

Lifestyle assessment in individuals with spinal cord injuries caused by accidents and disasters in qualitative studies published from 1990 to 2020: A meta-synthesis of qualitative study

Saeed Nazari¹  | Maryam Moradi¹  | Zeinab Danyali² |
Milad Ahmadi Marzaleh³  | Vahid Hadi⁴  | Saeid Hadi⁴

¹Department of Health in Disasters and Emergencies, School of Nursing, AJA University of Medical Sciences, Tehran, Iran

²Department of Health in Disasters and Emergencies, Master of Nursing, AJA University of Medical Sciences, Tehran, Iran

³Department of Health in Disasters and Emergencies, School of Health Management and Information Sciences, Shiraz University of Medical Sciences, Shiraz, Iran

⁴Department of Health and Nutrition, Faculty of Medicine, AJA University of Medical Sciences, Tehran, Iran

Correspondence

Saeed Nazari, Department of Health in Disasters and Emergencies, School of Nursing, AJA University of Medical Sciences, Tehran, Iran.

Email: saeed.nazari93@yahoo.com

Abstract

Background and Aims: As a debilitating disorder, spinal cord injuries (SCIs) can bring about a range of physical, psychological, and social consequences in individuals and even have effects on their lifestyle indicators. The present study was thus to reflect on lifestyles among people with SCIs developing from accidents and disasters.

Methods: Using a meta-synthesis of qualitative research, all articles recruiting qualitative methods to examine patients with SCIs, published from 1990 to 2020, were retrieved by the researchers, good at the Persian and English languages, from the databases of ScienceDirect, MD Consult, Pedro, ProQuest, PubMed, SID, MedLib, Magiran, Scopus, Google Scholar, Iranmedex, the Cochran Library, CINAHL, and Blackwell, tapping the keywords of “spinal cord injury, SCI, manmade disaster, natural disaster, content analysis, concept analysis, thematic analysis, lifestyle, quality of life, QoL, grounded theory, meta-synthesis, mixed-methods research, historical research, ethnography, and phenomenology” in both languages for their inclusion in this study and further analyses.

Results: With reference to the inclusion criteria, 18 articles were extracted, and after all 10 studies in line with the research topic were reviewed and analyzed. Ultimately, six main themes, namely, *compromise, self-reliance, income-generating activities, mental status, inability, and issues of sexuality* were extracted, demonstrating their importance to individuals suffering from SCIs.

Conclusion: During the initial stages following SCIs, the abilities to engage in participatory practices and individual's power of decision-making diminish because of physical, social, psychological, and environmental constraints. It was accordingly recommended to have a holistic perspective and respect all aspects of life in individuals with SCIs.

KEYWORDS

accident, disaster, lifestyle, qualitative research, spinal cord injury

This is an open access article under the terms of the Creative Commons Attribution-NonCommercial License, which permits use, distribution and reproduction in any medium, provided the original work is properly cited and is not used for commercial purposes.

© 2023 The Authors. *Health Science Reports* published by Wiley Periodicals LLC.

1 | INTRODUCTION

Natural and manmade disasters have together occurred continuously in the long history of humankind, with a large number of adverse effects on the environment and the humans, including loss of life as well as financial, psychological, and environmental impacts.¹ Disasters here refer to disruptive events, typically addressed beyond the capacity in each society.² In this sense, manmade disasters include events such as war, armed conflicts, or internal events as well as technological disasters such as industrial accidents, rail accidents, etc. that clearly have an element of human intent³; on the other hand, natural disasters represent all atmospheric, hydrologic, and geologic (viz. seismic and volcanic) phenomena.⁴ Over the last 20 years, a total number of 7348 worldwide disasters have been recorded by the Emergency Events Database (EM-DAT), leading to nearly 1.23 million death tolls, affecting 60,000 people on an annual average, and over four billion cases in total. In addition, disasters have resulted in economic losses of approximately 2.97 trillion United States dollars (USD) globally.⁵ For 2000–2019, 510,837 deaths and 3.9 billion people have been also influenced by 6681 natural disasters linked to climate change.⁵ In this sense, spinal cord injury (SCI) is one of the destructive disorders, which might be experienced by all humans.^{6,7} Together with physical limitations caused by SCIs, individuals may further suffer from emotional, mental, sexual, economic, and environmental stressors.^{8,9} According to the National Spinal Cord Injury Statistical Center (NSCISC), the annual incidence rate of SCIs in the United States in 2015 was about 54 cases per million or almost 17,000 new cases per year.^{10,11} With reference to the study by Baba-Mohammadi et al.,¹² estimating the number of Iranian people with SCIs is demanding due to lack of an accurate recording information system. Besides, evidence shows that around 70–90 thousand patients are living with SCIs in this country. In accordance with the statistics released by the Vice-Chancellor's Office for Health and Treatment affiliated to the Foundation of Martyrs and Veterans Affairs in Iran, over 80,000 individuals with SCIs have been so far identified, including 2000 veterans injured during Iran-Iraq war or those suffering from SCIs due to falling from height, car crashes, accidents in the workplace, or sports injuries.^{13,14} Few studies have thus far reported that mental, social, and professional functioning following the loss of job opportunities resulting from SCIs can make drastic changes in income, place of living, family life, and access to social opportunities.¹⁵ Transmission from an independent life to a dependent one accordingly requires specifying individual, social, and professional goals.^{16,17} As reported, physical disabilities affect all aspects of life in these patients, leading to lifestyle changes and a rising trend in posttraumatic stress symptoms and depression.¹⁸ In general, ISC-induced impacts can often bring about striking consequences in any aspect of life for a person and consequently disturb everyday life routines.¹⁹ Over the last decades, health-related studies have mainly reflected on recording signs and symptoms as well as risk factors associated with undesirable consequences of SCIs. In addition, scientific communities have addressed factors promoting positive processes and outcomes in these individuals to prevent risk factors and to minimize negative

