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A critical review of gender issues in understanding prolonged disability related to musculoskeletal pain: How are they relevant to rehabilitation?

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Purpose: The purpose of this critical review is to describe available theoretical models for understanding the gender issues in prolonged work disability related to persistent musculoskeletal (MSK) pain.

Method: A critical literature review was conducted in medicine, health sciences, and social sciences databases (MEDLINE, CINHAL, PsychINFO and SOCINDEX) using specific keywords. After screening titles and abstracts, followed by methodological quality assessment, a total of 55 references were retained for content analysis.

Results: Gender issues in disability related to persistent MSK pain show that men and women may experience pain and rehabilitation process in different ways. Three main themes were extracted and further described: 1) the experience of distrust, 2) the self-identity process, and 3) the domestic strain. Each of these themes has a specific and potentially different impact on men and women, and we report that experiential differences may strongly impact the rehabilitation process and outcomes such as return to work.

Conclusions: This critical review provides insight into gender issues in the process of rehabilitation and outcomes such as return to work. We suggest that work and family considerations are the two most important issues in the rehabilitation process and that differences between men and women are likely to occur.

Introduction

Pain is a ubiquitous phenomenon intrinsic to human experience [1]. According to the International Association for the Study of Pain [2], pain is “an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage”. Dualistic ideas about pain have fostered the division between physical and psychological processes [3]. Dualism, a concept generally associated to the 17th century philosopher and scientist René Descartes, posed pain as having either a psychological or physical origin [4]. We now recognize that pain sensation and response also underlies non-biological factors such as emotions, cognitions, prior experiences, and cultural influence [5]. This cross-dimensional vision was first labelled as “biopsychosocial” in the late 1970’s [6]. Every year, many workers experience sickness absence due to MSK pain [7,8]. Most return to work in the following weeks but 8% experience persistent pain that may result in prolonged work disability [9]. According to the Quebec Workers Compensation Board (CSST) those workers account for half of the indemnity costs [7,8]. During their prolonged sickness absence these workers will attend rehabilitation programs to help them return to work.

There is growing evidence that gender issues play a crucial role in prolonged work disability and rehabilitation outcomes [10-17]. In this article, “gender” does not mean “sex” as biological differences, but rather the socialization process through which a person learns and adopts the cognitive schemes, and the attitudinal and behavioural patterns he or she has been assigned to on the basis of his or her sex [18-20]. Premising gender as a social and cultural construct does not mean that sex differences are supererogatory, as anatomical, genetic or hormonal settings seem to play a significant role in pain tolerance, frequency or prevalence [21-23]. Mitigated reports and even rivalling results suggest that “sex” in itself may not be as strong a predictor for persistent disability than other variables such as family situation (ex. Number of children, income, possible conflicting roles) [24]. Drawing a conceptual frontier between sex and gender is not an easy thing to do when, for example, emotional onset and display are also gendered [25-27]. Dichotomized categories of biology and culture make up both sides of the same coin and are likely to be interactive. The intrinsically complex and multidimensional nature of the pain phenomenon goes far beyond the sensory or emotional dimension.

It has been suggested that the construction of social and gender roles may have an impact on the interpretation and expression of pain [4]. To be understood by others, painful sensations must be enacted or expressed in a particular setting or fashion that makes sense to others, i.e., in a socially or culturally appropriate manner [28-30]. Pain, then, needs to be validated to legitimatize one’s own disability. It also triggers entry into the health system, so that specific interventions are provided [31]. The feeling of being a gender and functioning in daily life in what might be socially expected for that gender is another facet of being in the world. Do men and women experience illness the same way? Is prolonged work disability related to MSK pain gender neutral or must the gender be considered as a real concern in occupational rehabilitation? In light of these questions, the aims of this article are: 1) to provide a critical review of the literature on gender issues in prolonged work disability related to MSK pain and rehabilitation and; 2) to assess the major emerging themes and their ability to address new theoretical perspectives and conceptual tools to bring a deeper understanding of workers' personal experiences of disability.

