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The impact of substance use on the work ability among persons with chronic pain: A scoping review

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Abstract

Background. Chronic pain is a prevalent condition with profound impacts on occupational performance and work ability. Substance use for pain management is common, involving both pain medications and other substances such as cannabis and alcohol. While work ability in persons with chronic pain has been studied, limited research examines how substance use influences work ability.
Objective. This scoping review aimed to summarize research on the impact of substance use on work ability in persons with chronic musculoskeletal pain to identify knowledge gaps and inform interventions.

Methods. A scoping review approach was employed. Keywords and databases were defined, followed by a comprehensive literature search. Studies were screened by title, abstract, and full text. Inclusion criteria focused on adults with chronic musculoskeletal pain, excluding pediatric and neuropathic pain populations.

Results. From 4903 identified studies, 3253 abstracts and 159 full texts were screened, yielding 53 relevant studies. Most originated from North America and Europe. Findings revealed a complex relationship between substance use and work ability. Opioid use was frequently associated with reduced work ability, increased absenteeism, and decreased likelihood of returning to work. Conversely, limited evidence suggested opioids and methadone could facilitate work ability in specific cases.

Conclusion. Substance use significantly affects the work ability of persons with chronic pain, often diminishing occupational performance and increasing absenteeism. Addressing these challenges necessitates integrative health and social strategies and further exploration of comprehensive, interprofessional interventions.

Keywords

community health promotion, health care, musculoskeletal disorders, occupation, occupational therapy, sickness absence, work productivity

1. Introduction

Chronic pain is a common and complex health-related condition among adults characterised by pain that persists beyond usual recovery period or occurs alongside another chronic health condition (1–5). For this study, we will focus on musculoskeletal chronic pain which according to the ICD-11 is defined as the 'persistent or recurrent pain that arises as part of a disease process directly affecting bone(s), joint(s), muscle(s), or related soft tissue(s) (5). Evidence show that persons with chronic pain have reduced quality of life (1), reduced emotional well-being (6), and increased functional limitation (7–9). In addition, persons with chronic pain show lower level of work ability and lower employment rates (7,8,10). Overall, chronic pain leads to limitations in all activities of daily living (11).

The intake of substances is one way to cope with pain and its effects on the person. Pharmacological interventions are an important part of the treatment of chronic pain. This includes the use of medications with dependence potential, including opioids and central nervous system (CNS) depressants such as antidepressants (12). The use of cannabis to treat chronic pain (13) has become more present in recent years. Moreover, the use of alcohol (14), benzodiazepines (15), or tobacco (16) among persons with chronic pain has been reported.

Substances such as opioids are taken by person with chronic pain to be able to work (17) or perform household activities (18). The ability to perform such activities is broadly known as "occupational performance". Occupational performance is defined as "doing occupations" (19) and denotes "the ability to choose, organize, and satisfactorily perform meaningful occupations" (20). Using substances can influence occupational performance

differently. On the one hand, it compromises occupational performance negatively (21–23) and on the other hand, it can enhance people in doing productive activities (3,24,25) and help maintain their daily life participation (18,26–28).

Outside occupational therapy, synthesis studies were conducted to evaluate the rate of opioid misuse, abuse, and addiction of persons with chronic pain (29), to describe appropriate terminologies used in addiction practice (29,30), and to provide up-to-date clinical recommendations for safe and effective pain management for persons with substance use disorder (30). Within occupational therapy, reviews confirmed that occupational therapy has a large focus on work-oriented interventions including facilitating return to work in a multidisciplinary team (31) and critiqued that occupational therapy interventions are deemed most supportive when intervention goes beyond teaching skills and prioritize occupational participation and engagement at work and in the community (32). To further build on this research, it is important to explore the extant literature on the nuances of the impact of using substances, whether prescribed, licit or illicit, on the occupational performance of people with chronic pain conditions, especially in the area of work.