consequences.²⁰ Evidence shows that injury severity and type of paralysis in such individuals depend on SCI levels. In fact, SCI may vary from loss of sensation in a particular part of the body to quadriplegia. Following the physical problems, coping with SCIs is often difficult and complicated.²¹ In this respect, factors such as unemployment, depression, pain, substance abuse, as well as shame and isolation are considered among the main barriers to adaptation to SCIs,^{22,23} which can significantly affect lifestyles in these patients.²⁴ Someone's ability to maintain independent performance is frequently regarded as a precondition to involvement in social activities (such as employment, education, and leisure time).¹⁶ In the study by Pashaie et al.,²⁵ identifying rehabilitation needs for patients with physical disabilities arising from traffic accidents to allow daily life to return to normal, had revealed that the implementation of the family- and society-centered approach to rehabilitation and comprehensive multidimensional rehabilitation programs, meeting the mentioned needs, could aid these individuals particularly individuals with SCIs to gain independence and benefit from full-time support as well as availability and continuity of health care services. SCIs can additionally lead to loss of identity in individuals, because they cannot take part in various activities or they may have a sense of being invisible in social situations.^{26,27} Accordingly, researchers are making efforts to collect information, understand factors improving lifestyles in these individuals, and realize how patients living with SCIs can obtain more flexibility and eventually upgrade their welfare through efforts, strategies, along with contingency programs. Therefore, the present study was to get down to an in-depth understanding of strategies maintaining and improving physical, psychological, social, and economic health status in people living with SCIs. In addition, this type of awareness can be utilized for health care professionals to keep an eye on the special needs of these individuals in consort with special support. What is clear is that most aspects of quality of life cannot be assessed in a quantitative manner. The problem intricacies thus need to be examined in qualitative research because questionnaires and quantitative tools cannot simply demonstrate all positive and negative points in the lifestyles of patients with SCIs. As meta-synthesis is a relatively novel technique to review qualitative research,^{28,29} it was practiced in the present study. In fact, meta-synthesis refers to collecting a group of qualitative studies, analyzing their findings, discovering their basic points, and converting them into more general research.³⁰ Conducting meta-synthesis of qualitative research in this domain can accordingly provide researchers and health care workers with new insights. Indeed, recognizing existing challenges requires an analysis of experiences, feelings, and perceptions of patients with SCIs and qualitative surveys can be effective in this way. Therefore, this study aimed to reflect on the lifestyles of people with SCIs resulting from accidents and disasters.

2 | METHODS

As a meta-synthesis of qualitative research, all articles recruiting qualitative methods to examine patients with SCIs, published from 1990 to 2020, were retrieved by the researchers, good at the Persian

and English languages, from the databases of ScienceDirect, MD Consult, Pedro, Proquest, PubMed, SID, MedLib, Magiran, Scopus, Google Scholar, Iranmedex, the Cochran Library, CINAHL, and Blackwell, using the keywords of “spinal cord injury, SCI, manmade disaster, natural disaster, content analysis, concept analysis, thematic analysis, lifestyle, quality of life, QoL, grounded theory, meta-synthesis, mixed-methods research, historical research, ethnography, and phenomenology” in both languages for their inclusion in this study and further analyses. In this sense, the inclusion criteria were full-text articles published from 1990 to 2020, reflecting on SCIs caused by manmade and/or natural disasters, and their types, with reference to a qualitative approach. The exclusion criterion was the nonrelevance of the articles to the research topic.

We followed Noblit and Hare's seven steps of meta-ethnography.³¹ In a meta-ethnographic analysis, information is classified as a first, second and third-order constructs. First-order constructs are direct quotes within studies, second-order constructs are authors' interpretations within the primary studies, third-order constructs are interpretations synthesized by the reviewers from second-order constructs.

2.1 | Ethical considerations

Authors consider themselves obliged to comply with common ethical principles governing the publication of scientific publications, which are specifically defined in the guidelines of the International Committee On Publication Ethics (COPE).

3 | RESULTS

Based on the above-mentioned criteria, a total number of 18 articles were extracted, but nine cases were excluded. Finally, 10 articles were reviewed, whose main characteristics are illustrated in Table 1 (Figure 1). Table 2 also shows the demographic characteristics of the participants (namely, age, SCI level, and SCI duration) along with the themes obtained from the selected articles. In studies examining the lifestyles of people with SCIs resulting from accidents and disasters, according to Table 2, six main themes, including *compromise*, *self-reliance*, *income-generating activities*, *mental status*, *inability*, and *issues of sexuality* were extracted. The main themes were comparable as people might run through common physical and mental concerns following this injury, affecting their lifestyles as well as personal relationships and financial status.

4 | DISCUSSION

This study was to investigate the lifestyles of patients suffering from SCIs. The findings from data extraction accordingly led to the emergence of six themes, including, *compromise*, *self-reliance*, *income-generating activities*, *mental status*, *inability*, and *issues of sexuality*. The

main themes were comparable as people might run through common physical, mental, social, and spiritual concerns following SCIs, affecting their lifestyles as well as personal relationships and financial status.

4.1 | Compromise

As one of the main themes, compromise was of utmost importance to the study participants. It is clear that living with SCIs is a complex process that needs kind of adaptation to physical, psychological, and social changes in affected people and their families.⁴⁰ SCIs often lead to permanent defects as very important events in someone's life.^{4,7,41} The coping strategies adopted by these individuals in stressful events can thus shape their life consequences.^{42,43} Numerous studies have so far delineated coping strategies and their impacts on SCIs. Such strategies, including acceptance,^{44,45} positivity,⁴⁴ social support,⁵ religion and spirituality,^{45,46} and seeking for social support⁴⁴ have been discussed in a number of cross-sectional studies.^{47,48} Although little research has examined such strategies practiced by patients with SCI, no case has ever accounted for views and experiences of the patients themselves in the course of compromise, to the best of authors' knowledge, and there are still abundant uncertainties with regard to the most effective coping strategies employed by such individuals.^{49,50} Family and proper financing can further contribute to compromise in such patients, so the fewer the environmental and family barriers, the better the mental health status and the compromise routine in these individuals.

