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Exploring the experiences and perceptions of participating in a peer support intervention for adults with chronic non-cancer pain: a qualitative systematic review.

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Review Title

Exploring the Experiences and Perceptions of Participating in a Peer Support Intervention for Adults with Chronic Non-cancer Pain: a qualitative systematic review

Abstract

Objective: This review explored the experiences and perceptions of adults with chronic non-cancer pain regarding participation in peer support interventions. This included adults' perceptions of intervention components, strengths and limitations of interventions and barriers and facilitators to their implementation.

Introduction: Chronic pain, defined as pain that persists beyond 12-weeks or past normal tissue healing time, is a prevalent and costly issue. Peer support interventions could play a pivotal role in the management of chronic pain. Studies have been conducted examining the perspectives of people with chronic pain on peer support interventions; however, a systematic review has yet to be conducted to synthesize this evidence.

Inclusion criteria: This review included qualitative studies of any design that explored the experiences of adults with chronic pain during and after participation in a peer support intervention.

Methods: The methods for this review followed JBI methodological guidance for systematic reviews of qualitative evidence. AMED, CINAHL, Medline, PsycArticles, SPORTDiscus (all EBSCO), EmBase, PsycINFO (both Ovid), and Web of Science (Clarivate Analytics) databases were searched for published studies. EBSCO Open Dissertations (EBSCO), EThOS (British Library), the Networked Digital Library of Theses and Dissertations (Global ETD) and Google Scholar were searched for grey literature. Databases were searched from inception to April 2020 and all languages were considered for inclusion. All studies identified from the search were examined against the inclusion criteria. Papers selected for inclusion were assessed by two independent reviewers for methodological quality prior to inclusion in the review. Qualitative research findings were extracted and pooled. Findings were assembled and categorized based on similarity in meaning. These categories were then subjected to a meta-synthesis in order to produce a single comprehensive set of synthesized findings.

Results: Seven studies with a total of 214 participants were included in the review. Most of the studies (5/7) were of moderate to high quality, following critical appraisal. From these studies, 53 findings were extracted and grouped into 14 categories. Four synthesized findings were compiled by aggregating the categories. Broadly, these synthesized findings related to the unique relationship formed between peers, benefits for both parties, essential intervention components and barriers to implementation.

Conclusions: This was the first systematic review to summarize the experience of participating in a peer support intervention for adults with chronic non-cancer pain. The synthesized findings from this review can be used by organizations to develop and implement peer support interventions for adults with chronic non-cancer pain. Another main finding is the lack of research in this area, as only seven studies were included after a comprehensive search. Furthermore, no evidence was found in the areas of intervention format, length of intervention and frequency of contact between peer support volunteers and participants. As such, these areas require further research. The generalizability of the included studies is also limited as the studies represented four countries (Canada, China, UK, and US). The results therefore present the experiences of people from high income settings and may not be contextualized to low- and middle-income countries; this warrants further research to be conducted in the latter countries.

Systematic review registration number: CRD42021245085

Keywords: chronic pain; patient experience; peer support; systematic review; qualitative

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Abstract word count: 503

Summary of Findings

Systematic review title: Exploring the Experience of Participating in a Peer Support Intervention for Adults with Chronic Non-cancer Pain: a qualitative systematic review
Population: adults with chronic non-cancer pain
Phenomena of interest: the experience of participating in a peer support intervention
Context: any setting where peer support interventions are offered, not limited by geographical location

Synthesized finding	**Type of research**	**Dependability**	**Credibility**	**ConQual score**	**Comments**
Synthesized Finding 1: The peer-peer relationship is perceived as unique by those giving and receiving peer support, and important components included communication, a shared understanding and an ability to connect on a personal level. These components should be considered when matching participants to PSVs.	Qualitative	High	High	High	Dependability: 11/14 findings came from studies with high dependability as they scored 4/5 yes responses for the questions relating to appropriateness of the conduct of the research. Credibility: All 14 findings were unequivocal
Synthesized Finding 2: PSVs and participants perceive a number of benefits from taking part in peer support interventions including developing a greater sense of purpose, feeling optimistic about the future, and an overall improvement in skills such as communication, knowledge and confidence. These benefits should be considered when developing and recruiting to future peer support interventions.	Qualitative	Moderate (Downgrade one level*)	Moderate (Downgrade one level**)	Low	Dependability: 9/14 findings came from studies with moderate dependability as they scored 3/5 yes responses for the questions relating to appropriateness of the conduct of the research. Credibility: Downgraded one level due to mix of unequivocal (12) and credible (2) findings.
Synthesized Finding 3: People developing or implementing peer support interventions should be cognizant of elements that are deemed essential by PSVs and participants, which includes specific discussion topics, a sharing of ideas and individual preferences.	Qualitative	High	High	High	Dependability: 8/13 findings came from studies with high dependability as they scored 4/5 yes responses for the questions relating to appropriateness of the conduct of the research Credibility: All 13 findings were unequivocal
Synthesized Finding 4: A number of physical, logistical and interpersonal barriers to successful implementation of peer support for chronic pain have been reported; ways of overcoming these barriers should be considered when developing future peer support interventions.	Qualitative	Moderate (Downgrade one level*)	Moderate (Downgrade one level**)	Low	Dependability: 6/12 findings came from studies with high dependability as they scored 4/5 yes responses for the questions relating to appropriateness of the conduct of the research. Credibility: Downgraded one level due to mix of

					unequivocal (8) and credible (4) findings.

PSVs = peer support volunteers
* Downgraded one level due to common dependability issues across the included primary studies (the majority of studies had no statement locating the researcher and no acknowledgement of their influence on the research).
** Downgraded one level due to a mix of unequivocal and equivocal findings.

Introduction

Chronic pain is a global issue and has been recognized as one of the most prominent causes of disability worldwide.[1] The global prevalence of chronic pain is high, affecting up to 40% of American adults,[2] 50% of adults in the UK,[3] 20% of Australian adults,[4] and 33% of adults ~~Additionally~~, across 28 low- and middle-income countries. [5] The financial cost of chronic pain is substantial, not only for the individual but also for healthcare systems and economies. There is a greater economic impact of chronic pain compared with most other health conditions due to its impact on work absence, reduced levels of productivity and increased risk of altogether leaving the labor market.[6] Total costs of chronic pain have been estimated between $560 to 635 billion in the US[2] $73.2 billion in Australia[7] and €300 billion on back pain alone in the EU.[8] With such high global prevalence and economic impact, developing methods of managing and supporting people with chronic pain remains a priority.

Both the World Health Organization (WHO) and the International Association for the Study of Pain (IASP) classify pain as chronic when it persists beyond 12-weeks[9, 10], as this is the normal time for tissue healing.[11] The International Classification of Diseases (ICD-11) further categorizes chronic pain into primary and secondary pain.[12] Chronic primary pain is pain that cannot be explained by another condition and examples include non-specific low back pain, chronic migraine, complex regional pain syndrome and fibromyalgia.[12] Chronic secondary pain is pain that may initially be regarded as a symptom of another disease, although a diagnosis of secondary pain distinguishes a turning point when the chronic pain becomes a problem in its own right.[12] Oftentimes the chronic pain may persist beyond successful treatment of the initial cause, at this point the underlying disease has been treated but the diagnosis of chronic pain will remain.[12] Examples of chronic secondary pain include pain related to the bones or joints, disease in the muscles, nerve damage, surgery, injury or cancer.[12]

For the purposes of this review, all types of chronic primary and secondary pain were included except for cancer-related pain due to its unique experience and management, which typically differs from other types of pain.[13] The WHO recognizes pharmacological interventions as the “mainstay” of cancer pain management,[14] while other types of chronic pain utilize a variety of management techniques, which will be explored in the following section.

Some of the key clinical recommendations for managing chronic non-cancer pain include pharmacological management, psychologically-based interventions, physical therapies and supported self-management.[15] Members of the multidisciplinary team (MDT) such as nurses, physiotherapists, psychologists, anesthetists and pharmacists all play vital roles in the implementation of these management strategies. Pharmacological management can include a range of medications such as non-opioids, opioids, antiepilepsy drugs and antidepressants.[15] Psychologically-based interventions can include behavioral therapies, mindfulness and acceptance and commitment therapy.[15] Physical therapies can include exercise prescription, traction and manual therapy, and electrical physical modalities as recommended by Scottish and UK guidelines.[15, 16] As chronic pain is a lifelong condition, self-management is a key component of chronic pain management, although additional research is required to determine the optimum method of facilitating self-management.[17]

Self-management is defined as “the individual’s ability to manage the symptoms, treatment, physical and psychosocial consequences and lifestyle changes inherent in living with a chronic condition.”[18] Self-management programs are community-based and affordable interventions to help patients better manage their condition.[19] These programs are structured, with the aim to allow participants to become active in the management of their own chronic conditions.[20] Common components of self-management can include pain education, physical activity, lifestyle modification, psychological therapy and mind-body therapy.[21] In recent years, countries such as the UK, Canada and Australia have published national frameworks focused on empowering patients to improve self-management skills.[22] In addition, the WHO issued a 2021 guideline calling for future research to be focused on the development of self-care interventions; specifically determining optimal design features.[23] Numerous studies have been conducted which show that self-management skills can be improved with the use of peer support.[24-26]

Peer support is based on individuals with similar conditions supporting one another by providing emotional, appraisal and informational assistance.[27] Peer support emerged from the mental health consumer movement of the 1970s,[28] with published research originating in 1991.[29] Since that time, researchers have studied the use of peer support with a variety of populations, and the interventions themselves can vary in numerous ways. These variations include the format (group, one-to-one or a hybrid), delivery (face-to-face or virtual such as audio or video call, social media platform or a hybrid), length of the intervention, and frequency and duration of contact between the peers. Another important component is the role and training of the peer support volunteer (PSV), as formal interventions may provide extensive training while less formal interventions may provide no training whatsoever.

Peer support interventions (PSIs) could play a pivotal role in the management of chronic pain as their purpose is to empower patients by equipping them with self-management skills which can aid in improving health outcomes.[30] Indeed, improved condition management can be attained by ensuring adequate amounts of social support, particularly support that is condition-specific.[31]

Examining the literature on the use of PSIs for adults with chronic non-cancer pain has shown promising effects. Effectiveness studies on PSIs have shown improvements in psychological outcome measures,[32] self-efficacy, pain centrality and patient activation,[24] and several other health outcomes.[33] An increase in patient activation is particularly notable, as higher levels are associated with improved adherence to treatment recommendations and self-management behaviors.[34] Decreases in pain centrality are also significant as this results in pain becoming less of a focal point for patients post-intervention, possibly aiding patients to better cope with their pain.[35]

As previously mentioned, there are numerous variations across PSIs, and it is crucial to consider how these variations may impact the patient experience. Literature searching of Medline and CINAHL has identified a body of evidence regarding the experience of participating in these interventions. Participants and PSVs appear to have generally positive views about participating in PSIs,[36-39] although barriers to participation are also discussed.[40] Further searching of PROSPERO, the Cochrane Database of Systematic Reviews, and JBI Evidence Synthesis was conducted and no current or in-progress systematic reviews on the topic were identified. Other reviews have explored effectiveness[17, 33] and design and implementation,[41] and individual studies have addressed patients' experiences and perceptions of participation in an intervention, but this information has not been synthesized into a systematic review. This information is crucial for developing and delivering PSIs with optimal benefits for those involved. The aim of this review was therefore to explore adults' (either PSVs or participants) experiences of and perceptions of participating in (i.e. delivering or receiving) a PSI for chronic non-cancer pain in order to make recommendations for future research and practice with respect to the content and delivery of PSIs.

Review question(s)

This review explored the experiences and perceptions of adults with chronic non-cancer pain who had either delivered or received a PSI. The specific review questions were:

1. What are the experiences and perceptions of adults with chronic non-cancer pain regarding the format, delivery, role and training of PSVs and duration of the PSI?
2. What are the experiences and perceptions of adults with chronic non-cancer pain regarding the strengths and limitations of PSIs?
3. What do adults with chronic non-cancer pain perceive to be the barriers and facilitators to implementation of PSIs?

Inclusion criteria

Participants

This review considered studies that included adults with chronic (over 12-weeks duration) non-cancer pain. The definition of adulthood was aligned with the country of origin for each publication as this can vary between 16-18 years. Due to differences in management strategies and particular guidelines for children compared with adults,[42] children were considered outside the scope of this review. There was no upper age limit as chronic pain can impact adults of all ages. Conditions included, but were not limited to: low back pain, osteoarthritis, rheumatoid arthritis, fibromyalgia, chronic widespread pain, and lupus.

The following criteria were not clarified in the *a priori* protocol but were added as amendments and updated in PROSPERO.[43] Chronic pain as a result of a traumatic experience was included, (i.e. burn victims, amputees). Studies with adolescents were included if more than 50% of participants were considered adults. Cancer pain, neurological conditions and opioid dependence were all excluded due to the specific nature and management of these conditions,[13, 44, 45] which typically differs from other types of pain and circumstances. Sickle cell and tinnitus were excluded as these conditions exhibit episodic rather than long-standing chronic pain which also requires specific management.[46,47]

Phenomena of interest

This review considered studies that explored adults' (either PSV or participant) perceptions of participating in a PSI. A PSI was defined as a gathering of two or more people with similar conditions with the goal of supporting one another by providing emotional, appraisal and informational assistance. This intervention could be delivered by any mode including face-to-face, virtual (audio or video call, messaging/emailing, or social media platform) or a hybrid, and in any format including group, one-to-one or a hybrid. In order to differentiate a PSI from a support group, some amount of training had to be provided to the PSVs. Studies with peer support included as part of a multi-component intervention were included if peer support was the dominant component and/or the data on peer support could be extracted separately.

The following criteria were not clarified in the *a priori* protocol but were added as amendments and updated in PROSPERO.[43] Peer support was included where it was a standalone intervention or where it was delivered alongside or embedded within a broader self-management program. Studies were excluded if the research questions were solely focused on the training experience of PSVs, as this was not directly related to the aims of this review.

Context

This review considered studies that offered PSIs in any setting, including but not limited to, hospitals, clinics, and community settings, and was not restricted by geographical location.

Types of studies

This review considered studies that focused on qualitative data, including but not limited to, designs such as phenomenology, grounded theory, ethnography, action research, and feminist research. Mixed methods studies were considered where the qualitative results were reported separately. Qualitative studies could include interviews, focus groups, case studies, exploratory, longitudinal studies, or cross-sectional surveys with reported free-text responses that were analyzed qualitatively. Conference proceedings were excluded as it would not be possible to extract sufficient information on methodological quality or study findings, this was not clarified in the *a priori* protocol, but was added as an amendment and updated in PROSPERO.[43]

Methods

This systematic review was conducted in accordance with JBI methodology for systematic reviews of qualitative evidence[48] and followed an *a priori* protocol registered in PROSPERO, (CRD42021245085).[43]

Search strategy

The search strategy was developed in consultation with a research librarian and congruent with recent systematic reviews, [49, 50] including a large umbrella review, [17] all of which focused on peer support for chronic conditions. The search strategy aimed to locate both published and unpublished studies. A three-step search strategy was utilized in this review. First, an initial limited search of MEDLINE and CINAHL (EBSCOhost) was undertaken, followed by analysis of the text words contained in the title and abstract and the index terms used to describe the articles. The search strategy, including all identified keywords and index terms, was adapted for each included information source and a second search was undertaken during April of 2021. The full search strategies are provided in Appendix I. In keeping with the focus of the review (peer support) and informed by the previous systematic and umbrella reviews described above,[17,49-50] we did not include search terms for the broader concept of self-management, as it was not the purpose of the review to explore self-management *per se.* Our search strategy, using a combination of subject headings and keywords, was designed to identify peer support interventions either as stand-alone or components of broader self-management interventions.

