

Prevention strategies for secondary health conditions in people with spinal cord injury: a scoping review protocol

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ABSTRACT

Objective: The objective of the review is to map existing evidence and to provide an overview of the prevention strategies for secondary health conditions that have been reported in people with spinal cord injuries.

Introduction: Spinal cord injury is a physical disability caused by a lesion in the spinal cord resulting in a loss of sensory and motor function below the affected area. In the lifespan of a person living with spinal cord injury, at least one preventable secondary health condition will develop. These conditions can be predictable and potentially prevented.

Inclusion criteria: This review will consider studies that include participants 18 years and over with spinal cord injury and report on prevention strategies for secondary health conditions (e.g. pressure sores, urinary tract infection, pain) at all levels of disease prevention (primary, secondary and tertiary level). Studies of any design conducted in a clinical (hospital and primary healthcare facility), home or community-based setting will be considered.

Methods: A three-step search strategy will be used in this review, with an initial search of MEDLINE (PubMed) and CINAHL. Databases to be searched include: PubMed, PEDro, CINAHL, Embase, Scopus, Health Source: Nursing/Academic Edition and SPORTDiscus. Government resources (Department of Health website), World Health Organization, Google Scholar and OpenGrey will be searched for unpublished studies. Titles and abstracts will be screened by two independent reviewers. Studies that meet the inclusion criteria will be retrieved and assessed. Results will be presented in narrative and tabular form.

Keywords Prevention strategies; secondary complications; secondary conditions; secondary health conditions; spinal cord injury

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Introduction

Spinal cord injury (SCI) is a physical disability caused by a complete or incomplete lesion in the spinal cord resulting in a loss of sensory and motor function below the affected area. It is more prevalent in the adult population.^{1,2} People with SCI experience preventable secondary health conditions, which negatively impact their health, quality of life and participation in life, as well as increasing re-hospitalization rates.^{3–5} Secondary health conditions are preventable complications, such as urinary tract infections and pressure sores, that a person living with disability is predisposed

to in their lifetime as a result of living with a disability.^{6–8} Different researchers have used different terminologies for these health conditions, namely secondary conditions, secondary medical problems, secondary impairments, secondary participation limitation, secondary complications and secondary disabilities.^{6,7,9} For the purpose of this study, the term secondary health conditions will be used.

In the lifespan of a person living with SCI, at least one preventable secondary health condition will develop. Adriaansen *et al.*⁵ assessed the occurrence of secondary health conditions in persons living with SCI at different periods in the journey of care. The study reported a high prevalence, with 98.5% of participants having had at least one secondary health condition. The most common secondary health conditions were musculoskeletal pain, neuropathic pain,

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pressure ulcer, urinary tract infection and edema. Similar findings were noted in an earlier longitudinal study by Adriaansen *et al.*⁸ that looked at the occurrence of secondary health conditions and their potential risk factors in persons with SCI, one to five years post discharge. These secondary health conditions are known to affect people with SCI, thus they are predictable and preventable.⁸

Prevention care for a person with SCI must be at primary, secondary and tertiary levels, starting during inpatient rehabilitation and continuing after hospital discharge in the community.¹⁰⁻¹² Prevention care at a primary level focuses on stopping the health condition from occurring; secondary level prevention focuses on early detection and treatment of the condition to prevent its progression; and tertiary level prevention care aims to manage the condition to prevent its consequences.¹³ Throughout the lifespan of disability, a person with SCI must be able to prevent secondary health conditions and manage them when they have occurred. However, research indicates that the prevention care needs of people living with SCI are not being fully met.^{14,15} A study by Van Loo *et al.*¹⁵ described the care received and extra care needs related to secondary conditions experienced by people living with SCI at home. Thirty percent of the care received focused on treatment for the most problematic secondary health conditions, namely pressure sores, pain, spasms, bladder and bowel problems.¹⁵ The fact that such a high percentage of participants received treatment for secondary conditions could indicate that most of the preventive care occurs after secondary conditions have already developed. In addition, the study found that 41% of the participants still needed extra care related to secondary conditions, mostly in the form of treatment care, psychosocial care and access to information.¹⁵ This finding indicates a need to strengthen prevention care at all levels to minimize the risk of developing preventable secondary health conditions and their consequences. Similarly, a study by Mashola *et al.*¹⁶ looked at hospital readmission rates and reasons for readmissions for persons with SCI. The study found that 80% of readmissions were due to secondary health conditions, with pressure sores and urinary tract infections being the leading causes.¹⁶

