



Review Article:

Barriers and Facilitators of Community Integration of People With Spinal Cord Injuries Living in Low- and Middle-Income Countries: A Systematic Review



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ABSTRACT

Background and Objectives: Spinal cord injury (SCI) is an irreversible and potentially life-altering event that creates poor economic conditions. The SCI healthcare model has shifted more towards patient-centered care, which focuses on the issues that affect the quality of life and community integration of people with such disabilities.

This systematic review was conducted to identify the factors influencing the community integration of SCI individuals in low- and middle-income countries.

Methods: Three databases of Scopus, PsycINFO, and PubMed were searched with the keywords of “spinal cord injury”, “tetraplegia”, “paraplegia”, and “challenges” for relevant articles published from 2010 to 2020. Boolean operators “OR” and “AND” were used between the keywords, and cross-linking methods were applied to get better results. The quality assessment of the included studies was analyzed by the Critical Appraisal Skills Programme (CASP) and Thomas tool. The extracted data included demographic details, sample size, results, and outcome measures.

Results: A total of 26 peer-reviewed studies were included in the review. The evidence extracted was classified into six categories that influence the community participation (either positive or negative) of SCI individuals.

Conclusion: The review revealed more barriers in the form of health-related, environmental, psychological, and social issues that hinder the community reintegration of individuals with SCI compared to facilitators such as spirituality, family/friends support, self-efficacy and resilience. Most research studies highlighted specific environmental obstacles in terms of accessibility and affordability. By working on these challenges, the authorities can enhance community integration of the SCI population in low- and middle-income countries.

Keywords: Spinal cord injury, Low- and middle-income countries, Challenges, Quality of life, Health related issues, Resilience



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↑ *What is “already known” in this topic:*

Spinal cord injury is a debilitating life-altering event which lead to impairments and limitations in various activities (such as social and domestic). It is the negative outcome of a complex interaction between an individual's health conditions and his/her personal, environmental and social contexts. It is one of the high-cost disabling condition which not only diminish suffers quality of life but also made them more depend on the care givers which itself a significant reason for developing challenges.

→ *What this article adds:*

Here we aimed to identify the characteristics that influence spinal cord injury patients' engagement in community activities especially in low-middle income countries through a systematic review. These elements can be categorized as barriers or facilitators of community participation amongst people with SCI.

S 1. Introduction

Spinal Cord Injury (SCI) is an irreversible and potentially life-threatening health condition [1]. It has significant consequences at individual and social levels. The incidence of SCI was higher in low- and middle-income countries (8.72 per 100000 persons) compared with high-income countries (13.69 per 100000 persons). Road traffic accidents, followed by falls, were the most common mechanism of SCI worldwide [2]. SCI not only causes severe disability but also affects body organs resulting in various secondary complications, such as urinary tract infection, severe constipation, breathing difficulty, pressure sores, etc. These secondary complications are the major reasons for the high mortality rate [3-5]. The two most common clinical manifestations of spinal cord injury are paraplegia and quadriplegia [6]. SCI significantly impacts a person's Quality of Life (QoL) which expresses physical, psychological, and social participation and functioning. In addition, work, leisure, and daily activities are adversely affected.

Despite the best efforts of medical treatment, SCI patients encounter various physical and mental challenges when they return home. In recent years, the healthcare model has shifted more towards patient-centered care [7]. This care helps improve the quality of life of people with such disabilities through a bio-psychosocial approach. Healthcare professionals aim to maximize functional independence, prevent secondary problems, improve physical functioning, and encourage community reintegration [8]. Even after discharge from the rehabilitation centers, SCI individuals face difficulty participating in the community due to accessibility, affordability, and acceptability issues. This study focuses on determining the issues influencing SCI patients' engagement in

community activities. These issues can be categorized as barriers or facilitators of community participation of people with SCI.

2. Materials and Methods

A systematic literature search was done in Scopus, PsycINFO, and PubMed databases for the relevant studies published from 2010 to 2020. This systematic review is based on PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines. The protocol was registered in the PROSPERO database (CRD42020206998). Figure 1 displays the consort flow diagram for the reviewed studies.

The included articles were those published in the last 10 years (March 2010 to March 2020) conducting on SCI individuals diagnosed with a traumatic or non-traumatic injury, aged above 18 years, living in the community, and discharged from the hospital.

Other than original research, review articles should report the data for SCI from the Low- and middle-income countries (LMICs) [9] and be published in English. Furthermore, these studies aimed to assess the outcome of community reintegration in terms of community access, involvement, independence, and quality of life. Most of the criteria analyzed or measured in the studies were connected to work or employment, sports involvement, anxiety, stress, stigma, and accessibility. Articles were excluded if they did not assess the barriers or facilitators of SCI persons in the community and were not written in English.

Search strategy

The study aims to address the factors which affect the community integration of the SCI individuals in LMIC. The full search and article screening was performed independently by two authors (MM & RD) and compared for consensus.

A PRISMA guideline was followed in four phases: identification, screening, eligibility, and inclusion. Scopus, PsycINFO, and PubMed databases were used for the primary search of studies with the keywords of “spinal cord injury”, “tetraplegia”, “paraplegia”, and “challenges”. These keywords were cross-linked with “community reintegration”, “community participation”, “community access”, “psychological”, “social”, “cultural”, and “culture”. The keywords have been selected by identifying synonyms used by respective databases and Cochrane Library MeSH (Medical Subject Headings) terms contained in the title, abstract and subject descriptors. Boolean operators “AND” and “OR” were used in the literature search. An expanded search was conducted by reviewing citations and references from articles retrieved in the initial search. Duplicate citations were identified and removed through Salesforce Einstein analytics software or MS Excel, and the included abstracts were screened. Finally, the authors reviewed the full text of the articles for eligibility.