4.2 | Self-reliance

Self-reliance, as another main theme in this study, challenges people with SCIs in the domain of health, performance, physical and mental status, and social life.⁵¹ This type of disability often results in defects in sensory and motor skills as well as impaired functions inducing bowel and bladder problems, limiting the ability of a person to perform common individual and social activities independently. In addition to physical constraints arising from SCI, people also experience many emotional, psychological, economic, and environmental stressors,^{16,17,36} shaping their lifestyles. At present, independent-performance criteria are considered as the most effective ways to assess the independence practices during rehabilitation. Organizations monitoring SCI have also accepted the given criteria following their evaluation in joint studies as a performance indicator.⁵¹ Accordingly, independence dimensions have reduced into two categories, namely, motor and cognitive. In this sense, the motor items include self-care (eating, putting on make-up, taking a shower, dressing, being independent in toilets), bladder/bowel control, mobility (moving to beds, sitting on chairs, going to toilets, using moving showers, using a wheelchair, and climbing stairs), and cognitive items such as communications (perception and self-expression), social interactions, and cognitive activities (problem-solving and memory).⁴⁰

TABLE 1 Characteristics of selected qualitative studies.

No.	Author(s) (year)	Type of study	Title	Data collection method, sampling, sample size	Main themes	Outcomes
1	Le Fort et al. ²¹ (2020)	Grounded theory	The functioning of social support in long-term prevention after spinal cord injury	<ul style="list-style-type: none"> - Acquired SCI - 32 participants - Use of semi-structured interviews - Age ≤18 - Completion of a rehabilitation program by participants in France at least 1 year ago 	<ul style="list-style-type: none"> - Challenges to gain balance in life - Emotional instability - Anxiety about the future - Permanent dissatisfaction with oneself 	This study reflected on social support as a dynamic process and a reciprocal phenomenon evolving in variations over time. These findings should be central to short- and long-term therapeutic education programs for patients and those providing social support. Effective changes should be also implemented through the concept of the Learning Health Systems ²¹ .
2	Taylan et al. ³⁰ (2020)	Phenomenology	Experiences of patients and their partners with sexual problems after spinal cord injury	<ul style="list-style-type: none"> - Semi-structure interviews - 7 women with SCI and 6 partners 	<ul style="list-style-type: none"> - First exposure to SCI - Experience of sexual problems - Coping strategies - Partners' views on sexual issues - Other people's standpoint 	The study findings revealed that the sex life of these individuals with SCIs had been negatively affected and they had been left down to deal with their own problems. As well, some patients had difficulties in coping with this condition. ³⁰
3	Bailey et al. ³² (2016)	Grounded theory	Managing the stigma: Exploring body image experiences and self-presentation among people with spinal cord injury	<ul style="list-style-type: none"> - 9 participants selected based on purposeful sampling technique - Use of semi-structured interviews - 5 women and 4 men - Aged between 21 and 63 - SCIs for 4–36 years 	<ul style="list-style-type: none"> - Physical appearance - Concerns about body weight - Negative performance features - Social impacts - Amputation - Hygiene and health problems along with incontinence - Independence 	Self-image was introduced as the most important indicator and the bodily appearance was presented as the main experience with self-image. ³²
4	Jackson et al. ³³ (2010)	Thematic analysis	Principles pertaining to lifestyle and pressure ulcer risks in adults with spinal cord injury	<ul style="list-style-type: none"> - Qualitative in-depth interviews over an 18-month period - 20 adults with spinal cord injury and a history of pressure ulcers 	<ul style="list-style-type: none"> - Perpetual danger - Change/disruption of routines - Decay of preventive behaviors - Lifestyle risk ratio - Individualization - Simultaneous presence of prevention awareness and motivation - Lifestyle trade-off - Access to care services and support 	The identified principles can be used to drive future research theoretically or to guide innovative lifestyle-focused intervention approaches. Public policies that promote short-term preventive interventions at critical junctures throughout a person's life should be also considered. ³³

TABLE 1 (Continued)

No.	Author(s) (year)	Type of study	Title	Data collection method, sampling, sample size	Main themes	Outcomes
5	Rahmani-Rasa et al. ³⁴ (2018)	Grounded theory	The process of non-resilience in a spinal cord injury population in Iran	<ul style="list-style-type: none"> - Experiences of 24 participants, including 16 people with spinal cord injury, and 8 cases with spinal care experience (3 caregivers, 2 occupational therapists, 1 physiotherapist, 1 social worker, and 1 nurse) - In-depth, semi-structured interviews 	<ul style="list-style-type: none"> - Lack of essential knowledge - Dependence - Psychosexual preoccupation - Confusion - No accommodation - Inappropriate feedback - Inability to adapt 	<p>Detecting barriers to resilience is important in planning rehabilitation programs for people with a spinal cord injury. Improving social support for patients with such an injury can thus promote their mobility within the community and mental health status.³⁴</p>
6	Smith et al. ³⁵ (2015)	Thematic analysis	The impact of living in a care home on the health and wellbeing of spinal cord injured people	<ul style="list-style-type: none"> - 20 adults living in care homes or those who have lived so recently for over 2 years - In-depth interviews 	<ul style="list-style-type: none"> - Lack of independence: Freedom, control, and flexibility - Inability to participate in community life - Failure to sustain meaningful relationships - Damage to physical health - Restricted participation in work and leisure time - Life on hold: Lack of physical activity - Life on hold: Lack of meaning, self-expression, and the future - Loneliness - Difficulties with re-housing process - Depression - Suicidal thoughts and actions³⁵ 	<p>For people with SCIs, care home environment violates social dignity, is oppressive, and denies human rights. Implications for housing and health care policies were also offered.³⁵</p>
7	Kehn et al. ³⁶ (2009)	Ethnography	Staying physically active after spinal cord injury	<ul style="list-style-type: none"> - 26 individuals with SCI (15 self-described exercisers and 11 non-exercisers) from a nonrandom pool of survey respondents - Semi-structured phone interviews conducted to record participants' experiences with pre/post-injury exercise, barriers, and facilitators to being active and perceived health impact 	<ul style="list-style-type: none"> - Personal motivation - Independence - Accessible facilities and personal assistants - Fear of health complications - Weight management 	<p>Despite motivation and interest in being active in exercises, people with SCIs face many obstacles. Removal of such barriers coupled with promotion of facilitating factors is thus vital for enhancing opportunities for physical activity and reducing risks of costly secondary conditions in this population.³⁶</p>

(Continues)

TABLE 1 (Continued)

