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Peer-supported interventions for people with spinal cord injury (Protocol).
Cochrane Database of Systematic Reviews 2024, Issue 12. Art. No.: CD015942.
DOI: 10.1002/14651858.CD015942.

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[Intervention Protocol]

Peer-supported interventions for people with spinal cord injury

Mengqi Li[1], Sam Yuen[2], Mohit Arora[3,4], Xu Liu[5,6], Tella Lantta[7,8,9], Ashley Craig[3,4], Yan Li[1,10]

[1]School of Nursing, The Hong Kong Polytechnic University, Hong Kong SAR, China. [2]School of Chinese Medicine, Hong Kong Baptist University, Hong Kong SAR, China. [3]John Walsh Centre for Rehabilitation Research, Northern Sydney Local Health District, St Leonards, Australia. [4]Faculty of Medicine and Health, The Kolling Institute, The University of Sydney, Sydney, Australia. [5]Department of Infectious Diseases, The Fifth Affiliated Hospital, Sun Yat-sen University, Zhuhai, China. [6]Guangdong-Hong Kong-Macao University Joint Laboratory of Interventional Medicine, The Fifth Affiliated Hospital, Sun Yat-sen University, Zhuhai, China. [7]Department of Nursing Science, University of Turku, Turku, Finland. [8]Centre for Forensic Behavioural Sciences, Swinburne University of Technology, Alphington, Australia. [9]Department of Biomedical, Metabolic and Neuroscience, University of Modena and Reggio Emilia, Modena, Italy. [10]Mental Health Research Centre, The Hong Kong Polytechnic University, Hong Kong SAR, China

Contact: Yan Li, yan-nursing.li@polyu.edu.hk.

Editorial group: Cochrane Central Editorial Service.
Publication status and date: New, published in Issue 12, 2024.

Citation: Li M, Yuen S, Arora M, Liu X, Lantta T, Craig A, Li Y. Peer-supported interventions for people with spinal cord injury (Protocol). *Cochrane Database of Systematic Reviews* 2024, Issue 12. Art. No.: CD015942. DOI: 10.1002/14651858.CD015942.

ABSTRACT

Objectives

This is a protocol for a Cochrane Review (intervention). The objectives are as follows:

Primary objective

To assess the effects of peer-supported interventions on quality of life and self-management compared with control (i.e. usual care, no intervention, or other supportive or psychosocial interventions) in people with spinal cord injury (SCI).

Secondary objective

To assess the effects of peer-supported interventions on health service utilisation, secondary health conditions, mood disorders, and social participation compared with control (i.e. usual care, no intervention, or other supportive or psychosocial interventions) in people with SCI, as well as to assess the adverse outcomes of peer-supported interventions in people with SCI.

BACKGROUND

Description of the condition

Spinal cord injury (SCI) is a neurological disorder that leads to partial or complete loss of a person's motor, sensory, and/or autonomic functions below the level of the injury (Guest 2022). SCI can occur due to traumatic causes (e.g. traffic accidents, industrial accidents, or falls) and non-traumatic causes (e.g. degeneration, infection, or tumours in the spinal cord) (Lee 2022; Thietje 2017). SCI can result in paraplegia, a type of paralysis starting in the thoracic (T1 to T12), lumbar (L1 to L5), or sacral (S1 to S5) area, while arm and hand functions are preserved, or tetraplegia, a type of paralysis starting in the cervical (C1 to C8) area, where hand and partial arm functions are affected (Thietje 2017). Recent data from the Global Burden of Disease Study reported an estimated 0.9 million incident cases and 20.6 million prevalent cases of total SCI in 2019 worldwide (Ding 2022). In the last three decades, the age-standardised prevalence rate of SCI has increased by 0.1 estimated annual percentage change (Ding 2022).

Currently, there is no curative treatment for SCI. Survivors often endure severe chronic disabilities resulting from irrecoverable neurological loss (impairment or loss of function in the nervous system due to damage to the spinal cord) (Sian 2023). People with SCI are vulnerable to experiencing secondary health conditions during their long recovery process (Li 2021). Secondary health conditions after SCI are medical issues that arise as a result of, or are exacerbated by, the initial injury to the spinal cord (Jensen 2012). Pressure injuries, neurogenic bowel (a condition characterised by bowel dysfunction due to damage to the nerves that control bowel function), and urinary tract infection, with prevalence rates ranging from 32% to 80%, are common medical conditions that occur in SCI survivors (Chen 2022; Johns 2021; Shiferaw 2020). Living with multiple dysfunctions and a variety of secondary health conditions, individuals with SCI face significant challenges in maintaining a good quality of life (Craig 2022; Jeyathevan 2021). The World Health Organization (WHO) defines quality of life as "an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards, and concerns" (WHO 2012). People with SCI often experience a significant decline in quality of life compared to the general population (Tschoepe 2022).