Finally, reference lists of included studies were screened for additional studies. Searches were conducted using English databases and were open to all languages as translation services were available, however it transpired that final articles for critical appraisal were all published in English. Databases were searched from inception to April 28, 2021, as the volume of qualitative studies was expected to be manageable due to the use of PSIs being a relatively recent occurrence.

The databases that were searched included AMED, CINAHL, Medline, PsycArticles, SPORTDiscus (all EBSCO), EmBase, PsycINFO (both Ovid) and Web of Science (Clarivate Analytics). Sources of unpublished studies and gray literature included EBSCO Open Dissertations (EBSCOhost), EThOS (British Library), the Networked Digital Library of Theses and Dissertations (Global ETD) and Google Scholar.

Study selection

Following the search, all identified citations were collated and uploaded to RefWorks (ProQuest, MI, USA) and duplicates removed. Citations were then uploaded to Covidence to facilitate screening, additional removal of duplicates, and selection. Titles and abstracts were screened for eligibility using the inclusion criteria by two independent reviewers (RA and KC). As this review was conducted as part of an unfunded doctoral study, the following deviation from the protocol was made. After screening 24% of studies, substantial agreement was reached (93% agreement, Cohen's Kappa 0.62 [51]), therefore RA screened the remaining titles and abstracts, discussing with KC as required. As one of the reviewers (KC) has authored multiple studies on the topic of peer support and chronic pain, RA screened any studies by this author and discussed with another reviewer (VP) as required, in order to mitigate risk of author bias. Full-text studies were retrieved and imported to Covidence for screening by two independent reviewers (RA, KC). Studies that did not meet the inclusion criteria were excluded and reasons for their exclusion are provided in Appendix II. Any disagreements that arose between the reviewers were resolved through discussion.

Assessment of methodological quality

Eligible studies were imported into the JBI System for the Unified Management, Assessment, and Review of Information (JBI SUMARI; JBI, Adelaide, Australia). The studies were critically appraised by two independent reviewers (RA, KC) for methodological quality using the standard JBI critical appraisal checklist for qualitative research.[52] As one of the reviewers (KC) authored one of the included studies, it was appraised by RA and VP. It was not necessary to contact authors of any papers for missing or additional data for clarification. Any disagreements that arose between the reviewers were resolved through discussion. In order to ascertain a comprehensive understanding of the research phenomenon, both data extraction and synthesis were conducted for all studies that met the inclusion criteria, regardless of methodological quality, as both high- and low-quality studies can provide potentially valuable insights.[53]

Data extraction

Data were extracted from studies included in the review by the lead author (RA) using the qualitative standardized data extraction tool from JBI SUMARI.[54] A pilot data extraction was completed and no changes were necessary to the data extraction tool. A second reviewer (KC) conducted independent data extraction on 10% of studies and no discrepancies between reviewers were identified. The data extracted included specific details about study methods, country of origin, phenomena of interest, setting, participant characteristics, and a description of the main results. Study findings, and their illustrations were extracted from each paper verbatim, and assigned a level of credibility of unequivocal (U), credible (C), or not supported (NS), as per JBI levels of credibility.[48] No further requests were needed for additional data from the authors of any of the included studies.

Data synthesis

Qualitative research findings were pooled using JBI SUMARI[54] and the meta-aggregation approach.[48] This involved the aggregation or synthesis of findings to generate a set of statements that represented that aggregation, through assembling the findings and categorizing these findings on the basis of similarity in meaning. These categories were then subjected to a synthesis in order to produce a single comprehensive set of synthesized findings that could be used as a basis for evidence-based practice. Where textual pooling was not possible, the findings were presented in narrative form. Only unequivocal and credible findings were included in the synthesis, and all findings were either unequivocal or credible.

Assessing confidence in the findings

The final synthesized findings were graded according to the ConQual approach for establishing confidence in the output of qualitative research synthesis and presented in a Summary of Findings.[55] The Summary of Findings (SoF) includes the major elements of the review and justification for the ConQual score. The SoF also includes the title, participants, phenomena of interest and context for this systematic review. Each synthesized finding from the review is presented, along with the type of research informing it, scores for dependability and credibility, and the overall ConQual score.

Results

Study inclusion

After searching the databases, a total of 5016 reports were retrieved. From this, 1122 duplicates were removed leaving a total of 3894 titles and abstracts to be screened for inclusion. A total of 3808 of these were subsequently excluded as they did not meet inclusion criteria, leaving 86 reports for further review. After examining the full text of these 86 reports against the inclusion criteria, it was determined that nine met the criteria and were suitable for inclusion in the review. Reasons for exclusion at this stage were: wrong study design (n=30), wrong phenomena of interest (n=27), wrong patient population (n=16), and duplicate reports (n=4). The results of the search and selection process are displayed in the Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) flow diagram[56] (Figure 1). Excluded studies, with reasons, are in Appendix II. Therefore, nine reports, which represented seven unique studies, and a total of 214 participants, were included in the review.[44-47, 49-53] Two studies had two separate reports written on each. One RCT with an embedded qualitative component produced a report on participant perceptions[57] and an additional report on PSV perceptions.[40] Another mixed methods study produced two qualitative reports, one on facilitators and barriers[58] and another on participant experiences.[38]

<Insert Figure 1 here>

Methodological quality

As seen in Table 1, the quality of the studies varied. Five out of seven studies were of moderate to high quality as they scored "yes" on seven to eight out of the ten total questions. These ~~reports~~ studies all exhibited good amounts of detail and congruence on methods, methodology and data reporting. No studies clearly stated their philosophical perspective (Q1) and few included a statement locating the researcher culturally or theoretically (Q6) or discussed the influence of the researcher on the research (Q7). The majority of included studies could be categorized as qualitative descriptive, an approach increasingly common in applied health research,[59] which may account for the lack of stated philosophical perspective. Therefore, scoring "unclear" for Q1 was not considered to be a major limitation. The one study with the lowest score~~s~~ (4/10) was largely due to this study coming from an RCT with an embedded qualitative component, as such the qualitative content was a smaller part of the study. This resulted in a lack of clarity in reporting on the research methodology and analysis and representation of data.[40, 57]

<Insert Table 1 here>

Characteristics of included studies

Of the seven included studies published between 2002 and 2020 which included nine reports, two were conducted in the US[36, 38, 58] and there were two each from the UK[47, 48] and Canada,[37, 39] and one from China.[40, 57] Study designs included three mixed methods,[36, 39, 60] three qualitative[37, 38, 58, 61] and one RCT with an embedded qualitative component.[40, 57] Three studies employed semi-structured interviews,[38, 40, 57, 58, 60] while the remainder combined interviews with focus groups,[37, 61] written accounts,[36] or questionnaires and diaries.[39] Sample sizes ranged from seven[36] to 68.[57] The total sample size for participants in this review was 214. Populations varied from adults with arthritis,[37, 39, 61] chronic low back pain,[60] chronic musculoskeletal pain[38, 58] and more general chronic pain.[36, 37, 40, 57] Concerning the aims of the included studies, three explored participant and PSV experiences of PSIs,[38, 40, 57, 61] two examined the feasibility of PSIs[39, 60] two explored the facilitators and barriers to participation in a PSI[37, 58] and one evaluated the transition from participant to PSV.[36] Full characteristics of included studies are reported in Appendix III.

Review findings

A total of 53 findings, 47 unequivocal and six credible, were extracted from the nine included reports and combined to form 14 categories based on similarity of meaning. They were further organized into four synthesized findings. Narrative results are presented by synthesized finding and include a description of the categories and sample illustrations. Full details of study findings and illustrations are reported in Appendix IV. Figures 2-5 present the relationship between the findings, categories, and synthesized findings.

Synthesized finding #1 - The peer-peer relationship is perceived as unique by those giving and receiving peer support, and important components include communication, a shared understanding and an ability to connect on a personal level. These components should be considered when matching participants with PSVs.

Participants and PSVs frequently reflected on the significance of relating to another person with chronic pain. The relationship was generally positive; both participants and PSVs felt they benefited from the social time spent together. Listening was a key component and helped participants convey their feelings in an atmosphere that was both welcoming and understanding. This synthesized finding was created from three categories and 14 findings (Figure 2).

Category 1: Importance of mutual understanding from shared diagnosis/background

Four unequivocal findings[58, 60, 61] were combined to form this category, where participants noted that having a shared diagnosis of chronic pain or a shared background (e.g., as a veteran[38]) was highly impactful to building rapport and communicating openly. Participants consistently reflected on the difficulty of sharing their experience with medical professionals or family and friends; essentially people who have not actually experienced living with chronic pain. In contrast, conversations with peers who share a diagnosis were described as extremely valuable. In this context, it was commonly expressed among participants that there was a much greater understanding of the day-to-day challenges and the reality of living with chronic pain.

> *"You don't have to have a lot of other things in common if you both have back pain, both have an understanding" [PSV66, Male]* [60(p. 159)]

Category 2: Importance/benefits of making a connection

This category combined seven unequivocal findings[36-39] and demonstrated that both PSVs and participants noted the unique relationship that was formed during the intervention and how talking with someone who shared the same condition and experiences helped to validate feelings on both sides.

> *"The connection helps validate feelings for both involved, the whole thing was very gratifying."* [36(p. 99)]

The power of the connection was facilitated by similarities in age, gender, personality, interests, stage of life, level of responsibility at work, diagnosis and disease progression.[39] Some participants reflected that the relationship helped provide assurance that they were not the only one struggling with certain aspects of their diagnosis. Participants appreciated discussing topics related to their diagnosis along with talking about other common interests unrelated to pain. At times the mentor role of the PSV evolved into a more egalitarian friendship and PSVs also felt supported by the conversation.[37] PSVs also commented that making connections looked different between different peers; some were shy while others opened up more quickly.

Category 3: Importance of listening/communication

Three unequivocal findings[38, 61] indicated that participants greatly valued having a space to be heard and relay their experiences and feelings, especially in their own language. Participants who spoke more than one language stated they had not encountered another space to convey their story and emotions in their native tongue.[61] Being able to fully express their experience was therefore a very impactful and gratifying moment. Participants also felt supported as they shared their story with someone who could relate to them. Participants liked the openness of the conversations with their PSVs and that it was not purely an exchange of advice but more a social exchange of experiences.

> *"It was good to talk to [N.L.] because she spoke my language and that really helped me to get my feelings across and this wouldn't happen otherwise" (56 years old, disease duration 10 years).*[61(p. 15)]

<Insert Figure 2 here>

Synthesized finding #2 - PSVs and participants perceive a number of benefits from taking part in PSIs including developing a greater sense of purpose, feeling optimistic about the future, and an

overall improvement in skills such as communication, knowledge and confidence. These benefits should be considered when developing and recruiting to future PSIs.

PSVs reported numerous benefits from participating in PSIs, these benefits ranged from improvements in interpersonal skills, gaining knowledge about their condition and management strategies, and most notably a boost in their sense of self-worth. Participants were positive about their relationships with the PSVs, particularly appreciating their kindness and patience. Greater levels of optimism were also commented on by both parties, with PSVs illustrating how to live well with pain and participants feeling motivated to focus on what they could do, instead of their limitations. This synthesized finding summarizes four categories comprising 14 findings (Figure 3).

Category 4: PSVs perceive a range of personal benefits from taking part in PSIs

Five findings (three unequivocal[37, 40, 60] and two credible[36, 38]) showed that PSVs noted several benefits from not only helping others but also helping themselves. As they interacted with participants, PSVs enjoyed having a positive influence, empowering the participants and watching them improve their quality of life and decrease levels of loneliness. PSVs also noted a sense of satisfaction as they experienced overall improvements in their own skills of communication, confidence, functioning and knowledge. Several PSVs reported learning new self-management techniques and coping strategies as well as appreciating reinforcement of familiar self-management techniques.

> *"Think I got as much out of it as the patients have. I learned a lot about pain and different people's pain thresholds, ways of managing. Think I'm more tolerant of back pain as a result of the study." [PSV40, Female]* [60(p. 159)]

Category 5: PSVs experience a sense of purpose from taking part in PSIs

Three unequivocal findings[36, 40] revealed that PSVs reported greater levels of satisfaction and self-worth by giving back to society and seeing participants improve their skills of self-management. PSVs described their involvement in the PSI as a meaningful experience and felt appreciated by the participants.

> *"When they started thinking of more ways to help themselves I felt good, I felt like I had purpose."* [36(p. 99)]

Category 6: Participant benefits/positive feedback

This category combined three unequivocal findings[57] to show that participants liked the PSVs and the intervention as a whole. These findings came from two reports on the same study, which implemented a face-to-face intervention for nursing home residents with chronic pain. The intervention consisted of weekly one-hour sessions; PSVs led 20 minutes of physical activity followed by 30 minutes of pain management education over a duration of 12 weeks. Participants described the PSVs as patient and nice and they enjoyed participating in the intervention.

> *"I feel happy and relaxed when taking part in the program every week"* [57(p. 9)]

Category 7: Positive about the future/changed attitude

Three unequivocal findings[37, 38, 61] indicated that both PSVs and participants reported improved levels of hope for the future, aided by sharing their experience with someone who understood their condition and provided motivation and encouragement. PSVs expressed familiarity with feelings of anxiety and fear of the future due to the very real impact of living with chronic non-cancer pain. They were able to pass on advice such as not letting pain be in control and focusing on what each person is capable of instead of how they are limited.[38] After conversing with PSVs, participants noted a greater acceptance of pain and felt motivated to see themselves as separate from their disease.

> *"Instead of thinking about what I can't do, I like to think about what I can do. That's more fun. It's a lot more fun. It gives the day a better outlook" (Veteran 213).*[38(p. 2251)]

<Insert Figure 3 here>

Synthesized finding #3 - People developing or implementing PSIs should be cognizant of elements that are deemed essential by PSVs and participants, which include specific discussion topics, a sharing of ideas and individual preferences.

Sharing of ideas was especially helpful amongst participants and PSVs in a particular life stage, such as entering university. PSVs from this study were able to provide specific advice regarding accommodation and accessing other resources. Notable discussion topics comprised of treatment options, exercise and navigating healthcare resources. Preferences for intervention components including stressing the overall significance of PSIs, the benefits of PSV training and having support from other PSVs and study staff and finally the importance of face-to-face interactions. This synthesized finding summarizes three categories comprising 13 findings (Figure 4).

Category 8: Sharing ideas on self-management

This category combined two unequivocal findings[37, 38] to show that PSVs provided advice on pain management strategies and some discussed specific life transitions and accommodations that can be requested (high school to university). One PSV stated his favorite part of working with participants was sharing concrete ideas about self-management, not just abstract principles.[38] He was able to share specific strategies that both of his participants implemented in their own lives. Several participants expressed a willingness to try new coping strategies or methods of pacing.

> *"…figuring out ways to cope with my pain or learning tricks to ease the pain, [my peer coach] just sharing information that he found out with me, you know all the tips and tricks were very beneficial. Because I'm in pain, I don't think it's going to hurt to try something new (chuckles)." (Veteran 215)* [38(p. 2252)]

Category 9: Types of support and discussion topics

Five unequivocal findings[38, 39] revealed that emotional, informational, appraisal and instrumental support were all provided by PSVs. Emotional and informational support appeared to be the most commonly reported forms and frequent discussion topics included exercise, activity pacing and navigating health care resources. Informational support included both program resources and mentors' experiential knowledge. After incorporating more activity into their routines, at least one participant was able to reduce his use of pain medication and also noted improved sleep quality.[38] PSVs also shared information about coping strategies or preventative measures to take to reduce pain. PSVs shared their experiences oftentimes to model what could work like walking with a friend or keeping weights nearby while they are watching TV and trying to incorporate small exercises during commercial breaks.[38]

> *"I would ask her when she encountered bad weather, how were her joints? What did she do about that? …Can I do something prior to, when you know the weather is coming." (EIA3)* [39(p. 6)]

At least one PSV went beyond discussing techniques and agreed to engage in the same self-management routine as his assigned participant.

