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Evaluation of the Quality of Current COVID-19 Resources Developed for Individuals with Spinal Cord Injuries: A Scoping Review

Pegah Derakhshan[1,2,3], William C. Miller[2,3,4], Ethan Simpson[2,3,4], Christopher B. McBride[5], Jaimie Borisoff[3,4,6], Julia Schmidt[2,4], W. Ben Mortenson[2,3,4]

[1] Graduate Program in Rehabilitation Sciences, UBC, Vancouver, BC, CA
[2] Centre for Aging Smart Rehabilitation Research Program, GF Strong Rehabilitation, UBC, Vancouver, BC, CA
[3] International Collaboration on Repair Discoveries (ICORD), Vancouver, BC, CA
[4] Department of Occupational Science & Therapy, UBC, Vancouver, BC, CA
[5] Spinal Cord Injury British Columbia, Vancouver, BC, CA
[6] British Columbia Institute of Technology (BCIT), Burnaby, CA

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ABSTRACT

Introduction: During the COVID-19 pandemic, there was an urgent need for information on dealing with it among people with spinal cord injuries (SCI). Organizations provided resources, but many of them were generic. In some cases, the information was provided by dubious sources, contradictory, or not assessed for usability with individuals with SCI. This study reviewed COVID-19 web-based resources for individuals with SCI and evaluated their quality.

Methods: A scoping review for COVID-19-related web-based resources for individuals with SCI was performed by first identifying SCI-relevant organizations and, subsequently, targeted website searching using a systematic search strategy in May 2021. The included resources were categorized based on their content and format (e.g., video, infographic, text). The resources were evaluated using tools that had been previously validated.

Results: Our search identified 71 SCI organizations and 10,538 potential resources. Based on inclusion and exclusion criteria, 112 resources were included and categorized based on their content into ten main domains: prevention, caregivers, exercise, mental health, stories, telehealth, specific organs/systems, report of evidence, SCI network COVID-19 response and COVID-19 communication rights toolkit. The average score for the quality of the text, infographic, and video resources are 9.72/28 (Range:3-24), 37.75/44 (Range:35-41), and 59.14/80 (Range: 49-75), respectively.

Conclusion: Website resources mainly focused on preventing COVID-19. Only five of them addressed telehealth during COVID-19 for individuals with SCI. The results of this study will inform the development of SCI-oriented toolkits for future pandemics.

Introduction:

The COVID-19 pandemic had a considerable impact on the lives of all individulas. [1–4]The necessity of physically distancing lead to widespread disruptions of social activities and interactions.[5] While necessary, the broader impacts of COVID-19 measures have shown substantial deficits in areas such mental and physical health, education, economy and domestic abuse.[5,6]

Vulnerable populations, such as individuals with spinal cord injury (SCI),[7] may experience exacerbated negative impacts. For example, the requirement could make it especially problematic for wheelchair users to maintain effective hand washing and social distancing in certain situations.[8] Individuals with SCI have a higher level of loneliness than the average population, COVID may have led to increased social isolation. What is more, the access to essential services for individuals with SCI is of concern during the pandemic.[9] These include accessing the sufficient caregiver coverage and risk of infection by contacting caregivers, maintenance of specialised equipment, and access to medical care.[9–11]

COVID-19 web-based resources appeared almost overnight. Some targetied the gneral population while others targeted vulnerable segments of the population. Many of these targeted resources were developed and hosted by organisations created to provide support and address and alleviate COVID-19 related concerns. Such is the case for individuals with SCI. Given the immediate need for the resources many were expedited towards publication. It remains unclear how well they actually address the experiences, needs and coping requirements of individuals with SCI.[12,13] For instance in some cased the information provided was not evidenced based, contradictory, or not evaluated for individuals with SCI. For example, a study by Stillman et al. (2020) found that many COVID-19 guidelines failed to consider the specific vulnerabilities and healthcare needs of SCI patients, such as respiratory complications and limited access to personal care assistance, which are critical during the pandemic.

Accurate, comprehensive and practical information resources is necessary for management of public prevention behaviour and maintaining the mental health of individuals with SCI.[14] The objective of this scoping review was to systematically catalog, evaluate and synthesize COVID-19 web-based resources for individuals with SCI.

Methods:

The scoping review was executed in five stages, described by Arksey and O'Malley's framework,[15] including (1) identifying the research question; (2) identifying relevant studies; (3) selecting the studies; (4) charting the data; (5) collating, summarizing, and reporting the results.

