereas patient handling and

medication management showed relatively higher competency levels. These results indicate that although caregivers are familiar with routine care tasks, they lack preparedness for critical situations requiring advanced knowledge and timely intervention.

The predominance of female caregivers (81.25%), particularly wives (56.25%), aligns with previous reports that caregiving roles in SCI largely fall on women due to cultural and familial expectations. [7] Adhikari et al. (2020) similarly reported that spouses and mothers are the most common caregivers, reflecting traditional gender roles in caregiving responsibilities. This pattern underscores the need for training interventions that acknowledge the unique challenges faced by women, including role strain and limited access to external support. [4]

The identified deficiencies in emergency response skills are consistent with the findings of Smith et al. (2016) [2], who highlighted that informal caregivers often lack training in handling medical crises. Inadequate preparedness in emergencies may compromise patient safety and increase hospital readmissions. Likewise, Backx et al. (2018) demonstrated that ongoing training and professional guidance enhance caregiver confidence and reduce the risk of preventable complications. The results of this study further strengthen the argument for structured, context-specific caregiver training programs. [3]

Psychological stress and emotional strain among caregivers are well documented in the literature [4,5] Although this study primarily focused on proficiency levels, the lower scores in emotional support and communication suggest an underlying need for psychological empowerment and resilience-building. Hlabangana and Hearn (2020) emphasized that self-compassion and psychosocial interventions improve caregiver well-being, which in turn enhances patient care quality. [11]

Reliability analysis of the assessment tool yielded a Cronbach's alpha of 0.668, which falls within the acceptable range for exploratory studies [1] This indicates that the tool is suitable for assessing caregiver proficiency but can benefit from refinement and cultural adaptation in future research. D'Angelo et al. (2021) similarly stressed the importance of developing contextually valid tools to evaluate caregiver competencies in SCI care. [8]

The implications of these findings are significant. Addressing caregiver knowledge gaps, particularly in emergency management, can enhance patient safety, reduce complications, and improve rehabilitation outcomes. Structured training programs incorporating simulation-based learning, as suggested by Juguera Rodríguez et al. (2020), could provide hands-on practice and improve knowledge retention. Furthermore, peer-support and community-based interventions may be particularly effective in rural areas, where caregivers face geographic and resource constraints. [10]

In conclusion, this baseline assessment revealed that while a majority of caregivers possess satisfactory proficiency, but still a significant portion requires targeted training to meet the complex demands of SCI care. Addressing these gaps through culturally sensitive, accessible, and hands-on training programs will enhance caregiver competency, improve patient outcomes, and alleviate caregiver burden. Future research will focus on post-training assessments to evaluate the effectiveness of the implemented program, monitor long-term caregiver proficiency, and refine educational modules based on participant feedback. Investing in caregiver education is essential for ensuring that individuals with SCI receive comprehensive, compassionate, and competent care, ultimately promoting better rehabilitation outcomes and overall well-being for both patients and their caregivers.

5. Conclusion

This current study assessed the baseline proficiency of caregivers providing support to individuals with spinal cord injuries (SCI) in a rural setting. The findings indicate that while a majority of caregivers demonstrated satisfactory proficiency, a significant proportion exhibited gaps in key areas such as emergency response, patient handling, and practical knowledge of SCI care. These deficiencies highlight the urgent need for targeted training programs to improve caregiver competency, reduce patient risks, and enhance overall care quality.

6. Limitations

- Small sample size limited to a rural setting, affecting the generalizability of results.
- Reliance on self-reported data and observational assessments, which may introduce response bias.
- Moderate reliability of the assessment tool, indicating a need for further refinement to improve internal consistency of questionnaire items.
- Potential cultural and language barriers that may have influenced participant's understanding of the questionnaire which was in English language.

References

[1] Nas K, Yazmalar L, Şah V, Aydın A, Öneş K. Rehabilitation of spinal cord injuries. World J Orthop. 2015 Jan 18;6(1):8-16. PMID: 25621206; PMCID: PMC4303793.
[2] Smith EM, Boucher N, Miller WC. Caregiving services in spinal cord injury: a systematic review of the literature. Spinal Cord. 2016 Aug;54(8):562-9. doi: 10.1038/sc.2016.8. Epub 2016 Feb 23. PMID: 26902459.
[3] Backx APM, Spooren AIF, Bongers-Janssen HMH, Bouwsema H. Quality of life, burden and satisfaction with care in caregivers of patients with a spinal cord injury during and after rehabilitation. Spinal Cord. 2018 Sep;56(9):890-899. 10.1038/s41393-018-0098-7. Epub 2018 Apr 27. PMID: 29700476.
[4] Adhikari, S. P., Gurung, G., Khadka, B., & Rana, C. (2020). Factors influencing depression in individuals with traumatic spinal cord injury and caregivers' perceived burden in a low-income country: A cross-sectional study. *Spinal cord, 58*(10), 1112–1118.
[5] Lucke, K.T., Coccia, H., Goode, J.S. *et al.* Quality of life in spinal cord injured individuals and their

caregivers during the initial 6 months following rehabilitation. *Qual Life Res* **13**, 97–110 (2004).

[6] Keihanian, F., Kouchakinejad-Eramsadati, L., Yousefzadeh-Chabok, S., & Homaie Rad, E. (2022). Burden in caregivers of spinal cord injury patients: A systematic review and meta-analysis. *Acta neurologica Belgica, 122*(3), 587–596.

[7] Lynch, J., & Cahalan, R. (2017). The impact of spinal cord injury on the quality of life of primary family caregivers: A literature review. *Spinal cord, 55*(11), 964–978.

[8] D'Angelo, M., Grieco, G., Panuccio, F., Berardi, A. (2021). Measuring Caregiver in Spinal Cord Injury. In: Galeoto, G., Berardi, A., Tofani, M., Auxiliadora Marquez, M. (eds) Measuring Spinal Cord Injury. Springer, Cham.

[9] Elliott, T. R., & Berry, J. W. (2009). Brief problem-solving training for family caregivers of persons with recent-onset spinal cord injuries: A randomized controlled trial. *Journal of Clinical Psychology, 65*(4), 406–422.

[10] Juguera Rodríguez L, Pardo Ríos M, Castillo Hermoso M, Pérez Alonso N, Leal Costa C, Díaz Agea JL. Impact of simulation-based learning on family caregivers during the rehabilitation period of individuals with spinal cord injury. Spinal Cord. 2020 Jan;58(1):95-105. Epub 2019 Aug 20. PMID: 31431675.

[11] Hlabangana, V., & Hearn, J. H. (2020). Depression in partner caregivers of people with neurological conditions; associations with self-compassion and quality of life. *Journal of mental health* (Abingdon, England), *29*(2), 176–181.