Prevention strategies for secondary health conditions must be holistic in their approach in order to meet the needs of people living with SCI. Prevention

strategies are interventions or approaches that aim to address risk factors that predispose an individual to ill health in order to minimize the chance of developing or minimizing progression of a health condition.¹³ Prevention strategies can be targeted at a primary, secondary or tertiary level. Previous studies have considered prevention strategies in isolation, such as role of physical activity and the use of assistive devices in preventing secondary conditions.^{17,18} Social support networks¹⁹ and self-management have also been highlighted as important preventive care strategies for secondary conditions.^{20,21} Some studies have looked at strategies to enhance self-efficacy in self-management for secondary health conditions through peer mentoring, education and motivational interviewing.²²⁻²⁵ Although there are studies that have reported on strategies to prevent secondary health conditions, when assessed against frameworks for prevention studies such as Rimmer *et al.*'s,⁷ the range of prevention strategies is still unknown. Rimmer *et al.*⁷ developed a conceptual model for identifying, preventing and managing secondary conditions in people with disabilities. This conceptual model proposed elements of a prevention and intervention strategy for secondary conditions which included health promotion, rehabilitation, assistive devices and policy.⁷

There are limited studies that review these key concepts for the prevention of secondary health conditions, specifically in people living with SCI. A scoping review to map the evidence will be useful because it will give a broad overview of types of prevention strategies for secondary health conditions that have been reported in the literature and any gaps that exist.

A preliminary search was conducted in the Cochrane Database of Systematic Reviews and the *JBIR Database of Systematic Reviews and Implementation Reports*, and no scoping reviews or systematic reviews on this topic was identified.

Review question

What kind of prevention strategies for secondary health conditions have been reported for people with SCI?

Inclusion criteria

The inclusion criteria for this scoping review will be guided by the population, concepts and context (PCC) approach.

Population

This review will consider studies that include people with SCI. Both non-traumatic and traumatic SCI will be included, with no limitation on the duration of living with SCI, severity or the level of the lesion. Studies with female or male participants who are 18 years and over will be included.

Concept

This review will consider papers that report on different prevention strategies for secondary health conditions (e.g. pressure sores, urinary tract infection, pain) at all levels of disease prevention (primary, secondary and tertiary level) including, but not limited to, rehabilitation, health promotion, assistive technology and policy. Examples of prevention strategies include physical activity or exercise therapy, self-management intervention, peer mentoring, health education and motivational interviewing.

Definition of concepts

Health promotion is a “process of enabling people to increase control over, and to improve, their health”.^{26(para.3)} Health promotion interventions can include exercise interventions, health literacy, self-efficacy skills training, social support, peer support and accessibility of the environment.

Policy can be guidelines and/or frameworks that advocate for the health care of a person with a disability, as illustrated in the coverage for power assisted wheelchairs, and health insurance coverage.^{7,27}

Rehabilitation is a process across the continuum of care in the lifespan of a person with a disability that aims to maximize function and participation in key aspects of life within the individual’s environment.^{7,28} Rehabilitation intervention can include patient-orientated therapy, exercises training, family support, counseling, modification to the environment and self-management strategies.

Assistive devices are equipment used to enhance the functional ability of an individual with a disability and facilitate participation in life events such as power-assisted wheelchairs, prostheses and specialized computer software.^{7,29}

Context

The review will consider studies on prevention strategies for secondary health conditions experienced by people with SCI conducted in a clinical (hospital and

primary health care facility), home or community-based setting. The context will not be limited to specific geographic locations or racial or gender-based interests.