The scoping review co-created with of SCI-BC, is built on two main research questions: "What is the extent, range, and focus of the web-based information resources on COVID-19 for individuals with spinal cord injury during the COVID-19 pandemic?" and "What is the quality of the available information resources?"

IDENTIFYING SCI-RELATED RESOURCES:

A grey literature search plan was established in collaboration with a research librarian. This plan involved two steps of identifying relevant organizations and search & documentation strategies. [15]

Step 1: Identify Relevant Organizations:

To search for relevant spinal cord injury organization websites and other web-based sources of SCI information we applied three different strategies including: 1) conducting a google search on the topic of 'spinal cord injury' and searching through the first ten pages to find their publishers; 2) reviewing grey material from the Canadian Agency for Drugs and Technologies in Health (CADTH) checklist of health organizations; and 3) organizing a brainstorm session with expert research team members (WBM, WCM, CBM) to identify potential organizations, or partners relevant to spinal cord injury. Using these three steps we found 71 SCI related organizations.

Step 2: Search & Documentation Strategies:

This step is an integration of four different searching strategies for searching and documenting information sources. These strategies were adapted from the method outlined in an article by Godin et al. [16]

(1) Grey literature data bases: This step enabled us to search databases that list grey literature records and provide indexing for web-based resources. A search was conducted on May 25, 2021 and included two databases: The *Canadian Electronic Library—Canadian Public Policy Collection*, and the *Canadian Electronic Library—Canadian Health Research Collection*. We adapted our search terms to fit each database including using two group search terms: 1) "Spinal cord injury" and 2) "COVID-19". An Excel spreadsheet was used to list the results of our database search and the inbuilt 'remove duplicates' function excluded any duplication.

(2) Customized Google search engines: Conducting a Google search for information resources published on the internet is our second and main strategy. In order to narrow our search result to the specific subject of our research we use the customized google search engine for Canadian public health information and government documents, which allows for a more targeted and refined search. Websites searched this way include ones by public health agencies, collaborating centers, provincial and federal health departments of Canada. This custom search engine created by the association of Ontario's Public Health Libraries. The search strategy in [Appendix 1] was implemented. The following search strategy was applied: Potentially relevant records were bookmarked in the web browser used at the time of searching (Google Chrome) and later entered into an Excel spreadsheet.

(3) Targeted websites: Websites of relevant health agencies and organizations, which were identified in the first step, were browsed and each website's homepage was thoroughly searched for relevant information resources. The date of this search was May 29, 2021. Furthermore, the same strategy was applied to a search on the custom Google search engine for the website of each organization. The top 100 results, were checked for relevancy (text underneath the title was considered). An

Excel spreadsheet was used to compile the URL and organization name of each website. With the help of a combination of keywords each website was subsequently searched in detail.

(4) Consultation with contact experts: This strategy, used to identify information resources for screening, involved contacting content experts to identify other items for possible inclusion in the review. Content experts are considered to be individuals who are experienced in the field of spinal cord injury and most likely to be familiar with relevant resources. In this study we contacted five experts including from Spinal Cord Injury BC (CBM), and Spinal Cord Injury Research Evidence (SCIRE) project (WBM, WCM), as well as the International Collaboration on Repair Discoveries (ICORD) (WBM, JB, WCM) and Rehabilitation Sciences of the University of British Columbia (JS).

SELECTING THE RESOURCES:

Inclusion criteria for selecting resources were as follows: 1) Resources specifically designed for individuals with spinal cord injury, 2) Resources specifically designed for the COVID-19 pandemic, 3) Resources designed in English for English language speakers. In discussion with two undergraduate students, the original database search was conducted by the first author (PD). A total of 10,538 potentially relevant results were identified and compiled on an Excel sheet. The first author removed duplicates (n= 3,259) leaving 7,279 remaining to screen (Fig 1). A subsequent discussion among the three researchers about the inclusion or exclusion of each resource based on its relevancy reduced this number to 171 resources (Fig 1).

The most common reason for the exclusion of a resource was that the website has some sub link with COVID-19 caution or information, but that information resource was not describing any information about COVID-19 (n=4578). Other resources excluded were either not designed specifically for COVID-19 and/or individuals with spinal cord injury (n=2347) and designed for non-English audiences (n=183) (Fig 1).

CHARTING THE DATA:

One hundred and seventy-one selected resources were reviewed using a template designed by all three authors. A study flow diagram, recommended by PRISMA, for describing the selection and screening process of our study [21], was applied to the methods of grey literature search. A numeric code was assigned to each resource to detail the reason for exclusion (Fig 1).This numeric code was recorded for each resource at both stages of the screening process. All items still deemed relevant after full-text screening are included in this scoping review.