Quality assessment

In the present review, the difference in the philosophical origins and methodological approaches of qualitative and quantitative study designs required a specific tool for each type of approach. There is no single validated checklist for all types of qualitative studies [10], so the critical appraisal skills programme (CASP, 2018) 10-step assessment tool was selected. This tool has been previously well-evaluated [11, 12] and is relatively easy to use. The quality assessment for quantitative studies (effective public health practice project [EPHPP] -Thomas Tool, 2010) was used to guide the assessment of quantitative study quality. This tool is recommended for its versatility in application, and its content and construct validity has already been established [10].

Data abstraction

The studies were grouped, described, and evaluated according to their methodological similarities. The qualitative and quantitative studies' findings were dovetailed to enable interpretation of the findings into a coherent summary of the current evidence on the topic. It included

SCI individual characteristics (sample size, age, gender, and injury details), authors details, study design, population, and outcomes of interest. Data were extracted from the studies focusing on the community integration, quality of life, work or employment, financial hardships, stigma, accessibility, optimism, and participation in leisure activities. The data were presented as the scale's group mean, Standard Deviation (SD), and categories [13].

Data synthesis

Of the 26 studies eligible for review, six had qualitative designs (Arya et al., 2016; Akter et al., 2019; Dorjbal et al., 2020; Irshad et al., 2012; Øderud et al., 2014; Moshi et al., 2020) and 20 had quantitative designs (Ganesh et al., 2015; Buřthomy Rofi'IAAYA et al., 2019; Gautam et al., 2019; Bhattarai et al., 2020; Bhattarai et al., 2018; Bhattarai et al., 2017; Hossain et al., 2019; Kader et al., 2017; Adhikari et al., 2020; Darain et al., 2017; Scovil et al., 2012; Sekaran et al., 2010; Xue et al., 2016; Selvaraj et al., 2010; Kumar et al., 2016; Kalyani et al., 2014; Moshi H et al., 2020; Hossain et al., 2015; Atobatele et al., 2018; Gupta et al., 2011). The publication year ranged from 2010 to 2020. There were six articles from Nepal, five from India, four from Bangladesh, three from Sri Lanka, two from Pakistan, two from Tanzania, one from Nigeria, one from Indonesia, one from Zimbabwe, and one from Mongolia.

The qualitative studies were all community reintegration focused, involving specific barriers/challenges while participating in the community after SCI (Akter et al. 2019; Dorjbal et al. 2020), and factors that negatively affect the participation like gendered biases that was mentioned in Irshad et al. (2012) study. Similarly, Arya et al. (2016) and Moshi et al. (2020) mentioned the factors or coping strategies which positively affect the community participation of SCI individuals. A summary of the selected studies is presented in Table 1.

Of the quantitative studies, six had only focused on the factors which affect the community integration of SCI people (Adhikari et al., 2020; Darain et al., 2017; Kader et al., 2017; Selvaraj et al., 2010; Sekaran et al., 2010; Scovil et al., 2012). In contrast, the others discussed SCI people's Quality of Life (QoL) and their resilience status. Two studies (Xue et al., 2016; Bhattarai et al., 2020; Selvaraj et al., 2010) focused on the facilitators which helped the SCI individuals cope with the challenges of participating in the community. A summary of the eligible studies is presented in Table 2.

3. Results

A total of 9020 articles were retrieved from the three different databases. Of those, 3722 duplicate articles were removed, and 5298 articles remained. After screening the titles and abstracts, 5186 articles were excluded, and 112 full-text articles were retrieved. An additional 86 articles were excluded because of having duplicate data; data population were not from LMIC, data included pediatric population, having included comorbidities, i.e., brain injury/dysfunction; no full-text in English; and lacking discussion of the challenges of community integration of SCI persons. In total, 26 articles (Figure 1) were included: 20 quantitative and 6 qualitative studies. A mixed-method study design was used for data synthesis. The data extracted from the studies were classified into six categories: environmental barriers, psychological barriers, cultural barriers, secondary health conditions, spirituality, and support from family or friends. These issues are all associated with the community reintegration of SCI individuals. The aim, method, and research design of all qualitative studies were clear (ranging from moderate to strong). Recruitment strategy, rigorous data analysis, and clear statement of findings were also appropriate (ranging from moderate to strong). Thus, all included studies were rated moderate to strong (Table 3).

Furthermore, as per the Thomas tool, the global rating of quantitative studies ranged from weak to moderate; 15(75%) quantitative studies were moderate, while 5 (25%) studies were considered weak due to various factors like no declaration of withdrawals, no blinding, or no confounders reported (Table 4). The rating decreased due to the factors like no clinical trial in the selected 20 studies; most studies were questionnaire-based, without intervention.