In this scoping review, we framed our findings from a more contemporary and critical perspective on work as an occupation. Hence, we would describe work as an occupation performed by people and beyond paid employment. Furthermore, we considered work broadly from pursuing work, seeking work, doing paid work, unpaid work (i.e., domestic work, household chores, and caregiving), getting out or losing work (unemployment), to returning to work (33,34). While reviews have concurred, that occupational therapy has a critical role in pain management and addiction rehabilitation, it would be beneficial to address this overarching research question: What is the impact of using substance, whether licit or illicit, on the occupational performance and work ability among persons with chronic musculoskeletal pain?

2. Method

2.1. *Protocol and registration*

We conducted a scoping review following the methodological framework from Arksey and O'Malley (35). Scoping reviews are especially beneficial to identify knowledge gaps, scope a body of literature, concept clarification, and to jumpstart a potential systematic review in the future (36). A study protocol was registered on the Open Science Framework database (37). The authors followed the guidelines from Levac (38) and Joana Briggs Institute (39) to ensure rigour throughout the process as well as the *Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews* (PRISMA-ScR) checklist to guide reporting (40).

2.2. *Eligibility criteria*

The eligibility criteria considered for this scoping review are summarized in Table 1.

2.3. *Information sources*

In order to identify relevant studies, a search strategy including search terms and search strings suitable to the databases used were formulated. A librarian from the Zurich University of Applied Sciences (ZHAW, Switzerland) supported the authors in this step. The search was conducted in April 2023 using six databases (i.e., PubMed, APA PsycInfo, Medline, CINAHL, Cochrane, Web of Science) that index studies relevant to health, medicine, psychology, occupational therapy, and social sciences. An update search was done in June 2024 to ensure that all studies included for analysis are up to date.

To initiate the search, the authors decided to undertake a pilot search in MEDLINE/PubMEd to identify articles on this topic, followed by a screening of title and abstracts to generate search terms and key words. We have considered that search terms had to be explicitly stated in the title or abstract (see Table 2). This process helped the authors develop a search strategy and corresponding search strings for each database. Table 3 presents a sample search string for CINAHL.

2.4. *Selection of sources of evidence*

After doing the search on all the six databases, all identified studies were uploaded to the Covidence systematic review, which automatically removed duplicate studies in preparation for two screening rounds. The first round entailed the screening of the title and abstract performed by BEG and AB, and then a third reviewer (FB) was consulted to resolve conflicts. The second round required full-text screening done by FB and MS. A third reviewer (TF/BEG) was consulted to resolve conflicts between studies during the second round.

The database search was supplemented with forward (i.e., search for all articles citing a specific article) and backward (i.e., search for all cited reference of an article) citation searches. References from the supplemental search underwent a full-text review following the same eligibility criteria outlined in Table 1. The final PRISMA flow diagram for this scoping review is presented in Figure 1.

<Insert Figure 1 here. PRISMA updated as of September 2024

2.5. *Data charting process and data items*

Pertinent data were extracted from the included studies through a data charting system within Covidence. FB and MS filled out the charting form separately. Each had to distil specific information from each included study including but not limited to the following: author/s, year of publication, title, country/s where the study was conducted, purpose of the study, study or research design, ethical consideration and approval, substances described in the study, description of chronic pain, type of work occupations discussed, description of “occupational performance”, and the relationship between pain, substance use, and work-related performance. Additional remarks were indicated as necessary. The charting process required several on-site and on-line meetings between the authors (BEG, FB, and MS) to determine which information would be used for analysis and reporting as well as gather insights for the discussion.

2.6. *Critical appraisal for individual sources of evidence*

Doing a critical appraisal process of included studies is not required for scoping review compared to a systematic review (35,40). To ensure quality in the studies we considered for this scoping review, we only included studies with explicit mention of research design utilized and thereby excluded any record from grey literature.

2.7. *Synthesis of results*

The results of the scoping review were synthesised in two ways: quantitative descriptions and content analysis. The results were reported by providing numerical descriptions (via percentages and frequencies). Then, as recommend by Levac and colleagues (38), a content analysis following the steps recommended by Graneheim and Lundman (41). FB and MS firstly read and reread the extracted data, specifically the data on the descriptions of “work”, “occupational performance”, “chronic pain”, and the interrelationship of these three concepts. Using MAXQDA (done by MS and FB), open coding was initially performed to collect codes that were then categorized, and eventually distilled into emergent themes. While the content analysis was not done exactly as one would do in a purely qualitative study, the synthesis focused on addressing the research objective of this scoping review.