Method

A survey was conducted using French and English language literature from the early 1950's when gender articles appeared in social sciences literature. The following databases were consulted: MEDLINE, CINHAL, PsychINFO, SocINDEX, using *gender* or *pain* as the main keywords, combined with specific keywords: *occupational diseases* or *rehabilitation* or *back pain* or *chronic pain* or *disability* or *musculoskeletal* or *return to work* or *work* or *phenomenology* or *qualitative research* or *experience* or *narrative* or *pain behaviours*. A total of 3686 articles were found. After removing duplicates, eliminating articles written in languages other than French or English, and evaluating article relevance based on the correspondence of their titles with the aim of assessing the major emerging themes and addressing new theoretical perspectives relevant to rehabilitation, 475 articles remained. A second evaluation assessed the accuracy of the titles with the gender issues in MSK pain, disability and rehabilitation, and was based on the following criteria: 1) to be concerned about persistent pain, musculoskeletal pain, prolonged disability or rehabilitation; 2) to address theoretical issues in the study of pain, prolonged disability, rehabilitation process, and gender experience. In opting for this methodological choice, the studies using gender/sex as a confounding variable (along with age and other demographic variables) were excluded, and those using gender as an integral part of the problematic were included. That explains why there are less quantitative studies in this review as that kind of study uses gender/sex as a confounder. The two authors reached consensus on the relevance and choice of the articles and a total of 32 references were retained for the critical evaluation. The authors developed an evaluation grid to assess the quality and the content of the studies, based on Malterud's [32] and Verbeek's [33] guidelines. Articles were ranked from 0 to 20 on the basis of their methodological qualities and a rank ≥12 was considered sufficiently rigorous for inclusion [33]. Only one article was excluded for not satisfying the criteria for assessing methodological quality, namely a lack of detail regarding sampling and possible sample biases related to the procedures by which workers were referred to clinics. Thirty-one references were retained. Content analysis and critical commentary were recorded for each article. A structured analysis grid included 1) elements of the problematic, 2) methodology (including objectives, sampling procedures, hypotheses, measure tools used, analysis and validation procedures), 3) theoretical framework (including premises, discussion, epistemology, strength and limits) and 4) main results (including emerging themes, observed correlations, barriers to return to work). The grids are presented at the tables 1 and 2.

Table 1. Evaluation grid for qualitative studies.

	Score
1. Aim	
a. The research question is a relevant issue?	
b. the aim is focussed and clearly described?	
c. The title gives a clear account of the aims?	
2. Sampling	
a. Inclusion, exclusion criteria and selection of study population are described?	
b. Participants are described in details (age, gender, social position, name of disease, duration, etc.) ?	
c. Someone other than their care provider recruited the patients?	
d. There is a clear distinction between clinicians and researchers?	
e. When relevant, clinical context and treatment description are described?	
3. Data collection	
a. The method of data collection is described (random, purposive, and theoretical?	
b. Is the reason for this choice stated?	
c. Are the characteristics of the sample presented in enough depth to understand the study site and context?	
4. Theoretical framework	
a. The concepts and perspectives used for data analysis are presented?	
b. The theoretical framework is adequate, in view of the aim of the study?	
c. There is a clear account for the role given to the theoretical framework during analysis?	
5 Analytical instruments and procedures	
a. Data organisation and analysis are fully described?	
b. The various categories identified are developed from the data or from theory or preconceptions?	
c. Internal validation or credibility is detailed (cross-checks for rivalling explanations, triangulation, peer debriefing, member checking)?	
6. Discussion	
a. Data and analysis are relevant with respect to the aim of the study?	
b. Findings have been compared with appropriate theoretical and empirical references?	
c. Interpretation limits and consequences of the study are proposed?	

Scores: 12-13 Low but acceptable; 14-17 High; 18-20 Very high

Table 2. Evaluation grid for quantitative studies.

	Score
1. Aim	
a. The research question is a relevant issue?	
b. the aim is focussed and clearly described?	
c. The title gives a clear account of the aims?	
2. Sampling	
a. Inclusion, exclusion criteria and selection of study population are described?	
b. Participants are described in details (age, gender, social position, name of disease, duration, etc.)?	
c. Someone other than their care provider recruited the patients?	
d. There is a clear distinction between clinicians and researchers?	
e. When relevant, clinical context and treatment description are described?	
3. Data collection	
a. The method of data collection is described (random, purposive, and theoretical?	
b. The questionnaire(s) used in the study have been validated?	
c. The characteristics of the sample are presented in enough depth to understand the study site and context?	
4. Theoretical framework	
a. The concepts and perspectives used for data analysis are presented?	
b. The theoretical framework is adequate, in view of the aim of the study?	
c. There is a clear account for the role given to the theoretical framework during analysis?	
5 Analytical instruments and procedures	
a. Data organisation and analysis are fully described?	
b. The various categories identified are developed from the data or from theory or preconceptions?	
c. Procedure of statistical analysis is described in detail (reproducible process?	
6. Discussion	
a. Data and analysis are relevant with respect to the aim of the study?	
b. Findings have been compared with appropriate theoretical and empirical references?	
c. Interpretation limits and consequences of the study are proposed?	

Scores: 12-13 Low but acceptable; 14-17 High; 18-20 Very high

Both grid are the same except for 3b (methodological choice vs. validated questionnaires) and 5c (internal validation vs. reproducible process)

The first 10 articles were reviewed by both authors for inter-rater validity and agreement on evaluation and content analysis. Disagreements were discussed and clarified until a common satisfying agreement was found. Agreement was found to be satisfactory according to Landry's method [34]. Only minor disagreements over details occurred and these were easily resolved by hearing each author's argument in order to propose an alternative evaluation or to agree with other author's argument. Themes were drawn from subjective experience of disability and rehabilitation where gender-specific issues could be extracted.