COLLATING, SUMMARIZING, AND REPORTING THE RESULTS:

After a full review of each resource included in our case study, core data was extracted related to the date of realization, the organization publishing the resource, the focus topic of the resource's content, the date and time each resource was first reviewed by one of our three researchers, the estimated time to study the resource, and the format of the resource. Using a narrative synthesis, (i.e., relying on a written explanation of the findings of the concluded synthesis), each resource's content was summarized. Based on this narrative, the focus of the content of each resource was chosen as theme of the resource by the three researchers (PD, NT, CH). The included resources were categorized based on their format, including video, infographic, and text.

Evaluating the Quality of Resources:

We evaluated the content quality of the included resources using the following tools based on the format of each resources.

1. DISCREN:

The DISCERN questionaire[17] was used to evaluate the quality of video resources. The University of Oxford and employees of the British Library collectively developed the underlying DISCERN scoring system. It can be used by health professionals as well as their patients and the general population as a critical assessment tool to evaluate health information by providing a standardized quality index containing the health information of consumers. With the help of patients in a self-help group, health information providers and an expert panel, the questionaire was systematically derived.

DISCERN includes 16 questions in three sections, including reliability , dependibility, and trusthworthiness of web-based resources (question 1 to 8), quality of information about treatment choice (question 9 to 15), and overall quality (question 16). All questions are on the countinious Likert scale of 1 (definite NO) to 5 (definite YES). The total score of the first 15 questions is reported; ranging from 5 to 75; A higher score represents a better quality of health information. Cronbach's alphas within the current study ranged from 0.73 to 0.80.

2. QUEST- Quality of Web-based Health Information:

QUEST[18] is used to evaluate the quality of information resources in text format. It lets users assess the quality of web-based articles in a reliable and valid way and is accessible for researchers and health care professionals alike. A total of seven different aspects with regards to the quality of health information available online is measured quantitatively by the questionnaire. A weighted score, detailed in the following, is assigned to each of the seven aspects:

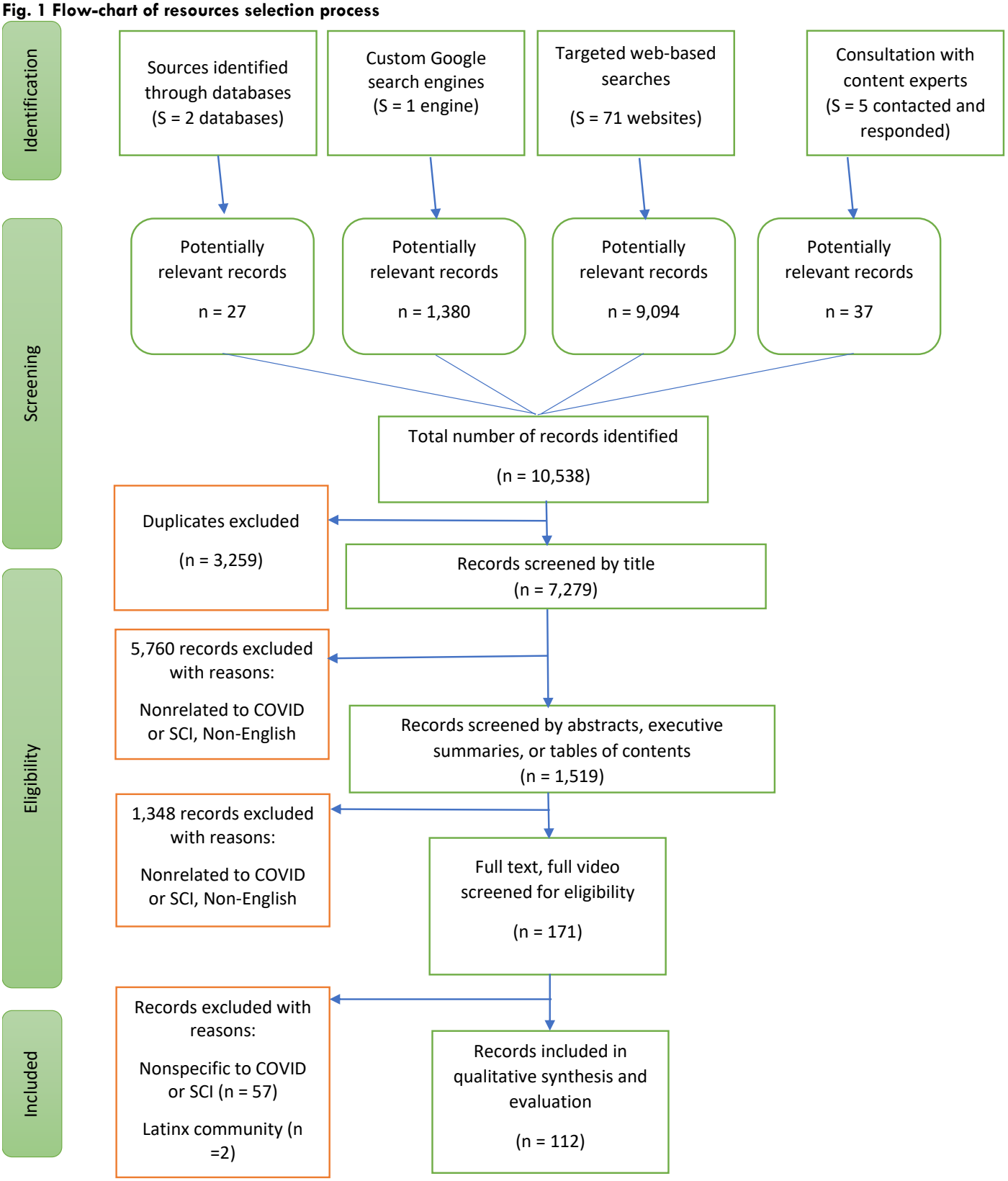
Authorship (score range from 0-2, weighting 1), attribution/presence of references (score range from 0-3, weighting 3), attribution/type of study (score range from 0-2, weighting 1), conflict of interest (score range from 0-2, weighting 3), currency (score range from 0-2, weighting 1), complementarity (score range from 0-1, weighting 1), and tone (score range from 0-2, weighting 3). The total score is given in a range between 0 and 28; higher scores represent a better quality. Cronbach's alphas within the current study ranged from 0.91 to 0.94.