2.8. *Ethical considerations*

This study is exempt from ethical review and clearance. However, to ensure ethical conduct of this research, we have indicated in our data extraction process whether the included study had ethical approval or not, or if ethical approval was not applicable.

4. Results

Description of included studies

The analysis of frequencies across different categories offers an overview of the 53 included studies (see Table 4). The publication years of the studies range from 1986 to 2024. Four included studies were published before 2000 (42–45), 10 studies between 2000-2009 (46–55), 20 studies between 2010 and 2019 (56–61,61,62,62–75) and 19 studies from the period between 2020-2024 (76–94).

In terms of geographic distribution, most of the included studies were conducted in North America (28 studies), with two of those from Canada (58,85) and 26 from the USA (42,43,45,46,48–50,55–57,59–62,65,69–73,76,78,80,82,89,92). Fourteen studies were conducted in Europe (44,47,52,53,64,66–68,77,79,84,86,87,94), 3 studies in Asia (51,63,88) and 1 study in Australia (74). Seven of the included studies involved authors hailing from multiple countries (54,75,81,83,90,91,93). Regarding the income levels of the countries of the included studies, 45 studies were from high-income countries (42–50,52,53,55–74,76–80,82–87,89,92,94), one study was from a upper-middle-income country (51), and one study was from a lower-middle-income country (88). Five studies could not be classified (54,75,81,91,93).

In terms of study design, quantitative research was the most common, with 41 studies (42–50,52,55–67,69–74,76,77,79,80,82,84–86,88–90,92,94), 3 of them were randomized controlled trials (72,74,89). Further, there were 6 reviews or evidence syntheses (54,75,81,83,91,93), 3 qualitative studies (68,78,87), 1 case report (51) and 1 mixed-methods study (53).

Regarding the substance investigated, 28 of the included studies focused on opioids (42,43,45–47,49–51,54–58,60–63,69–71,73,76,80,81,83,84,86,87). Multiple substances were examined in 14 studies (48,59,65–67,78,79,82,88–92,94), amphetamines in four studies (44,52,68,93), nicotine in two studies (64,77), sedative-hypnotics in one study (72),

and other substances in 4 studies (e.g., non-image guided injection treatments, nerve blocks amitriptyline) (53,74,75,85).

The included studies addressed the following work-related topics: paid work was addressed in 30 studies (42,43,46,49,53,54,57,58,60,63,67–69,71–75,79,84–94), returning to work in 24 studies (42–47,49–53,56,60,63,65,69,70,75,76,81,83,91–93), losing work/ unemployment in 1819 studies (42,43,49,53,55,56,60–64,66,69,77,80,82,86), and unpaid work in 9 studies (43,47,59,63,68,74,78,79,85), none of the included study reported the topic of seeking work. Other work-related topics (e.g. pain interference with work, ability to work, work limitation) were mentioned in 3 studies (48,54,73).

Substance use in relation to occupational performance

The substances used and misused by participants in our scoping review were mostly prescribed (e.g., amphetamines, opioids, analgesics, sedatives OTC pain killers, and immunosuppresants) (42–52,54–58,60–63,65–76,78–81,83–87,89–91,93,94) and licit (e.g., alcohol, cannabis, and tobacco) substances (48,64,65,67,77,78,82,88,94). Several studies revealed the use and misuse of multiple substances (48,59,65–67,78,79,82,88–91,94), illicit (i.e., illegal, clandestine open secret use) substances, not otherwise specified, were also mentioned in few of the included studies (59,88).