No.	Author(s) (year)	Type of study	Title	Data collection method, sampling, sample size	Main themes	Outcomes
8	Scheel-Sailer et al. ³⁷ (2017)	Content analysis	Patients' views on their decision-making during inpatient rehabilitation after newly acquired spinal cord injury	<ul style="list-style-type: none"> - 22 participants with SCIs - In-depth semi-structured interviews - 6 months and 35 years post-onset SCI 	<ul style="list-style-type: none"> - Medical and psychological conditions - Personal engagement - Time - Dialogues with peers 	During the initial phases of rehabilitation of the patients with SCI, professionals need to deal with the discrepancy between the obligations to respect patients' autonomy and their diminished ability for decision-making. ³⁷
9	Khazaeipour et al. ³⁸ (2018)	Phenomenology	The childbearing experience of women with spinal cord injury in Iran	<ul style="list-style-type: none"> - 8 women with SCI - Use of telecommunication and face-to-face semi-structured interviews 	<ul style="list-style-type: none"> - Revivification - Fears and concerns of mothers with SCI - Flawed health care system - Maternal experience under a supportive umbrella - Strengthening spirituality and religious beliefs 	Childbearing had a positive effect on family relationships, continuity of marriage, and quality of life following SCI. There are potential benefits in establishing a center that provides consultation on childbearing and childcare for women with SCI. ³⁸
10	Richards et al. ³⁹ (1997)	Phenomenology	Women with complete spinal cord injury	<ul style="list-style-type: none"> - 15 adult women who sustained complete spinal cord injury between the levels of T6 and L2 verified by a physiatrist - Semi-structured interviews by an interdisciplinary team of researchers 	<ul style="list-style-type: none"> - Cognitive-genital dissociation - Sexual disenfranchisement - Sexual exploration - Sexuality reintegration 	It seems likely that there are nerve pathways from the sexual system to the brain that are functional in women with complete SCI, mediating orgasm in response to genital stimulation. ³⁹

Abbreviation: SCI, spinal cord injury.

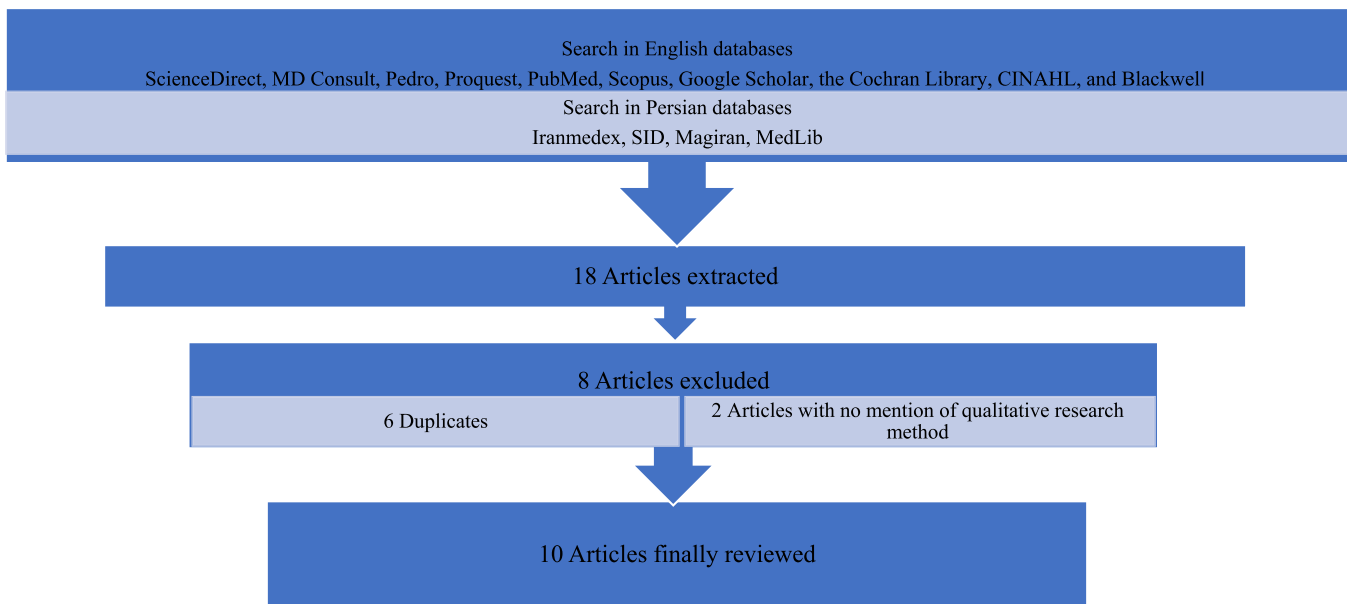


FIGURE 1 Article inclusion process.

4.3 | Income-generating activities

According to this theme, patients with SCIs are encountering numerous problems and complications. Of the important ones affecting these individuals following the acute phase of SCI are having an income and going back to work.⁵² Among the health care goals for people with disabilities is providing them with independence that leads to more satisfaction with health care services, reduction in physical dependence, and a sense of better personal control.⁵² Disabled people are among individuals experiencing unemployment more than other counterparts do, since they are the last workforce recruited by organizations and institutions. In this view, the rate of employment among them is much less than normal. They accordingly suffer from the problems of finding jobs and need more help to overcome such obstacles.⁵² In the study by Wang et al.⁵³ in Taiwan, evaluating the effectiveness of training programs designed to improve the quality of life and the possibility of hiring patients with SCI, the rate of unemployment in these individuals had been estimated by 78.2%. Physical defects, search for jobs, as well as return to work can thus limit these individuals, so mental factors are as important as physical disabilities in determining the success of return to the workplace in people with SCIs.⁵⁴ Employment is also assumed as an activity essential for the completion of personal and social life, so there is always an emphasis that all people, under different conditions, must work all the time, and employment can establish a logical and dynamic relationship between the person and the surrounding world.⁵⁵

4.4 | Mental status

People with SCI are also exposed to risks arising from mental disorders that differ from a process of normal grief, sorrow, and discomfort, giving rise to considerable losses in connection with

this type of injury.^{56,57} SCIs might be accompanied by different levels of psychological illnesses,⁵⁸ so substance abuse and suicidal attempts in the population of patients with SCIs are higher compared with healthy individuals.^{59,60} For example, Diemen (XXX) had found that half of the adult samples with SCI had turned to consumption of alcohol or other drugs and even the rate of suicidal attempts and actions following injury in these individuals had augmented by five times more than the expected value in the general population living in the States United, Europe, and Australia.⁶¹ In the survey by Kravous (XXX), four groups of major problems in people with SCIs had been determined, including (1) mental problems such as loneliness, depression, and stress, (2) those related to dependency and control, (3) health problems such as pain, and (4) social inconveniences such as access to public facilities.⁶² Although mental problems do not emerge in more than 50% of patients with SCIs and its related disorders, there are minority groups who are significantly at risk and the nature of the psychological illnesses following this type of injury needs to be specifically taken into account.⁶³