3. Infographic Design Rubric (IDR):

We used IDR[19] to evaluate the quality of infographic resources. Centered on content generation and on the dimensions of IDM for visual design generation, which are to be applied in the process of evaluating and creating infographics, the following criteria of IDR were generated. This rubric measures three aspects of the quality of infographics, including content generation (main heading and sub-headings), organization of

information (grouping, systematics, and consistency), and the quality of information (essential information, key concepts, description, exemplification, outcome, and identity). All questions are on the countinious scale of 1 (unacceptable) to 4 (exemplary). The total score of all questions is reported; ranging from 11 to 44; higher scores shows a better quality of infographic.

Fig. 1 Flow-chart of resources selection process



Results:

The included 112 resources from 28 organisations [Tabel 1] were categorised, based on narrative synthesis, into ten themes, including General Information and Prevention, Caregivers, Exercise and Rehabilitation, Mental Health, Stories Regarding the Impact of COVID-19 on Individuals with SCI, Report & Review of Evidence/Publications, SCI Network Covid Response, Specific Organ Systems, Telehealth & Virtual Care, and the COVID-19 Communication Rights Toolkit. The characteristics of the categorised resources based on their theme were described in Table 2, including the organisations which designed and published them, the format of these resources, and the mean time of reading/watching the resources. (Table 2)

Table 1: Characteristics of Websites

		Number of resources
Country		
	Australia	**3**
	Canada	**49**
	United State	**49**
	United Kingdom	**11**
Name of Organization		
	Agency for clinical innovation	**1**
	American Spinal Injury Association	**2**
	Back Up	**2**
	FacingDisability	**4**
	International Spinal Cord Society	**1**
	Kennedy Krieger	**1**
	Kessler foundation	**2**
	North American Spinal Cord Injury Consortium	**11**
	New Mobility	**11**
	National Institute for the clinical application of Behavioral Medicine	**1**
	The Perry Cross Spinal Research Foundation	**1**
	Praxis- Spinal Cord Institute	**2**
	Paralyzed Veterans of America	**1**
	Rick Hansen Foundation	**1**
	South Carolina Spinal Cord Injury Association	**1**
	SCI Everything	**3**
	Spinal Cord Injury- Ontario	**1**
	Spinal Cord Injury- Washington	**1**
	Spinal Cord Injury- British Columbia (BC)	**18**
	Spinal Cord Injury- Canada	**5**
	The Spinal Cord Injury Research Evidence (SCIRE) Project	**17**
	Spinal Cord Injury- Saskatchewan	**2**
	Shepherd Center	**1**
	Spinal Cord Injury Research Center at Mount Sinai	**1**
	Spinal Cord Injury Zone	**6**
	Spinal Cord Injury- UK	**9**
	Spine universe	**2**
	United Spinal Association	**3**