These substances were not only used to alleviate chronic pain due to musculoskeletal injuries, surgeries, and work-related injuries, but more importantly to continue with work or return to work. Whereas opioid is the most commonly prescribed medicine to address chronic pain (for temporary relief), its efficacy revealed contradicting effects. On the one hand, the use of opioid, especially high doses, has little to no effect (45,50,54,58,84) or negative effects (42,46,49,55–57,60–62,65,66,69,70,76,80,81,83,86,91,92) on work ability and on the other hand, opioid use results in adverse effects to the workers such as more disability, hence more absences and less likelihood to return to work. Only few quantitative studies showed positive effects of opioids on work ability (43,47,63,71,73). The qualitative studies (68,78,87), a case report

(51), and quantitative studies utilizing self-reported outcomes (71,73) showed positive effects of opioids on work ability. Participants used opioids as a coping strategy which enabled them to engage in working activities (68,71,78). For persons with chronic pain and opioid dependence, positive results of methadone on work ability were reported (53). Studies investigating use of nicotine showed negative results on work ability in persons with chronic pain (64,77). New drugs are being developed to address chronic pain that shows effectiveness on work ability, but they are still under clinical trials (e.g., Upadacitinib, Baricitinib) (72,89).

Non-pharmacological and multi-professional treatment regimens have been advocated in several studies (44,50,52,57,94) to address chronic pain not only as a body function issue, but a complex health issue. We have provided a synthesis of our data in Table 4. In the same table, we took stock on the influence of substance use on a person's role as a worker. Although it is evident that the substances that we considered in these studies, whether licit or illicit, have an influence towards work ability and occupational performance, majority of the included studies reported that the use of substances either decreased their work ability, leading to work absences, worsening health condition, and disabilities, or did not change their work ability i.e., status quo.

5. Discussion

"What is the impact of using substance, on the work ability among persons with chronic musculoskeletal pain?" was our main research question. The results of the scoping review show the complex relationship between substance use and work ability. Most studies highlight that substance use, particularly the use of opioids, leads to decreased work ability, increased absenteeism, and lower likelihood to return to work. However, some reports noted opioids and methadone as facilitating work ability in certain cases.

The effects of substance use on occupational performance show meaningful variability, particularly with opioids. While qualitative studies indicated their role as a coping mechanism

for managing chronic pain and increasing work ability (68,78,87), most quantitative studies pointed out detrimental impacts, such as greater disability and prolonged absences (42,46,49,55–57,60–62,65,66,69,70,76,80,81,83,86,91,92). This is in line with earlier research that showed that persons with chronic pain take substance in order to be able perform paid (17) or unpaid work (e.g., household tasks) (18,95,96) on the short-term. However, the reduction in pain experienced due to substance use does not necessarily translate into improved long-term work ability for individuals with chronic pain. This finding is consistent with current systematic reviews, which have reported a lack of high-certainty evidence supporting the long-term effectiveness of commonly used substances (e.g., antidepressants, bisphosphonates) or other interventions in reducing chronic pain in general (97,98). A recent review on the use of opioids found no studies providing evidence on the presence and severity of adverse events associated with high-dose opioid use in individuals with non-cancer pain (99). The lack of data on many adverse events represents a significant limitation in the evidence regarding opioid use. For instance, while occupational health professionals recognise that there are work safety issues related to opioid use (e.g., motor accidents, committing high-risk errors, agitation and irritation among others) (100) occupational injuries continue to lead to more opioid prescriptions, cost, and supply days (101) .In situations where opioids are obtained through illegal means, blackmailing can also occur in the workplace and may require the employee to seek legal assistance to mitigate such work-related and security risks. Similarly, workers in specific industries such as construction and fishing do not seek medical help due to the fear of losing their job when they are found to be using these substances (102). The association between substance use, particularly opioid dependence, and reduced work ability underscores the broader implications of prescription opioid use and misuse among persons with chronic pain. The question of whether the current practice of prescribing opioids for persons with chronic pain should be maintained is a matter of significant importance.

Many of the studies included in this review recommend non-pharmacological and interprofessional interventions as effective strategies to address these challenges and

enhance work ability and the worker role in persons with chronic pain on the short and long term (44,50,52,57,94). These findings are consistent with earlier systematic reviews, which concluded that interprofessional interventions (including medicine, psycho-, physical-, and occupational therapy, and social work) are more effective for persons with chronic pain compared to single interventions (103), especially in reducing job loss and improving work ability (104).