Self-management refers to a person's ability and willingness to take on the daily management of his or her health and healthcare (Hibbard 2008). SCI survivors often feel emotionally overwhelmed and unprepared to manage their health and care needs due to significant lifestyle changes, particularly during their long-term rehabilitation after discharge from hospital (Hoffman 2024; Li 2024). Ineffective self-management contributes to the occurrence of secondary health conditions and concomitant unplanned health service utilisation, including increased clinic visits and hospital readmissions (Gassaway 2017). In particular, people with SCI are vulnerable to developing mood disorders such as anxiety, depression, and stress when they have low self-efficacy (i.e. do not believe they can manage life events) (Craig 2015; Williams 2015). Additionally, SCI imposes tremendous barriers to individuals in terms of reintegrating with their families and communities, particularly for those having difficulties in daily activity management (Riedman 2022). The adverse consequences of improper self-management impact both physical and psychosocial well-being, threatening the overall quality of life amongst SCI survivors (Hoffman 2024).

Given the above, it is important to provide supportive and intensive interventions to SCI survivors in order to help them manage health challenges and improve their quality of life. Peer-supported interventions have shown benefits when addressing the needs of people with SCI in long-term self-management and maintaining a good quality of life (Gassaway 2017; Houlihan 2017).

Description of the intervention

In the healthcare context, 'peer support' refers to people who share similar lived experiences affiliating with, empathising with, and supporting each other to address life challenges and promote health (Dennis 2003). In contrast to health professionals, peers are an informal resource available to patients in need of support that builds mutual and equal partnerships (Suresh 2021). The involvement of peers in healthcare delivery originated in the area of mental health (Corrigan 2022). In recent years, peer support has gained recognition and has been widely utilised to provide education about symptom management, provide emotional support, and promote recovery for people with diverse chronic conditions (Berkanish 2022; Wallace 2021).

A systematic review of peer-supported interventions in healthcare identified the following five typical peer roles across interventions (Ramchand 2017).

1. Peer support
   - Providing informal and unstructured support such as affirmation, reminders, or reinforcement, serving as informal coaches and sharing personal experiences, commonly as a 'buddy' or partner in the intervention
2. Peer counsellor
   - Offering guidance, knowledge, and tangible tools to assist individuals in setting and achieving their health and wellness aims
3. Peer educator
   - Delivering formal education or training on specific topics, using a protocolised curriculum and approach that does not involve a therapeutic relationship
4. Peer facilitator
   - Facilitating group interactions with the primary goal of establishing or building relationships between and amongst individuals in order to empower them to set and achieve goals jointly
5. Peer case manager
   - Assisting individuals in accessing or co-ordinating health and social services, including directing participants to resources and supervising their activities within the intervention

Ramchand 2017 analysed 116 randomised controlled trials that evaluated peer-supported interventions for health promotion and disease prevention, and found that: (1) peers held only one of the roles described above in most of the studies (85%), while in some interventions (15%), peers held multiple roles; (2) in most cases (66%), the peer-supported intervention was characterised as a stand-alone initiative rather than involving peers as members of a larger clinical team; (3) most studies (87%) described formal peer training characterised by a structured training protocol or receiving necessary training from health professionals; and (4)

interventions with peer facilitators were commonly delivered in a group format, while those with peer case managers were typically provided in a dyadic format. Interventions involving other types of peer roles could be implemented using either a group and/or dyadic approach.

Extensive evidence has demonstrated the benefits of peer-supported interventions to enhance self-management and improve quality of life in people with diverse chronic conditions, such as asthma, diabetes, and mental illness (Kew 2017; Ramchand 2017; Sartore 2021). Peers, who can share personal experiences, provide guidance on coping strategies, and offer practical tips for managing challenges, are valuable resources for individuals after SCI (Houlihan 2017). Studies investigating peer-supported interventions (e.g. trained peers taking roles of supporting, educating, and counselling services) in the SCI population have found that such interventions improved factors like self-efficacy and self-management, contributing to an increased quality of life (Coker 2019; Gassaway 2017; Houlihan 2017).

How the intervention might work

Based on their experiential knowledge, peers who share similar caring experiences are able to empathise with and provide relevant support to their fellow patients (Dennis 2003). The value of peer relationships in this context is based on 'homophily theory', which proposes that people will associate and bond with people who are alike, especially in stressful situations (Au 2023). Peer-supported interventions work on the premise that supported individuals who feel affiliated and understood are more likely to listen and act on the guidance that peers offer to them. Furthermore, peers are important within the framework of social cognitive theory, which proposes that individuals model their behaviours based on role models in social interactions (Luszczynska 2015). When peers serve as role models, they can help those they support to increase their self-efficacy, develop adaptive strategies in health management, and, as a consequence, enhance their quality of life (Gassaway 2017; Hoffman 2024).

Limited by physical disabilities and lack of rehabilitation services in the community, people living with SCI may encounter challenges in obtaining the necessary guidance to manage their physical and psychosocial health problems (George 2022; Li 2020). Peer-supported interventions, which usually run outside the formal health system of care, can fill an important service gap in long-term SCI management (Houlihan 2017). Peers who have similar challenges and adapt well to their disabilities can share their experiential knowledge to empower individuals with SCI in managing secondary health conditions and enhancing their overall quality of life (Barclay 2019; Gassaway 2017).

Emotional support is a vital component of peer-supported interventions (Ramchand 2017). Living with SCI can be emotionally challenging due to mood disorders such as anxiety and depression, and peers provide a safe space for people to express their feelings, share concerns, and find validation (Coker 2019). Additionally, the involvement of peers in healthcare delivery increases the availability of information and resources, thereby facilitating the reintegration of individuals with SCI into their communities (George 2022). Furthermore, peers provide informal support in contrast to healthcare professionals, and have become an increasingly valuable force in healthcare systems that are grappling with limited resources (Chien 2019). Peer-supported interventions have substantial potential to provide accessible and continued support to individuals with SCI in addressing their complex health needs in daily life (Barclay 2019).