The total number of participants in the 26 studies was 2492. The maximum number of participants involved in a study was 350, and the lowest number in a study was 10. Of 2492 SCI participants, 1916 (76.8%) were males, and 486 (19.5%) were females. According to the literature, males were more affected by spinal cord injuries than females due to violence, reckless driving, participation in sports, etc. Epidemiological factors of SCI in India are different from Western countries [14]. The mean age in most of the studies ranges from 30 to 40 years. Most studies have mentioned socio-demographic data, i.e., 980 participants (39.3%) reported being married, 508 (20.3%) were single, and the marital status of 12 (0.48%) was not reported. Also, 555 participants (22.2%) reported primary or low education, whereas 685 (27.4%) fell in the category of secondary or higher

education. Similarly, 35.2% of SCI individuals (in the selected studies) were unemployed, and only 29.9% were employed, except for one study [14], where 0.01% of participants were reported as retired or veterans at the time of data collection. Overall, there were only 10 quantitative studies that included all demographic information. The studies were conducted in different LMICs, including Nepal, India, Bangladesh, Sri Lanka, Pakistan, Tanzania, Nigeria, Indonesia, Zimbabwe, and Mongolia.

Categories in the studies reviewed

Environmental barriers

Eleven studies reported several environmental issues, including poor access to the physical environment, inappropriate wheelchairs, inadequate healthcare and rehabilitation services, no access to the medicines and healthcare, limited financial resources, and government policies which are considered challenges for SCI individuals to reintegrate into the community [15-25]. Living in rural areas is one of the significant barriers for people with SCI; the same was reported in a study conducted on 73 SCI participants in the rural areas of Kashmir and Pakistan, where the author addressed the earthquake reconstruction and rehabilitation as an unrealistic and poorly thought-out program. Participants in the study stated that they turned down the idea since it was difficult for them to leave their homes to do any work because there was no road accessible [26]. In addition, the literature supports that the current healthcare system in Mongolia is inadequate for the SCI population due to a lack of knowledge and well-trained rehabilitation experts [24]. Even secondary health issues arose due to a lack of competent and skilled care [24]. In addition, policy barriers, as well as the disability legislation, were reported in two studies [21, 24]. The Craig handicap assessment and reporting technique short form (CHART-SF) was chosen as the assessment tool in a quantitative study. The lowest average score was related to policy barriers because the majority of the participants were unaware of the government's policies. Although most government programs encourage community reintegration, they have proven to be practically ineffective [21, 24].

Psychological barriers

Five studies [15, 27-30] reported psychological barriers. The study participants reported their injuries as a life-altering event that brought them depression, anxiety, shock, failure, dependency, and hopelessness. A study on psychosocial factors among the Nepalese SCI population revealed that resilience was linked to demographic pa-

rameters such as gender, employment, and living place. As a result, interventions or rehabilitation should be targeted at specific psychosocial and demographic characteristics to increase community involvement among people with SCI [29]. The prevalence of depressed mood among individuals with traumatic SCI and the burden of caregiving among caregivers was high [27].

Another study conducted on Sri Lankan population used descriptive thematic analysis to illuminate psychological barriers. Participants in the study shared their feelings about how SCI has damaged their relationships. They rely entirely on their spouse like a child and cannot spend much time with their family. They were depressed as a result of these circumstances [31]. Female participants frequently mentioned broken family ties, although the nature of these breakups was different. Female participants expressed dissatisfaction with their inability to participate in family activities as they did before. Young adults, on the other hand, felt gloomy because they could not follow their careers as they desired before the injury. All preceding observations can be expressed as feelings of loneliness, hopelessness, and emptiness in the SCI individuals. Participants feel guilty about not being able to help or support their families. These feelings affect their quality of life and become barriers to participation in the community.

Cultural barriers

Two studies discussed the factors which comprise the cultural barriers: negligence, discrimination, stigma, negative attitude from the society and family members, acceptance, and gendered biases [24, 26]. The negative attitude of society and families toward SCI individuals after their injury was reported in a study conducted on the Mongolian population [24]. The findings of the study reported discrimination in the families (e.g., not being accepted by the girlfriend's family), at work (e.g., not being hired because the recruiter did not feel they were capable of performing the job or being paid less), and in society (e.g., people believe that persons with disabilities are paying for previous bad deeds). In addition, the issue of gender biases was reported in a study conducted in six villages of Bagh District, Kashmir, and Pakistan; the findings revealed that the women were socially, emotionally, and financially isolated. In contrast, men received full social and emotional support from their families and friends. SCI women have a high degree of anxiety, depression, a sense of helplessness, and a cynical view of life due to the gendered biases and the concept of remarriages [26].

Secondary health conditions

Four quantitative [19, 20, 23, 32] and one qualitative [33] studies reported several secondary health complications, including the high occurrence of pressure sores, urinary tract infections, pain, neurogenic bladder, spasticity, contracture, tightness, and sleep problems, which were considered key factors for reducing the mobility and community participation in individuals with SCI. The spinal cord injuries secondary conditions scale (SCI-SCS) is a standardized and validated 16-item questionnaire used in a study to measure secondary complications, such as pressure ulcers, respiratory problems, postural hypotension, spasticity, and pain [19]. According to published studies, pressure ulcers are prevalent in people with SCI who live in LMICs [19, 34, 35]. Pressure ulcers are expected to be preventable with simple, low-cost methods, such as regular position changes and the use of cushions on wheelchairs [36]. These factors suggest that measures to prevent pressure ulcers should be prioritized in LMICs to increase the survival of spinal cord injury individuals after discharge from the hospital.

Facilitators

Five studies [30, 31, 37-39] revealed the characteristics that help people favorably manage SCI. Religious practice was the most common method for dealing with chronic problems. Generally, SCI participants relied on spiritual practices for comfort, consolation, and inner calm, especially during tough times. Some believed that religious figures were also responsible for or assisted in improving their physical conditions. SCI prompted not only religious yearning but also religious intensification in study participants. Karma also strongly impacted individuals' attitudes and psychological health [31]. A study in Nepal reported that positive assets, such as self-efficacy, resilience, and social support, contribute considerably to health and buffer against adverse outcomes [15]. Subject wellbeing was found to have significant solid relationships with age, self-efficacy, and social support. For further validation of these findings, longitudinal and or experimental research is obligatory [15]. Moreover, a greater emphasis should be put on family involvement in SCI rehabilitation for social integration [38]. This issue had been proven statistically in a study where the Craig Handicap Assessment and Reporting Technique (CHART) scale was used to measure social integration after SCI [38].