4.5 | Inability

Reflecting on disorder, disability, and paralysis, the World Health Organization (WHO) attributes the causes of disabilities to society, and thereby puts more emphasis on the abilities of people with physical problems to boost their participation.⁴⁰ Difficulties associated with SCIs include reduction in vital capacity, osteoporosis, postural hypotension, abnormal automatic reaction, muscle contraction, bone defects, pressure ulcers, and sexual problems.³⁹ The prevalence rates of depression and anxiety in these people have been also reported by 20%–25% and 30%–40%, respectively.⁵³ Each

TABLE 2 Demographic characteristics of the participants in the selected qualitative studies.

Author(s) (year)	Age (year)	SCI level	SCI duration (year)	Themes
Rahmani-Rasa et al. ³⁴ (2018)	25–66	C4–C8 (n = 14) C1–C4 (n = 150) Paraplegia (n = 63) Tetraplegia (n = 34) (n = 14)	6 months to 28 years	Body problems (defects)/Loss/Communication/Responsibility and control of individual life/Work and ability to collaborate/Surrounding environment/New values/Development/Landscape/Good and bad days/Value of human existence/Independence ³⁴
Smith et al. ³⁵ (2015)	A sample of 20 people, specifically, 15 males and 5 females aged between 21 and 70 years (mean = 31 years of age)	Not mentioned	2–3 years	Lack of independence: Freedom, control, and flexibility/Inability to participate in community life/Failure to sustain meaningful relationships/Damage to physical health/Restricted participation in work and leisure time physical activity/Life on hold: Lack of meaning, self-expression, and the future/Loneliness/Difficulties with re-housing process/Depression/Suicidal thoughts and actions ³⁵
Jackson et al. ³³ (2010)	40–49	Quadriplegia	16	Employment status/marital status/SCI severity/Cause of SCI ³³
	40–49	Quadriplegia	19	
	40–49	Paraplegia	19	
	40–49	Quadriplegia	21	
	50–59	Quadriplegia	23	
	30–39	Quadriplegia	16	
	30–39	Quadriplegia	16	
	40–49	Quadriplegia	19	
	30–39	Quadriplegia	18	
	30–39	Quadriplegia	17	
Le Fort et al. ²¹ (2020)	48	C ₄ /C ₅	6	Challenges to gain balance in life/Emotional instability/Anxiety about the future/Permanent dissatisfaction with oneself ²¹
	56	C ₄	7	
	50	C ₅	8	
	61	C ₆	5	
	62	C ₆	12	
Bailey et al. ³² (2016)	26	T ₆	5	Physical appearance/Concerns about the body weight/Negative performance features/Social impacts/Amputation/Hygiene and health problems along with incontinence/Independence ³²
	32	T ₁	14	
	42	C ₆	4	
	44	T ₇	10	
	21	C ₇	4	
	48	C ₃	9	
	63	C ₃	36	
	36	T ₃	18	
	35	C ₅	16	
Scheel-Sailer et al. ³⁷ (2017)	19–29 (n = 6)	Tetraplegia (n = 14)	0–10 (n = 7)	Decision-making processes/Physical, mental, and personal aspects/Attitudes of health professionals/Organizational status/Environmental aspects/Time dimensions/Disorder/Disability/Paralysis/Quality of life ³⁷
	30–39 (n = 2)		2–4 (n = 6)	
	40–49 (n = 5)		5–9 (n = 3)	
	50–59 (n = 5)		10–19 (n = 2)	
	59–60 (n = 4)		20–40 (n = 4)	

TABLE 2 (Continued)

Author(s) (year)	Age (year)	SCI level	SCI duration (year)	Themes
Khazaeipour et al. ³⁸ (2018)	29–47	T7	6–34	Support-Seeking/Constraints/Challenges of return to society/Recovery facilitators ³⁸
		T8		
		T9		
		T12		
		L1		
Taylan et al. ³⁰ (2020)	56	Paraplegia	3	Independence/Health/Main barrier/Comfort/Aesthetics (Appearance)/Self-confidence/Personal issues/Dignity and respect/Gender and issues of sexuality/Normality/Safety and security ³⁰
	53	Paraplegia	1.5	
	52	Paraplegia	1.5	
	53	Quadriplegia	10	
	42	Quadriplegia	1.5	
	41	Quadriplegia	17	
	46	Paraplegia	8	
	35	Quadriplegia	1.5	
	42	Quadriplegia	2	
47	Quadriplegia	8		
Kehn et al. ³⁶ (2009)	45–63	L1–L2 (n = 4)	22–30	Social/Economic/Cultural/Medical/Environmental aspects ³⁶
		T8–T9 (n = 2)		
		T11–T12 (n = 2)		
		T10–T11 (n = 1)		
		T11–T12 (n = 1)		
Richards et al. ³⁹ (1997)	15 participants aged 30–55	T6 and L2 verified by a physiatrist	10–25	Cognitive-genital dissociation/Sexual disenfranchisement/Sexual Exploration/Sexuality reintegration ³⁹

Abbreviation: SCI, spinal cord injury.

person at each stage of life might accordingly face physical disabilities. According to Table 2, inability was one of the very important themes in this study. With respect to the definition offered by the WHO, inability refers to any kind of limitation or lack of ability that keeps a tight rein on a person's activity to do something in the way that ordinary people do, or makes their scope of activity out of normal order. Physical disabilities are usually divided into two categories: sensory and motor.^{64,65} After SCI, several spinal shock phases may be experienced from 24 h to 6 weeks later in which numbness is felt below the surface of the lesion. In this case, tendon reactions are reduced, the bowel and the bladder are relaxed, and the sympathetic nervous system functions are impaired.⁶⁴ On the contrary, despite strong evidence that these individuals live through negatively stressful experiences, they continue to grow and there is compelling evidence of the positive changes in their lifestyles along with their painful events. Many people adapt to these conditions over time and lead a meaningful and purposeful life.²⁷

4.6 | Issues of sexuality

The other frequently observed theme in this study was the issues of sexuality and its dimensions, almost directly pointed out in all studies based on the extracted data. People with SCIs live with this problem for long, they also work like their friends and colleagues, make a family, and even take part in sports competitions. However, activities that seem safe, simple, and easy to healthy individuals are problematic for these patients. Besides, these people are grappling with a number of financial problems, no social support, and health issues.