Why it is important to do this review

As mentioned above, people with SCI often face challenges in self-managing a variety of secondary health conditions (Li 2023). Previous evidence has suggested that peer-supported interventions can help improve self-management and quality of life among the SCI population (Barclay 2019; Houlihan 2017). However, there is great variation in the components of peer-supported interventions as well as the outcomes evaluated across studies (Barclay 2019; Tschoepe 2022). In addition, research has indicated inconsistent findings about whether peer-supported interventions improve depressive symptoms, reduce unplanned health service utilisation, and increase social participation (Coker 2019; Houlihan 2017; Mackelprang 2016). To our knowledge, there are no systematic reviews evaluating the effectiveness of peer-supported interventions for people with SCI (Barclay 2019). It is still uncertain what approaches and benefits peer-supported interventions may have for people with SCI. This uncertainty primarily arises from significant variations in the roles of peers involved in these interventions, as well as inconsistent findings across studies. Given that there is an increasing number of studies in this area, a systematic review to comprehensively assess the effects of peer-supported interventions for people with SCI by synthesising high-quality evidence is warranted. The findings of this review will provide valuable insights into the development and evaluation of peer-supported interventions for people with SCI. Furthermore, these findings will contribute to evidence-based practices that can enhance community healthcare for individuals living with SCI through peer-supported interventions.

Consumer involvement in the review process

It is important to us that this review is relevant and helpful for people with SCI. We will use our connections with local consumer agencies to invite individuals with lived experience of SCI to participate in the review process. These consumers will be asked to provide feedback on the review to help check whether and how the findings and implications are meaningful to consumer groups.

OBJECTIVES

Primary objective

To assess the effects of peer-supported interventions on quality of life and self-management compared with control (i.e. usual care, no intervention, or other supportive or psychosocial interventions) in people with spinal cord injury (SCI).

Secondary objective

To assess the effects of peer-supported interventions on health service utilisation, secondary health conditions, mood disorders, and social participation compared with control (i.e. usual care, no intervention, or other supportive or psychosocial interventions) in people with SCI, as well as to assess the adverse outcomes of peer-supported interventions in people with SCI.

METHODS

Criteria for considering studies for this review

Types of studies

We will include randomised controlled trials (RCTs), cluster-randomised controlled trials (cRCTs), and cross-over RCTs. For cross-over RCTs, we will only include data from the first period. We will not include quasi-randomised studies. This review will comply with the inclusion criteria of study designs from the Cochrane Effective Practice and Organisation of Care (EPOC) group (Cochrane 2017). Following the EPOC criteria, we will exclude cRCTs with only one intervention or control site where the intervention is completely confounded by the study site.

Types of participants

The target participants will be adults (≥ 18 years of age) with a diagnosis of SCI. The SCI can be traumatic (resulting from an external force such as motor vehicle accidents, sports accidents, or fall) or non-traumatic (resulting from non-traumatic causes such as infection, tumours, or degeneration); complete (total loss of motor, sensory, and autonomic functions below the level of the injury) or incomplete (partial motor, sensory, or autonomic function below the level of the injury); and result in tetraplegia (SCI within the cervical vertebra) or paraplegia (SCI within the thoracic, lumbar, and sacral vertebra) (Kirshblum 2022). Participants can be inpatients or outpatients in any setting, e.g. rehabilitation centres, clinics, or communities. Studies that include only a subset of SCI participants will be eligible if relevant data are reported separately and can be extracted, or if most (≥ 50%) of the participants are diagnosed with SCI.

Types of interventions

In this review, 'peer-supported interventions' is an umbrella term that describes a range of emotional, appraisal, and informational support offered and received by individuals who share the experience of having an SCI (Ramchand 2017). Peer-supported interventions will include, but are not limited to, the five types that are listed in the Description of the intervention: peer support, peer counsellor, peer educator, peer facilitator, and peer case manager.

As there are likely to be few studies in this area, we will include peer co-facilitated studies where peers comprise approximately 50% or more of the intervention providers. Where the composition of the intervention providers is not explicitly indicated, we will contact the study authors for further information. Interventions related to mutual support amongst participants that do not involve more experienced peers will not be included. Interventions of any dose, frequency, or duration will be included in this review. Both group and individual interventions will be included. We also do not have limits on the format (e.g. face-to-face or online) of delivery.

We are interested in the following comparators: (1) usual care (e.g. conventional medications, physical therapy, didactic education, resources guide or referrals) without any peer-supported intervention that a participant would normally receive in the trial settings; (2) no intervention (including waiting list control); or (3) other supportive or psychosocial interventions (e.g. cognitive-behavioural therapy, psychoeducation programmes, family interventions, and social skills training programmes) that do not involve a peer or peer group(s).

Types of outcome measures

Whether a study reports one or more of the outcomes listed here will not be used as a criterion for including studies in this review.