> *"I told them up front, Look I'm gonna do these with you, so if you agree to do them over the next two weeks, I will do them for two weeks and I'll even document the days that I do 'em"* (Peer Coach 106).[38(p. 2252)]

Category 10: Preferences for intervention components

Six unequivocal findings[37, 39, 58, 60] were combined to form this category, showing preferences for a range of intervention components. Both participants and PSVs stressed the need for PSIs; participants describing them as "critical" and PSVs wishing that a similar intervention had been available earlier in their diagnosis.[39] Regarding the delivery of the intervention, both parties preferred at least one face-to-face interaction, often with additional phone interactions.

> *"Both [face-to-face & telephone] were good…just as easy over the phone…but it's vital to see a face, you couldn't do them all by phone" [41]52, Male]* [60(p. 159)]

PSVs appreciated the training provided to them, particularly how to use their story in a constructive way.[37] In an intervention where a manual was provided, PSVs varied in their use of said manual, some citing it as helpful if participants went off track during a session as they could use the manual to direct the conversation back to the topic for the session.[60] Some PSVs noted the manual was helpful but there was far too much content; it could be halved. Finally, one intervention provided support to PSVs via regular group conference calls with other PSVs, supervised by the psychologist, as well as individual phone calls from the psychologist who provided supervision and advice.[58] PSVs agreed that this support was crucial as a main facilitator to participation.

<Insert Figure 4 here>

Synthesized finding #4 - A number of physical, logistical and interpersonal barriers to successful implementation of peer support for chronic pain have been reported; ways of overcoming these barriers should be considered when developing future PSIs.

PSVs noted physical challenges such as enduring the length of the therapy sessions during a pain flare and struggling to physically assist frail participants during an exercise portion. Logistical challenges included difficulties with scheduling, access to technology or transportation, and time commitment. PSVs discussed interpersonal challenges such as ascertaining and providing an appropriate level of engagement with their peer. PSVs and participants both commented on some negative interactions relating to difficulty building rapport due to differences in disease stage, gender, sexuality or political views. This synthesized finding summarizes four categories comprised of 12 findings (Figure 5).

Category 11: Physical barriers to leading intervention

Two findings (one unequivocal[40] and one credible[36]) showed that PSVs experienced some challenges with leading an intervention. In one intervention, PSVs led a brief (20 minute) exercise period with participants; PSVs reported some difficulty with providing assistance to particularly frail participants.[40]

> *"Some nursing home residents were too frail and required more assistance"* [40] (p. 99)

In another intervention, PSVs similarly noted the physical challenges of enduring the duration of the therapy sessions along with transportation to the clinic, particularly during their own pain flares.[36]

Category 12: Logistical barriers to participation

This category combined five findings (four unequivocal[37, 58] and one credible[36]) revealing a number of logistical barriers related to technology, time commitment and finances. PSVs noted internet connectivity as an occasional disruption to video calls but stated the overall quality of the calls was never compromised. PSVs also discussed barriers such as scheduling challenges and finding time to meet with their assigned participants. Time commitment was also highlighted as a substantial consideration; with one particular study requiring three to seven hours per week, along with paperwork.[36] Some PSVs struggled to establish an initial contact with participants if not done in person, and others noted challenges with properly connecting with participants if there was an interruption to their meeting schedule. Participants discussed transport expenses when weighing how to meet, with some deciding on phone calls as a lower cost option.

> *"I told [my peer coach], I got to ride the bus to get [to the medical center to meet]. I said that's four bucks. I said I have to look at that money because I'm on a fixed income. I said I know it's a lot of gas for you, and gas at that time was almost $4 a gallon. That's why we decided to do the phone calls." (Veteran 210)*[58] (p. 8)

Category 13: Difficulties with correct level of engagement from PSV

Two findings (one unequivocal[58] and one credible[36]) indicated that some PSVs experienced the psychosocial challenge of determining and executing the correct level of engagement with their assigned participants. PSVs reported an eagerness to get overly involved and had to scale back their efforts when their desire to help actually exceeded what they could feasibly achieve. PSVs also spoke of their own challenges with engagement when they themselves were fatigued or not in the right headspace to mentor.

> *"Sometimes I was also weak. I didn't call or nothing because I was spaced out. My disabilities were taking over, and I just would come into the house and just sit in the corner in my chair…and watch TV." (Peer 109)* [58(p. 9)]

Category 14: Challenges/negative interactions between PSV and participant

Three findings (two unequivocal[39, 61] and one credible[39]) were combined to form this category, where some participants noted fear or disbelief when meeting PSVs with reduced mobility as they reflected on that possibility of disease progression in their own lives.

> *"When I first saw her I felt very afraid. For a whole week I was upset, I was thinking, gosh... will I be like this in another 10 years time? Then I tried to make myself understand that, no, I will not end up like that because I have been treated reasonably early. Then I thought that it could be that some people have different disease and patterns." (45 years old, disease duration three years).*[61 (p. 16)]

One participant found herself disassociating from her PSV who was a wheelchair user.[39] PSVs also relayed difficulties in building rapport due to differences in gender, sexuality, political views or disease stage. Finally, PSVs reported a few specific incidents such as a participant who was reluctant to stop consuming alcohol in order to take methotrexate.[39] Another incident involved a PSV struggling to advise a participant who had problems returning to work after being on long-term disability.[39]

<Insert Figure 5 here>

Discussion

This is the first systematic review to synthesize the available qualitative evidence on the experience of participating in a PSI for adults with chronic non-cancer pain. One of the main findings is the lack of research in this field.[36-40, 57, 58, 60, 61] These studies represented four countries; the US, UK, China and Canada. Generalizability must be considered not only between these countries, but also from these countries to other parts of the world as they represent different healthcare systems, cultures and societies. In addition, the organization and funding of health and social care also varies widely between countries. The results present the experiences of people from high income settings and may not be contextualized to low- and middle-income countries, this warrants further research to be conducted in the latter countries. Other literature on peer support for adults with diabetes has noted varying peer support strategies and preferences for different ethnic and racial groups.[62, 63] Additionally, the impact of peer support may be influenced by contextual factors such as culture and social environment.[64] Therefore, these factors may need to be considered for the population of adults with chronic non-cancer pain.

The four synthesized findings have provided an understanding of the unique relationship formed between peers, the benefits for both parties, essential intervention components, and barriers to implementation. ConQual[33] was utilized to determine the confidence of the evidence for the four synthesized findings, which resulted in two high ratings and two low ratings. These findings will now be discussed in relation to each of the review questions.

What are the perceptions of adults with chronic non-cancer pain regarding the format, delivery, role and training of PSVs and duration of the PSI?

This review illuminated findings on delivery and PSV training, but no evidence was found on the remaining intervention components, namely the format, role of the PSV, length of intervention and frequency of contact between PSVs and participants. In the realm of PSIs, delivery can vary from a face-to-face interaction,[57] audio call,[65] video call,[66] social media platform,[67] online discussion forum,[68] or a combination of two or more of these interaction types.[60] This review elucidated only one finding regarding participants' perceptions of delivery modes. Cooper et al.[60] reported that all participants deemed a face-to-face element to be essential, including participants who had one or more telephone meetings. This preference for a face-to-face element is an important consideration in light of the increasing number of studies that are incorporating virtual components to interventions. The cause of this increase could be twofold, as access to smart devices is expanding and owing to ongoing concerns relating to Covid-19. With only one finding exposed in this review, further research is required to determine if this was simply an outlier or a function of other studies not reporting on preferences of delivery mode. Furthermore, as this finding was from a study completed before the global outbreak of Covid-19, it would also be important to consider how participant and PSV preferences may be impacted by ongoing concerns relating to Covid-19. Evidently there is still a need for further research to gain a more comprehensive understanding of participant and PSV perceptions of this component.

Another component is PSV training and two findings were related to this topic. Training can range from as little as three[38] to 12 hours,[60] as demonstrated by the studies included in this review. One PSV noted training was valuable in terms of learning how to mentor and use his story in a constructive way.[37] Another intervention provided manuals to PSVs to use throughout the PSI, and PSVs had variable opinions on the usefulness of the manuals. [60] For the purpose of this review, some amount of training was required for PSVs in order to be included in the chosen definition of peer support, but it should be noted that many PSIs are implemented without any training being provided to PSVs. A future review could be conducted to evaluate and synthesize and/or compare PSIs with or without training for PSVs.

This review did not find any evidence on the remaining intervention components, these include the format, role of the PSV, length of intervention and frequency of contact between PSVs and participants. Further research is warranted on these topics in order to address this prominent gap in the evidence base. The format of PSIs can vary from a one-to-one interaction,[38] a group[57] or a hybrid.[65] With peer support in critical care, one-to-one interactions have demonstrated more significant improvements in certain health outcomes[69] compared to group interactions. These include reductions in anxiety and depression and increases in perceived social support and self-efficacy.[69] Depending on the parameters of the intervention, if a group is gathered, the composition can also vary from homogenous to mixed disease type and several other demographics. It is important to consider the impact this could have on group dynamics and the level of shared experiences. With any PSI, the most beneficial design will depend on the preferences of the individuals and any unique circumstances or challenges associated with a particular diagnosis.

The role of the PSV can also vary based on the design of the intervention. All interventions included in this review designated PSVs who received training and were matched either with an individual or helped lead a group of participants, all of whom desired some kind of support. While the interventions are termed “peer support,” this type of partnership does reveal a slight hierarchy. The PSVs are usually chosen due to their experience at managing their condition well, thus they take on somewhat of a mentorship role towards the participant. This contrasts other interventions which construct partnerships that are reciprocal in nature; all participants complete the same training and have the opportunity to both offer and receive support.[70]

The length of a PSI can range from as little as a singular interaction[61] to two years.[71] The frequency of meetings can vary, again from a singular interaction,[61] although most are weekly,[40] every two weeks[60] or a hybrid of one-to-one meetings weekly and groups meetings monthly.[71]

What are the perceptions of adults with chronic non-cancer pain regarding the strengths and limitations of PSIs?

This review mainly found strengths and instead of limitations found barriers, which will be discussed in detail in the next section. Both PSVs and participants identified several strengths of PSIs. These pertained to the benefits they received from taking part in the interventions, including developing a greater sense of purpose, feeling optimistic about the future, and an overall improvement in skills such as communication, confidence and knowledge. Similar benefits have been reported with the use of PSIs with other conditions. With regard to diabetes, peer support increased scores for patients in the areas of self-efficacy, self-management and quality of life.[72] Patients with cancer have also expressed high satisfaction and acceptance of PSIs, along with improvements in the areas of emotional distress, decision-making skills, communication, and psychological adjustment.[73]

There were no findings specifically on limitations of PSIs, but barriers to implementation of PSIs are explored in the next section, which heavily relates to limitations as well.

What do adults with chronic non-cancer pain perceive to be the barriers and facilitators to implementation of PSIs?

This review found barriers to implementation of PSIs could be categorized into physical, logistical, and interpersonal barriers. PSVs noted the physical challenge of assisting frail participants,[40] along with enduring the length of the exercise portion of the intervention.[36]

Logistical barriers included technological difficulties such as internet connectivity,[37] challenges with time commitment,[36, 37] and travel costs.[58] Studies on peer support with adults with diabetes have also found that poor attendance rates can potentially impair the effects of peer support.[74] For those who design and deliver future interventions, it is important to mitigate against these logistical barriers. Shue et al.[75] has also identified adequate time and space as potential barriers, coming from clinicians' (or implementers') perspectives. This included time for the initial training of PSVs and ongoing supervision, along with securing physical space to meet.[75] Evidently, interventions that are held virtually would not have to address the barrier of securing physical space, although implementers of these interventions would have to consider access to smart devices and internet connectivity. A systematic review on peer support in mental health reported barriers such as the absence of training for PSVs, unclear role definition for PSVs and a lack of support from staff/implementers of the intervention.[76]

Interpersonal barriers included negative interactions between peers. PSVs commented on challenges in building rapport with some participants due to differences in gender, sexuality, political views or disease stage.[39] In the interventions, the connection between peers and thus the potential benefits are largely based on good rapport, built from similarities or shared experiential knowledge of the condition. These benefits could be hindered if peers have a difficult time building rapport due to differences.

Another barrier was the challenge noted by PSVs to avoid the tendency to get overly involved in the lives of the participants and dealing with frustration when their desire to help exceeded their ability to help.[36] PSVs also commented on their own challenges with engagement when they themselves were fatigued or not in the right headspace to mentor. This points to a larger limitation of peer support in general, which is that it relies on the active participation of both PSVs and additionally participants that are motivated towards behavioral change, yet not all peers will possess these attributes.

We intended to explore facilitators to intervention implementation, however we instead found facilitators to patient participation, in an intervention from one study on veterans with chronic pain.[58] While the literature did not directly answer our original question, this information is still valuable. This study established the significance of participants sharing a common identity as veterans, along with the shared experience of living with chronic pain. It was evident that the veterans had struggled to share their experience with non-veterans and valued having a space to meet with other veterans. Similarly, the experience of living with chronic pain was also difficult to express and the veterans valued meeting with others with experiential knowledge of their circumstances. Our findings concur with those of Kong et al.,[77] who stressed the integral role that PSVs play and how their experiences, competency and extent of involvement could impact outcomes for participants with diabetes. Kong et al.'s review found that the selection criteria and training of PSVs is widely varied and could also impact the effects of peer support. Finally, the PSVs in this intervention stated that having support from the study staff also was a great benefit and facilitator to their participation. Another systematic review on peer support in mental health has also identified support for PSV wellbeing and access to their own peer network as facilitators.[76] This same review also found that providing adequate training and supervision to PSVs was essential.

Strengths and Limitations of this Review

The strengths of this review include a comprehensive, multi-language search strategy, the use of two independent reviewers throughout the review, which aided in reducing bias, and the assessment of the quality of evidence in the included studies. The search strategy was developed in consultation with a research librarian and relevant search terms were congruent with recent systematic reviews, [49, 50] including a large umbrella review.[17] We are confident that our comprehensive search strategy identified most relevant studies, although it is possible some studies were not discoverable due to the range of terms for “peer support” used by different researchers. However, we used all the terms related to peer support commonly cited in the literature and used in previous systematic review searches, including “peer group,” “peer counsel*,” “peer mentor*,” “peer coach*” and “social support.” It is always possible that studies have been missed, but we are confident that the search strategy was comprehensive, identifying 3,894 unique records. Studies retrievable via non-English databases may also have been missed as the searches were only conducted using English databases. Human error may have been possible in the screening of the titles and abstracts, however high reliability was achieved between the 25% screened by two independent reviewers. There was an included study authored by one of the reviewers (KC). Inclusion of this study and the subsequent risk of author bias was unavoidable as this author had done previous research in the area of chronic pain and peer support, but steps were taken to mitigate the risk of author bias. These steps comprised of excluding KC from any decisions regarding inclusion, critical appraisal or data extraction related to her study.

Additionally, there were concerns around the methodological quality of some of the included reports. None of the included reports clearly stated a philosophical perspective, as such none scored a "yes" to the criterion assessing congruity between the stated philosophical perspective and the research methodology. Only one of the reports had a statement locating the researcher culturally or theoretically and just three of the reports addressed the potential influence of the researcher on the researched. These limitations may have impacted the researcher's influence on the results, although are unlikely to have influenced the findings and illustrations.