4. Discussion

Overall findings of the review showed the diverse experience of 2692 SCI participants in 26 studies (quali-

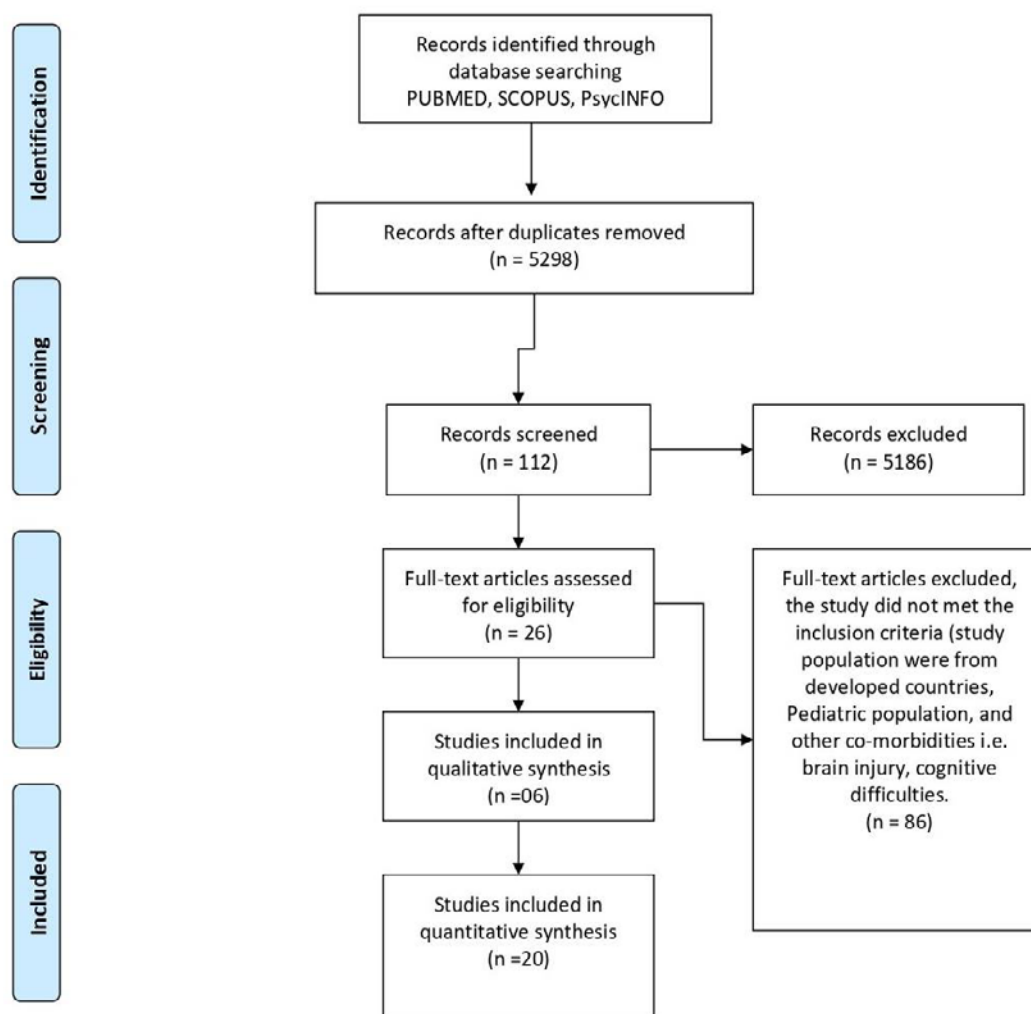


Figure 1. Flow Diagram of Shortlisting Studies

tative and quantitative) that elucidate the barriers and facilitators of the SCI people's reintegration into the community in low- and middle-income countries. This systematic review yielded enormous evidence reporting that physical environmental factors (such as access to public places, public transport, financial constraints, and unemployment) are the major hindrances for the SCI people to reintegrate into the community. Dorjbal et al. used an explorative qualitative study design with semi-structured interviews to study the lived experience of individuals with SCI in Mongolia. The study's findings helped describe environmental barriers that impacted the development of secondary health conditions, limited activities, and participation in almost all areas of life. It has been seen that people with SCI often use healthcare services as compared to people without disabilities due to their secondary complications such as sepsis, pressure ulcers, and urinary tract infection [33, 40], and this condition impacts their quality of life [41, 42]. Hossain et al. (2016) conducted a mixed retrospective-prospective

cohort design to determine survival after SCI in LMICs like Bangladesh. Findings of the study supported that cushions on wheelchairs and foam overlays on beds would help prevent the deaths amongst SCI individuals due to sepsis and pressure ulcers [19].

Furthermore, the present study observed the inter-relationship between the barriers. If a person gets an appropriate healthcare facility, including appropriate wheelchairs, roads, and transportation for mobility, he or she is unlikely to bother about cultural and psychological issues. Environmental constraints mainly cause discrimination and a lack of confidence in SCI patients, leaving them completely reliant on their caregivers [24, 43]. A cross-sectional study was conducted by Muller et al. (2015). Their conclusion supported that those SCI individuals with better social support took lower scores in depression and higher scores in QoL [44].