1. Quality of life

1.1 Overall

1.1.1 Average endpoint score on quality of life, assessed on a validated scale, such as the 36-item Short Form Health Survey questionnaire (SF-36) (Forchheimer 2004), World Health Organization Quality of Life Brief Scale (Corallo 2013), or Euro Quality of Life (Whitehurst 2012)

1.1.2 Minimal clinically important difference (MCID) in quality of life, as defined by each included study. For instance, the MCID is 4.6 for the total score of quality of life assessed by the SF-36 (Clement 2022)

1.1.3 Any change in quality of life, as defined by each included study

1.2 Specific

1.2.1 Average endpoint score on specific aspects of quality of life, e.g. mental domain of quality of life assessed by the mental health dimension of SF-36 (Forchheimer 2004)

1.2.2 MCID in specific aspects (e.g. physical or mental domain) of quality of life, as defined by each included study. For instance, the MCID is 3.9 for the physical domain of quality of life assessed by the physical function dimension of SF-36 (Clement 2022)

1.2.3 Any change in specific aspects of quality of life, as defined by each included study

2. Self-management

2.1 Average endpoint score for self-management, assessed on a validated scale, such as the Instrument to Measure Self-Management (Lorig 1996) or the Patient Activation Measure (Hibbard 2004)

2.2 Average endpoint score for self-efficacy, assessed by a validated scale such as the Moorong Self-Efficacy Scale, which is specifically designed for individuals with SCI in performing functional daily activities (Middleton 2003), or the General Self-efficacy Scale, which is used in chronic disease self-management (Schwarzer 1995)

2.3 MCID in self-management, as defined by each included study. For instance, MCID in self-management refers to 4-point changes from baseline assessed by the Patient Activation Measure (Anderson 2018)

2.4 Any change in self-management, as defined by each included study

1. Health service utilisation

1. Number of clinical/hospital visits

2. Secondary health conditions

2.1 Number of secondary health conditions

2.2 Any changes in secondary health conditions, as defined by each included study, such as changes in urinary tract infection rate (He 2019)

3. Mood disorders

3.1 Average endpoint score for any mood disorders, assessed on a validated scale such as Depression, Anxiety, and Stress Scale (Sakakibara 2009), Hospital Anxiety and Depression Scale (Woolrich 2006), Patient Health Questionnaire (Kaggwa 2022), General Anxiety Disorder (Spitzer 2006), or Perceived Stress Scale (Nitsch 2016)

3.2 MCID in any mood disorder, as defined by each included study. For instance, MCID in depression refers to 3-point changes from baseline assessed by the Patient Health Questionnaire (Turkoz 2021).

3.3 Any change in mood disorders, as defined by each included study

4. Social participation

4.1 Average endpoint score for social participation, assessed on a validated scale designed for people living with disabilities, such as Craig Handicap Assessment and Reporting Technique Short Form (Hall 1998) or Participation Assessment with Recombined Tools-Objective (Whiteneck 2011)

4.2 MCID for social participation, as defined by each included study. For example, the MCID is estimated as 0.07, 0.09, 0.24, and 7.17 for the subscale scores of diversity, desire for change, frequency, and difficulty, respectively, on the Participation Measure-3 Domains, 4 Dimensions (Chang 2019).

4.3 Any change in social participation, as defined by each included study

5. Adverse outcomes

5.1 Proportion of participants experiencing any reported adverse effects related directly to the intervention, such as inaccurate information from peers, as defined by each included study

5.2 Proportion of participants experiencing adverse events, including death (all causes), injuries, and suicide attempts

Time points for measurement

We will categorise the outcomes into three time intervals to utilise the available data, as guided by the Methodological Expectations of Cochrane Intervention Reviews (MECIR) standards (Higgins 2023b) and existing peer-supported interventions amongst people with SCI (Barclay 2019; Tschoepe 2022):

1. short-term (≤ one month postintervention);
2. medium-term (> one month to ≤ six months postintervention); and
3. long-term (> six months postintervention).

Selection of data for analysis

For the purpose of meta-analysis, based on guidance in the *Cochrane Handbook for Systematic Reviews of Interventions* (McKenzie 2023), if an included study reports:

1. multiple time points within a time interval (e.g. both two months and four months are reported), we will use the longer time frame (e.g. four months);
2. multiple outcome measures for an outcome, such as both average endpoint score and change score, we will use average endpoint score;
3. multiple scales for an outcome, such as both SF-36 and Euro Quality of Life to evaluate quality of life, we will select the primary outcome measure as defined by the included study;
4. both the overall and subscale score of an outcome (e.g. the overall score of SF-36 or subscale score of the mental health domain), we will use the overall score;
5. no overall score and multiple subscale scores, we will use a subscale more theoretically relevant to the peer-supported intervention in the included study (e.g. mental health domain of quality of life will be chosen for a study with peer-supported psychological intervention).

Search methods for identification of studies

We will not restrict our searches by language or publication status in any component of the search strategy.

Electronic searches

We will search the following electronic databases for relevant studies.

1. Cochrane Central Register of Controlled Trials (CENTRAL; latest issue)
2. MEDLINE (OvidSP, from 1966)
3. Embase (OvidSP, from 1974)
4. PsycINFO (ProQuest, from 1887)
5. ISI Web of Science: Science Citation Index Expanded (from 1997)
6. CINAHL Plus (EBSCO Host, from 1981)
7. Physiotherapy Evidence Database (PEDro, from 1999)
8. Allied and Complementary Medicine Database (AMED, from 1985)
9. Scopus (from 1966)

We present our search strategy for MEDLINE in Appendix 1. To increase search sensitivity, we will adapt this strategy for each database.