Fortunately, new medical advances have made it possible for patients with SCIs to live for longer years and run a meaningful and productive life. It seems that these individuals need to take a different look at their body.³⁵ Changes to their lifestyles can be also assessed through their certain mental feelings with regard to happiness or unhappiness about life.⁶⁶ At present, independent-performance

criteria are considered as the most effective ways to evaluate independence practices during rehabilitation. Organizations monitoring SCI have further accepted the given criteria after their assessment in joint studies as a performance indicator.⁶⁷ In a survey, the results of lifestyle assessment in 11 dimensions including employment, education, leisure time, economic status, housing, daily living activities, family relationships, social relationships, physical health, psychological comfort, self-image, independence, and lack of dependence on environment had revealed that 73.3% of people with SCIs had reported their lifestyles at a balanced level.³¹ In another study, evaluating people with SCIs, they had been identified with low mental status compared with healthy individuals.⁶⁸ The rates of suicide, divorce, and substance abuse in individuals with SCIs are also higher.⁶⁸ As a very painful event, SCI can thus overshadow all aspects of life.⁸

In the present study, no relationship was found between lifestyle and other themes such as age, cause of SCI, SCI level, and SCI duration. Moreover, there was no relationship between lifestyle and cause of SCI. The patient had also recognized their inability to control all things as they were exploiting this feeling to be a relief from heaviness coming from their inability. One of the main objectives in SCI rehabilitation, in addition to access to stable medical state and physical independence, is to create the best power of decision-making in all stages of life, which can be achieved through maintaining the independence of the individuals. On this basis, these people must recognize their own social identity as ones with SCI and accept it as someone with disabilities. They also need to perceive their differences compared with healthy people and easily acknowledge them. The present study showed that the participants had accepted their disability sometime following injury and had tried to keep living; in other words, they had attempted to return to normal life. During the first phase of rehabilitation provided to patients with SCI, the treatment system must thus show maximum commitment towards the main themes such lifestyle and its sub-themes, namely, independence, adaptation to SCI injuries, issues of sexuality, and decision-making that are of utmost importance and vital for individuals with SCI, especially in the early stages of the injury, and focus on service delivery in this field.

Even though cultural needs, economic status, marital status, and issues of sexuality in patients living with SCI have been thus far less considered, improving the lifestyles of these individuals in a positive manner demands adopting a comprehensive perspective along with meeting physical and mental requirements. In general, it is suggested to develop a model for future research, wherein the health care framework for patients with SCIs is defined to provide support and rehabilitation for these patients and play a crucial role in boosting their lifestyles positively in the shortest time possible. In this way, an effective step is taken towards preparing patients to live normally and to be in social activities.

It is suggested to design a model for future research; in which the structure of care for patients with spinal cord injuries is defined and with effective support and rehabilitation of these patients, it plays a significant role in increasing the quality of life of these people and

protecting their health in the shortest possible time. In this way, an effective step will be taken to prepare patients to return to normal life and society.

CONFLICT OF INTEREST STATEMENT

The authors declare no conflicts of interest.

DATA AVAILABILITY STATEMENT

The authors of the study have these conditions: (1) the author(s) is (are) preparing articles in their "personal capacity" (in other words, "not as an official representative or otherwise on behalf of a sanctioned government"); or (2) the author(s) is (are) employed at an academic or research institution where research or education is the primary function of the entity. The use of the study in articles or any other scientific writing depends on mentioning the source and maintaining the intellectual property of the article. All researchers can use this article by mentioning the source while observing ethics in research.

TRANSPARENCY STATEMENT

The lead author Saeed Nazari affirms that this manuscript is an honest, accurate, and transparent account of the study being reported; that no important aspects of the study have been omitted; and that any discrepancies from the study as planned (and, if relevant, registered) have been explained.

ORCID

Saeed Nazari  <http://orcid.org/0000-0002-1231-9647>

Maryam Moradi  <http://orcid.org/0000-0001-7216-4213>

Milad Ahmadi Marzaleh  <http://orcid.org/0000-0003-1743-0093>

Vahid Hadi  <http://orcid.org/0000-0002-6458-950X>

REFERENCES

1. Coppola DP. *Introduction to international disaster management*. Elsevier; 2019.
2. Madigan ML. *Handbook of emergency management concepts: a step-by-step approach*. CRC Press; 2017.
3. Khankeh K, Akbari Shahrestanaki Y, Ghomian Z, et al. *The terminology of accident and disaster risk management*. University of Social Welfare and Rehabilitation Sciences; 2017 [Persian].
4. Zare M. *Natural disaster risk management*. kimia kherad Pars Company; 2016.
5. Centre for Research on the Epidemiology of Disasters – CRED. Cred Crunch 61 - Human Cost of Disasters (-2019 [CredCrunch61-Humancost.pdf] 2000).
6. Carlson M, Vigen CLP, Rubayi S, et al. Lifestyle intervention for adults with spinal cord injury: results of the USC-RLANRC pressure ulcer prevention study. *J Spinal Cord Med*. 2019;42(1):2-19.
7. Baker M, Pryor J, Fisher M. Nursing practice in inpatient rehabilitation: a narrative review (part 1). *JARNA*. 2019;22(2):7-21.
8. Lim CAR, Nightingale TE, Elliott S, Krassioukov AV. Lifestyle modifications and pharmacological approaches to improve sexual function and satisfaction in men with spinal cord injury: a narrative review. *Spinal Cord*. 2020;58(4):391-401.
9. Kunz S, Stadler C, Peter C. SwiSCI Study Group Longitudinal course and predictors of posttraumatic stress symptoms after spinal cord injury. *Psychol Health*. 2020;5(4):1-20.