Moreover, various factors appear to influence outcomes. Social determinants of health, such as education, working conditions, and housing (96), play a crucial role in shaping interactions with substance use, work ability, and the ability to maintain one's role as a worker. These findings align with previous studies that revealed how substance use can be considered as a secondary occupation (i.e., a precedent) to a primary occupation which is work (105) and the idea that living with drug using can be a barrier to participation, enabler to participation, and a predisposition to injustice (3).Our results pointed to a predominance of manual labourers from low-income groups who, due to limited benefits and difficult work environments, were more susceptible to substance use for pain relief and work ability. However, it is important to note that over half of the studies included in this review focused on blue-collar workers engaged in manual and physically demanding occupations.

The findings of this review may be generalizable to a diverse range of settings in middle- and high-income countries. The studies included were conducted in North America, Europe, Asia, Australia, and across multiple countries. Participants represented men, women, and individuals of diverse genders across a wide age range, with a focus on various substances, including opioids, sedative-hypnotics, nicotine, amphetamines, multiple substances, and others. However, careful consideration should be given to the specific work contexts targeted in the studies, such as paid work, unpaid work, a combination of both, return-to-work scenarios, or transitions out of work. As such, the findings may not apply equally to all persons with chronic pain who are employed, seeking work, or aiming to maintain their role as workers. Furthermore, the results may not be directly applicable to persons with chronic

pain from low-income countries or those with high levels of education and/or incomes in middle and high-income countries. The implications for health professionals are clear: comprehensive intervention strategies should address substance use as part of an interprofessional approach, incorporating both health care interventions and other determinants of health. To enhance the skills of practitioners, continuing professional development programs should integrate contemporary concepts related to return-to-work strategies, the application of various work ability assessments, interprofessional interventions, and the consideration of social determinants of health in all intervention stages of persons with chronic pain. These additions would provide health and social care professional with the knowledge and tools necessary to address the multifaceted challenges associated with work ability and health.

Future research should focus on enhancing understanding of non-pharmacological interventions and exploring diverse work settings and populations to inform more effective preventative measures and policies. More specifically, future research should include case studies involving persons with chronic pain from diverse occupational backgrounds to examine how chronic pain and substance use affect their work ability. Such studies should also be conducted in low- and middle-income countries and with person with a high socio-economic and educational status in high-income countries to identify potential differences or similarities in findings across varied socioeconomic contexts and groups. Furthermore, the World Federation of Occupational Therapists (WFOT) position statement on occupational therapy in work-related practice (106) should be expanded. This update could encompass individuals and groups across the spectrum of work-related transitions, including entering, maintaining, and exiting work. By doing so, the scope of occupational therapy services would be broadened to address the dynamic processes and transitions associated with work and employment.

This review has several strengths. We conducted an extensive and iterative search for studies, adhering to rigorous inclusion criteria and updating the search multiple times. The

included studies encompassed diverse methodologies, predominantly quantitative approaches, complemented by qualitative insights and case reports. Additionally, the review process involved five researchers working collaboratively at various stages, including structured discussions to resolve conflicts, thereby enhancing the trustworthiness of the findings. However, this review also has limitations. We included only articles published in English, which may have influenced the regional representation and contributed to a strong focus on high-income countries. Furthermore, we did not assess the methodological quality of the included studies, which limits our ability to evaluate the reliability of the results. Nonetheless, as this is a scoping review, assessing study quality was not the primary aim. Scoping reviews are designed to provide a broad overview of evidence on a topic and are not intended to replace complex intervention studies and/or controlled trials. Finally, variations in practice context should be noted. The populations included in many of the studies may not reflect the complexity of persons with chronic pain typically encountered in clinical practice. This difference may influence the generalizability of the findings to real-world settings.

To conclude, substance use significantly affects work ability of persons with chronic pain, often decreasing occupational performance, work ability and increasing absenteeism. Addressing these challenges requires integrative health and social strategies and further exploration into comprehensive, interprofessional interventions.

6. Ethical approval

Not applicable

7. Informed consent

Not applicable

8. Conflicts of interest

The authors report no conflict of interest relevant to this article.

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