Table 2: Characteristics of resources included

Themes	**Number of Resources**	**Name of Organizations**	**Total Estimated Time (in minutes)**	**Type of Resource**	**Mean Score of the Evaluation of Each Type of Resource**		
					Texts by Quest (Range: 0-28)	**Videos by Discern (Range:5-75)**	**Infographics by IDR (Range:11-44)**
General Information and Prevention of COVID-19	54	Agency for Clinical Innovation, Craig Hospital, Facing Disability, Kessler Foundation, NASCI Consortium, New Mobility, ParaQuad South Australia, Perry Cross Spinal, Praxis, PVA, Rick Hansen, SCI Washington, SCI-BC, SCI-Can, SCIRE, Shepherd, Spinal Cord Injury Zone, Spinal UK,	2,519	Text, Video, Infographic	9.15	58.60	38.67
Caregivers	4	SCI-BC, SCIRE, SCI Everything	941	Text, Video, Infographic	11.5	60.00	35

Themes	Number of Resources	Name of Organizations	Total Estimated Time (in minutes)	Type of Resource	Mean Score of the Evaluation of Each Type of Resource		
					Texts by Quest (Range: 0-28)	Videos by Discern (Range:5-75)	Infographics by IDR (Range:11-44)
Exercise and Rehabilitation	7	SCIRE, Craig Hospital, NASCI Consortium, SCI-BC	2,326	Text, Video	6	62.75	NA
Mental Health	12	SCIRE, SCI-Canada, SCI Research Center at Mount Sinai, Facing Disability, United Spinal, NASCI Consortium, SCI-BC	2,787	Text, Video	8.85	59.59	NA
Stories Regarding the Impact of COVID-19	10	New Mobility, Back Up, United Spinal	2,840	Text	8.68	NA	NA
Telehealth & Virtual Care	5	Spine Universe, United Spinal, NASCI Consortium	1,872	Text, Video	9.57	68.5	NA
Specific Organs/Systems	3	SCI Everything, SCI-BC	812	Video	NA	59.5	NA
Report & Review of Evidence/Peer-Reviewed Publication:	10	SCI-CAN, ASIA, SCI-BC, NASCI Consortium, International Spinal Cord Society, United Spinal	3,073	Text, Video	18.8	65	NA
SCI Network Covid Response	6	Spinal UK, SCI-Saskatchewan, SCI Ontario, SCI Research Center at Mount Sinai, NASCI Consortium	1,913	Text, Video	9.01	58	NA
COVID-19 Communication Rights Toolkit	1	SCI-Canada	15	Text	10	NA	NA

Themes of the resources:

1. General Information and Prevention of COVID-19:

Resources in this theme mainly contain information about the coronavirus and its symptoms, how differently it affects individuals with spinal cord injury, risks for this specific part of the population (16 resources) and the steps of preventing an infection (30 resources). Six resources are about the information on vaccine updates and their effect on individuals with SCI. One of the resources is about ways of not contracting Covid-19 during travel for individuals with SCI, another one about how to prevent Covid-19 by choosing the right diet. This information is covered by 18 organizations using three types of resources: video, infographic, and text.

2. Caregivers:

Two out of four resources in the caregivers' theme give general information on steps and instructions for caregivers during COVID-19 to be more helpful for individuals with SCI and about the different ways they can manage their stress as well as improve the mental health of them and their patients. One of the resources is an infographic gives instructions on hygiene, using personal protective equipment, as well as creating a backup care plan. Another one is a 25-minute-long video by SCI Everything on mental health distress and the role of peer support in coping for caregivers. The remaining two resources are in text format.

3. Exercise and Rehabilitation:

There are seven resources included which focus on exercise and rehabilitation. Before the full text screening step, based on the inclusion and exclusion criteria, we had a list of 16 resources on exercise and rehabilitation, but most of them were excluded as they were not designed for COVID-19 or individuals with SCI specifically. Some of the organizations use videos shot for individuals with mobility impairment before COVID-19 for the time during COVID-19.

From the included resources in this theme, four of them were videos discussing the benefits of exercise during physical distancing and show the exercise in a practical way. The ones which consist of a panel on the benefits of exercise are around an hour in length, however, the ones which include a discussion with individuals with spinal cord injury while showing the different types of exercise of individuals with spinal cord injury took 14-18 minutes.

The remaining three resources are texts, giving information on how to stay motivated, providing exercise guidelines, considerations for exercising at home, and recommendations, as well as showing equipment and replacement options.