Conclusion

There is minimal qualitative research exploring the experience of participating in a PSI for adults with chronic pain. Most of the seven included studies were qualitative descriptive. The findings can be used to inform the development and delivery of PSIs, and direct future research in this important area of practice. The peer-peer relationship is perceived as unique by those giving and receiving peer support, and important components included communication, a shared understanding, and an ability to connect on a personal level. These components should be considered when matching participants with PSVs. PSVs and participants perceive a number of benefits from taking part in PSIs including developing a greater sense of purpose, feeling optimistic about the future, and an overall improvement in skills such as communication, knowledge and confidence. These benefits should be considered when developing and recruiting to future PSIs. People developing or implementing PSIs should be cognizant of elements that are deemed essential by PSVs and participants, which include specific discussion topics, a sharing of ideas and individual preferences. A number of physical, logistical and interpersonal barriers to successful implementation of peer support for chronic pain have been reported; ways of overcoming these barriers should be considered when developing future PSIs.

Recommendations for practice

Based on the evidence displayed in the Summary of Findings, the overall findings in this review provide evidence to guide practice for organizations involved with developing and implementing PSIs for adults with chronic non-cancer pain. The summary of findings presents the overall ratings of confidence in our findings. Recommendations for practice are rated according to the JBI Grades of Recommendation.[61]

i. Individuals and organizations involved in developing and running PSIs for people with chronic pain should ensure that PSVs possess the relevant lived experience, personal attributes and communication skills in order to provide effective peer support. A screening process could be used to determine suitability and/or to help target necessary training to be provided to PSVs. (Grade B)
ii. This review found several benefits for both participants and PSVs, which could be used during recruitment to future PSIs to inform interested parties of potential benefits. These findings can also be used to develop feasible, acceptable and effective interventions. (Grade B)
iii. Participants and PSVs deemed a few essential elements to PSIs such as specific discussion topics like pain management and an open environment to share ideas. People developing or implementing PSIs should be cognizant of these elements and consider these topics for PSV training. (Grade B)

Recommendations for research

This systematic review paves the way for future research to purposefully assess patient preferences regarding the many components of peer support. Most notably, no evidence was found in the areas of intervention format, length of intervention and frequency of contact between PSVs and participants. As such, these areas require investigation. Further research is also required in other geographical locations and healthcare contexts in order for the findings to be generalized more widely. Additionally, future research can combine the findings of this review with evidence of effectiveness and cost-effectiveness of peer support in order to make more informed recommendations to policy-makers.

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57. Tse M, Li Y, Tang SK, Ng SSM, Bai X, Lee PH, et al. An Exploration of the Effectiveness of a Peer-Led Pain Management Program (PAP) for Nursing Home Residents with Chronic Pain and an Evaluation of Their Experiences: A Pilot Randomized Controlled Trial. Int J Environ Res Public Health. 2020;17(11).

58. Matthias MS, Kukla M, McGuire AB, Damush TM, Gill N, Bair MJ. Facilitators and Barriers to Participation in a Peer Support Intervention for Veterans With Chronic Pain. Clin J Pain. 2016;32(6):534-40.

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62. Pérez-Escamilla R, PhD, Hromi-Fiedler, Amber, PhD, MPH, Vega-López S, PhD, Bermúdez-Millán, Angela, PhD, MPH, Segura-Pérez, Sofia, MS, RD. Impact of Peer Nutrition Education on Dietary Behaviors and Health Outcomes among Latinos: A Systematic Literature Review. Journal of nutrition education and behavior. 2008;40(4):208-25.

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64. Zhang X, Yang S, Sun K, Fisher EB, Sun X. How to achieve better effect of peer support among adults with type 2 diabetes: A meta-analysis of randomized clinical trials. Patient Education and Counseling. 2016;75(4):186–197.

65. Shadick NA, Zibit MJ, Iannaccone CK, Thrower R, Sowell NF, Weinblatt ME, et al. A Development and Feasibility study of a peer support telephone program in rheumatoid arthritis. Journal of clinical rheumatology: practical reports on rheumatic & musculoskeletal diseases. 2018;24(6):346.

66. Jeffrey A, Andracchio L, Dvorak M, Lomas P, Smith B, Borowitz D. Virtual Peer Support for People With Cystic Fibrosis and Their Family Members: A Program Evaluation. Journal of patient experience. 2020;7(6):1748-54.

67. Young SD, Koussa M, Lee S, Perez H, Gill N, Gelberg L, et al. Feasibility of a social media/online community support group intervention among chronic pain patients on opioid therapy. Journal of Addictive Diseases. 2018;37(1-2):96-101.

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70. Heisler M. Different models to mobilize peer support to improve diabetes self-management and clinical outcomes: evidence, logistics, evaluation considerations and needs for future research. Fam Pract. 2010;27:i23-32.

71. Johansson T, Keller S, Sönnichsen AC, Weitgasser R. Cost analysis of a peer support programme for patients with type 2 diabetes: a secondary analysis of a controlled trial. European journal of public health. 2017;27(2):256-61.

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73. Meyer A, Coroiu A, Korner A. One-to-one peer support in cancer care: a review of scholarship published between 2007 and 2014. European journal of cancer care. 2015;24(3):299-312.

74. Smith SM, Paul G, Kelly A, Whitford DL, O’Shea E, O’Dowd T. Peer support for patients with type 2 diabetes: cluster randomised controlled trial. BMJ. 2011;342(7795):45-482.

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76. Ibrahim N, Thompson D, Nixdorf R, Kalha J, Mpango R, Moran G, et al. A systematic review of influences on implementation of peer support work for adults with mental health problems. Soc Psychiatry Psychiatr Epidemiol. 2019;55(3):285-93.

77. Kong L, Hu P, Yang L, Cui D. The effectiveness of peer support on self-efficacy and quality of life in adults with type 2 diabetes: A systematic review and meta-analysis. Journal of advanced nursing. 2019;75(4):711-22.

Appendix I: Search strategy

Database (& date searched)	**Search Terms**	**Records Retrieved**
Medline (EBSCO) April 20, 2021	1. MH "Social Support" OR TX "social support" OR MH "Peer Group" OR TX "peer group" OR KW "peer support" OR TX "peer support*" OR TX "peer counsel*" OR TX "peer mentor*" OR TX "peer coach*" 2. MH "Patient Preference" OR TX "patient preference" OR KW "patient experience" OR TX "patient experience" OR TX "patient perception" OR AB attitude* OR AB opinion* OR AB experience* OR AB perspective* OR AB view* OR AB feeling* OR AB thought* 3. MH "Chronic Pain" OR KW "chronic pain" OR MH "Pain" OR KW "pain" OR MH "Arthritis, rheumatoid" OR TX arthritis* OR MH "Fibromyalgia" OR TX fibromyalgia OR TX "persist* pain" OR TX "long term pain" **4. 1 and 2 and 3**	1. 120,571 2. 1,964234 3. 1,237,644 **4. 1,560**
CINAHL (EBSCO) April 20, 2021	1. MH "Peer Counseling" OR MH "Peer Group" OR KW "peer support" OR TX "peer support*" OR TX "peer counsel*" OR TX "peer mentor*" OR TX "peer coach*" OR TX "social support" OR TX "peer group" 2. MH "Patient Preference" OR KW "patient preference" OR TX "patient experience" OR TX "patient perception" OR TX "patient preference" OR AB attitude* OR AB opinion* OR AB experience* OR AB perspective* OR AB view* OR AB feeling* OR AB thought* 3. MH "Chronic Pain" OR KW "chronic pain" OR MH "Pain" OR KW "pain" OR MH "Arthritis, Rheumatoid" OR TX "persist* pain" OR TX "long term pain" OR TX "chronic pain" **4. 1 and 2 and 3**	1. 85,192 2. 659,581 3. 332,511 **4. 1,553**
AMED (EBSCO) April 21, 2021	1. KW "peer support" OR TX "peer support*" OR TX "peer counsel*" OR TX "peer mentor*" OR TX "peer coach*" OR TX "social support" OR TX "peer group"	1. 3,873 2. 32,387

	2. KW "patient preference" OR TX "patient preference OR TX "patient experience" OR TX "patient perception" OR AB attitude* OR AB opinion* OR AB experience* OR AB perspective* OR AB view* OR AB feeling* OR AB thought* 3. KW "chronic pain" OR TX "chronic Pain" OR KW "Pain" OR TX "pain" OR TX *arthritis OR TX “persist* pain” OR TX "long term pain" OR TX fibromyalgia **4. 1 and 2 and 3**	3. 39,105 **4. 81**
EmBase (Ovid) April 28, 2021	1. KW "peer support" OR TX "peer support*" OR TX "peer counsel*" OR TX "peer mentor*" OR TX "peer coach*" OR TX "social support" OR TX "peer group" 2. KW "patient preference" OR TX "patient preference OR TX "patient experience" OR TX "patient perception" OR AB attitude* OR AB opinion* OR AB perspective* OR AB view* OR AB feeling* OR AB thought* 3. KW "chronic pain" OR TX "chronic Pain" OR KW "Pain" OR TX "pain" OR TX arthritis OR TX “persist* pain” OR TX "long term pain" OR TX fibromyalgia **4. 1 and 2 and 3**	1. 63,155 2. 1,524,419 3. 1,234,16 4. **695**
PsycArticles (EBSCO) April 28, 2021	1. DE "Social Support" OR DE "Peer Tutoring" OR DE "Peer Counseling" OR TX "peer support*" OR TX "peer counsel*" OR TX "peer mentor*" OR TX "peer coach*" OR TX "social support" OR TX "peer group" 2. DE "Client Attitudes" OR DE "Preferences" OR TX "patient experience" OR TX "patient perception" OR TX "patient preference" OR AB attitude* OR AB opinion* OR AB experience* OR AB perspective* OR AB view* OR AB feeling* OR AB thought* 3. DE "Chronic Pain" OR TX “chronic pain” OR TX “persist* pain” OR TX “long term pain” **4. 1 and 2 and 3**	1. 22,241 2. 61,632 3. 3,125 **4. 384**
PsycInfo (Ovid) April 28, 2021	1. Peer support 2. Chronic pain 3. Patient experience **4. 1 and 2 and 3**	1. 15,127 2. 58,079 3. 4,015 **4. 6**

SPORTDiscus (EBSCO) April 28, 2021	1. KW "peer support" OR TX "peer support*" OR TX "peer counsel*" OR TX "peer mentor*" OR TX "peer coach*" OR TX "social support" OR TX "peer group" 2. KW "Patient Preference" OR TX "patient preference" OR TX "patient experience" OR TX "patient perception" OR AB attitude* OR AB opinion* OR AB experience* OR AB perspective* OR AB view* OR AB feeling* OR AB thought* 3. DE "CHRONIC pain" OR TX "chronic pain" OR TX "persist* pain" OR TX "long term pain" **4. 1 and 2 and 3**	1. 25,251 2. 210,251 3. 14,713 **4. 395**
Web of Science (Clarivate Analytics) April 28, 2021	All searched in category "Topic" (title, abstract, keyword) 1. Peer support 2. Chronic pain **3. 1 and 2**	1. 45,895 2. 121,387 **3. 230**
Google Scholar April 28, 2021	1. Peer support 2. Chronic pain **3. 1 and 2**	1. 4,200,000 2. 2,910,000 3. 722,000 **(120 results)** First 25 pages reviewed and discontinued after 3 pages of consecutive irrelevant terms

Appendix II: Studies ineligible following full text review

1. Alliance CI, Mawson E. Peer Support for Chronic and Complex Conditions. 2019.
   Reason for exclusion: Ineligible study design
2. Badger K, Royse D. Adult burn survivors' views of peer support: a qualitative study. Soc Work Health Care 2010;49(4):299-313.
   Reason for exclusion: Ineligible phenomena of interest
3. Badger K, Royse D. Helping others heal: burn survivors and peer support. Soc Work Health Care 2010;49(1):1-18.
   Reason for exclusion: Ineligible study design
4. Bauer SM, McGuire AB, Kukla M, McGuire S, Bair MJ, Matthias MS. Veterans' pain management goals: Changes during the course of a peer-led pain self-management program. Patient Educ Couns 2016;99(12):2080-2086.
   Reason for exclusion: Ineligible phenomena of interest
5. Peer to peer mentoring: Facilitating individuals with early inflammatory arthritis to manage their arthritis - Exploring learning and support needs. Journal of Rheumatology. Conference: 65th Annual Meeting of the Canadian Rheumatology Association, CRA. Quebec City, QC Canada. Conference Publication: (var.pagings). 37 (6 SUPPL. 2) (pp 1317); Journal of Rheumatology; 2010.
   Reason for exclusion: Ineligible study design
6. Peer to peer mentoring: Facilitating individuals with early inflammatory arthritis to manage their arthritis. Arthritis and Rheumatism. Conference: American College of Rheumatology/Association of Rheumatology Health Professionals Annual Scientific Meeting, ACR/ARHP 09. Atlanta, GA United States. Conference Publication: (var.pagings). 60 (SUPPL. 10) (pp 1366); John Wiley and Sons Inc; 2009.
   Reason for exclusion: Ineligible study design
7. Peer to peer mentoring for individuals with early inflammatory arthritis: Feasibility pilot. Journal of Rheumatology. Conference: Canadian Rheumatology Association Meeting 2012. Victoria, BC Canada. Conference Publication: (var.pagings). 39 (8) (pp 1717-1718); Journal of Rheumatology; 2012.
   Reason for exclusion: Duplicate study
8. Bridgman H, Todd A, Maine G, Hardcastle S, Bird M, Radford J, et al. Piloting an interprofessional chronic pain management program: Perspectives of health students and community clients. Journal of Interprofessional Care.
   Reason for exclusion: Ineligible phenomena of interest

9. Brooks JM, Umucu E, Storm M, Chiu C, Wu J, Fortuna KL. Preliminary Outcomes of an Older Peer and Clinician co-Facilitated Pain Rehabilitation Intervention among Adults Aged 50 Years and Older with Comorbid Chronic Pain and Mental Health Conditions. Psychiatr Q 2020:1-11.
Reason for exclusion: Ineligible patient population
10. Brown L. Implementation of a Peer Support Group for Adolescents with Persistent Pain. Pain Management Nursing 2017;18(2):66.
Reason for exclusion: Ineligible study design
11. Chang PF, Bazarova NN, Wethington E. How Older Adults with Chronic Pain Manage Social Support Interactions with Mobile Media. Health Commun 2020:1-13.
Reason for exclusion: Ineligible phenomena of interest
12. Cooper K, Klein S, Smith BH, Schofield P. Peer support for community dwelling older adults with chronic low back pain: a mixed-methods feasibility study. Physiotherapy 2017;103:e13-e14.
Reason for exclusion: Ineligible study design
13. Cooper K, Jehu LM, Klein S, Smith BH, Schofield P. Training peers to support older people with chronic low back pain following physiotherapy discharge: a feasibility study. Physiotherapy 2018;104(2):239-247.
Reason for exclusion: Ineligible phenomena of interest
14. Cooper K, Schofield P, Klein S, Smith BH, Jehu LM. Exploring peer-mentoring for community dwelling older adults with chronic low back pain: a qualitative study. Physiotherapy 2017;103(2):138-145.
Reason for exclusion: Ineligible phenomena of interest
15. Crotty M, Prendergast J, Battersby MW, Rowett D, Graves SE, Leach G, et al. Self-management and peer support among people with arthritis on a hospital joint replacement waiting list: a randomised controlled trial. Osteoarthritis and Cartilage 2009;17(11):1428-1433.
Reason for exclusion: ~~Wrong~~ Ineligible study design
16. Davison KP, Pennebaker JW, Dickerson SS. Who talks? The social psychology of illness support groups. Am Psychol 2000;55(2):205-217.
Reason for exclusion: Ineligible phenomena of interest
17. Doull M, O'Connor A,M., Welch V, Tugwell P, Wells GA. Peer support strategies for improving the health and well-being of individuals with chronic diseases. The Cochrane database of systematic reviews 2017;2017(6).
Reason for exclusion: Ineligible study design
18. Dresner, D.; Resnick, K.; Gardiner, P.; Barnett, K. G.; Laird, L. Qualitative evaluation of an integrative medicine group visits program for patients with chronic pain and associated

comorbidities. Journal of Alternative and Complementary Medicine. Conference: International Research Congress on Integrative Medicine and Health, IRCIMH 2014. Miami, FL United States. Conference Publication: (var.pagings). 20 (5) (pp A55-A56); Mary Ann Liebert Inc; 2014.
Reason for exclusion: Ineligible study design