Table 1. A summary of the qualitative studies included in the review

Author(s) Study Design	Sam- ple Size	Gender		Injury Type	Study Country	Data Collection Tools	Outcomes	
		Male	Female					
Arya S et al., 2016 [31]	Quali- tative study	23	19	4	Traumatic & non- traumatic	Bangla- desh	Qualita- tive (Focus groups)	Loss of independence, disturbance of social roles, and family stress were all indicated as significant issues for Sri Lankan male and female SCI patients in the study. Religion, positive reframing, and social support all had a role in improving psychological adaptation.
Akter F et al., 2019 [54]	Quali- tative ap- proach	11	9	2	Traumatic	Mon- golia	Qualitative approach (semi- structured interviews)	Secondary health complications (such as pain and bowel-bladder problems), a lack of assistance and equipment, inaccessible environmental structure/slopes and stairs, inaccessible public transportation, lack of social acceptance, and poverty were all reported as barriers in the study.
Dorjbal D et al., 2020 [24]	Explor- ative qualita- tive study	16	9	7	Traumatic	Paki- stan	Explorative qualitative study	Environmental barriers such as poor access to the physical environment; absence of wheelchair-friendly transportation; negative societal attitudes; inadequate healthcare and rehabilitation services; lack of access to assistive devices and medicines; limited financial resources for healthcare; and inaccurate categorization of disabilities in laws and regulations were reported as an outcome in the study.
Irshad H et al., 2012 [26]	Ethno- graphic ap- proach	73	43	30	Traumatic	Zimba- bwe	Qualitative (ethno- graphic approach)	Barriers were gendered biases, including lack of a support system, remarriage, isolation, despair, poverty, and powerlessness are far greater for women than for men.
Øderud T et al., 2014 [33]	Quali- tative study	23	*	*	Traumatic	Tanza- nia	Qualitative (semi- structured interviews)	High occurrence of pressure sores and urinary tract infections, pain, depression, stigma, negative attitudes, lack of appropriate wheelchairs and services, limited knowledge about SCI amongst health care staff, limited access to health care and rehabilitation services, loss of employment, and lack of financial resources worsen the daily challenges.
Moshi H et al., 2020 [25]	Quali- tative study	10	7	3	*	*	Qualitative (in-depth interviews)	Authors reported challenges, including poverty, inaccessible environment, and unavailability of essential health and rehabilitation services. Internal and external coping strategies were also mentioned, such as social skills, trust in god, increased health risk, problem-solving skills, having a reliable family, varying support from the community, etc.

*Data in the particular sections were not reported in the respective published papers.

Table 2. A summary of the quantitative studies in the review

Outcomes	Data Collection Tools, Follow-up Time	Employment Status (n)		Level of Education (n)	Marital status (n)	Study Country	Injury Type	Age (y)		Gender	Sample Size	Study Design	Author(s)
		Employed	Retired					SD	Mean				
Barriers reported in the study were inaccessible environments and physical health. The population in the Kilimanjaro rural area has a somewhat low quality of life, with physical health and the environment being the most affected domains.	WHOQOL-BREF	39	*	31	30	Tanzania	Traumatic	11.4	42.29	25	55	Descriptive community-based cross-sectional study	Moshi H et al., 2020 [25]
		41		49	50								
		6	*	62	44	40	India	Traumatic & non-traumatic	10.75	32.54	8		
78		22	44	40									
84													
The social relationships domain of QOL was significantly influenced by marital status. Married participants may have been less content with their lives, more concerned about their sex life, and under strain from their incapacity to function generally in the household. Reasons for not wanting or not having the courage to be sexually intimate may be related to physical problems.	WHOQOL-BREF	*	*	*	40	Indonesia	Traumatic & Non-Traumatic	11.75	43.62	17	38	Cross-sectional	BusthomayRoffi AVA et al., 2019 [53]
		*	*	*	15								
The study reported that the neurogenic bladder problem impacted the quality of life (QoL) score. Among four domains of QoL, the physical domain was the lowest QoL score.	WHOQOL-BREF												

Outcomes	Data Collection Tools, Follow-up Time	Employment Status (n)	Level of Education (n)	Marital status (n)	Study Country	Injury Type	Age (y)	Gender	Sample Size	Study Design	Author(s)
Current living situation, employment, and inaccessibility to health care services were all mentioned as barriers in the study. Low resilience was also caused by a lack of self-efficacy, a lack of social support, and an unpredictable or depressive mood. The author recommended that individuals with SCI strengthen their resilience to improve rehabilitation outcomes and reintegration into their communities.	Connor-Davidson Resilience scale, Multidimensional scale of perceived social support, Mooring self-efficacy scale, Intrinsic spirituality scale, and Patient-health questionnaire-9.	Employed Retired Unemployed	Secondary or higher Primary or low	Married Unmarried	Nepal	Not specified	Mean SD	Female Male	82	Descriptive cross-sectional study	Bhattarai M et al., 2018 [29]
According to the study, low resilience is caused by several factors, including the severity of the injury, gender, and employment status.	Connor-Davidson resilience scale	21	40	50	Nepal	Not specified	11.38	34	82	Cross-sectional	Bhattarai M et al., 2017 [30]
Pressure ulcers, unemployment, and poverty were the major hindrances reported in the study.	The spinal cord injuries secondary conditions scale (SCI-SCS), The world health organization disability assessment scale (WHODAS 2.0), The short-form health survey (SF-12), The center for epidemiological studies on depression scale (CESD)	123	137	188	Bangladesh	Traumatic & Non-Traumatic	22-40	30 29 231	260	Cross-sectional analysis of a mixed retrospective and prospective inception cohort study	Hossain MS et al., 2019 [23]

