Section: Miscellaneous

Original Research Article

COMMUNITY INTEGRATION IN SPINAL CORD INJURY PATIENTS – A PROSPECTIVE OBSERVATIONAL STUDY

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ABSTRACT

Background: Community integration is a key indicator of successful rehabilitation following spinal cord injury (SCI), reflecting an individual's ability to participate in home, social, and productive activities. However, data on community reintegration among individuals with lower thoracic and lumbar SCI in the Indian setting remain limited. **Materials and Methods:** This prospective observational study was conducted at the Government Institute of Rehabilitation Medicine, Madras Medical College, Chennai, between June 2019 and May 2021. Thirty-five individuals aged 18–50 years with traumatic SCI at neurological levels T10 and below, who had completed a 12-week inpatient rehabilitation program and had a duration of injury greater than six months, were included. Community integration was assessed during follow-up using the Community Integration Questionnaire (CIQ). **Results:** Participants were predominantly male (89%), with the majority aged 31–40 years (46%). L1 (34%) and T12 (26%) were the most common injury levels. Mean FIM scores improved from 66.76 at admission to 86.74 at discharge. The mean total CIQ score was 15.43, with higher scores observed in social integration (6.86) and home integration (5.71) compared to productive activities (2.97). Environmental barriers (62.9%), lack of opportunities (51.4%), and health-related issues (48.6%) were the most frequently reported challenges. Financial difficulties (37.1%), lack of family support (14.3%), psychological issues (11.4%), and equipment-related problems (8.6%) were also identified. **Conclusion:** Individuals with traumatic SCI at T10 and below achieved moderate levels of community integration following rehabilitation, with better home and social participation than productive engagement. Environmental, financial, health-related, and psychosocial barriers continue to hinder successful community reintegration, highlighting the need for comprehensive rehabilitation strategies beyond functional recovery.

INTRODUCTION

Spinal cord injury (SCI) is a life-changing condition that can result in significant physical, psychological, social, and economic consequences. It commonly affects young and middle-aged adults and often leads to varying degrees of motor, sensory, and autonomic dysfunction. Depending on the severity and level of injury, individuals may experience limitations in mobility, self-care, employment, social participation, and overall quality of life. Advances in acute medical management and rehabilitation have improved survival and functional outcomes; however, successful reintegration into the community remains a major challenge for many individuals with SCI.[1,2]

Rehabilitation following spinal cord injury aims not only to improve physical functioning but also to enable individuals to return to meaningful roles within their families and communities. Functional recovery achieved during inpatient rehabilitation is expected to facilitate independence in activities of daily living, mobility, social interaction, and productive engagement. Nevertheless, improvement in physical function alone does not necessarily ensure successful participation in community life. Many individuals continue to encounter barriers such as inaccessible environments, transportation difficulties, financial constraints, limited employment opportunities, inadequate social

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support, and psychological challenges after discharge from rehabilitation.[3,4]

Community integration is an important indicator of rehabilitation outcomes in individuals with spinal cord injury. It reflects the extent to which a person participates in home activities, social relationships, and productive roles such as employment, education, or volunteering. Assessment of community integration provides valuable information regarding an individual's ability to adapt and function within society after injury. The Community Integration Questionnaire (CIQ) is a widely used tool for evaluating these aspects and has demonstrated good reliability and validity in rehabilitation settings.[5,6]

Several studies have reported that individuals with SCI often achieve satisfactory levels of home and social integration following rehabilitation, while participation in productive activities remains comparatively limited. Factors such as level of injury, functional independence, accessibility of the environment, family support, educational status, and employment opportunities have been shown to influence community reintegration. Although considerable research has examined functional outcomes after SCI rehabilitation, there is relatively limited information regarding community integration among individuals with lower thoracic and lumbar spinal cord injuries in the Indian context.[7-10]

Patients with neurological levels of injury at T10 and below generally have greater potential for mobility and functional independence following rehabilitation. However, the extent to which these functional gains translate into successful community participation remains unclear. Understanding community integration in this population is essential for identifying barriers, planning rehabilitation services, and developing strategies to enhance long-term participation and quality of life.[11,12]

Therefore, the present study was undertaken to assess community integration among individuals with traumatic spinal cord injury at neurological levels T10 and below who had completed an inpatient rehabilitation program. The study also aimed to identify factors facilitating and barriers affecting successful community reintegration following rehabilitation.