4. Mental Health:

Twelve resources are included, focusing on the mental health of individuals with spinal cord injury during COVID-19. These resources provide information to aid the understanding of social isolation and how to manage it, identifying mental health concerns during social isolation and different strategies of coping with it while supporting others during COVID-19, different ways of improving mental health and reaching out for help such as support groups or hotlines. Also, they facilitate access to therapy, and explain self-help during COVID-19.

Four of the resources are videos, each of them more than 50 minutes in length, focusing on social isolation and how to cope with it. One of the videos details how to handle misinformation on COVID-19 so as to not affect the mental health of individuals. Other resources are in text format and cover the other subjects mentioned above.

5. Stories Regarding the Impact of COVID-19 on Individuals with SCI:

Three organizations, including Back Up, New Mobility, and United Spinal developed 10 resources in total on the personal experience of individuals with spinal cord injury, letting them use their own words. Each story has its own topic, such as their feelings during social isolation, or when some of their family or friends passed away. All of these resources are in text format with a couple of pictures from the storyteller and their situation.

6. Telehealth & Virtual Care:

There are five resources which focus on telemedicine. Two of them are webinars within the SCI community to connect and have an open dialogue about virtual care and assistance. The remaining ones are in text format and discuss virtual appointment tips and telehealth.

7. Specific Organs/Systems:

Three of the included studies are specifically focused on one organ system including the respiratory system and the urinary tract system, and the effect of COVID-19 on them for individuals with spinal cord injury. All of these resources provide information from an expert of the field and a question-and-answer panel from individuals with spinal cord injury. They cover topics such as lung health, respiration/intubation, and mask usage for individuals with SCI.

8. Report & Review of Evidence/Peer Reviewed Publication:

This theme, including ten resources, consists of peer reviewed publications on spinal cord injury, uploaded to the website of the organizations, as well as safety protocols and changes in therapy of individuals with SCI. We put all of these resources in one theme as the audience groups are directly researchers and clinicians in the field of spinal cord injury, however, individuals with spinal cord injury have access to them via the related organizations and can learn about their specific situation. Three of these resources are videos, webinars focused on advocacy challenges and the review of literature on COVID-19 and SCI.

9. SCI Network Covid Response:

This theme consists of six resources, all of them giving information on how their own organization responds to or addresses challenges of the spinal cord injury community during COVID-19, such as increasing services and funding, or inviting to webinars to share information. All of them except one, which is a recorded webinar video, are in short text format.

10. COVID-19 Communication Rights Toolkit:

There is only one resource which focuses on the communication right of individuals with spinal cord injury during a quarantine, an emergency, and in the hospital. This toolkit is cited on other websites three times but is the single resource we can find in this regard.

Evaluation of the Quality of the Resources:

The included resources consist of four infographics, 28 videos, 80 website texts. Generally, the average score for the quality of the text, infographic, and video resources is 9.72/28 (Range:3-24), 37.75/44 (Range: 35-41), and 59.14/80 (Range: 49-75), respectively.

Videos:

Twelve (44%) and fourteen (52%) videos have a good and excellent score, respectively. In general, videos score poorly with regards to the shared decision making. In the "reliability" domain, approximately 70% of the videos mention or cite which sources of information are used to compile the resource. The highest quality of videos is related to the prevention and the lowest is related to the general information on COVID-19.

The median length of the videos is 53.5 minutes; The longest one is webinars with 83 minutes on prevention, and the shortest one is with 13 minutes on exercise during the COVID-19 time.

Infographics:

There are only four resources designed in infographic format and all of them had good to excellent scores (35 to 41 out of 44). Two of them do not mention the source of the information and the other two omit the date of designing the infographic.

The median time for reading the infographics is five minutes. The longest one is a infographic on handwashing (ten minutes).

Text:

In general, most of the texts score poorly regarding the tone, i.e., the authors' claims are not balanced by caution, and repeatedly contain statements of contrasting findings or limitations. Regarding attribution, most of the resources mention an expert source, but include insufficient information to identifiable studies.

The median time for reading the texts is seven minutes. The longest one is regarding a publication on respiratory infection with 35 minutes, and the shortest one is exercise and rehabilitation with five minutes.