19. Druett, K.; Morris, M.; Minaur, N.; Silverthorne, C. Personal experiences of the 'living well with arthritis' self management course. Annals of the Rheumatic Diseases. Conference: Annual European Congress of Rheumatology of the European League Against Rheumatism, EULAR 2015. Rome Italy. Conference Publication: (var.pagings). 74 (SUPPL. 2) (pp 1343-1344); BMJ Publishing Group; 2015.
    Reason for exclusion: Ineligible study design
20. Dunbar, M.; McCowatt, M.; Wallace, H. The effects of peer led, chronic pain education in primary care on attitudes to self-management: An NHS and third sector partnership. British Journal of Pain. Conference: 52nd Annual Scientific Meeting of the British Pain Society, BPS 2019. London United Kingdom. 13 (Supplement 2) (pp 43-44); SAGE Publications Ltd; 2019.
    Reason for exclusion: Ineligible study design
21. Faith TD, Flournoy Floyd M, Ortiz K, Egede LE, Oates JC, Williams EM. My life with lupus: Contextual responses of African-American women with systemic lupus participating in a peer mentoring intervention to improve disease self-management. BMJ Open. 2018;8(11).
    Reason for exclusion: Ineligible phenomena of interest
22. Finlay KA, Elander J. Reflecting the transition from pain management services to chronic pain support group attendance: An interpretative phenomenological analysis. British Journal of Health Psychology 2016;21(3):660-676.
    Reason for exclusion: Ineligible phenomena of interest
23. Finlay KA, Peacock S, Elander J. Developing successful social support: An interpretative phenomenological analysis of mechanisms and processes in a chronic pain support group. Psychol Health 2018;33(7):846-871.
    Reason for exclusion: Ineligible phenomena of interest
24. Fitchett, K.; Weedon, G.; Jacklin, C.; Murrell, J. Peer-to-peer innovative online training. Rheumatology (United Kingdom). Conference: Rheumatology 2015. Manchester United Kingdom. 54 (Supplement 1) (pp i144-i145); Oxford University Press; 2015.
    Reason for exclusion: Ineligible study design
25. Goldenberg D, Payne LA, Hayes LP, Zeltzer LK, Tsao JCI. Peer mentorship teaches social tools for pain self-management: A case study. Journal of pain management 2013;6(1):61.
    Reason for exclusion: Ineligible patient population

26. Grasaas E, Fegran L, Helseth S, Stinson J, Martinez S, Lalloo C, et al. iCanCope With Pain: Cultural Adaptation and Usability Testing of a Self-Management App for Adolescents With Persistent Pain in Norway. JMIR research protocols 2019;8(6).
    Reason for exclusion: Ineligible phenomena of interest
27. Guillory J, Chang P, Henderson,Charles R.,,Jr, Shengelia R, Lama S, Warmington M, et al. Piloting a Text Message-based Social Support Intervention for Patients With Chronic Pain: Establishing Feasibility and Preliminary Efficacy. Clin J Pain 2015;31(6):548-556.
    Reason for exclusion: Ineligible phenomena of interest
28. HadleyBarrows, T.; Quicke, J.; Evans, N.; Duffy, H.; Chatwin, L.; Stevenson, K.; Jones, S.; Shipway, C.; Simpson, J.; Hurley, M.; Dziedzic, K. Optimising resources for patient benefit: implementing ESCAPE-pain in collaboration with leisure and third sector community partners. A pilot study. Physiotherapy (United Kingdom). Conference: Physiotherapy UK Conference 2019. Birmingham United Kingdom. 107 (Supplement 1) (pp e122); Elsevier Ltd; 2020.
    Reason for exclusion: Ineligible phenomena of interest
29. Hainsworth J, Barlow J. The training experiences of older, volunteer lay leaders on an arthritis self-management course. Health education journal. 2003;62(3):266–77.
    Reason for exclusion: Ineligible phenomena of interest
30. Haldar, Shefali; Mishra, Sonali R.; Khelifi, Maher; Pollack, Ari H.; Pratt, Wanda. Exploring the design of an inpatient peer support tool: views of adult patients. : American Medical Informatics Association; 2018.
    Reason for exclusion: Ineligible patient population
31. Henry, J. L.; Hutzul, G.; Forgeron, P.; Kohut, S. A. Peer-to-peer support for people with chronic pain: The need, the delivery models, and the next steps. Pain Research and Management. Conference: 2013 Annual Conference of the Canadian Pain Society. Winnipeg, MB Canada. Conference Publication: (var.pagings). 18 (2) (pp e16); Pulsus Group Inc; 2013.
    Reason for exclusion: Ineligible study design
32. Khodneva Y, Richman J, Andreae S, Cherrington A, Safford MM. Peer Support Intervention Improves Pain-Related Outcomes Among Rural Adults With Diabetes and Chronic Pain at 12-Month Follow-Up. Journal of Rural Health 2021;37(2):394-405.
    Reason for exclusion: Ineligible study design
33. Khodneva Y, Richman J, Andreae S, Cherrington A, Safford MM. Peer Support Intervention Improves Pain-Related Outcomes Among Rural Adults With Diabetes and Chronic Pain at 12-Month Follow-Up. The Journal of Rural Health 2020.
    Reason for exclusion: Ineligible phenomena of interest

34. Kulandaivelu Y, Kohut SA. Peer Support for Adolescents with Chronic Illness. Peer Support in Medicine: A Quick Guide 2021:95-113.
    Reason for exclusion: Ineligible study design
35. Kulnik ST, Pöstges H, Brimicombe L, Hammond J, Jones F. Implementing an interprofessional model of self-management support across a community workforce: A mixed-methods evaluation study. Journal of Interprofessional Care 2017;31(1):75-84.
    Reason for exclusion: Ineligible patient population
36. Kumar, K.; Gordhan, C.; Situnayake, D.; Raza, K.; Bacon, P. Breaking communication barriers for ra patients of South Asian origin: The use of a bilingual audio cd and linguistically appropriate peer support. Rheumatology. Conference: Rheumatology 2010 - British Society for Rheumatology, BSR and British Health Professionals in Rheumatology, BHPR Annual Meeting 2010. Birmingham United Kingdom. Conference Publication: (var.pagings). 49 (SUPPL. 1) (pp i141); Oxford University Press; 2010.
    Reason for exclusion: Duplicate study
37. Lewis DJ, Frain KA, Donnelly MH. Chronic pain management support group: a program designed to facilitate coping. Rehabilitation nursing : the official journal of the Association of Rehabilitation Nurses 1993;18(5):318-320.
    Reason for exclusion: Ineligible study design
38. Mathias B, Parry-Jones B, Huws JC. Individual experiences of an acceptance-based pain management programme: An interpretative phenomenological analysis. Psychol Health 2014;29(3):279-296.
    Reason for exclusion: Ineligible phenomena of interest
39. Matthias M, Kukla M, McGuire A, Bair M. (518) Facilitators and barriers to peer support for chronic pain self-management in veterans. The Journal of Pain 2015;16(4).
    Reason for exclusion: Duplicate study
40. Matthias MS, Bair MJ, Ofner S, Heisler M, Kukla M, McGuire AB, et al. Peer Support for Self-Management of Chronic Pain: the Evaluation of a Peer Coach-Led Intervention to Improve Pain Symptoms (ECLIPSE) Trial. Journal of General Internal Medicine 2020;35(12):3525-3533.
    Reason for exclusion: Ineligible study design
41. Matthias MS, Daggy J, Adams J, Menen T, McCalley S, Kukla M, et al. Evaluation of a peer coach-led intervention to improve pain symptoms (ECLIPSE): rationale, study design, methods, and sample characteristics. Contemporary clinical trials 2019;81:71-79.
    Reason for exclusion: Ineligible study design

42. Matthias MS, Daggy J, Ofner S, McGuire AB, Kukla M, Bair MJ. Exploring peer coaches’ outcomes: Findings from a clinical trial of patients with chronic pain. Patient Educ Couns 2020;103(7):1366-1372.
    Reason for exclusion: Ineligible study design
43. Matthias MS, Kukla M, McGuire AB, Bair MJ. Peer Support for Chronic Pain Self-Management: a Qualitative Study of Peer Coaches' Experiences. Journal of General Internal Medicine 2014;29:S169-S170.
    Reason for exclusion: Ineligible study design
44. Matthias MS, Kukla M, McGuire AB, Damush TM, Gill N, Bair MJ. Facilitators and barriers to participation in a peer support intervention for veterans with chronic pain. Clin J Pain 2016;32(6):534.
    Reason for exclusion: Duplicate study
45. Matthias MS, McGuire AB, Kukla M, Daggy J, Myers LJ, Bair MJ. A brief peer support intervention for veterans with chronic musculoskeletal pain: a pilot study of feasibility and effectiveness. Pain Medicine 2015;16(1):81-87.
    Reason for exclusion: Ineligible study design
46. Matthias MS, McGuire AB, Kukla M, Daggy J, Myers LJ, Bair MJ. Effectiveness of a Brief Peer Support Intervention for Veterans with Chronic Pain. Journal of General Internal Medicine 2014;29.
    Reason for exclusion: Ineligible study design
47. Matthias MS, Miech EJ, Myers LJ, Sargent C, Bair MJ. A Qualitative Study of Chronic Pain in Operation Enduring Freedom/Operation Iraqi Freedom Veterans: "A Burden on My Soul". Mil Med 2014;179(1):26-30.
    Reason for exclusion: Ineligible phenomena of interest
48. Matthias MS, Miech EJ, Myers LJ, Sargent C, Bair MJ. An Expanded View of Self-Management: Patients' Perceptions of Education and Support in an Intervention for Chronic Musculoskeletal Pain. Pain Medicine 2012;13(8):1018-1028.
    Reason for exclusion: Ineligible phenomena of interest
49. McGuire AB, Powell KG, Treitler PC, Wagner KD, Smith KP, Cooperman N, et al. Emergency department-based peer support for opioid use disorder: emergent functions and forms. J Subst Abuse Treat 2020;108:82-87.
    Reason for exclusion: Ineligible patient population
50. McNairy, S.; Dols, R.; Keple, T. The Benefits of Combined Peer Support Group With Buprenorphine Medication Management for Opioid Dependence. ; 2010.

Reason for exclusion: Ineligible patient population

51. Nøst TH, Steinsbekk A, Riseth L, Bratås O, Grønning K. Expectations towards participation in easily accessible pain management interventions: a qualitative study. BMC health services research 2017;17(1):712.
    Reason for exclusion: Ineligible phenomena of interest
52. Park J, Hirz CE, Manotas K, Hooyman N. Nonpharmacological pain management by ethnically diverse older adults with chronic pain: barriers and facilitators. Journal of gerontological social work 2013;56(6):487-508.
    Reason for exclusion: Ineligible phenomena of interest
53. Plinsinga ML, Besomi M, Maclachlan L, Melo L, Robbins S, Lawford BJ, et al. Exploring the Characteristics and Preferences for Online Support Groups: Mixed Method Study. Journal of Medical Internet Research 2019;21(12).
    Reason for exclusion: Ineligible phenomena of interest
54. Richardson L-J, Molyneaux V, Murray CD. Being a peer support mentor for individuals who have had a lower limb amputation: an interpretative phenomenological analysis. Disability and rehabilitation. 2020;42(26):3850–7.
    Reason for exclusion: Ineligible phenomena of interest
55. Sallinen M, Kukkurainen ML, Peltokallio L. Finally heard, believed and accepted - Peer support in the narratives of women with fibromyalgia. Patient Educ Couns 2011;85(2):e126-e130.
    Reason for exclusion: Ineligible phenomena of interest
56. Salmon, V.; Hewlett, S.; Walsh, N.; Kirwan, J. R.; Morris, M.; Urban, M.; Cramp, F. Acceptability of a novel physical activity and self-management intervention for managing fatigue in rheumatoid arthritis. Annals of the Rheumatic Diseases. Conference: Annual European Congress of Rheumatology of the European League Against Rheumatism, EULAR 2015. Rome Italy. Conference Publication: (var.pagings). 74 (SUPPL. 2) (pp 1322); BMJ Publishing Group; 2015.
    Reason for exclusion: Ineligible study design
57. Scherzer CR, Ranney ML, Jain S, Bommaraju SP, Patena J, Langdon K, et al. Mobile Peer-Support for Opioid Use Disorders: Refinement of an Innovative Machine Learning Tool. Journal of psychiatry and brain science 2020;5(1).
    Reason for exclusion: Ineligible patient population
58. Schwartz CE, Sendor RM. Helping others helps oneself: response shift effects in peer support. Soc Sci Med 1999;48(11):1563-1575.
    Reason for exclusion: Ineligible patient population

59. Schwarz F. Peer consultants: Missing link in the treatment of chronic pain. Canadian Family Physician 2015;61(10):837.
    Reason for exclusion: Ineligible study design
60. Schweier R, Romppel M, Richter C, Hoberg E, Hahmann H, Scherwinski I, et al. A web-based peer-modeling intervention aimed at lifestyle changes in patients with coronary heart disease and chronic back pain: sequential controlled trial. Journal of medical Internet research 2014;16(7).
    Reason for exclusion: Ineligible study design
61. Shadick NA, Zibit MJ, Iannaccone CK, Thrower R, Sowell NF, Weinblatt ME, et al. A Development and Feasibility study of a peer support telephone program in rheumatoid arthritis. Journal of clinical rheumatology: practical reports on rheumatic & musculoskeletal diseases 2018;24(6):346.
    Reason for exclusion: Ineligible study design
62. Shigaki CL, Smarr KL, Gong Y, DonovanHanson K, Siva C, Johnson RA, et al. Social interactions in an online self-management program for rheumatoid arthritis. Chronic Illness 2008;4(4):239-246.
    Reason for exclusion: Ineligible phenomena of interest
63. Shue SA, McGuire AB, Matthias MS. Facilitators and Barriers to Implementation of a Peer Support Intervention for Patients with Chronic Pain: A Qualitative Study. Pain Medicine 2019;20(7):1311-1320.
    Reason for exclusion: Ineligible patient population
64. Simmonds MJ, Finley EP, Vale S, Pugh MJ, Turner BJ. A Qualitative Study of Veterans on Long-Term Opioid Analgesics: Barriers and Facilitators to Multimodality Pain Management. Pain Medicine 2015;16(4):726-732.
    Reason for exclusion: Ineligible patient population
65. Strøm J, Høybye MT, Laursen M, Jørgensen LB, Nielsen CV. Lumbar Spine Fusion Patients' Use of an Internet Support Group: Mixed Methods Study. Journal of medical Internet research 2019;21(7).
    Reason for exclusion: Ineligible phenomena of interest
66. Tse MMY, Yeung S, Lee PH, Ng S. Peer-assisted pain management program for nursing home residents: does it help to relieve chronic pain and enhance physical and psychological health. Journal of Gerontology Geriatric Research S 2015;3(003).
    Reason for exclusion: Ineligible study design
67. Tse MMY, Yajie LI, Tang SK, Ng SSM, Bai X, Lee PH, et al. A randomized controlled trial of a peer-led pain management program for older adults: Baseline characteristics and preliminary results. 2020.
    Reason for exclusion: Ineligible study design

