

# Factors Facilitating Access to Rehabilitation Services for Individuals with Spinal Cord Injuries During the COVID-19 Pandemic

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## Abstract

**Background:** Rehabilitation services as a set of measures to improve health, increase independence, and facilitate return to everyday life are mandatory for individuals with spinal cord injuries. The most critical challenge that has emerged in recent years to provide these services in a timely and appropriate manner is the global spread of the coronavirus. Accordingly, this study aimed to explain the factors facilitating access to rehabilitation services for individuals with spinal cord injuries during the coronavirus pandemic.

**Methods:** This qualitative study was conducted using the conventional content analysis method in Tehran, Iran in 2023. A total of 25 participants selected via purposive sampling, participated in the study. Data were collected and analyzed using semi-structured interviews. MAXQDA 2020 software was used to organize the collected data and facilitate their coding.

**Results:** The analysis of participants' experiences led to the identification of 876 codes, 9 subcategories, and 4 main categories as factors facilitating access to rehabilitation services. The main categories included *supportive community, optimized health services, therapeutic facilities, and reliance on individual abilities.*

**Conclusion:** According to the findings, appropriate access to rehabilitation services requires a comprehensive understanding and an accurate identification of the facilitators. Therefore, the results of this study can be used in policymaking, planning, and developing appropriate protocols to improve the access of individuals with spinal cord injuries to rehabilitation services during critical times similar to the coronavirus pandemic in the future.

**Keywords:** Spinal cord injuries, Access to health services, Rehabilitation, COVID-19, Facilitators

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## Introduction

Spinal cord injury (SCI) impairs self-care and affects physical and emotional well-being (1,2). Globally, there were 0.7 to 1.2 million incident individuals with SCI, 18.9 to 23.6 million prevalent cases, and 4.5 to 8.2 million years lived with SCI disability in 2019 (3). The prevalence of traumatic and non-traumatic individuals with SCI in Iran was estimated at 318.45 per million in 2015 (4). Depending on the extent of the injury, the inability to perform purposeful activity can affect the social participation of the injured person. For this reason, individuals with SCI, like other individuals with disabilities, even in a group with more advantages than the general individuals with similar conditions, have problems receiving many social services (5,6). One of the needs of individuals with SCI in healthcare services is rehabilitation. Rehabilitation is needed when a person has experienced limitations in daily functioning due to a physical condition, such as SCI (7). The objective of rehabilitation is to help individuals

with SCI reach their maximum ability after the injury (8). Despite the importance and necessity of rehabilitation services for individuals with SCI, these individuals in Iran face challenges in accessing the rehabilitation services they need for several reasons, one of which is that there are not enough services available to them (9-11). The most important challenge in recent years to provide rehabilitation services in a timely and appropriate manner was the global outbreak of the coronavirus (12). Most of the studies in this field have been conducted with a quantitative approach, focusing mainly on the impact of the coronavirus pandemic on limiting the provision of healthcare services (13-17), loss of rehabilitation services, stopping clinical practices (6,14,18), increasing dependence on caregivers (19), limited access to health professionals (20), facilities, and medical equipment (18,21). Qualitative studies have also explained the experiences of individuals with SCI during the coronavirus pandemic and emphasized the reduction of access to



health and support services and its effects on the physical and mental health of patients (13,22). Telemedicine services have also been explored as a compensatory method in many studies investigating the experiences of access to health services, such as rehabilitation services during the coronavirus outbreak (13,14,23-25). However, due to certain problems, telemedicine cannot be considered a complete substitute for in-person visits, and policymakers must deal with issues related to increased privacy, regulations, and insurance coverage. Moreover, further investigation is necessary to evaluate the level of care telemedicine provides and its effectiveness (26,27). Furthermore, most studies conducted in Iran have explained the obstacles facing the health system in providing rehabilitation services for people with disabilities before the coronavirus pandemic (11), and few studies have described the challenges of accessing services for individuals with disabilities during the coronavirus outbreak (28). Dealing with these challenges in crises similar to the coronavirus pandemic in the future requires proper planning (29). Given that individuals with SCI require rehabilitation services to improve mobility, independence, and quality of life (30), and because of the limitations of in-person communication during the pandemic, identifying facilitating factors for better access to rehabilitation services was a necessity to provide better services during similar crises. Accordingly, we sought to deepen our understanding of this topic. Therefore, the present study aimed to qualitatively analyze the experiences of individuals with SCI, their caregivers, and rehabilitation specialists. Since the experiences of these individuals were subjective and reflected their mental perceptions, this study was conducted using a qualitative approach. The objective of the study was to explain the factors facilitating the access of individuals with SCI to rehabilitation services during the coronavirus pandemic in Tehran, Iran.