We will also search the following Chinese databases.

1. China National Knowledge Infrastructure (CNKI, www.cnki.net, from 1979)
2. China Biomedical Literature Database (CBM, www.sinomed.ac.cn/index.jsp, from 1978)
3. WanFang Data (www.wanfangdata.com.cn/index.html, from 1985)
4. Weipu Database (www.cqvip.com, from 1989)

We present the search strategy for CBM in Appendix 2. The strategy for other Chinese databases will be adapted as necessary. We will pilot the search strategies before running them, and we will report the strategies as run.

Unpublished and grey literature

We will search for ongoing trials in clinicaltrials.gov and the WHO International Clinical Trials Registry Platform. We will also search grey literature for relevant sources (e.g. reports, dissertations, and conference abstracts) from the following databases: OpenGrey,

Open Directory of Open Access Repositories, GreyNet, Health Management Information Centre, and The National Technical Information Service.

Handsearching

We will handsearch the reference list of all included studies and relevant reviews to identify any further relevant trials. We will perform forward citation searches on our included studies using Web of Science and Google Scholar. We will exclude abstracts published in scientific conference proceedings if the full text is not available.

Personal contact

We will contact the corresponding author of each included study for information regarding any unpublished trials.

Data collection and analysis

Selection of studies

We will import all records retrieved from electronic databases into Covidence, a Cochrane-recommended tool for review authors to manage screening and data extraction. After excluding duplicates, two review authors (ML and SY) will perform title and abstract screening independently. They will obtain the full text of the studies identified by either author against the inclusion criteria. Two review authors will examine the full texts independently to assess their eligibility. Should there be any disagreement over the study selection, we will reach a consensus through discussion. If disagreements still exist, we will consult a third review author (YL). To assist in the decision-making procedure, we will ask for additional or missing information from the study authors. We will compile a table to list excluded studies and note the primary reason for exclusion. We will create a flow diagram using the PRISMA template within Review Manager (Lefebvre 2024). The flow diagram will include the number of:

1. records identified by the databases and other sources;
2. records after duplicates are removed;
3. records excluded after preliminary screening (i.e. of titles and abstracts);
4. records retrieved in full text;
5. records or studies excluded after assessment of the full text, with brief reasons;
6. records or studies that are ongoing or awaiting classification; and
7. studies (with number of records) included qualitative synthesis and quantitative synthesis (meta-analysis).

Data extraction and management

A data extraction list adapted from the *Cochrane Handbook for Systematic Reviews of Interventions* will be integrated into Covidence for quantitative data management (Li T 2023). Two review authors (ML and SY) will independently extract data from each included study and cross-check the extracted data. They will resolve any disagreement by consensus or by involving a third author (YL) if necessary. We will attempt to contact study authors for missing information or any clarification. We will pilot the data extraction list with three included studies to make sure we collect data appropriately and consistently. We will extract the following data.

1. Study information: year and location of the study, author contact details, study duration, study registration information, funding source, and potential conflicts of interest;
2. Methods: study aims, study design, details about randomisation, sampling and recruitment of participants, information relevant to risk of bias assessment, and methods used to address missing data;
3. Participants: number randomised and analysed in each group, setting, inclusion and exclusion criteria, personal and SCI characteristics at baseline;
4. Intervention: number of groups, duration, intensity, and format of the intervention and control groups, training received by peers, and any co-interventions in both intervention and control groups;
5. Outcomes: predefined primary and secondary outcomes, measurement tools, and timing of outcome assessment;
6. Data: means and standard deviations for continuous outcomes; number of participants who experienced the events in each group for dichotomous outcomes. For data reported as medians with ranges, we will transform the medians into means and standard deviations using the inbuilt calculator in Review Manager. To facilitate comparison between studies, we will convert variables reported in different metrics to common metrics. For time-to-event data, we will express results as hazard ratios and standard deviations by the proportional hazards assumption.

Assessment of risk of bias in included studies

Two review authors (ML and SY) will assess the risk of bias for each included study using the revised Cochrane risk of bias tool for randomised trials (RoB 2 tool) (Higgins 2023a). We will resolve disagreements through discussion and by the involvement of a third author (YL) if required. When existing information is insufficient or unclear, we will contact the study authors for additional information. We will use the Excel tool designed by the RoB 2 tool development group to manage assessments.

We are interested in the effect of assignment to the intervention group at baseline, regardless of whether the interventions are received as intended (i.e. the intention-to-treat effect). However, we anticipate that this analysis may not be possible as outcomes may not be available for participants who dropped out. In this scenario, we will use the following order of preference:

1. the result corresponding to a full intention-to-treat analysis, as defined above;
2. the result corresponding to an analysis that adheres to intention-to-treat principles other than participants with missing outcome data being excluded;
3. a result corresponding to an 'as-treated' or naïve 'per-protocol' analysis, or an analysis from which eligible trial participants were excluded.