10. National Spinal Cord Injury Statistical Center. Spinal cord injury facts and figures at a glance. *J Spinal Cord Med.* 2012;35(4):197-198.
11. Haywood C, Pyatak E, Leland N, Henwood B, Lawlor MC. A qualitative study of caregiving for adolescents and young adults with spinal cord injuries: lessons from lived experiences. *Top Spinal Cord Inj Rehabil.* 2019;25(4):281-289.
12. Babamohamadi H, Negarandeh R, Dehghan-Nayeri N. Barriers to and facilitators of coping with spinal cord injury for Iranian patients: a qualitative study. *Nurs Health Sci.* 2011;13(2):207-215.
13. Fatehi F, Kamali M. Perceived experiences of unemployed people with spinal cord injury in the process of returning to work. *J Res Rehabil Sci.* 2012;8(2):254-262 [Persian].
14. Halvorsen A, Pettersen AL, Nilsen SM, Halle KK, Schaanning EE, Rekan T. Epidemiology of traumatic spinal cord injury in Norway in 2012–2016: a registry-based cross-sectional study. *Spinal Cord.* 2019;57:331-338.
15. Hilton G, Unsworth C, Murphy G. The experience of attempting to return to work following spinal cord injury: a systematic review of the qualitative literature. *Disabil Rehabil.* 2018;40(15):1745-1753.
16. Ceallaigh O, Cian Brian. Psychological adaptation to spinal cord injury: the roles of sense of coherence and post traumatic growth. *Diss. Cardiff University.* 2018;1.
17. Ho CH, Atchison K, Noonan VK, et al. Models of care delivery from rehabilitation to community for spinal cord injury: a scoping review. *J Neurotrauma.* 2020;38(6):677-697.
18. Kraft R, Dorstyn D. Psychosocial correlates of depression following spinal injury: a systematic review. *J Spinal Cord Med.* 2015;38(5): 571-583.
19. Ugboh E, Hammed AI. Association between self-esteem, depression, social support and quality of life among patients with cerebrovascular accident and spinal cord injury. *Movement, Health & Exercise.* 2018;7(1):43-56.
20. Southwick SM, Bonanno GA, Masten AS, Panter-Brick C, Yehuda R. Resilience definitions, theory, and challenges: interdisciplinary perspectives. *Eur J Psychotraumatol.* 2014;5(1):25-38.
21. Le Fort M, Lefèvre C, Kiény P, Perrouin-Verbe B, Ravaud JF. The functioning of social support in long-term prevention after spinal cord injury. A qualitative study. *Ann Phys Rehabil Med.* 2020;64(4):101-114.
22. Zanini C, Fiordelli M, Amann J, Brach M, Gemperli A, Rubinelli S. Coping strategies of family caregivers in spinal cord injury: a qualitative study. *Disabil Rehabil.* 2020;12(34):100-120.
23. Mahooti F, Raheb G, Alipour F, Hatamizadeh N. Psychosocial challenges of social reintegration for people with spinal cord injury: a qualitative study. *Spinal Cord.* 2020;58(11):1119-1127.
24. Amjadi MA, Simbar M, Hosseini SA, Zayeri F. The sexual health needs of women with spinal cord injury: a qualitative study. *Sex Disabil.* 2017;35(3):313-330.
25. Pashaei Sabet F, Norouzi Tabrizi K, Khankeh H, Fallahi-Khoshkenab M. Rehabilitation needs of patients with physical disabilities due to traffic accidents for returning to the community: a qualitative study. *Iran J Rehabil Res Nurs.* 2014;1(1):74-87 [Persian].
26. Pullin LH, McKenzie H. Lifetime active care: a qualitative study of long-term family carers of people with spinal cord injury in Australia. *Health Soc Care Community.* 2020;12(10):38-48.
27. Chun S, Lee Y. The experience of posttraumatic growth for people with spinal cord injury. *Qual Health Res.* 2008;18(7):877-890.
28. Duggan C, Wilson C, DiPonio L, Trumppower B, Meade MA. Resilience and happiness after spinal cord injury: a qualitative study. *Top Spinal Cord Inj Rehabil.* 2016;22(2):99-110.
29. Murray CM, Van Kessel G, Guerin M, Hillier S, Stanley M. Exercising choice and control: a qualitative meta-synthesis of perspectives of people with a spinal cord injury. *Arch Phys Med Rehabil.* 2019;100(9): 1752-1762.
30. Taylan S, Özkan İ, Çelik GK. Experiences of patients and their partners with sexual problems after spinal cord injury: a phenomenological qualitative study. *J Spinal Cord Med.* 2020;7(6):1-9.
31. Noblit GW, Hare RD. *Meta-ethnography: synthesizing qualitative studies.* 11. Sage Publications; 1988.
32. Bailey KA, Gammage KL, van Ingen C, Ditor DS. Managing the stigma: exploring body image experiences and self-presentation among people with spinal cord injury. *Health Psychol Open.* 2016;3(1):205510291665009. doi:10.1177/2055102916650094
33. Jackson J, Carlson M, Rubayi S, et al. Qualitative study of principles pertaining to lifestyle and pressure ulcer risk in adults with spinal cord injury. *Disabil Rehabil.* 2010;32(7):567-578. doi:10.3109/09638280903183829
34. Rasa AR, Haghgoo HA, Khankeh H, Hosseini SA. The process of non-resilience in a spinal cord injury population in Iran: a grounded theory. *Int J Ther Rehabil.* 2018;25(7):327-334.
35. Smith B, Caddick N. The impact of living in a care home on the health and wellbeing of spinal cord injured people. *Int J Environ Res Public Health.* 2015;12(4):4185-4202. doi:10.3390/ijerph120404185
36. Kehn M, Kroll T. Staying physically active after spinal cord injury: a qualitative exploration of barriers and facilitators to exercise participation. *BMC Public Health.* 2009;9(1):168-182.
37. Scheel-Sailer A, Post MW, Michel F, Weidmann-Hügler T, Baumann Hölzle R. Patients' views on their decision making during inpatient rehabilitation after newly acquired spinal cord injury—a qualitative interview-based study. *Health Expect.* 2017;20(5):1133-1142.
38. Khazaeipour Z, Nikbakht-Nasrabadi A, Mohammadi N, Salehi-Nejad A, Shabany M. The childbearing experience of women with spinal cord injury in Iran: a phenomenological study. *Spinal Cord.* 2018;56(12):1184-1193.
39. Richards E, Tepper M, Whipple B, Komisaruk BR. Women with complete spinal cord injury: a phenomenological study of sexuality and relationship experiences. *Sex Disabil.* 1997;15(15):271-283. doi:10.1023/A:1024773431670
40. Shafiabady A Vocational rehabilitation; 2003. [Persian] Tehran: Jangal.
41. Shakespeare T, Officer A. Editorial. *Disabil Rehabil.* 2011;33(17-18): 1491-1492.
42. Babamohamadi H, Negarandeh R, Nayeri ND. Important coping strategies used by individuals with spinal cord injury: a qualitative study. *J Qual Res Health Sci.* 2013;2(1):90-100 [Persian].
43. Chan R, Lee P, Lieh-Mak F. Coping with spinal cord injury: personal and marital adjustment in the Hong Kong Chinese setting. *Spinal Cord.* 2000;38(11):687-696.
44. McColl MA, Bickenbach J, Johnston J, et al. Changes in spiritual beliefs after traumatic disability. *Arch Phys Med Rehabil.* 2000;81(6): 817-823.
45. Udermann BE. The effect of spirituality on health and healing: a critical review for athletic trainers. *J Athl Train.* 2000;35(2):194-197.
46. Lohne V, Severinsson E. The power of hope: patients' experiences of hope a year after acute spinal cord injury. *J Clin Nurs.* 2006;15(3): 315-323.
47. Anderson CJ, Vogel LC, Chian KM, Betz RR. Coping with spinal cord injury: strategies used by adults who sustained their injuries as children or adolescents. *J Spinal Cord Med.* 2008;31(3):290-296.
48. Elfström M, Rydén A, Kreuter M, Taft C, Sullivan M. Relations between coping strategies and health-related quality of life in patients with spinal cord lesion. *J Rehabil Med.* 2005;37(1):9-16.
49. Middleton J, Tran Y, Craig A. Relationship between quality of life and self-efficacy in persons with spinal cord injuries. *Arch Phys Med Rehabil.* 2007;88(12):1643-1648.
50. Elliott TR, Kennedy P. Treatment of depression following spinal cord injury: an evidence-based review. *Rehabil Psychol.* 2004;49(2):134-139.