## Methods

The present study was conducted using a qualitative approach based on the conventional content analysis method from October 2022 to August 2023. The participants were selected from the individuals with SCI, their caregivers, and rehabilitation specialists using a purposive sampling method with maximum diversity. The inclusion criteria were giving informed consent to participate in the study, having the ability to follow verbal instructions, and being diagnosed with SCI by a specialist. The participants were selected from those who visited a private rehabilitation center (Rahgosha) and a public hospital (Rofeideh Hospital) in Tehran. None of the participants left the study or were excluded. Sampling continued until data saturation. The data were collected via in-depth, semi-structured face-to-face interviews. Semi-structured interviews make it possible

to evaluate the participants' perceptions, attitudes, and aspirations more deeply (31). The second researcher conducted interviews after getting approval from the ethics committee of the university. All interviews were reviewed and approved by the corresponding author. Each interview began with the collection of demographic information followed by an open-ended question. The primary questions included "Would you please describe your experience of access to rehabilitation services during COVID-19?" and "What factors facilitated the process of receiving rehabilitation services for you?" Then, the interviews continued according to the statements of each participant. The researcher used these questions to guide the research topic, and also explored the participants' answers by asking probing questions such as "Could you explain more about this?" The interviews were conducted in a real environment, some of them in rehabilitation hospitals, others in private clinics, and some in the participants' homes. The interviews were recorded by mobile phone with full written consent of the participants and then transcribed verbatim. The recorded audio files of the interviews were deleted after the completion of the study. Each interview lasted between 45 and 60 minutes.

After conducting 22 interviews, the data were saturated and no new data were extracted from the interviews. Then, to ensure data saturation, three additional interviews were conducted. All interviews were transcribed verbatim in Microsoft Word and read carefully. Data were analyzed using the method proposed by Graneheim and Lundman. The analysis started after the end of each interview. A code was assigned to each of the important sentences related to the purpose of the study. Categorizing is about interpreting which groups of codes are interrelated and differ from other groups of codes (32). The codes that had a similar concept were placed together in a subcategory. Similar subcategories also formed main categories. At each stage, concrete concepts were upgraded to abstract concepts (32). MAXQDA 2020 software was used for regular data classification. To ensure the accuracy of the data, Guba and Lincoln's four criteria including credibility, dependability, confirmability, and transferability were used. The credibility of the data was confirmed as the researcher had three years of experience in the field of rehabilitation services provided to individuals with SCI, participated in the empowerment plan of the studied community, and could understand their problems and gain their trust. The text of the interviews and the formed categories were sent to two supervising professors with experience in qualitative research and completed using their comments. To comply with the ethical principles, the researcher provided all the information to the participants, and they were assured that their information would be kept confidential. Written informed consent was obtained from the participants. The recorded audio files were deleted after the completion of the study. The

participants were assured that participation in this study would cause them no harm or limitation, and that they could withdraw from the study whenever they wished, which would not affect the medical services they received from the centers. This study was not in contradiction with the social and cultural values of the society. The researcher undertook to provide the information and results obtained from this study to the participants and express the results of the study completely, accurately, and honestly.

## Results

A total of 25 participants (10 females and 15 males) including 17 individuals with SCI, 4 caregivers, and 4 rehabilitation specialists participated in this study. The demographic characteristics of the participants are demonstrated in Tables 1-3. A total of 876 initial codes were extracted from the data which eventually yielded 4 main categories as shown in Table 4.

### Supportive community

This main category consists of three subcategories including family support, friend and acquaintance support, and peer support.

#### Family support

The primary coding results showed that during the COVID-19 pandemic, the most crucial factors facilitating access to rehabilitation services were related to family support. Family support included assistance in transfer, facilitating the receipt of social services, and financial support. One of the participants stated in this regard,

*“My family pays all my expenses and they help me a lot to attend physiotherapy and move around with a wheelchair. My mother takes me to the hospital”* (Participant 16). Another family support noted by most of the participants was looking for rehabilitation. In this regard, one of the participants noted, *“My father looked for an occupational therapist to come to my house to do occupational therapy. He has a heart of gold and he says ‘Don’t underestimate yourself. You still have a lot of potential. You can be much better, my son’”* (Participant 15).