We will consider the following domains for risk of bias assessment: (1) randomisation process; (2) deviations from intended interventions; (3) missing outcome data; (4) measurement of the outcome; and (5) selection of the reported result. We will assess seven outcomes (quality of life, self-management, health service utilisation, secondary health conditions, mood disorders, social participation, and adverse outcomes) using RoB2. For the first six outcomes, we will use average endpoint and medium-term

time point as the primary measure for evaluation using RoB2. For adverse outcomes, the proportion of participants experiencing any reported adverse effects during the study period as the primary measure will be evaluated using RoB2.

We will use an added domain of bias for the assessment of cRCTs. This added domain is 'bias rising from the identification or recruitment of participants into clusters' from the additional considerations for cRCTs in the RoB 2 tool (Eldridge 2016). For any included cross-over trial, we will use the RoB 2 tool variant for cross-over trials, addressing specific issues including carry-over effect, period effect, selective reporting, etc.

We will use 'signalling questions', responding with one of five options from 'yes' to 'no information' to reach our judgment for each domain of bias as described in the *Cochrane Handbook for Systematic Reviews of Interventions* (Higgins 2023a; Sterne 2023). We will determine an overall assessment of the risk of bias by integrating the ratings in each domain. For the RoB 2 tool, the grades of risk are 'low', 'some concerns', and 'high'. We will display our risk of bias assessment in a risk of bias table as part of the Characteristics of included studies table. Additionally, we will provide a risk of bias graph and a summary figure.

Measures of treatment effect

For continuous data, we will estimate mean difference with 95% confidence intervals between groups for outcomes measured in the same units, and standardised mean difference with 95% confidence intervals for outcomes measured in different units (e.g. quality of life assessed by World Health Organization Quality of Life Brief Scale and Euro Quality of Life). We will transform standardised mean differences from meta-analyses into mean differences to aid clinical interpretation (Deeks 2023). We will select a frequently used outcome and its standard difference value from one study that has a reasonable sample size and is included in the meta-analysis. To determine the mean difference, we will multiply the standardised mean difference by the baseline standard difference from the control group of the selected study.

For dichotomous outcomes, we will estimate the risk ratio with 95% confidence intervals as the risk ratio is considered to be more intuitive than the odds ratio (Boissel 1999).

For ordinal data, we will meta-analyse data as dichotomous or continuous depending on how the original analyses were carried out by the study authors (Deeks 2023). Proportional odds models may occasionally be used for ordinal data analysis when the ordinal scales have a small number of categories, the numbers for each category in each intervention group are known, and all studies use the same ordinal scales.

For time-to-event data, when studies report log hazard ratio plus standard error or hazard ratio plus 95% confidence, we will synthesise the data for meta-analysis using the generic inverse variance method.

Unit of analysis issues

For cross-over studies, we will only use the data from the first sequence (pre-washout period) to avoid the carry-over effect.

For studies that involve the randomisation of clusters of individuals into groups, but where inference is intended at the individual level, we will need to take into account the intracluster correlation coefficient during analysis. We will obtain the intracluster correlation coefficient estimates by contacting authors or through the use of external estimates. If neither option is possible, we will report effect estimates and note the "unit of analysis error."

We will conduct a synthesis of trials that have data suitable for pooling in meta-analyses, categorised by intervention type. In trials that have multiple groups, we will include all groups in the relevant meta-analysis if they meet the inclusion criteria. In cases where there are more than two intervention or comparison groups, we will make multiple pairwise comparisons between the relevant groups and adjust the sample size accordingly to avoid double-counting participants.

Dealing with missing data

We will use the following management strategies for missing data.

1. For studies that present graphical data only, we will attempt to estimate the means and standard deviations from the graphs.
2. For studies that report medians and interquartile ranges, we will predict the mean and the standard deviations by transforming the median and interquartile ranges.
3. If data are missing entirely, we will contact the study authors to provide the missing data for data synthesis and analysis. If missing data can be provided, we will perform analyses based on the intention-to-treat principle. If available data is insufficient for meta-analysis, we will not include the study for meta-analysis but will present descriptive data. We will note all missing outcome data in the data extraction list, indicating our assessment of the risk of bias.

Clinical heterogeneity

We will assess clinical heterogeneity (e.g. variability in the participants, interventions, and outcomes) of included studies initially before seeing comparative data. We will inspect all studies for clearly outlying participants or situations that we had not predicted would arise. When identified, we will discuss them in the text.

Methodological heterogeneity

We will assess methodological heterogeneity (e.g. variability in study design, outcome measurement tools, and risk of bias) of included studies initially before seeing comparative data. We will inspect all studies for clearly outlying methods that we had not predicted would arise. When identified, we will discuss them in the text.

Statistical heterogeneity

Visual inspection

We will visually inspect forest plots to explore the possibility of statistical heterogeneity. When the confidence intervals of individual study results show limited overlap, this generally indicates the presence of statistical heterogeneity.

The I^2 statistic

We will evaluate statistical heterogeneity using the I^2 statistic alongside the Chi^2 statistic P value. The I^2 statistic provides an estimate of the percentage of inconsistency thought to be due to

chance. A low P value (or a large Chi^2 statistic relative to its degree of freedom) indicates the presence of heterogeneity in intervention effects, suggesting variation in effect estimates beyond chance. We will interpret an I^2 value of 50% or higher, alongside a statistically significant Chi^2 statistic ($P < 0.1$), as evidence of substantial levels of heterogeneity (Deeks 2023). If the primary outcomes exhibit substantial heterogeneity, we will explore the reasons for heterogeneity using prespecified subgroup analysis.