MATERIALS AND METHODS

This prospective observational study was conducted at the Government Institute of Rehabilitation Medicine, Madras Medical College, Chennai, from June 2019 to May 2021. A total of 35 individuals with spinal cord injury who had completed an inpatient rehabilitation program and attended follow-up visits during the study period were included. Approval from the Institutional Ethics Committee was obtained prior to commencement of the study. Written informed consent was obtained from all participants before enrolment.

Study Population and Sampling: The study population consisted of individuals with traumatic spinal cord injury attending the outpatient department for follow-up evaluation and disability certification. A convenience sampling method was employed, and all eligible participants meeting the selection criteria during the study period were included.

Inclusion and Exclusion Criteria

Individuals aged 18–50 years with spinal cord injury at neurological level T10 and below, duration of injury greater than six months, and completion of a 12-week inpatient rehabilitation program were included in the study. Patients with associated injuries, significant comorbidities, or absence of previous medical and rehabilitation records were excluded.

Methods

Participants attending follow-up visits at the Government Institute of Rehabilitation Medicine were assessed using their previous medical and rehabilitation records. Demographic details, mode of injury, treatment details, ambulation status, and Functional Independence Measure (FIM) scores at admission and discharge were extracted from the records.

Community integration was assessed using the CIQ. The questionnaire was administered during follow-up visits through direct interview by the investigator. Responses were recorded based on participants' self-report regarding their current level of community participation. Participants were asked an open-ended question regarding factors facilitating and barriers affecting community reintegration. Responses related to mobility, employment, accessibility, financial issues, family support, and psychological challenges were documented.

Community Integration Questionnaire: The CIQ was used to evaluate community participation across three domains: home integration, social integration, and productive activities. The questionnaire consists of 15 self-reported items with a maximum total score of 29. Domain scores include home integration (10 points), social integration (12 points), and productive activities (7 points). Productive activity scores were calculated according to the original CIQ scoring guidelines based on responses related to travel outside the home, employment status, and participation in educational or training programmes. A copy of the questionnaire and scoring instructions is provided in the Supplementary Appendix.

Statistical Analysis

Data were analyzed using descriptive statistics. Frequencies, percentages, and mean values were calculated.

RESULTS

Most participants were male (89%) and aged 31–40 years (46%). Educationally, 23% had higher secondary education, while 20% were illiterate. [Table 1]

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Table 1: Demographic Characteristics of Participants

Variable	Subcategory	Value
Gender	Male	89%
	Female	11%
Age	18–30 years	34%
	31–40 years	46%
	41–50 years	20%
Educational Level	Primary	9%
	Higher Secondary	23%
	10th Standard	9%
	12th Standard	14%
	Diploma	11%
	Graduate	14%
	Illiterate	20%

L1 was the most common neurological level of injury (34%), followed by T12 (26%). The mean FIM score improved from 66.76 at admission to 86.74 at discharge. [Table 2]

Table 2: Clinical Characteristics and Functional Independence

Variable	Subcategory	Value
Neurological Level of Injury	T10	11%
	T11	11%
	T12	26%
	L1	34%
	L2	9%
	L3	9%
Mean FIM Score	Admission	66.76
	Discharge	86.74

The mean total community integration score of 15.43, with the highest score in social integration (6.86), followed by home integration (5.71) and productive activities (2.97). [Table 3]

Table 3: Community Integration Scores

CIQ Domain	Mean Score
Home Integration	5.71
Social Integration	6.86
Integration into Productive Activities	2.97
Total Score	15.43

Environmental (n=22), lack of opportunities (n=18), and Health-related issues (n=17) were the most frequently reported outcomes. Financial issues (n=13), lack of family support (n=5), psychological issues (n=4), and equipment issues (n=3) were also reported. [Table 4]

Table 4: Participant-Reported Outcomes and Barriers

Outcome Reported	Number of Participants (n)
Health-related	17
Environmental	22
Lack of opportunities	18
Equipment Issues	3
Lack of Family Support	5
Financial Issues	13
Psychological Issues	4

DISCUSSION

Community integration is an important outcome of rehabilitation following spinal cord injury, as it reflects an individual's ability to participate in home, social, and productive activities. The present study aimed to assess community integration and identify factors influencing reintegration among individuals with traumatic spinal cord injury at neurological levels T10 and below following inpatient rehabilitation. The findings demonstrated improvements in functional independence and moderate levels of community integration, while identifying demographic, environmental, financial, and psychosocial factors reported by participants during community reintegration.