51. Baghiani Moghaddam MH General principles of health services Tehran: Asare Sobhan; 2015 [Persian].
52. Song H-Y, Nam KA. Coping strategies, physical function, and social adjustment in people with spinal cord injury. *Rehabil Nurs*. 2010;35(1):8-15.
53. Wang RY, Yang YR, Yen LL, Lieu FK. Functional ability, perceived exertion and employment of the individuals with spinal cord lesion in Taiwan. *Spinal Cord*. 2002;40(2):69-76.
54. Chan SK, Man DW. Barriers to returning to work for people with spinal cord injuries: a focus group study. *Work (Reading, Mass.)*. 2005;25(4):325-332.
55. Hosseini SH, Noroziyan Maleki S. Enabling of housing and urban environments for people with mobility limitations. *Int J Eng Sci*. 2008;19(10):195-206 [Persian].
56. North N. The psychological effects of spinal cord injury: a review. *Spinal Cord*. 1999;37(10):671-679.
57. Stanford RE, Soden R, Bartrop R, Mikk M, Taylor TKF. Spinal cord and related injuries after attempted suicide: psychiatric diagnosis and long-term follow-up. *Spinal Cord*. 2007;45(6):437-443.
58. Afkar A, Nasiripour A, Tabibi J, Kamali M, Farmanbar R, Kazem Nejad Leili E. Comparison between capabilities of the disabled people before and after implementation of community based on rehabilitation (CBR) program. *J Holist Nurs Midwifery*. 2014;24(4):1-8 [Persian].
59. Reitz A, Tobe V, Knapp PA, Schurch B. Impact of spinal cord injury on sexual health and quality of life. *Int J Impotence Res*. 2004;16(2):167-174.
60. van Diemen T, van Leeuwen C, van Nes I, Geertzen J, Post M. Body image in patients with spinal cord injury during inpatient rehabilitation. *Arch Phys Med Rehabil*. 2017;98(6):1126-1131.
61. Krause J. Self-reported problems after spinal cord injury: implications for rehabilitation practice. *Top Spinal Cord Inj Rehabil*. 2007;12(3):35-44.
62. Lohne V, Severinsson E. Hope and despair: the awakening of hope following acute spinal cord injury-an interpretative study. *Int J Nurs Stud*. 2004;41(8):881-890.
63. Whiteneck GG A functional independence measure trial in SCI model systems. ASIA 14th Annual Scientific Meeting; 1988; Atlanta.
64. Davies S, Ellis L, Laker S. Promoting autonomy and independence for older people within nursing practice: an observational study. *J Clin Nurs*. 2000;9(1):127-136.
65. Catalano D, Chan F, Wilson L, Chiu C-Y, Muller VR. The buffering effect of resilience on depression among individuals with spinal cord injury: a structural equation model. *Rehabil Psychol*. 2011;56(3):200-211.
66. Bakhtiyari M, Salehi M, Zayeri F, et al. Quality of life among disabled and healthy individuals: a comparative study. *Iranian journal of epidemiology*. 2012;8(2):65-72 [Persian].
67. Haran MJ, Lee BB, King MT, Marial O, Stockler MR. Health status rated with the medical outcomes study 36-item short-form health survey after spinal cord injury. *Arch Phys Med Rehabil*. 2005;86(12):2290-2295.
68. Kooijmans H, Post MWM, Stam HJ, et al. Effectiveness of a self-management intervention to promote an active lifestyle in persons with long-term spinal cord injury: the HABITS randomized clinical trial. *Neurorehabil Neural Repair*. 2017;31(12):991-1004.

How to cite this article: Nazari S, Moradi M, Danyali Z, Ahmadi Marzaleh M, Hadi V, Hadi S. Lifestyle assessment in individuals with spinal cord injuries caused by accidents and disasters in qualitative studies published from 1990 to 2020: a meta-synthesis of qualitative study. *Health Sci Rep*. 2023;6:e1328. doi:10.1002/hsr2.1328