#### Friend and acquaintance support

This subcategory included assistance in transfer, support in the rehabilitation process, and guidance. One of the participants stated, *“A friend in need is a friend indeed. My friends help me with the transition. They tell me to keep my chin up. They always guide me to find a good occupational therapist or physiotherapist. Also, my relatives hired a physiotherapist to work with me at home.”* (Participant 17).

#### Peer support

According to the experiences of the participants, helping individuals with similar experiences is always one of the most effective factors for facilitating the process of receiving rehabilitation services during the COVID-19 pandemic. Peer support includes using the experiences of peers. One of the participants stated, *“We have a Telegram group with most of the individuals with SCI in the city, and we usually get advice from each other on how to attend occupational therapy sessions during the coronavirus disease and what we should do”* (Participant 12).

### Optimized health services

Optimizing the health services provided was one of the categories identified in this study which was subdivided into compliance with hygiene principles and facilitation of vaccination. Since individuals with SCI considered themselves vulnerable to the coronavirus due to the underlying problems, it was very important for them to follow the health principles to continue the rehabilitation process without worrying about contracting the virus. Besides, before the start of vaccination and solving the problems of these individuals, they did not seek to continue their rehabilitation due to their vulnerability, and after the facilitation of vaccination, they were able to continue their rehabilitation treatments.

**Table 1.** The participants’ demographic data (Individuals with SCI)

Code	Age	Education level	Level of damage	Duration of injury (year)
1	32	High school	C3	10
2	23	Diploma	T12	5
3	31	Primary school	T12-L4	7
4	18	Diploma	T1,2	4.5
5	49	Bachelor’s degree	T11,12	5
6	41	Bachelor’s degree	C7	4
7	38	High school	C4	11
8	23	Diploma	T9,10	15
9	46	Middle school	T8, L4 (Non-traumatic)	28
10	52	Bachelor’s degree	L2	6
11	34	Master’s degree	T11,12; L1,2,3	9
12	27	Diploma	L1	13
13	46	Primary school	L5; S1,2	16
14	36	Diploma	C3 (Non-traumatic)	22
15	61	Master’s degree	T12-L5	5
16	19	Middle school	T4,5	8
17	26	Diploma	T12	11

**Table 2.** The participants’ demographic data (Caregivers)

Code	Age	Education level	Duration of patient care (year)	Level of damage to the patient cared for
18	28	Bachelor’s degree	2	T12
19	56	High school	1.5	T3,4
20	50	High school	2	T8
21	38	Diploma	6	C4

**Table 3.** The participants' demographic data (Rehabilitation specialists)

Code	Age	Specialty	Education level	Experience (year)	Workplace
22	48	Occupational therapy	PhD, Associate professor	31	Rehabilitation Hospital
23	28	Physiotherapy	Bachelor's degree	5	Hospital and Private clinic
24	32	Occupational therapy	PhD candidate	6	Private clinic
25	54	Technical orthopedics	Bachelor's degree	30	Iranian Red Crescent Society

**Table 4.** Categories and subcategories

Main categories	Subcategories
Supportive community	Family support
	Friend and acquaintance support
	Peer support
Optimized health services	Compliance with hygiene principles
	Facilitation of vaccination
Therapeutic facilities	Providing in-person services
	Providing non-face-to-face services
Reliance on individual abilities	Self-efficacy
	Motivation and hope

#### *Compliance with hygiene principles*

Individuals with SCI only visited those rehabilitation centers in which the staff followed all health principles. According to the participants, compliance with public health principles during the COVID-19 outbreak led to the safe use of rehabilitation services, hence not stopping the process of receiving rehabilitation services. This subcategory included compliance with hygiene principles by the individual himself, the individual's family, and the rehabilitation staff. A participant stated, "I have seen many times that my physiotherapist follows all health principles, so I feel relieved that I would not be in danger of being infected with the coronavirus" (Participant 15). One of the rehabilitation specialists stated, "We usually go well equipped with shields, goggles, masks, two or three layers of masks, and gloves. Caregivers and patients themselves observe hygiene" (Participant 21).

#### *Facilitation of vaccination*

Individuals with SCI stated that after vaccination, they were less worried about accessing rehabilitation services and went to rehabilitation centers more easily. One of the participants stated, "Before I was vaccinated, we could not attend occupational therapy or physical therapy sessions at all. But after I was vaccinated, I could go there without worrying and without much difficulty due to strict health protocols" (Participant 9).

#### *Therapeutic facilities*

Therapeutic facilities included providing in-person services and providing non-face-to-face services.