68. Tse S, Mak WWS, Lo IWK, Liu LL, Yuen WWY, Yau S, et al. A one-year longitudinal qualitative study of peer support services in a non-Western context: The perspectives of peer support workers, service users, and co-workers. Psychiatry Res 2017;255:27-35.
    Reason for exclusion: Ineligible patient population
69. Van Der Elst, K.; Bangels, L.; Peerlings, L.; De Caluwe, L.; Langers, I.; Stouten, V.; De Cock, D.; Westhovens, R.; Verschueren, P. Do we need a patient peer mentor program in daily practice for patients with early rheumatoid arthritis and if so, how should this be organized? Annals of the Rheumatic Diseases. Conference: Annual European Congress of Rheumatology, EULAR 2019. Madrid Spain. 78 (Supplement 2) (pp 2140); BMJ Publishing Group; 2019.
    Reason for exclusion: Ineligible study design
70. WaiteJones JM, Swallow V. Peer-based Social Support for Young-People with Juvenile Arthritis: Views of Young People, Parents/Carers and Healthcare Professionals within the UK. J Pediatr Nurs 2018;43:e85-e91.
    Reason for exclusion: Ineligible patient population
71. Weir B, Cunningham M, Abraham L, Allanson-Oddy C. Military veteran engagement with mental health and well-being services: A qualitative study of the role of the peer support worker. Journal of Mental Health 2019;28(6):647-653.
    Reason for exclusion: Ineligible patient population
72. Werner EL, Lærum E, Wormgoor MEA, Lindh E, Indahl A. Peer support in an occupational setting preventing LBP-related sick leave. Occupational medicine 2007;57(8):590-595.
    Reason for exclusion: Ineligible patient population
73. Williams EM, Egede L, Faith T, Oates J. Effective Self-Management Interventions for Patients With Lupus: Potential Impact of Peer Mentoring. Am J Med Sci 2017;353(6):580-592.
    Reason for exclusion: Ineligible study design
74. Young SD, Heinzerling K. The Harnessing Online Peer Education (HOPE) intervention for reducing prescription drug abuse: a qualitative study. J Subst Use 2017;22(6):592-596.
    Reason for exclusion: Ineligible phenomena of interest
75. Young SD, Koussa M, Lee S, Perez H, Gill N, Gelberg L, et al. Feasibility of a social media/online community support group intervention among chronic pain patients on opioid therapy. Journal of Addictive Diseases 2018;37(1-2):96-101.
    Reason for exclusion: Ineligible patient population
76. Young SD, Lee S, Perez H, Gill N, Gelberg L, Heinzerling K. Social media as an emerging tool for reducing prescription opioid misuse risk factors. Heliyon 2020;6(3).
    Reason for exclusion: Ineligible patient population

77. Yu X, Convoy S, Singh PA, Png C, Yoong CS, Pal P. Early Experience of a Multidisciplinary Group Pain Program with Cognitive Behavioural Strategies, Physiotherapy and Peer Support for Patients with Chronic Noncancer Pain. Pain Management Nursing 2020.

Reason for exclusion: Ineligible phenomena of interest

1245 Appendix III: Characteristics of included studies

Study	Methods for data collection and analysis	Country	Phenomena of interest	Setting/context/culture	Participant characteristics and sample size	Description of main results
Cooper K, Schofield P, Smith BH, Klein S. 2020.	Sequential explanatory mixed methods design - Semi-structured interviews were transcribed and data mapped onto framework matrices, arranged according to interview topics. Due to the structured nature of the interviews, data was not coded prior to mapping. Data analysis with framework approach by 2 researchers.	UK	Examining the feasibility and acceptability of a PSI	Telephone/face-to-face peer support, community dwelling older adults with chronic low back pain (CLBP), North Scotland	18 older adults (aged 65-79) with CLBP and 6 peer support volunteers (PSVs) aged 34-65	The peer support intervention was delivered as intended and acceptable to people with CLBP and PSVs. Most participants were satisfied with peer support intervention and would recommend it to someone else with CLBP.
Kohut SA, Stinson J, Luca S, Forgeron P, Harris L, Ahola Kohut S. 2017.	Qualitative descriptive - interviews and focus group. Interviews and focus group data were transcribed and analyzed using inductive content analysis.	Canada	Exploring the perceived benefits and challenges of acting as a peer mentor	Skype-based peer mentoring program, adolescents with chronic pain or juvenile idiopathic arthritis (JIA)	10 peer mentors (20.00 ± 1.49 years old, range 17–22 years; diagnosed with chronic pain [n = 4] or JIA [n = 6])	Four main categories were identified: social connection, personal growth, mentor role in mentee growth, and logistics of mentorship. Acting as a peer mentor online is a feasible and rewarding experience that supports the mentor's own illness self-management, social connection, and personal growth.
Kumar K, John H, Gordhan C, Situnayake D, Raza K, Bacon PA. 2011.	Qualitative descriptive - focus groups and semi-structured interviews. Transcripts were studied to look for similar themes; an inductive approach was applied, whereby the data were searched in detail for similar words, patterns	UK	Exploring patient perceptions of educational resources and peer support	Clinical face-to-face meetings, patients with rheumatoid arthritis (RA) of South Asian origin living in the UK	15 participants; all female, median age 48 (range 35 to 69) years, median disease (RA) duration four (range 2 to 10) years. All participants of South Asian origin.	Four important themes were identified: (1) All patients agreed there was a need for more information about RA in order to know how to live with their disease. (2) Concerns about currently available approaches to education included a lack of time

	and themes, which were then organized into categories.					in clinic and language barriers. (3) Patients appreciated the support provided by a trained patient volunteer. (4) The audio CD was useful for patients to have information in a language they could understand.
Matthias MS, Kukla M, Bair MJ, McGuire AB. 2016.	Qualitative descriptive - semi-structured interviews. Data analysis was guided by an immersion/crystallization approach. Data analysis was guided by an immersion/crystallization approach and consisted of two broad phases: open coding and focused coding.	US	Exploring the experience of participants in a peer support intervention and identifying the most effective elements	Telephone/ face-to-face, male veterans with chronic musculoskeletal (MSK) pain, Indiana, USA	26 male veterans with chronic MSK pain (n = 9 peer coaches, n = 17 veterans) Peer coaches' ages ranged from 50–71 years (Mean = 60). White (n=7), black (n=1), Hispanic (n=1), Veteran patients' ages ranged from 35–66 (Mean = 58). White (n=9), black (n=8).	Qualitative analysis revealed three elements of the PSI that peer coaches and patients believed conferred benefit: 1) making interpersonal connections; 2) providing/receiving encouragement and support; and 3) facilitating the use of pain self-management strategies.
Matthias MS, Kukla M, McGuire AB, Damush TM, Gill N, Bair MJ. 2016.	Qualitative descriptive - semi-structured interviews. Data were analyzed using an immersion/crystallization approach	US	Identifying the facilitators and barriers to participation in a PSI	Telephone/ face-to-face, male veterans with chronic MSK pain, Indiana, USA	26 male veterans with chronic MSK pain (n = 9 peer coaches, n = 17 veterans) Peer coaches' ages ranged from 50–71 years (Mean = 60). White (n=7), black (n=1), Hispanic (n=1). Veteran patients' ages ranged from 35–66 (Mean = 58). White (n=9), black (n=8)	Facilitators were 1) having a shared identity as veterans, 2) being partnered with a person who also has chronic pain, and 3) support from the study staff. Barriers were 1) logistical challenges, and 2) challenges to motivation and engagement in the intervention.

Sandhu S, Veinot P, Embuldeniya G, Brooks S, Sale J, Huang S, et al. 2013.	Mixed methods - qualitative descriptive – questionnaires, interviews and diaries	Canada	Examining the feasibility and potential benefits of early peer support	Telephone/ face-to-face, adults with RA, greater Toronto area, Canada	9 peer mentors (all female) and 9 mentees (7 females, 2 males). All adults with RA aged 18-70	Intervention was well received. Mentees experienced improvements in the overall arthritis impact on life, coping efficacy and social support.
Tse MMY, Ng SSM, Bai X, Lee PH, Lo R, Cheung DSK, et al. 2019.	Cluster RCT- qualitative descriptive – semi-structured interviews. Thematic analysis, but not explicitly described as such by the researchers.	China	Exploring the experiences and perceptions of PVs in a PSI	Face-to-face in nursing home, adults with chronic pain, Hong Kong	46 peer volunteers (PVs) (34 females, 12 males), with a mean ±SD age of 61.0±5.1 years. 31/46 had chronic pain	The PVs reported an improvement in their knowledge and skills after leading PAPs. No PVs reported having received any negative comments about their role in leading the PAP but mentioned that they had received feedback on how to improve the program. This study provides further evidence that peer-led pain management programs are feasible and can lead to positive experiences for the PVs
Tse M, Li Y, Tang SK, Ng SSM, Bai X, Lee PH, et al. 2020.	Cluster RCT - qualitative descriptive - semi-structured interviews. Qualitative data on the contents of the interview were analyzed after each interview.	China	Examining the effectiveness of a PSI and to evaluate participant experiences	Face-to-face in nursing home, adults with chronic pain, Hong Kong	68 participants total, 50 females, 18 males, age range 60-100, experimental group (n=36), control group (n=32).	The nursing home residents were satisfied with the pain education they received.
Arnstein P, Vidal M, Wells-Federman C, Morgan B, Caudill M. 2002.	Mixed methods - qualitative descriptive - Interviews and written accounts - Data from interviews with peer volunteers, and their written logs, were analyzed using Sandelowski's (1995) guidelines for qualitative data analysis.	US	Evaluating whether the transition from chronic pain patient to peer volunteer was beneficial or harmful	Phone/ face-to-face, assisting chronic pain patients enrolled in cognitive behavioral therapy	7 peer volunteers (1 male and 6 females), age range 41-70, with chronic pain >1 year.	Two themes, "making a connection" and "a sense of purpose," emerged from the narrative data. Descriptive data provided further support that volunteering benefited both patients and peers.

Appendix IV: Study findings and illustrations

Arnstein P, Vidal M, Wells-Federman C, Morgan B, Caudill M. From chronic pain patient to peer: benefits and risks of volunteering. Pain Management Nursing. 2002;3(3):94–103.[36]	
Finding	Making a connection (U)
Illustration	“The connection helps validate feelings for both involved, the whole thing was very gratifying.” (p. 99)
Finding	Sense of purpose (U)
Illustration	“When they started thinking of more ways to help themselves I felt good, I felt like I had purpose.” (p. 99)
Finding	Physical Challenges (C)
Illustration	The physical challenges they identified included enduring the duration of therapy, and transportation to the clinic, especially during their own pain-flares. (p. 99)
Finding	Psychosocial challenges (C)
Illustration	Examples of psychosocial challenges were avoiding the tendency to get overly involved and dealing with frustration when their desire to help exceeded their ability to help. (p. 99)
Finding	Protocol-related challenges (C)
Illustration	Examples of protocol-related challenges included the time commitment required (3 to 7 hours per week), completing the requested paperwork, and establishing initial contact with the patient if not done in person (p. 99)
Finding	Reported benefits (C)
Illustration	These rewards included helping themselves (e.g., improved communication skills, confidence, and functioning), helping others (e.g., having positive influence, empowering the patients, seeing them improve), and boosting their sense of self-worth (p. 99-100)
Cooper K, Schofield P, Smith BH, Klein S. PALS: peer support for community dwelling older people with chronic low back pain: a feasibility and acceptability study. Physiotherapy. 2020;106:154–62[60]	
Finding	Matching: Participants were generally positive about their matches (U)
Illustration	“You don’t have to have a lot of other things in common if you both have back pain, both have an understanding” [PSV66, Male] (p. 159)
Finding	Delivery: All participants, including those who had one or more telephone meetings, felt that a face-to-face element was essential (U)
Illustration	“Both [face-to-face & telephone] were good. . .just as easy over the phone. . .but it’ s vital to see a face, you couldn’t do them all by phone” [P52, Male] (p. 159)
Finding	What I got out of it: participants reported benefit, although not always in the way they had anticipated (U)
Illustration	“Think I got as much out of it as the patients have. I learned a lot about pain and different people’s pain thresholds, ways of managing. Think I’m more tolerant of back pain as a result of the study”. [PSV40,Female] (p. 159)
Finding	PALS Manual: Participants spoke variably of the manual and resources, with some liking the information provided, some using the manual as a step-by-step guide, and some not using it at all (U)
Illustration	“The best thing I found was the manual it gave criteria to work to. If the patient went off on a tangent I could bring it back to focus using the manual and topic for that session. . .but the content could be halved” [PSV66, Male] (p. 159)
Kohut SA, Stinson J, Luca S, Forgeron P, Harris L, Ahola Kohut S. Been There, Done That: The Experience of Acting as a Young Adult Mentor to Adolescents Living With Chronic Illness. Journal of pediatric psychology. 2017;42(9):962–9[37]	
Finding	Developing a relationship (U)
Illustration	“After the first few sessions, most of my mentees would come out of their shell and start conversing with me a little bit more, but I think it might also help to just talk about things that are going on in their life that had nothing to do with their pain.” (Pain mentor 8, aged 19, female) (p. 966)
Finding	Benefits of connection (U)

Illustration	“I think the biggest thing is [talking to] somebody that shared your general experiences. Probably the hardest thing is finding somebody that has the same condition or very similar condition and just knowing that you’re not the only one that has problems.” (JIA mentor 5, aged 17, female) (p. 966)
Finding	Mentor–mentor connection (U)
Illustration	“I think it would be really great just to be like ‘great, I’m working with this men- tee, I’m having a really hard time, getting her to have a conversation. She seems really shy, have you experienced this, what do you do to, like how do you, you know, get your mentee talking?’” (Pain mentor 8, aged 19, female) (p. 966)
Finding	Mentor growth (U)
Illustration	“I found it helped me grow a lot as a person too. Even when I work with my patients, I take things I’ve learned from my mentees.” (JIA mentor 6, aged 19, female, in school to become a health professional) (p. 966)
Finding	Mentor training (U)
Illustration	“I came into the training and that weekend kind of changed my perceptions on certain things, I guess I grew in terms of learning how to do mentoring on a higher level than if I didn’t have any training, and how to use your story in more of a constructive way.” (JIA mentor 4, aged 19, male) (p. 966)
Finding	Mentor role (U)
Illustration	“I don’t have to counsel them, they don’t have to be counselling me, we just talked, we had a conversation but we still helped each other so. . .that was nice to know.” (Pain mentor 11, aged 19, female) (p. 966)
Finding	Illness self-management (U)
Illustration	“I was able to guide them in terms of what to do when you’re at high school, go- ing to university, applying for accommodations and all that kind of stuff so I shared a lot.” (JIA mentor 1, aged 21, female) (p. 966)
Finding	Hope for the future (U)
Illustration	“Just sharing of hope almost because a lot of the time there are some feelings of anxiety, or fear of the future and then having us as mentors there, like you can actually live your life like this and you can live it really well and this is what we’re doing and just kind of being there, I thought that was amazing on both ends.” (JIA mentor 4, aged 19, male) (p. 966)
Finding	Mentee characteristics (U)
Illustration	“I did have one mentee who was more shy and then one who wasn’t so at the same time, I’d have a call and it would go really well and we’d talk about any- thing and everything and then when I did my call with the other one, I had to drive the conversation.” (JIA mentor 3, aged 19, female) (p. 966)
Finding	Scheduling issues (U)
Illustration	“Mostly I had a lot of conflict with my schedule in university and working two jobs and then the high school or elementary schedule, them working a job or two plus all these commitments with family and friends, so I mean, my avail- ability was almost the opposite of theirs.” (JIA mentor 1, aged 21, female) (p. 966)
Finding	Technological issues (U)
Illustration	“There were errors with the Internet. It isn’t perfect so there were some issues [interruption in transmission of voice or video] but nothing that couldn’t be handled and nothing that really devastated the quality of the calls.” (Pain men- tor 9, aged 19, female) (p. 966)
Finding	Programmatic issues (U)
Illustration	“It was harder for me to connect with someone if we didn’t follow the call scheme. If there were a couple missed calls in the middle, then you started and you were getting there and there was a period of stopping and you had to pick it up from the beginning again.” (JIA mentor 4, aged 19, male) (p. 966)
Kumar K, John H, Gordhan C, Situnayake D, Raza K, Bacon PA. Breaking communication barriers for RA patients of south Asian origin: The use of a bilingual educational audio CD and linguistically appropriate peer support and education. Musculoskeletal Care. 2011;9(1):11–8.[61]	
Finding	Patients were particularly impressed by the fact that the volunteer listened to their story (U)