Discussion:

This study applies a comprehensive and explicit method of scoping review with systematic review search strategies to identify 112 website resources from 28 organizations, extracting ten different themes, which detail the focus of each resource. Our study shows that this focus is unevenly distributed. More than half of the sites focus on answering the question of what the coronavirus and its symptoms are, how differently it affects individuals with SCI, and how to prevent it. This is perhaps explained by the fact that COVID-19 was a new and mysterious virus in 2020, causing fear of the unknown and leading to a high amount of uncertainty in society.[20] This fear is exacerbated for individuals with SCI, because a couple of early studies mention that these individuals might have a higher risk of being infected by COVID-19 while also developing more serious symptoms than the general population.[21] Giving a reliable answer to questions about the nature of COVID-19 and how it effects the SCI community may help people manage their anxiety and cope with the unfamiliar situation.[20] Moreover, individuals with SCI were thought to need different measures and guidelines to prevent an infection

with COVID-19 compared to the general population due to the nature of their impairment;[8] for instance, a specific protocol for hand washing while also having to use their hands to propel a manual wheelchair. This study shows that organisations addressed this issue properly in terms of the quantity of resources made available to the public. However, there is still a need for improvement with regards to the quality of information by providing scientific citations and weighing conclusions with caution.

Our study shows that the second most common theme, but only subject of about 10% of the resources, was focused on mental health. Research has raised concerns regarding the negative effects of COVID-19 on the mental health of individuals with SCI.[7] To address this concern, researchers suggest screening individuals for their overall resilience. In cases where people exhibit a low resilience score, it was recommended they be offered appropriate resources and support to improve their general well-being.[22] One of these resources could be an information resource. However, the researchers did not explicitly mention what kind of content in these resources would be most beneficial. These resources cover information on how to cope with social distancing and provide hotlines for emergency situations. One of those resources additionally provides information on support groups meetings. Studies show that social support, in this case by attending these kinds of meeting, is highly beneficiary for improving mental health during COVID-19.[23] However, the included resources barely mention the symptoms that would require individuals to seek help or explain the role of caregivers in improving the mental health of individuals with SCI. For this reason, our study recommends that more information of this type should be made available in future resources.

Other SCI-related themes are covered by less than ten resources, perhaps due to resources not being specifically designed for individuals with SCI in times of COVID-19. COVID-19 communication rights and tele-health are emerging subjects. The former is the only toolkit on communication rights, designed by Communication FIRST.[24] The latter, tele-health, while established before COVID-19, and greatly expanded during it, was reported to be still encountering a number of challenges, which require additional guidelines and training.[25]

On the other hand, evidence of increasing the physical activity of individuals with SCI being beneficial to physical and mental health suggests that tele-exercise has the potential to be critical in counteracting the forced inactivity caused by the COVID-19 pandemic.[26] However, this study showed that most resources use non-specific videos about physical activity geared towards the general population, results in some of them not being practical or doable for individuals with SCI. Over the course of the last few years, the number of publications focusing on these neglected themes has been increasing. For that reason, we can anticipate the quality of informational resources to be improving as well. There is an opportunity now to increase knowledge and implement better interventions tailored towards each of these subjects.

The current study showed that the most and the least efficient information resource in terms of time consumption are infographics and videos, respectively. However, videos give the user the opportunity to absorb the information in a more practical way, for example by visually demonstrating physical exercise. In general, the parameter with the lowest score of each type of informational resource is the lack of attribution, i.e., the insufficient source of the evidence. This is of great importance, as it makes it difficult to doublecheck presented evidence and learn about it in greater detail. However, we must take into account that a low rating in this area does not mean that the information is not accurate. Instead, having a high rating demonstrates that the source of the evidence is explicit, thus meeting our criterion.

There are 2 main limitations to our study. First, our search was limited to resources in the English language. This may have caused a language bias, which narrowed our range of literature. And second, we did not carry out a formal appraisal of the quality and accuracy of the included resources. Instead, a descriptive analysis was completed, in line with the methodology of scoping reviews.[14]

Conclusion:

In conclusion, this review provides helpful information regarding information resources for individuals with SCI. A significantly uneven distribution of subjects covered by the examined resources is identified. Resources are mainly focused on preventing COVID-19, and only three of them address tele-health and virtual care during COVID-19 for individuals with SCI. The results of this study suggest resources be designed based on the emerging knowledge and recommendations of recent publications while tailoring the information resources specifically for the target audience. There is a need for qualitative studies to understand individuals' requirements regarding information resources during the pandemic. The evaluation of the quality of resources shows that infographic resources generally achieve a higher score compared to texts and videos, however, the attribution of the resources needs to be improved. This study suggests that creators of information resources use a valid and reliable rubric or checklist for the design of their work. Its results will help us develop an SCI-oriented toolkit for this pandemic and future ones. The insights gained from this study highlights the ongoing need for well-designed information resources that can be quickly adapted for future health crises, ensuring that individuals with SCI continue to receive the support they need.