Outcomes	Data Collection Tools, Follow-up Time	Employment Status (n)	Level of Education (n)	Marital status (n)	Study Country	Injury Type		Age (y)	Gender	Sample Size	Study Design	Author(s)
						Traumatic & non-traumatic	Traumatic					
Tetraplegia, complete injury and living in a rural setting limit activity and engagement after a spinal cord injury.	World Health Organization disability assessment schedule 2.0 (WHODAS 2.0)	Employed 95 Retired * Unemployed 25	Secondary or higher 49 Primary or low 71	Married 74 Unmarried 46	Bangladesh	Traumatic & non-traumatic	Traumatic	25-43 Mean 34	Female 21 Male 99	120	Cross-sectional study	Kader M et al., 2017 [17]
Gender, education, lesion type, and time since the injury were significant predictors of depressed mood	The Nepali Beck depression inventory and the Zarit burden interview-12	* * *	* 95	* *	Nepal	Traumatic	Traumatic	11.2 34.8	31 64	95	Cross-sectional	Adhikari SP et al., 2020 [27]
The main impediments noted in the study were secondary health disorders such as urinary tract infection, stiffness, low back pain, and cardiac problems, inaccessible sites, and a lower degree of physical activity.	Related quality of life questionnaire	* * *	* *	* *	Pakistan	Traumatic	Traumatic	8.4 36.4	20 140	160	Survey	Darain H et al., 2017 [32]
The study found that secondary health concerns (such as pressure ulcers and urinary tract infections), inappropriate wheelchairs, inaccessible residence, rocky terrain, inaccessible toilets, unemployment, and sexually were the major obstacles.	Modified Barthel index, participation Scale	* * 7	* *	15 9	Nepal	Not specified	Not specified	13 32	12 25	37	Observational cohort study	Scovill CY et al., 2012 [20]
The level of community participation was highly influenced by architectural and environmental constraints, poor socioeconomic status, and comorbidities.	Craig handicap assessment and reporting technique (CHART) and inventory of environmental factors (CHIEF)	* * *	* *	* *	India	Not specified	Not specified	9 35.7	4 31	35	Cross sectional follow-up survey	Sekaran P et al., 2010 [21]

Outcomes	Data Collection Tools, Follow-up Time	Employment Status (n)	Level of Education (n)	Marital status (n)	Study Country	Injury Type	Age (y)	Gender	Sample Size	Study Design	Author(s)	
According to the findings, perceived functional impairment in work, social, and family domains predicted depressive symptomatology, but spirituality/religiousness assisted in recovering from depression. It should be valued as a rehabilitative tool to restore functional independence so they may reintegrate into their work, social, and family lives.	Spinal cord independence measure, benefit through spirituality/religiousity scale, Sheehan disability inventory and Beck depression inventory-II (BDI-II)	Employed Retired Unemployed	Secondary or higher Primary or low	Married Unmarried	Sri Lanka	Traumatic	SD Mean 39.5	Female Male	61	Cross-sectional, questionnaire-based study	Xue s et al., 2016 [37]	
Family support and self-employment were mentioned as positive variables that impact SCI individuals' community inclusion.	Craig handicap assessment and reporting technique (CHART).	*	71	*	India	Not specified	12	39	5	104	Cross-Sectional survey	Selvaraj SKK et al., 2010 [38]
The study reported that medical comorbidities had a negative impact on QoL.	WHOQoL-BREF	68 32	20	64	India	Traumatic	12 41.3	100	100	100	Prospective cross-sectional study	Kumar N et al., 2016 [14]
The author emphasized the high unemployment rate among civilians due to a lack of opportunities compared to those in the military, employer cultural biases, financial disincentives to employment, and environmental barriers such as uneven terrain or inaccessibility of work sites.	Self-designed questionnaire	114 *	234	42	India	Traumatic & non-traumatic	*	43	233	276	Postal Survey	Gupta N et al., 2011 [18]

Outcomes	Data Collection Tools, Follow-up Time	Employment Status (n)	Level of Education (n)	Marital status (n)	Study Country	Injury Type	Age (y)	Gender	Sample Size	Study Design	Author(s)
The research revealed a significant correlation between community reintegration and functional ability, self-esteem, and anxiety in people with SCI.	FIM = functional independence measure; RNL = reintegration to normal living index; SFCQ = self-esteem questionnaire; SSOQ = social support questionnaire; VAS = visual analogue scale.	Employed 29 Retired * Unemployed 21	Secondary or higher 40 Primary or low 10	Married 31 Unmarried 19	*	Traumatic & non-traumatic	SD 11.1 Mean 38.6	Female 31 Male 19	50	prospective longitudinal survey	Atobatele et al., 2018 [28]
Family income and psychological issues negatively impact SCI persons' quality of life which restricts them from participating in the community.	Modified Ferrans and Powers' quality of life index	70 * 9	* *	78 22	Sri Lanka	traumatic	4.75 35.5	15	85	Descriptive cross-sectional study.	Kalyani HHN et al., 2014 [22]
The majority of the deaths, according to the author, were caused by secondary health issues, such as sepsis due to preventable pressure.	SF12, the SCI secondary conditions scale, the center for epidemiologic studies, depression scale (CESDS), and the participation component of the (WHODAS)	133 * 148	* *	215 73	Bangladesh	Traumatic & non-traumatic	23 to 42 (IQR) 30	28	255	Mixed retrospective-prospective cohort study	Hossain MS et al., 2015 [19]

* Data in the particular sections were not reported in the respective published papers.