Illustration	“The main thing was the support that they are offering. [N.L.] was listening to me, and that was nice. (60 years old, disease duration 10 years).” (p. 15)
Finding	They found it very helpful to be able to communicate with her directly in their spoken language (U)
Illustration	“It was good to talk to [N.L.] because she spoke my language and that really helped me to get my feelings across and this wouldn’t happen otherwise.” (56 years old, disease duration 10 years). (p. 15)
Finding	The majority of patients also stated that there was mutual understanding between them and the volunteer, as they both suffered with RA (U)
Illustration	“It was like you could talk to her because she was a patient and you felt unburdening yourself. I looked at her and thought she is like me....She has the same thing as me...it’s difficult to talk to a nurse or doctor isn’t it? The other thing was that she was very positive about things. I liked that. (60 years old, disease duration 10 years).” (p. 15)
Finding	They found it helpful to talk to someone who had been through the experience of living with RA and had remained positive about the future (U)
Illustration	“Yeah . . . she did give us motivation and in a sense made me see a vision that is separate to my disease. (46 years old, disease duration three years).” (p. 15)
Finding	Two patients stood out in expressing some negative feelings about the interaction (U)
Illustration	“When I first saw her I felt very afraid. For a whole week I was upset, I was thinking, gosh. . . . will I be like this in another 10 years time? Then I tried to make myself understand that, no, I will not end up like that because I have been treated reasonably early. Then I thought that it could be that some people have different disease and patterns. (45 years old, disease duration three years).” (p. 16)
Matthias MS, Kukla M, Bair MJ, McGuire AB. How Do Patients with Chronic Pain Benefit from a Peer-Supported Pain Self-Management Intervention? A Qualitative Investigation. Pain Medicine. 2016;17(12):2247–55[38]	
Finding	Participants valued the purely social nature of connecting with another veteran, being able to get to know one another, and having the opportunity to discuss common interests that were often unrelated to pain (U)
Illustration	“I think what was most beneficial is taking the time out of your regular day and just sitting down and discussing and relaxing, and then putting everything behind you, forgetting things for an hour or so (Veteran 204).” (p. 2249)
Finding	Listening was a key component of the peer support experience (U)
Illustration	“He’s a real understanding guy. He listens. He knows when to listen. He knows when to talk. He don’t give you any advice or anything like that. He just tells you his experiences and stuff and lets you decide what to do on your own” (Veteran 207). (p. 2250)
Finding	Changes in Attitude Toward and Acceptance of Pain (U)
Illustration	“Instead of thinking about what I can’t do, I like to think about what I can do. That’s more fun. It’s a lot more fun. It gives the day a better outlook” (Veteran 213). (p. 2251)
Finding	Discussing Exercises and Activity (U)
Illustration	“It gets my body going. It’s like a warm-up. It gets me going and then I can do things around the house, or walk or something” (Veteran 214). (p. 2252)
Finding	Helping Veterans to Navigate Health Care Resources (U)
Illustration	“He gave me a lot of advice—how to get my old medical records and, uh, dental records and history stuck back in the military so that I could put in for some disability. So he’s really helped me a lot on that” (Veteran 219). (p.2252)
Finding	Sharing Ideas About Pain Self-Management Strategies (U)
Illustration	“getting some ideas, maybe a little feedback on what might be a little bit easier, getting [my peer coach’s] input and his experiences. He had enough experience to maybe show me some things I might not have thought about” (Veteran 208). (p. 2252)
Finding	Challenging and Motivating (U)
Illustration	“My exercise and stuff like that, we talked more about that than anything. He felt that it would probably help me a whole lot by trying to do something a little bit more than what I’m already doing, and to keep

	doing a little bit more. He said it seemed like that helped him a lot: The more he could do, it cut down on his pain" (Veteran 205). (p. 2252)
Matthias MS, Kukla M, McGuire AB, Damush TM, Gill N, Bair MJ. Facilitators and Barriers to Participation in a Peer Support Intervention for Veterans With Chronic Pain. Clinical Journal of Pain. 2016;32(6):534–40.[58]	
Finding	Facilitators to Participation: Shared veteran identity (U)
Illustration	"'Cause we both been in the service together, and that was something we could talk about. We had a lot of things in common, things we did, things that he went through, I went through." (Veteran 214) (p. 5)
Finding	Facilitator to Participation: Having a partner with chronic pain (U)
Illustration	"It's so much better if you talk to someone, and if that person understands what you're going through that's so much better...If you have someone to talk to that understands what you're going through it makes a ton of difference, it really does." (Veteran 213) (p. 6)
Finding	Facilitator to Participation: Support from study staff (U)
Illustration	"I felt that [study staff] had my back just in case, you know. Just in case." (p. 7)
Finding	Barriers to Participation: Logistical Challenges (U)
Illustration	"I told [my peer coach], I got to ride the bus to get [to the medical center to meet]. I said that's four bucks. I said I have to look at that money because I'm on a fixed income. I said I know it's a lot of gas for you, and gas at that time was almost $4 a gallon. That's why we decided to do the phone calls." (Veteran 210) (p. 8)
Finding	Barriers to Participation: Challenges to motivation and engagement (U)
Illustration	"Sometimes I was also weak. I didn't call or nothing because I was spaced out. My disabilities were taking over, and I just would come into the house and just sit in the corner in my chair... and watch TV." (Peer 109) (p. 10)
Sandhu S, Veinot P, Embuldeniya G, Brooks S, Sale J, Huang S, et al. Peer-to-peer mentoring for individuals with early inflammatory arthritis: feasibility pilot. BMJ open. 2013;3(3).[39]	
Finding	A few mentors experienced challenges (C)
Illustration	eg mentee reluctant to stop consuming alcohol to take methotrexate (PM7); mentee with problems returning to work after being on long-term disability (PM7, PM8) (p. 6)
Finding	Mentors reported personally benefiting from the programme (C)
Illustration	They reported that it increased their knowledge, provided new self-management techniques and coping strategies (PM3, PM4, PM7, PM9, PM12), reinforced self-management strategies they were familiar with and made them realise how far they had come in their disease experience (PM12, PM8) (p. 6)
Finding	Emotional and informational supports were most commonly reported (U)
Illustration	"I would ask her when she encountered bad weather, how were her joints? What did she do about that? …Can I do something prior to, when you know the weather is coming." (EIA3) (p. 6)
Finding	Appraisal and instrumental support were also exchanged (U)
Illustration	"It was great being able to sit down and have a normal conversation, but at the same time throw in, oh yeah, I'm thinking about switching to biologics so what's your opinion?" (EIA1) (p. 6)
Finding	Participants' experience of peer support was informed by the unique relationship they forged with their peer (U)
Illustration	Many participants spoke of having 'a connection' with his/her peer. This was facilitated by similarities in personality, age, gender, interests, life stage, position of responsibility at work, diagnosis, disease severity and similarity of affected joints. 'My hands felt like her hands', said one mentee (EIA4). (p. 6)
Finding	Four participants faced challenges building rapport due to differences in gender, sexuality, political views and disease stage (U)
Illustration	Gender differences restricted the type of conversations in one mixed gender dyad. In another dyad, a mentee found herself disassociating from her wheelchair-bound mentor, as she was not able to cope with this '... I found myself looking at my mentor and going, that's not me, I don't have that, I'm not going there, I'm not going to be in a wheelchair...or be badly deformed'. (EIA6) (p. 6)
Finding	All participants were unequivocal about the need for a peer support programme for individuals with EIA (U)

Illustration	Mentees spoke about the programme as ‘critical’ (EIA1), declaring, ‘It can’t stop. It can’t’ (EIA3). Mentors wished that similar peer support interventions had been available when they were first diagnosed. (p. 7)
Tse MMY, Ng SSM, Bai X, Lee PH, Lo R, Cheung DSK, et al. Lesson learned from peer volunteers in a peer-led pain management program among nursing home residents. International journal of environmental research and public health. 2019;16(17):3097 [40]	
Finding	PV's described leading the pain management program (PAP) as a meaningful experience (U)
Illustration	“I was appreciated by nursing home residents” (p. 6)
Finding	Perceived benefits: helping themselves and helping others (U)
Illustration	“I can see that the participants are happier and feel less lonely” (p. 6)
Finding	Boosted my sense of self-worth (U)
Illustration	“I get satisfaction in giving something back to the society and providing support to the participants” (p. 6)
Finding	Barriers encountered in leading the PAP (U)
Illustration	“Some nursing home residents were too frail and required more assistance” (p. 7)
Finding	Feedback on the content of the PAP (U)
Illustration	“I like the PAP” (p. 7)
Tse M, Li Y, Tang SK, Ng SSM, Bai X, Lee PH, et al. An Exploration of the Effectiveness of a Peer-Led Pain Management Program (PAP) for Nursing Home Residents with Chronic Pain and an Evaluation of Their Experiences: A Pilot Randomized Controlled Trial. International journal of environmental research and public health. 2020;17(11).[57]	
Finding	About the program (U)
Illustration	“I feel happy and relaxed when taking part in the program every week” (p. 9)
Finding	About the peer volunteers (U)
Illustration	“The volunteers are very patient and nice” (p. 9)

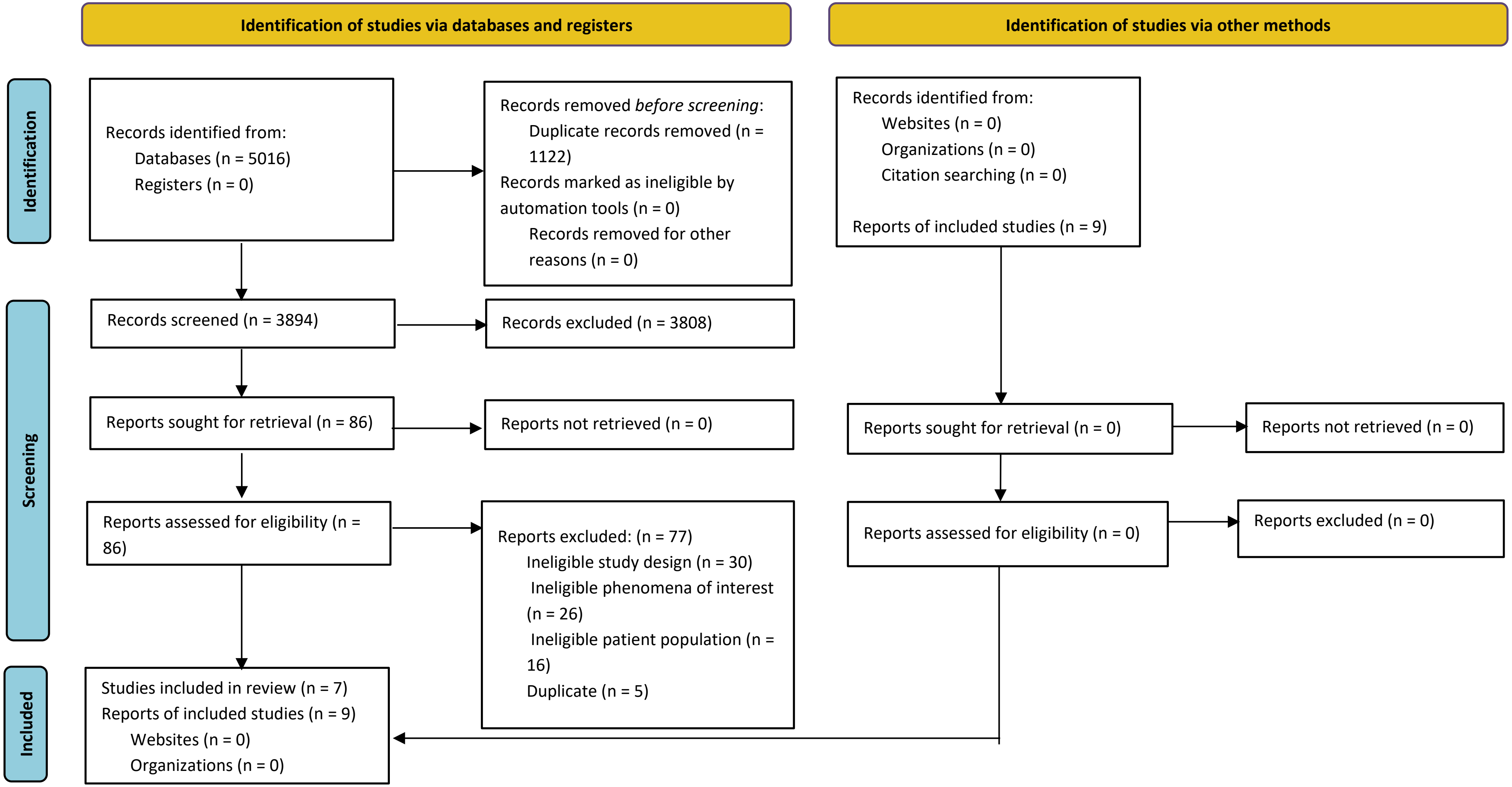

Figure 1: Search results, study selection and inclusion process[34]

Table 1: Critical appraisal results of eligible studies

Citation	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Total per record
Cooper et al. 2020	U	Y	Y	Y	Y	N	N	Y	Y	Y	7/10
Kohut et al. 2017	U	Y	Y	Y	Y	N	Y	Y	Y	Y	8/10
Kumar et al. 2011	U	Y	Y	Y	Y	Y	U	Y	Y	Y	8/10
Matthias et al. 2016	U	Y	Y	Y	Y	N	Y	Y	Y	Y	8/10
Sandhu et al. 2013	U	Y	Y	Y	Y	N	N	Y	Y	Y	7/10
Tse et al. 2020	U	Y	Y	U	U	N	Y	U	Y	U	4/10
Arnstein et al. 2002	U	Y	Y	Y	Y	N	N	U	Y	Y	6/10
Total % per question	0	100	100	86	86	14	43	71	100	86	

Y = Yes, N = No, U = Unclear; JBI Critical Appraisal Checklist for Qualitative Research Q1 = Is there congruity between the stated philosophical perspective and the research methodology? Q2 = Is there congruity between the research methodology and the research question or objectives? Q3 Is there congruity between the research methodology and the methods used to collect data? Q4 = Is there congruity between the research methodology and the representation and analysis of data? Q5 = Were those delivering treatment blind to treatment assignment? Q6 = Is there a statement locating the researcher culturally or theoretically? Q7 = Is the influence of the researcher on the research, and vice- versa, addressed? Q8 = Are participants, and their voices, adequately represented? Q9 = Is the research ethical according to current criteria or, for recent studies, is there evidence of ethical approval by an appropriate body? Q10 = Do the conclusions drawn in the research report flow from the analysis, or interpretation, of the data?