#### *Providing in-person services*

This subcategory included providing services at home

and providing services at a lower cost which would both help individuals with SCI to continue their rehabilitation treatment without feeling worry. One of the participants stated, "I have no problem. My physiotherapist comes home every day for physiotherapy. He also receives less money" (Participant 16).

#### *Providing non-face-to-face services*

This subcategory included providing rehabilitation services through virtual platforms, phone calls, and written exercises by the therapist. One of the participants stated, "The occupational therapist visits me online and shows me what exercises to do at home and I would call her and she would answer and guide me" (participant 19). Another participant stated concerning providing written exercises by the therapist, "We gave them the exercises. We took a printout and gave them the first session" (Participant 21).

#### *Reliance on individual abilities*

The other category identified in this study was reliance on individual abilities which was further divided into self-efficacy and motivation and hope.

#### *Self-efficacy*

Self-efficacy included performing rehabilitation exercises at home and repairing assistive devices by the patient himself. One of the participants said, "I work by myself. I know the same exercises that work with me" (Participant 3). Another participant added, "Since I was a technician, my wife sits next to me and I tell her which one to open and which one to close" (participant 10).

#### *Motivation and hope*

This subcategory included sufficient determination to continue the rehabilitation process and awareness of the positive effects of rehabilitation. One of the participants stated, "He is constantly following rehabilitation exercises and does not care about other things like corona. My son's mood is good. The rest of the patients do two exercises, but my son does four" (Participant 19). Another participant stated, "Rehabilitation and occupational therapy are like oxygen for me and people like me. I have to continue. Well, under any circumstances, be it coronavirus or any other disease, I have to continue. If I don't continue, I'll lose everything I've gained, I'll go back to my first days" (Participant 2).

## Discussion

This study was conducted to identify the factors facilitating the access of individuals with SCI to rehabilitation services during the COVID-19 pandemic based on in-depth interviews with three groups including individuals with SCI, their caregivers, and rehabilitation specialists in Tehran. The first category identified in this study was supportive community, and one of its subcategories was family support. The participants considered having appropriate family support to be an important factor in accessing rehabilitation services. Schwartz et al discovered that family members took on the role of rehabilitation providers during the coronavirus pandemic, which was an important factor in the continuation of their rehabilitation (6). Another facilitating factor identified in this study was friend and acquaintance support. Communication with friends and acquaintances maintained social relationships and was considered a force for better coping with the conditions caused by the coronavirus outbreak. In Razzaghi and colleagues' study, fostering friendships promoted the ability to cope with problems and ensured that those who sought empowerment returned in a timely and more appropriate manner to their relatively normal lives (33). The other facilitating factor was peer support. Schwartz et al (6) reported that loss of peer support was one of the changes that occurred during the coronavirus pandemic. This difference in research results can be justified. As pointed out by the participants in the present study, face-to-face communication with peers decreased during the coronavirus outbreak, but non-face-to-face communication continued. In general, according to this study, the support provided by family, friends, acquaintances, and peers was the most important factor in facilitating access to rehabilitation services during the COVID-19 pandemic for people with SCI.

The second category identified in this study was optimized health services. The most important issue in receiving rehabilitation services during the coronavirus outbreak was the possibility of virus transmission, which was greatly reduced by following the health principles. Compliance with public health principles during the outbreak of the coronavirus led to the safe use of rehabilitation services; thus, the process of receiving rehabilitation services did not stop. In a study by Swarnakar and Santra, taking care of personal hygiene was important to prevent infection (34). Stangerup et al also concluded that most healthcare workers have changed their point of view on personal hygiene due to the outbreak (35). However, after the control of meetings for hygiene compliance was halted, hand hygiene by health workers was also reduced over time. Other studies have also reported that healthcare workers are more concerned about protecting themselves from germs than protecting patients when it comes to keeping their hands clean (36,37). Considering that the patients' point of

view about using medical services during the outbreak of infectious diseases is focused on the observance of health by the medical staff, especially rehabilitation specialists, it is necessary for the Ministry of Health to continuously emphasize health issues. Another factor identified in this study was facilitating vaccination. Due to the fact that people were at a lower risk of getting infected with the coronavirus after vaccination and the barriers to access to rehabilitation services were largely removed by vaccination, vaccination played an important role in facilitating access to rehabilitation services. Moreover, administering vaccines at home greatly helped individuals with SCI who were unable to leave the home. Due to the limited mobility of individuals with SCI and their weak immunity, it was difficult to stand in long lines for vaccination and it increased the possibility of spreading the virus. Therefore, vaccinating these people inside a private car by the medical staff or doing it at home by acquaintances helped them a lot.