Further, the United Nations stressed the significance of accessibility for individuals with physical disabilities to engage in community activities and considered the physical environmental barriers such as homes and public spaces, as well as public transit around the world [45, 46]. Due to limited transportation, mobility, and social impediments in LMICs, reintegration into society is a major challenge for SCI individuals. On the contrary, developed countries have shown a better quality of life than LMICs in terms of medical management, rate of

morbidity/mortality, access to the physical environment, proper equipment, and so on [46]. People with SCI face various social hurdles, including low patient and family education, friend and family relationships, financial restrictions, unemployment, and social prejudices. The identified barriers regarding patient and family education during this review were further supported by studies that proved that enough knowledge and training skills were very useful to adjust to SCI [47]. Whereas unemployment and lack of vocational training after SCI are

Table 3. Summary of qualitative study evaluation using the critical appraisal skills programme (Casp, 2018)

Study Reference	Clear Aims Stated	Appropriate Method	Appropriate Design	Appropriate Recruitment Strategy	Data Collection Addressed Research Issue	Research/Participant Relationship Considered	Ethical Issue Addressed	Rigorous Data Analysis	Clear Statement of Findings	Value of Research
Arya et al., 2016	Strong	Strong	Moderate	Moderate	Strong	Moderate	Moderate	Weak	Moderate	Moderate
Akter et al., 2019	Strong	Strong	Moderate	Moderate	Strong	Strong	Strong	Moderate	Strong	Moderate
Dorjbal et al., 2020	Strong	Strong	Strong	Moderate	Moderate	Weak	Moderate	Strong	Strong	Strong
Irshad et al., 2012	Moderate	Strong	Strong	Moderate	Moderate	Strong	Moderate	Moderate	Strong	Strong
Øderud et al., 2014	Moderate	Strong	Strong	Moderate	Strong	Moderate	Strong	Strong	Strong	Moderate
Moshi et al., 2020	Strong	Strong	Strong	Strong	Strong	Strong	Strong	Moderate	Strong	Strong

the substantial roadblocks that place a financial burden on the SCI individuals and their families [29, 48].

As per WHO factsheets, the global unemployment rate is more than 60% amongst the SCI population [49]. Published studies indicate that employment rates in low-resource countries range from 7% to 41% [18, 48]. Unemployment and low income may result in financial difficulties, an important factor affecting the QoL of people with SCI [16]. Financial hardships may also be associated with emotional problems. Studies indicate that unemployment rates are 10 times higher among SCI patients compared with the general population [20, 21, 50, 51]. Access to the place of work, employer attitudes, and patients' beliefs in their abilities may influence the decision to resume employment after SCI. Singh R et al. (2007) found that employment status was associated with a higher QoL among those with SCI living in India [41]. Moreover, government policies, particularly social policies, significantly impact the participation of SCI people with physical disabilities [21, 26]. Social support, education level, financial standing, job security, and involvement in social and recreational activities have all

been identified as factors that may affect a person's ability to adjust to SCI.

The present systematic review also highlighted the facilitators that help SCI individuals overcome the hurdles mentioned above and help them participate in the community. A cross-sectional questionnaire-based study was conducted on the Sri Lankan population by Xue S et al. (2016). The study's findings emphasized the need for rehabilitative programming to support patients' spirituality/religiosity activities and mental wellbeing [37]. The most frequent approach for dealing with personal concerns was a religious practice. A similar study based on a focus group research design examined the coping mechanism after SCI. The findings suggested that spiritual practices provided solace, consolation, and inner quiet to participants, especially during difficult times, helping them participate in community activities well [31]. Social support provides a fundamental role in both depression and adjustment of SCI individuals. Persons who enjoy more social support recognize them as the reason behind the improvement in their condition. They

Table 4. A Summary of quantitative study quality using the quality assessment for quantitative studies tool (EPHPP- Effective Public Health Practice Project-Thomas 2010)