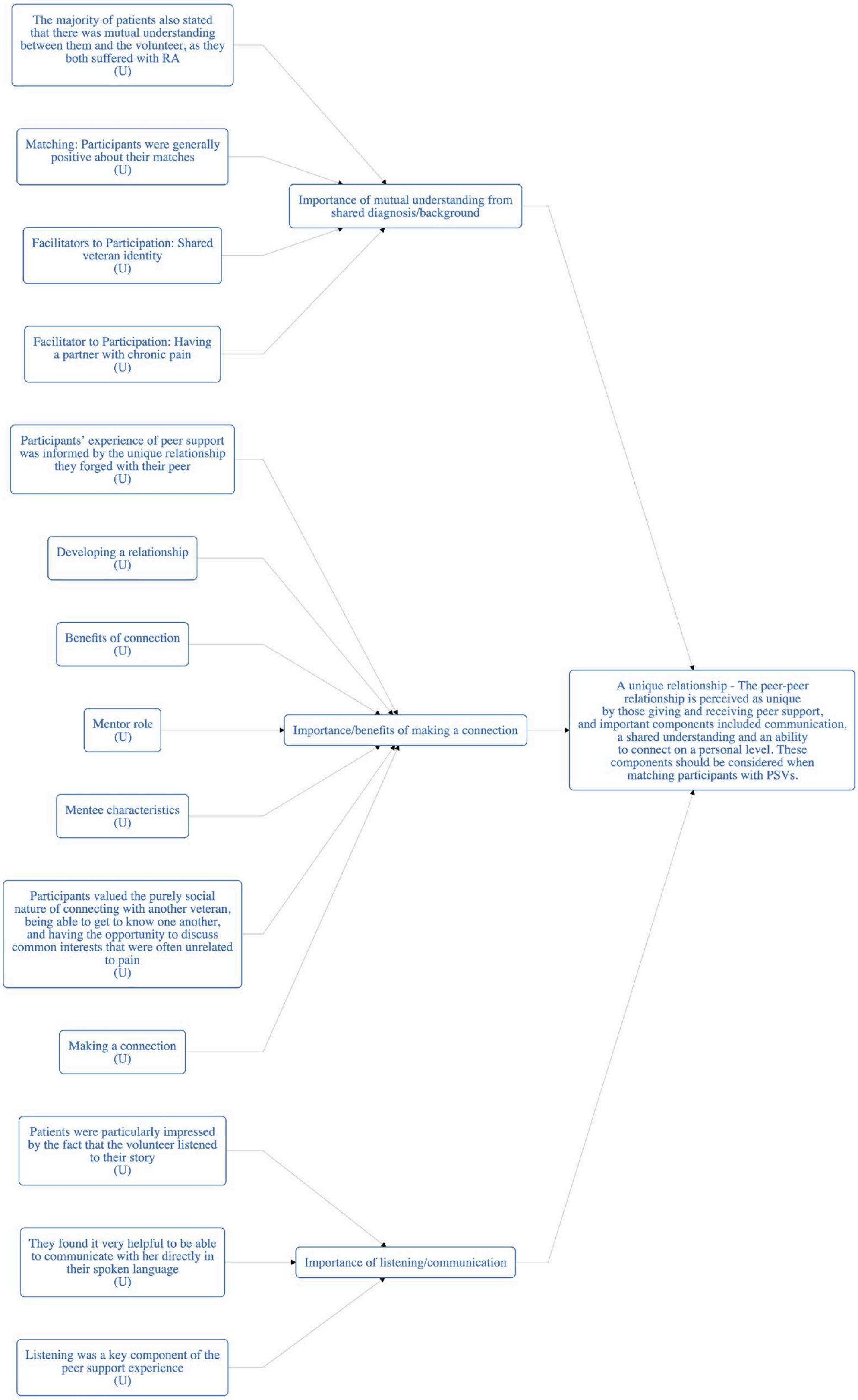

Figure 2: Synthesized finding #1 – A unique relationship

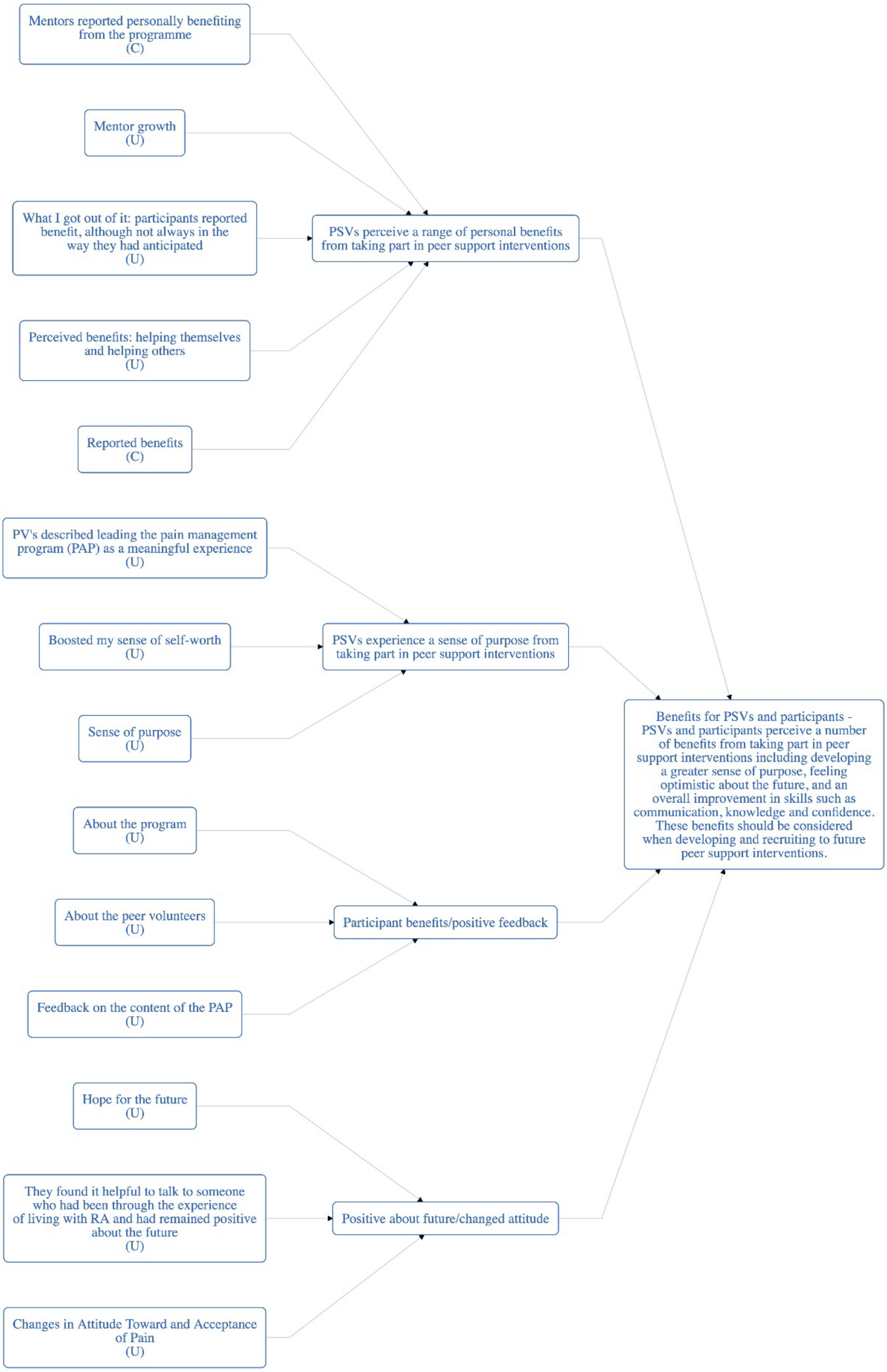

Figure 3: Synthesized finding #2 - Benefits for PSVs and participants

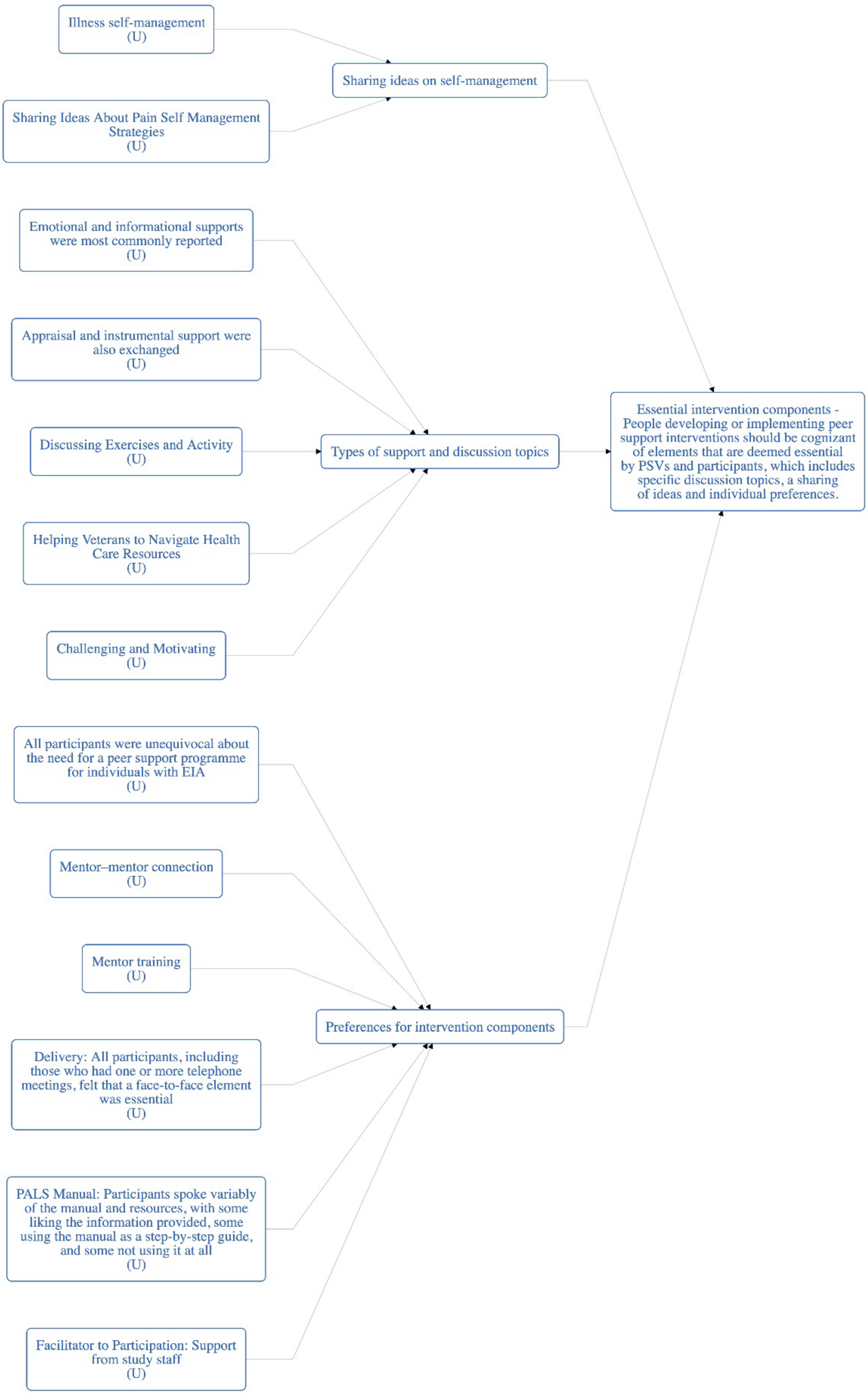

Figure 4: Synthesized finding #3 - Essential intervention components

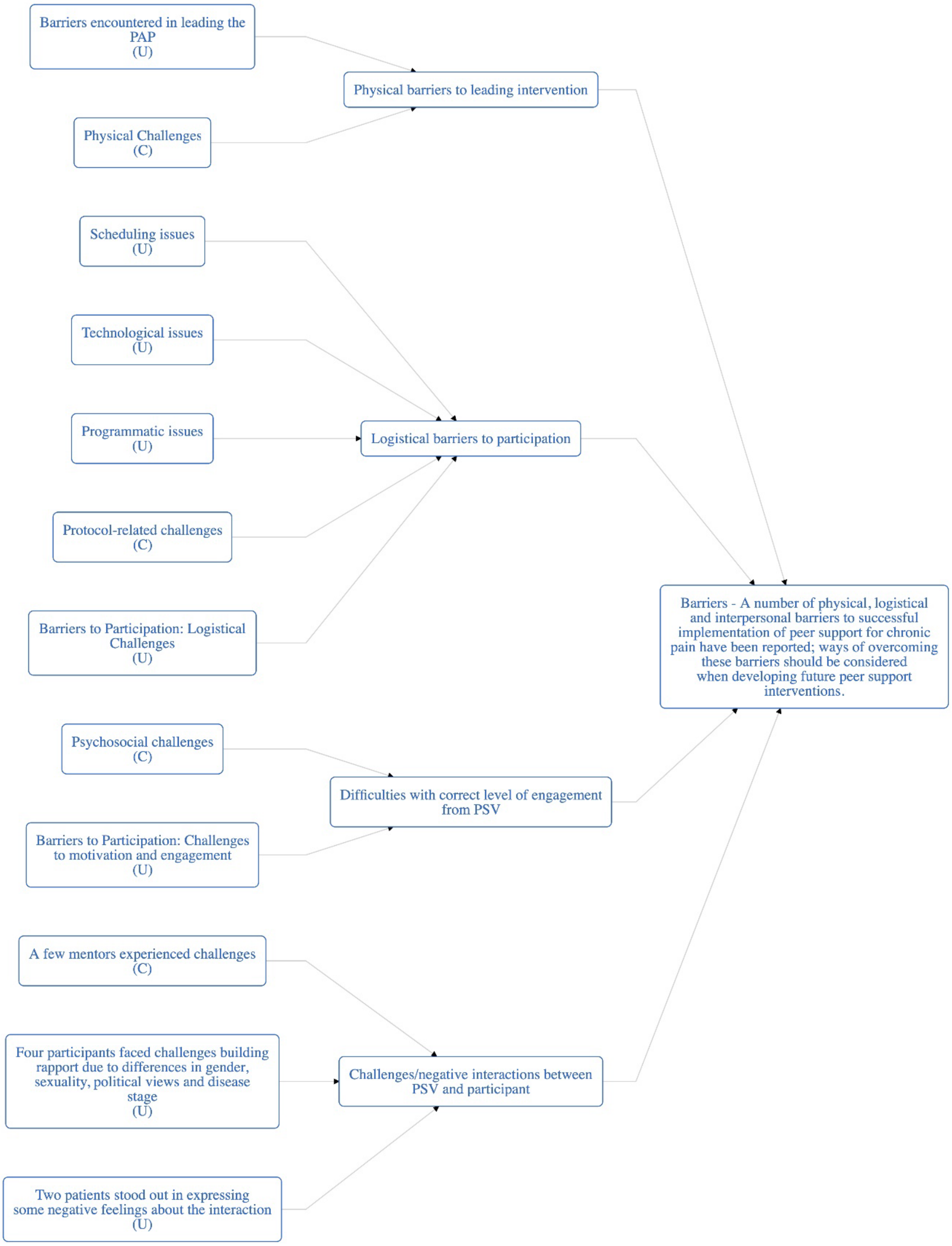

Figure 5: Synthesized finding #4 - Barriers