In our study, the participants were predominantly male and represented a range of educational backgrounds, with most belonging to the middle adult age group. Similar findings were reported by Das et al. where males constituted 90.5% of the sample and 51% of participants were aged 35 years and above.[11] García-Rudolph et al. reported males accounted for 68.4% of the study population and primary education was the most common educational level (55.9%).[1] These findings are consistent with our study, demonstrating similar demographic

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characteristics among individuals with spinal cord injury.

In the present study, lower thoracic and upper lumbar spinal cord injuries were the most common injury levels observed. Participants showed improved functional independence following inpatient rehabilitation. Similar findings were reported by Loni et al. who observed significant improvements in FIM scores from admission to discharge across most spinal cord injury levels, particularly in thoracolumbar injuries.[12] Further, García-Rudolph et al. who found a mean CIQ home integration score of 5.7, social integration score of 7.1, productivity score of 0.9, and total CIQ score of 13.8 among individuals with spinal cord injury following rehabilitation.[1] These findings are consistent with our study, demonstrating that inpatient rehabilitation contributes to improved functional independence and community integration among individuals with spinal cord injury.

In this study, participants demonstrated community reintegration after rehabilitation, with better performance in social and home integration than in productive activities. Similar findings were reported by Das et al. who found median home integration and social integration scores of 5 and 5, respectively, among individuals with spinal cord injury following rehabilitation. Participants with paraplegia also showed significantly better home and social integration compared to those with tetraplegia.[11] Further, García-Rudolph et al. found a mean CIQ home integration score of 5.7, social integration score of 7.1, productivity score of 0.9, and total CIQ score of 13.8 among individuals with spinal cord injury following rehabilitation.[1] These findings are consistent with our study, suggesting that individuals with spinal cord injury achieve better reintegration in social and home domains than in productive activities following rehabilitation.

In our findings, there were barriers such as environmental, limited community accessibility, financial constraints, inadequate family support, and psychological challenges continued to influence community participation. Similarly, Pan et al. identified unemployment (44.1%), financial burden (46.0%), accessibility issues (34.3%), psychological distress (12.3%), and social and family strain (9.8%) as major barriers affecting individuals with spinal cord injury during community reintegration.[13] Mohan and Deb reported environmental barriers (80.3%), psychological barriers (50.7%), cultural barriers (49.3%), and financial constraints as major factors affecting community reintegration among individuals with spinal cord injury.[14] These findings are consistent with our study, indicating that environmental, financial, and psychosocial factors significantly influence community reintegration among individuals with spinal cord injury.

Overall, participants achieved moderate levels of community integration following inpatient rehabilitation. Social and home integration scores were higher than productive activity scores, suggesting that return to employment and productive societal roles remains a challenge. Community accessibility, financial constraints, family support, and psychological issues emerged as important barriers influencing successful reintegration.

Limitation

This study was conducted in a single rehabilitation centre and included a relatively small sample size, which may limit the generalizability of the findings. Convenience sampling may have introduced selection bias. Community integration was assessed using self-reported responses, which are subject to recall and reporting bias. In addition, the study employed descriptive analysis and did not examine statistical associations between functional independence and community integration outcomes.

CONCLUSION

The present study demonstrated that individuals with traumatic spinal cord injury at neurological levels T10 and below achieved moderate levels of community integration following inpatient rehabilitation. Participants showed greater integration in home and social domains than in productive activities. Accessibility barriers, environment, health, financial difficulties, family-related factors, and psychological challenges were frequently identified as barriers to successful community reintegration. These findings highlight the need for rehabilitation programs to address environmental and psychosocial factors in addition to functional recovery.