Study	Selection Bias	Study Design	Con-founders	Blinding	Data Col-lection Methods	Withdraw-als and Dropouts	Inter-vention Integrity	Analyses	Global Rating
Adhikari et al., 2020	Some-what likely	Moderate	Weak	Weak	Strong	Not re-ported	Not ap-licable	Moderate	Weak
Atobatele et al., 2018	Some-what likely	Moderate	Weak	Weak	Strong	Strong	Not ap-licable	Strong	Weak
Bhattarai et al., 2017	Very likely	Moderate	Moderate	Weak	Strong	Strong	Not ap-licable	Strong	Moderate
Bhattarai et al., 2020	Some-what likely	Strong	Weak	Weak	Moderate	Not re-ported	Not ap-licable	Moderate	Weak
Bhattarai et al., 2018	Some-what likely	Moderate	Weak	Weak	Moderate	Weak	Not ap-licable	Moderate	Weak
Busthomy Rofi et al., 2019	Some-what likely	Weak	Weak	Weak	Moderate	Not re-ported	Not ap-licable	Moderate	Weak
Darain et al., 2017	Some-what likely	Moderate	Not reported	Weak	Moderate	Not re-ported	Not ap-licable	Moderate	Moderate
Ganesh et al., 2015	Some-what likely	Strong	Not reported	Weak	Moderate	Moderate	Not ap-licable	Moderate	Moderate
Gautam et al., 2019	Some-what likely	Moderate	Not reported	Weak	Moderate	Not re-ported	Not ap-licable	Moderate	Moderate
Gupta et al., 2011	Some-what likely	Moderate	Not reported	Weak	Moderate	Moderate	Not ap-licable	Moderate	Moderate
Hossain MS et al., 2015	Very Likely	Strong	Moderate	Weak	Moderate	Strong	Moderate	Strong	Moderate
Hossain et al., 2019	Some-what likely	Moderate	Not reported	Weak	Moderate	Moderate	Not ap-licable	Moderate	Moderate
Scovil et al., 2012	Some-what Likely	Moderate	Moderate	Weak	Moderate	Strong	Not ap-licable	Moderate	Moderate
Sekaran et al., 2010	Some-what likely	Strong	Not reported	Weak	Strong	Not re-ported	Not ap-licable	Strong	Moderate
Xue et al., 2016	Some-what likely	Moderate	Moderate	Weak	Strong	Strong	Not ap-licable	Strong	Moderate
Selvaraj et al., 2010	Some-what likely	Moderate	Not reported	Weak	Strong	Strong	Not ap-licable	Moderate	Moderate
Kumar et al., 2016	Some-what likely	Moderate	Not reported	Weak	Strong	Strong	Not ap-licable	Strong	Moderate
Kalyani et al., 2014	Some-what likely	Moderate	Not reported	Weak	Moderate	Not re-ported	Not ap-licable	Moderate	Moderate
Kader et al., 2017	Some-what likely	Moderate	Moderate	Weak	Strong	Strong	Not ap-licable	Strong	Moderate
Moshi et al., 2020	Some-what likely	Strong	Not reported	Weak	Strong	Not re-ported	Not ap-licable	Strong	Moderate

are less emotionally distressed and report better life satisfaction and quality of life [38].

5. Conclusion

In conclusion, environmental, psychological, cultural, and health-related issues hamper SCI individuals from participating in the community. The majority of studies highlight specific key difficulties associated with these hurdles, such as acceptability, affordability, and accessibility, which include social/self/family acceptance, financial restrictions, lack of employment, and access to places, toilets, and residences. Furthermore, research has revealed that coping strategies such as spirituality/religiosity and family/friends support are essential for SCI people to reintegrate into the community fully. Individuals with SCI and their families should be an integral part of the rehabilitation team, as this will help them comprehend the effects of the injury and decrease the psychological burden. Healthcare professionals could strengthen the patient-provider interaction by establishing short- and long-term treatment goals such as independence, vocational training, a positive attitude, and counseling-spousal involvement, considering patients' clinical and demographic variables. Working on the abovementioned issues can help SCI people in low- and middle-income countries become more integrated into their communities.

Ethical Considerations

Compliance with ethical guidelines

There was no use of human volunteers/animals during this research.

Funding

No funding has been availed for this study.

Authors' contributions

The datasets generated and analyzed during the current review study are available from the corresponding author upon reasonable request.

Conflict of interest

We certify that there is no actual or potential conflict of interest concerning this review.

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مقاله پژوهشی

موانع و تسهیل کننده‌های تلفیق اجتماعی افراد دچار آسیب نخاعی در کشورهای با درآمد کم و متوسط

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چکیده

مقدمه: آسیب طناب نخاعی یک آسیب غیر قابل برگشت و تغییر دهنده زندگی است. مدل مراقبت های بهداشتی آسیب نخاعی بیشتر به سمت "بیمار محور" سوق پیدا کرده، و بر مسائلی تمرکز دارد که بر کیفیت زندگی و تلفیق در جامعه تأثیر می گذارد. این مرور نظام مند برای شناسایی عوامل موثر بر تلفیق در جامعه افراد با آسیب نخاعی در کشورهای با درآمد کم و متوسط انجام شده است.

مواد و روش ها: سه پایگاه داده پابمد، اسکوپوس و سایک اینفو با کلمات کلیدی جستجو شدند. "آسیب نخاعی"، "تتراپلژی"، "پاراپلژی" و "چالش ها" برای مقالات مرتبط منتشر شده از سال ۲۰۱۰ تا ۲۰۲۰ جستجو شدند. از عملگرهای بولی "OR" و "AND" بین کلمات کلیدی استفاده، و برای به دست آوردن نتایج بهتر از روش های پیوند متقابل استفاده شد. ارزیابی کیفیت شامل مطالعات توسط برنامه مهارت های ارزیابی انتقادی) و ابزار توماس تجزیه و تحلیل شد.

یافته ها: در مجموع ۲۶ مطالعه بررسی شده در مرور وارد شدند. شواهد استخراج شده به شش دسته که بر مشارکت در جامعه تأثیر می گذارد طبقه بندی شد.

نتیجه گیری: این بررسی موانع بیشتری را در قالب عوامل مرتبط با سلامت، محیط، مسائل روانشناختی و اجتماعی که مانع ادغام مجدد افراد مبتلا به آسیب نخاعی در جامعه می شود، مطرح می کند. اکثر مطالعات تحقیقاتی موانع محیطی خاصی را از نظر دسترسی و توان مالی معرفی می کنند. این مطالعه نشان می دهد که اقدام در رابطه با چالش های مطرحه در کشورهای با درآمد کم و متوسط می تواند تلفیق اجتماعی را متاثر کرده و در جهت تسهیل آن گام برداشته شود.

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کلیدواژه‌ها:

افراد دارای آسیب نخاعی، چالش ها، موانع و تسهیل کننده ها، تلفیق اجتماعی



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