Assessment of reporting biases

Where possible, we will obtain the protocols of each included study. For studies with protocols available, we will compare outcomes reported in the published study and its relevant protocol. For studies without protocol or where protocols are unavailable, we will compare the outcomes listed in the methods section to the reported results of the trial report.

We will create funnel plots as the funnel plot is a useful way to evaluate reporting bias. We will inspect the asymmetry of the funnel plot of effect estimates against their standard error. However, funnel plots have limited power to detect study effects when there are a small number of studies. Therefore, for outcomes investigated in 10 or fewer studies, we will not evaluate the risk of reporting bias using funnel plot assessment.

Data synthesis

For meta-analysis, we will consider the comparability of outcome data and assessment of between-trial heterogeneity. We will conduct a meta-analysis only if there are at least two comparable studies without apparent clinical or methodological heterogeneity. Given the anticipated variability in peer-supported interventions, outcome measurements, and study settings, we will use the random-effects model for data synthesis; the random-effects model accounts for differences between studies (even if there is no statistically significant heterogeneity) (Deeks 2023).

We will present data with forest plots as follows: (1) with continuous outcomes, we will adopt the inverse variance method for summary estimates of mean difference or standardised mean difference with 95% confidence intervals; (2) with dichotomous outcomes, we will also adopt the inverse variance method for summary estimates of risk ratios with 95% confidence intervals; and (3) with time-to-event outcomes, we will use the generic inverse variance method for summary estimates of hazard ratios with 95% confidence intervals.

The primary data synthesis will include all eligible studies. To report on studies that are not included in the meta-analysis, we will use the Synthesis Without Meta-analysis (SWiM) approach, which consists of nine items from grouping studies for synthesis to limitations of the synthesis (Campbell 2020).

Subgroup analysis and investigation of heterogeneity

Different subgroups of the population may vary in their ability to benefit from the intervention, and various types of peer-supported interventions may have different effects on outcomes (Barclay 2019; Tschoepe 2022). A simple significance test will be used to examine differences amongst the subgroup analyses in RevMan if there are at least five studies included in the meta-analysis (Deeks 2023).

1. Types of participants: a) complete SCI versus incomplete SCI; b) tetraplegia versus paraplegia; c) different aetiologies of SCI (i.e. traumatic SCI versus non-traumatic SCI)
2. Types of peer-supported interventions: d) comparisons between different peer roles listed in Types of interventions
3. Training received by peers: e) formal versus informal. We will consider the inclusion of a structured training protocol or receiving necessary training from health professionals to be formal peer training.

Sensitivity analysis

To assess the robustness of data analyses, we intend to conduct the following sensitivity analyses if there are at least five studies included in a meta-analysis.

1. Risk of bias: we will remove trials that are deemed to have an overall high risk of bias.
2. Fixed-effect versus random-effects model: we will re-synthesise data for the primary outcomes using a fixed-effect model to evaluate whether this alters the significance of the results.

Summary of findings and assessment of the certainty of the evidence

We will create summary of findings tables for the main comparisons and outcomes (as listed below). In the summary of findings tables, we will present summary effect estimates and 95% CIs, the number of studies and participants contributing to each result, and our level of certainty about the evidence.

We will assess the certainty of the evidence based on GRADE criteria, assisted by GRADEpro software (https://www.gradepro.org/). This will indicate the degree of confidence we have that an effect estimate for an outcome reflects the 'true value'. The GRADE approach takes into account several factors, including the overall risk of bias (methodological quality) based on the overall RoB 2 judgement, indirectness of evidence, unexplained heterogeneity or inconsistency of results, imprecision of effect estimates, and risk of publication bias, as described in the *Cochrane Handbook for Systematic Reviews of Interventions* (Schünemann 2023). The levels of confidence are high, moderate, low, and very low. Two review authors (ML and SY) will independently conduct the GRADE assessment. We will resolve disagreements through discussion and by the involvement of a third author (YL) if required.

We will assess the following two comparisons in this review: all types of peer-supported interventions versus usual care or no intervention; all types of peer-supported interventions versus other supportive or psychosocial interventions. Each comparison will be presented in a separate summary of findings table. We will include the following outcomes in the summary of findings tables. Other than for adverse events, we will present the medium-term results.

1. Quality of life: average endpoint score on quality of life, assessed by a validated scale such as SF-36 (Forchheimer 2004)
2. Self-management: average endpoint score on self-management, assessed by a validated scale such as the Instrument to Measure Self-Management (Lorig 1996)
3. Health service utilisation: number of clinical/hospital visits
4. Secondary health conditions: number of secondary health conditions

5. Mood disorders: average endpoint score on any mood disorders, assessed by a validated scale such as Depression, Anxiety, and Stress Scale (Sakakibara 2009)
6. Social participation: average endpoint score on social participation, assessed by a validated scale such as Craig Handicap Assessment and Reporting Technique Short Form (Hall 1998)
7. Adverse outcomes: proportion of participants experiencing any reported adverse effects during the study period

ACKNOWLEDGEMENTS

We would like to thank Kanchana Ekanayake for checking and advising the search strategy.