REFERENCES

1. García-Rudolph A, Cusso H, Carbonell C, Lopez S, Pla L, Sabaté M, et al. Community integration after spinal cord injury rehabilitation: Predictors and causal mediators. J Spinal Cord Med 2025;48:682–93. https://doi.org/10.1080/10790268.2024.2386738.
2. Barclay L, Robins L, Migliorini C, Lalor A. Community integration programs and interventions for people with spinal cord injury: a scoping review. Disabil Rehabil 2021;43:3845–55. https://doi.org/10.1080/09638288.2020.1749889.
3. Henderson V, Mashola MK. The influence of pain on community reintegration after spinal cord injury. Pain Pract 2025;25:e13439. https://doi.org/10.1111/papr.13439.
4. Nizeyimana E, Louw Q, Joseph C. A community reintegration model for persons with traumatic spinal cord injury in South Africa: Process and outcomes. Adv Rehabil Sci Pract 2025;14:27536351251326797. https://doi.org/10.1177/27536351251326797.
5. Panuccio F, Galeoto G, Valente D, Ioncoli M, Marquez MA, Tofani M, et al. Psychometric properties of the Community Integration Questionnaire - Revised (CIQ-R) in an Italian population with spinal cord injury. Spinal Cord Ser Cases 2022;8:18. https://doi.org/10.1038/s41394-022-00486-x.
6. Xie H-X, Zhang Q, Wei Y, Li N, Wu A-R, Zeng X-H, et al. Validation study of the Chinese version of the Community Integration Questionnaire-Revised for individuals with spinal cord injury in Mainland China. J Spinal Cord Med 2024;47:850–8. https://doi.org/10.1080/10790268.2023.2217589.
7. Mullerpatan R, Ryain A, Padia N, Salgotra KR. Patient-reported challenges in spinal cord injury rehabilitation and integration within the community of a lower middle-income

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country: opportunities for changing lives. Brain Spine 2025;5:104299. https://doi.org/10.1016/j.bas.2025.104299.
8. Hitzig SL, Jeyathevan G, Farahani F, Noonan VK, Linassi G, Routhier F, et al. Development of community participation indicators to advance the quality of spinal cord injury rehabilitation: SCI-High Project. J Spinal Cord Med 2021;44:S79–93. https://doi.org/10.1080/10790268.2021.1955204.
9. Bryden AM, Gran B, Hinze S, Richmond MA, Anderson KD. How recovery influences community reintegration: perspectives of persons with spinal cord injury and their support persons. Front Rehabil Sci 2025;6:1617764. https://doi.org/10.3389/fresc.2025.1617764.
10. Williams T-L, Wikmar LN, Joseph C. The profile of persons with traumatic spinal cord injury and the associated factors of length of stay in a rehabilitation centre, in South Africa. Spinal Cord 2026;64:331–6. https://doi.org/10.1038/s41393-026-01189-y.
11. Das SK, Bakhtiar M, Sabrin SM, Curtin M, Rahman E, Nahid ZBS, et al. Relationship between functional independence and community integration of people with spinal cord injury in Bangladesh. Front Rehabil Sci 2024;5:1435656. https://doi.org/10.3389/fresc.2024.1435656.
12. Loni E, Moein S, Bidhendi-Yarandi R, Akbarfahimi N, Layeghi F. Changes in functional independence after inpatient rehabilitation in patients with spinal cord injury: A simultaneous evaluation of prognostic factors. J Spinal Cord Med 2024;47:369–78. https://doi.org/10.1080/10790268.2022.2064264.
13. Pan H, Ding M, Yang Y, Zhang J, Zhu L, Wei Q. Rehabilitation priorities and employment reintegration among individuals with spinal cord injury receiving home-based care: A national cross-sectional survey of functional and social determinants. Patient Prefer Adherence 2025;19:3125–44. https://doi.org/10.2147/PPA.S535765.
14. Mohan M, Deb R. Barriers and facilitators during community reintegration of people with spinal cord injury: A qualitative study. J Caring Sci 2024;13:44–53. https://doi.org/10.34172/jcs.2024.31955.

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