Type of sources

This review will consider all study designs including descriptive cross-sectional, experimental, systematic reviews, meta-analysis and qualitative. Opinion letters and conference papers will also be included.

Methods

This scoping review will identify the range of available evidence and relevant literature (published and unpublished) following JBI methodology.²⁹

Search strategy

A three-step search strategy will be used to search the databases. The initial search of MEDLINE (PubMed) and CINAHL will be conducted, followed by an analysis of the text words contained in the title and abstract of retrieved papers, and of the index terms used to describe the articles. A second search using all identified keywords and index terms will then be undertaken across all included databases. Thirdly, the reference lists of all identified reports and articles will be searched for additional relevant studies. If more information is required, the authors of primary studies or reviews will be contacted. The proposed search strategy is outlined in Appendix I. All relevant literature on the kinds of prevention strategies for secondary health conditions experienced by people with SCI (published and unpublished) from inception to the present date in English will be considered.

Information sources

Databases to be searched include: PubMed, PEDro, CINAHL, Embase, Scopus, Health Source: Nursing/Academic Edition, and SPORTDiscus. Government resources (Department of Health website), World Health Organization, Google Scholar and OpenGrey will be searched for unpublished studies.

Study selection

Following the search, all identified studies will be managed using Mendeley (Mendeley Ltd., Elsevier, Netherlands) and duplicates will be removed. Titles

and abstracts will be screened by two independent reviewers for assessment against the inclusion criteria. Potentially relevant studies will be retrieved and assessed. Studies that do not meet the inclusion criteria will be excluded. A Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flow diagram will outline the search process and the number of articles identified, included and excluded, with reasons.³⁰

Data extraction

The resulting articles will be retrieved and examined for the author, year of publication, country of origin, study aim, sample (size, age, and sex) and study outcomes against the inclusion criteria. Studies will be classified according to study design using Evans' Hierarchy of Evidence, a framework for ranking evidence evaluating healthcare interventions.³¹ Data extraction will be conducted by the primary reviewer using the data charting table (Appendix II). A second reviewer will confirm the accuracy of the extraction process based on the inclusion criteria. Where there is a disagreement, a third reviewer will aid in the decision. Charting the results is an iterative process; therefore, the charting table will be updated throughout the reviewing process.

Data presentation

Results will be presented in a tabular form to map existing evidence on kinds of prevention strategies for secondary health conditions, level of prevention and level of evidence. A narrative summary will describe how the tabulated results related to the review question.

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Appendix I: Search strategy for PubMed

search conducted July 19, 2019

Search	Query	Records retrieved
#7	Search (#6) Filters: English	25
#6	Search (#1 AND #2 AND #5)	26
#5	(#3 OR # 4)	663,579
#4	Search “Health Promotion”[Mesh] OR “Preventive Health Services”[-Mesh] OR “Primary Prevention”[Mesh] OR “Preventive Medicine”[Mesh] OR “Health Education”[Mesh] OR “Public Health Nursing”[Mesh] Sort by: PublicationDate	615,322
#3	Search “health promotion” OR “health behaviour*” OR “patient education” Sort by: PublicationDate	203,202
#2	Search “secondary health conditions” OR “secondary conditions” OR “secondary medical problems” OR “secondary impairments” OR “secondary participation limitation” OR “secondary complications” OR “secondary disabilities” Sort by: PublicationDate	2781
#1	Search “Spinal Cord Injuries”[Mesh] Sort by: PublicationDate	46,609

Appendix II: Data extraction tools

Level 1: Study details	
Author (year published)	
Title	
Study aim	
Country	
Context (clinical, home, community)	
Participants (age, gender, type of SCI, level of injury, duration of living with SCI)	
Study design	
Data collection methods	
Level of evidence	
Key findings	
Reviewers' summary	
Level 2: Results extracted from the study	
Prevention strategy used for secondary health conditions: i) Health promotion ii) Rehabilitation iii) Policy iv) Assistive device v) Other prevention strategies	
Level of prevention i) Primary ii) Secondary ii) Tertiary	

SCI: spinal cord injury.