The Cochrane Central Editorial Service team supported the authors in the development of this protocol for a Cochrane systematic review. The following people conducted the editorial process for this protocol.

• Sign-off Editor (final editorial decision): Emma Sydenham, Central Editorial Service

• Managing Editor (selected peer reviewers, provided editorial guidance to authors, edited the article): Sue Marcus, Central Editorial Service

• Editorial Assistant (conducted editorial policy checks, collated peer-reviewer comments and supported editorial team): Jacob Hester, Central Editorial Service

• Copy Editor (copy editing and production): Laura MacDonald, Cochrane Central Production Service

• Peer reviewers (provided comments and recommended an editorial decision): Sintip Pattanakuhar, MD, PhD, Department of Rehabilitation Medicine, Faculty of Medicine, Chiang Mai University, Chiang Mai, Thailand (clinical/content review); Brian Duncan (consumer review); Jo-Ana Chase, Cochrane Evidence Production and Methods Directorate (methods review); Jo Platt, Central Editorial Information Specialist (search review)

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APPENDICES

Appendix 1. Appendix 1: Search strategy for MEDLINE (Ovid)

1. exp Spinal Cord Injuries/ or Spinal Cord Injur*mp
2. spinal cord injur*.ti,ab,kw.
3. traumatic myelopath*.ti,ab,kw.
4. exp Central Cord Syndrome/ or Central Cord Syndrome*.mp
5. exp Brown-Sequard Syndrome/ or Brown-Sequard Syndrome*.mp
6. Spinal Cord Transection*.ti,ab,kw.
7. Spinal Cord Laceration*.ti,ab,kw.
8. Post-Traumatic Myelopath*.ti,ab,kw.
9. Spinal Cord Contusion*.ti,ab,kw.
10. Quadriplegia*.mp. or exp Quadriplegia/
11. exp Paraplegia/ or paraplegi*.mp.
12. exp Disabled Persons/ or disabl*.mp
13. exp Wheelchairs/
14. (wheelchair* or wheel-chair*).ti,ab,kw.
15. handicap*.ti,ab,kw.
16. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15
17. (Peer* adj3 (support* or led or lead* or deliver* or run* or held or direct* or online or "on line" or forum* or coach* or advice* or guidance or group* or assisted learning)).ti,ab,kw.
18. (lay* adj3 (support* or led or lead* or deliver* or run* or held or direct* or online or "on line" or forum*)).ti,ab,kw.
19. (lay* adj3 (person* or people* or worker* or or advisor* or consultant* or leader* or educator* or tutor* or instructor* or facilitator*)).).ti,ab,kw.
20. ("peer-run" or "peer-led").ti,ab,kw.
21. (mutual* adj2 (aid* or support* or help*)).ti,ab,kw.
22. exp Peer Group/ or peer group*.mp.
23. exp Mentors/ or mentor*.mp.
24. exp Self-Help Groups/ or self-help group.mp.
25. befriend*.ti,ab,kw.
26. (Buddy* or buddies).ti,ab,kw.
27. ((voluntary* or volunteer*) ADJ33 (worker* or aide* or traned* or care* or service* or involvement or help* or counsel* or stal or personnel or provider* or group*)).ti,ab,kw.
28. (social support*.mp. or exp Social Support/).ti,ab,kw.
29. Befriend*.ti,ab,kw.
30. 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29
31. exp randomized controlled trial/
32. controlled clinical trial.pt.
33. randomized.ab.
34. placebo.ab.
35. drug therapy.fs.
36. randomly.ab.
37. trial.ab.
38. groups.ab.
39. 31 or 32 or 33 or 34 or 35 or 36 or 37 or 38
40. exp animals/ not humans.sh.
41. 17 and 30 and 39 not 40

Appendix 2. Appendix 2: Search strategy for China National Knowledge Infrastructure (CNKI)

SU%=('脊柱損傷'+'脊髓損傷'+'急性脊髓損傷'+'頸脊髓損傷'+'頸髓損傷'+'脊椎損傷'+'截癱'+'截癱患者'+'四肢癱瘓+'四肢癱'+'脊柱骨折') AND SU%=('同伴支持'+'同伴支持教育'+'同伴支持為主導的健康教育'+'同伴支持干預'+'同伴教育'+'同伴互助') AND SU%=('随机'+'对照')

CONTRIBUTIONS OF AUTHORS

Conceiving the protocol: Mengqi Li (ML) and Yan Li (YL)
Designing the protocol: ML, Sam Yuen (SY), Mohit Arora (MA), Xu Liu (XL), Tella Lantta (TL), Ashley Craig (AC), YL
Co-ordinating the protocol: YL
Designing search strategies: ML, SY, YL
Writing the protocol: ML, SY, MA, XL, TL, AC, YL
Providing expert advice on the protocol: MA, XL, TL, AC

DECLARATIONS OF INTEREST

Mengqi Li: none known
Sam Yuen: none known
Mohit Arora: none known
Xu Liu: none known
Tella Lantta: none known
Ashley Craig: none known
Yan Li: none known

SOURCES OF SUPPORT

Internal sources

- None, Other

  None reported

External sources

- None, Other

  None reported