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Appendix 1:
Search strategy :
("COVID" OR "COVID-19" OR "coronavirus" OR "corona-virus" OR "corona") AND ("Spinal Cord Ischemia "OR "Spinal Cord Vascular" OR "Spinal Cord Neoplasms" OR "Spinal Cord Diseases" OR "Central Cord Syndrome" OR "Paraplegia" OR "Quadriplegia" OR "spinal cord injur*" OR "SCI" OR "tetraplegia")

Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) Checklist

SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON Line #
TITLE			
Title	1	Identify the report as a scoping review.	1-2
ABSTRACT			
Structured summary	2	Provide a structured summary that includes (as applicable): background, objectives, eligibility criteria, sources of evidence, charting methods, results, and conclusions that relate to the review questions and objectives.	5-28
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known. Explain why the review questions/objectives lend themselves to a scoping review approach.	37-54
Objectives	4	Provide an explicit statement of the questions and objectives being addressed with reference to their key elements (e.g., population or participants, concepts, and context) or other relevant key elements used to conceptualize the review questions and/or objectives.	55-61
METHODS			
Protocol and registration	5	Indicate whether a review protocol exists; state if and where it can be accessed (e.g., a Web address); and if available, provide registration information, including the registration number.	Click here to enter text.
Eligibility criteria	6	Specify characteristics of the sources of evidence used as eligibility criteria (e.g., years considered, language, and publication status), and provide a rationale.	131-134
Information sources*	7	Describe all information sources in the search (e.g., databases with dates of coverage and contact with authors to identify additional sources), as well as the date the most recent search was executed.	89-129
Search	8	Present the full electronic search strategy for at least 1 database, including any limits used, such that it could be repeated.	104-107
Selection of sources of evidence†	9	State the process for selecting sources of evidence (i.e., screening and eligibility) included in the scoping review.	131-145
Data charting process‡	10	Describe the methods of charting data from the included sources of evidence (e.g., calibrated forms or forms that have been tested by the team before their use, and whether data charting was done independently or in duplicate) and any processes for obtaining and confirming data from investigators.	146-156
Data items	11	List and define all variables for which data were sought and any assumptions and simplifications made.	159-170
Critical appraisal of individual sources of evidence§	12	If done, provide a rationale for conducting a critical appraisal of included sources of evidence; describe the methods used and how this information was used in any data synthesis (if appropriate).	172-218
Synthesis of results	13	Describe the methods of handling and summarizing the data that were charted.	163-170
RESULTS			
Selection of sources of evidence	14	Give numbers of sources of evidence screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally using a flow diagram.	221
Characteristics of sources of evidence	15	For each source of evidence, present characteristics for which data were charted and provide the citations.	222-226
Critical appraisal within sources of evidence	16	If done, present data on critical appraisal of included sources of evidence (see item 12).	NA
Results of individual sources of evidence	17	For each included source of evidence, present the relevant data that were charted that relate to the review questions and objectives.	229-322
Synthesis of results	18	Summarize and/or present the charting results as they relate to the review questions and objectives.	324-351
DISCUSSION			
Summary of evidence	19	Summarize the main results (including an overview of concepts, themes, and types of evidence available), link to the review questions and objectives, and consider the relevance to key groups.	353-413
Limitations	20	Discuss the limitations of the scoping review process.	415-422

SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON Line #
Conclusions	21	Provide a general interpretation of the results with respect to the review questions and objectives, as well as potential implications and/or next steps.	424-436
FUNDING			
Funding	22	Describe sources of funding for the included sources of evidence, as well as sources of funding for the scoping review. Describe the role of the funders of the scoping review.	438

JBI = Joanna Briggs Institute; PRISMA-ScR = Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews.

* Where *sources of evidence* (see second footnote) are compiled from, such as bibliographic databases, social media platforms, and Web sites.

† A more inclusive/heterogeneous term used to account for the different types of evidence or data sources (e.g., quantitative and/or qualitative research, expert opinion, and policy documents) that may be eligible in a scoping review as opposed to only studies. This is not to be confused with *information sources* (see first footnote).

‡ The frameworks by Arksey and O'Malley (6) and Levac and colleagues (7) and the JBI guidance (4, 5) refer to the process of data extraction in a scoping review as data charting.

§ The process of systematically examining research evidence to assess its validity, results, and relevance before using it to inform a decision. This term is used for items 12 and 19 instead of "risk of bias" (which is more applicable to systematic reviews of interventions) to include and acknowledge the various sources of evidence that may be used in a scoping review (e.g., quantitative and/or qualitative research, expert opinion, and policy document).

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