The third category identified in this study was therapeutic facilities which help make the access to rehabilitation services easier by providing both in-person and non-face-to-face services. In-person services include providing services at home. Many rehabilitation services require in-person visits. Falvey et al explained that during the coronavirus outbreak, it was important to use rehabilitation services at home (38). Providing non-face-to-face services was another facilitating factor. According to Jonsdottir et al (14), physical therapists have to come up with new ways to provide rehabilitation services. These strategies include talking to clients using mobile phone apps, making videos to help with rehabilitation exercises, and using sports websites. Mehta et al found in a study that people with SCI were satisfied with online physical activity training and that the online rehabilitation program was beneficial for their physical and psychosocial well-being (39). Because of the upward trend of the coronavirus disease, clients and rehabilitation specialists did not consider direct interaction in the services as safe and to reduce this risk, they looked for safe communication to provide services. Accordingly, the rehabilitation process of some individuals with SCI changed.

The other category identified in this study was reliance on individual abilities which was subcategorized into self-efficacy as well as motivation and hope. Self-efficacy included doing exercises and repairing auxiliary devices by the individual himself. In a study on individuals with SCI, Baehr et al concluded that most strategies are learned and practiced by the individuals themselves (40). Li et al also analyzed self-efficacy indicators among individuals with SCI hospitalized for restoration care and showed the participants' level of self-efficacy was lower than anticipated (41). Considering the role of self-efficacy in coping with critical conditions, it is suggested that rehabilitation specialists, especially occupational

therapists and psychologists, focus on improving the self-efficacy level of these patients. Furthermore, according to the experiences of some participants, one of the factors that caused individuals with SCI to overcome the difficult conditions of the coronavirus pandemic and continue to receive rehabilitation services was psychological factors including motivation and hope in these individuals. According to some participants, determination to follow occupational therapy and physical therapy sessions and perform exercises at home was an important facilitating factor in accessing and using rehabilitation services during the coronavirus pandemic. Individuals who had enough determination to follow up their treatment sessions during the difficult times of COVID-19 have gained more access to rehabilitation services due to their efforts. Besides, according to the individuals with SCI and their caregivers, awareness of the effect of rehabilitation services on reducing fatigue and weakening of physical strength, improving nerve and muscle pains, and preventing bed sores, encouraged them to continue rehabilitation during the coronavirus pandemic. This, in turn, has had a significant impact on the follow-up of rehabilitation specialists' instructions by individuals with SCI. Wilbanks and Ivankova reported that the main factor that helped adults with spinal cord injuries get back to work was their strong motivation which helped them find good things to focus on during rehabilitation (42). This shows that motivation in individuals with SCI is very important in trying to get back to life.

One of the most important limitations of the present study was the difficulty in accessing individuals with SCI in daycare centers. The reason for this restriction was that the SCI associations of Tehran did not cooperate with the researcher despite the presentation of a valid letter of introduction from the University of Rehabilitation Sciences and Social Health. To overcome this limitation, it was attempted to select participants from among the individuals admitted to the SCI Department of Rofeideh Hospital and private rehabilitation centers from all areas of Tehran province, under the supervision of the Ministry of Health.

### Conclusion

The findings of the present study showed that providing therapeutic facilities was the main factor facilitating access to rehabilitation services for individuals with SCIs during the COVID-19 pandemic. Moreover, policymakers can take basic measures to improve the access of individuals with SCI to rehabilitation services through the virtual space. Officials and policymakers must help individuals with SCI to achieve their human rights in rehabilitation and improve their health by formulating detailed plans and reforming executive structures. It seems that strengthening facilitators can increase the intensive care staff's acceptance of this information system and reduce

their cultural resistance toward it. It is suggested that further studies be conducted concerning training families and caregivers on how to receive rehabilitation services and determine the effectiveness of using non-attendance services at times of crisis.

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### Authors' Contribution

**Conceptualization:** Ghazaleh Mandani, Narges Ghafarzadeh Namazi.

**Data curation:** Narges Ghafarzadeh Namazi, Ghazaleh Mandani.

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### Competing Interests

The authors did not declare any conflict of interest in the present study.

### Ethical Approval

This study was approved by the Ethics Committee of the University of Social Welfare and Rehabilitation Sciences with the Code of Ethics IR.USWR.REC.1401.207. The codes approved by the National Committee of Ethics in Medical Sciences were also followed in this study. All ethical considerations including obtaining informed consent, voluntary participation, explaining the objectives of the study to the participants, and ensuring the confidentiality of the data were observed.

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