Results

Content analysis of the selected studies demonstrated that specific issues that were not necessarily common to both genders or common issues that may have reflected experiential differences, affected both men and women. Three main themes emerged from the data analysis. First, the *experience of distrust* was an important gender issue in prolonged work disability related to MSK pain. Second, *self-identity* was also an important issue, associated with social roles, functions and culturally defined expectations. Third, *domestic strain* was observed to be a significant, and possibly determinant, issue influencing the rehabilitation process. A summary of the selected papers highlights is presented at table 3.

Table 3. Summary table of reviewed articles.

Authors	Main focus	Type of study	Place	Sample	Main findings	Quality assessment
[32]	Gender differences pain experience	Qualitative	Sweden	Purposive. 11 participants with work related disability (4 men, 7 women), mean age 30	Women might be more subject to experience distrust and corresponding negative return to work outcomes	Very high
[73]	Coping and attitudes	Quantitative	Australia	Cohort study with 145 primary care chronic pain patients (86 women, 59 men), mean age 50	Poor feeling of self-efficacy is strongly related to avoidance of physical activity and perceived disability. Self-efficacy beliefs are stronger associated to avoidance behaviours than catastrophic thoughts. Gender variations are not reported	High
[25]	Gender differences in expressed emotions	Qualitative	England	Purposive. 107 chronic pain participants (53 men , 54 women), mean age unknown	Expression of pain and emotions are shaped by sociocultural experiences. Pain behaviour is more tolerated in women, but cultural stereotype of psychological pain	High
[33]	Coping and attitudes: relations between gender, age, class	Qualitative	England	Purposive. 34 chronic pain participants (12 men, 22 women), mean age 45	Women complaints would be taken less seriously than men. Identify accommodation (with pain) versus resignation groups of patients: accommodation group perceive biomedical treatment as less central and satisfactory compared to resignation group to whom biomedical treatment is perceived as central but providing less satisfactory results	High
[34]	Pain experience and help-seeking behaviours	Qualitative	Australia	Purposive. 52 women with repetivive strain injury (RSI), mean age unknown	Close relationship between loss of self, delegitimation and marginalisation	High

Authors	Main focus	Type of study	Place	Sample	Main findings	Quality assessment
[35]	Gender, coping and attitudes toward pain	Quantitative	Sweden	Purposive. 446 pain participants with musculoskeletal disorders (MSD) (321 men, 125 women), mean age 46	Emotional distress, catastrophizing and perceived disability scores are correlated to gender	High
[36]	Emotional changes during rehabilitation process	Qualitative	Sweden	Purposive. 16 fibromyalgic women, mean age 43	Changing self-image through rehabilitation process, setting limits and body awareness	Very high
[37]	Division of domestic labour and power structure	Qualitative	Sweden	Purposive. 20 women with MSD, mean age 39	Rehabilitation procedures might contradict domestic patterns of labour	Very high
[117]	Pain experience and narrative	Qualitative	Finland	Purposive. 3 participants with chronic pain (1 men, 2 women), mean age 56	Pain narratives denote a discontinuity in life trajectory. Necessity to rebuild and a sense of coherence.	Very high
[38]	Gender and coping strateties	Quantitative	Sweden	Convenience. 121 participants with MSD (50 men, 71 women), mean age 40	Stronger relation between women and catastrophizing. Stronger associations when considering unskilled labour and diffuse intractable pain (compared to specific pain)	Very high
[39]	Women experiences of pain	Qualitative	Sweden	Purposive. 20 women with MSD, mean age unknown	Construction / deconstruction of self-identity is related to the idea of womanhood, loss of control over pain and legitimation of pain experience	High
[14]	Gender differences in expressed emotions and psychological distress	Quantitative	United Kingdom	Purposive. 260 chronic pain participants (101 men, 159 women), mean age 45	Stronger associations between women, depression and perceived disability	High
[11]	The influence of psychosocial factors in rehabilitation outcomes	Quantitative	Norway	Purposive. 168 chronic pain participants (60 men, 108 women), mean age 46	Stronger association between women gender, socio-economic lower economical conditions, perceived disability and psychological distress	High

Authors	Main focus	Type of study	Place	Sample	Main findings	Quality assessment
[40]	Psychosocial barriers to return to work	Qualitative	Norway	Convenience. 17 low back pain participants (5 men, 12 women), mean age 49	Work constraints and lack of flexibility influence the return to work outcomes	High
[123]	Gender differences in treatment seeking behaviours	Quantitative	United States	Purposive. 716 chronic pain participants (264 men, 452 women), mean age 45	Stronger association between women, perceived disability and lower quality of life	High
[10]	Psychosocial barriers to return to work	Quantitative	United States	Cohort. 1827 chronically disabled spinal disorder participants (1158 men, 669 women), mean age 41	Stronger association between women, self reported pain, perceived disability, depression and negative return to work outcomes	High
[118]	Gender differences in psychological distress	Quantitative	United States	Randomised trials. 245 chronic pain participants (109 men, 136 women), mean age 40	No significant patterns of gender variation in psychological distress using BDI scales	High
[41]	Experience of long term sickness	Qualitative	Sweden	Randomised. 82 long term sickness absence women, mean age 42	Changing self-image and social identity through sickness and healing. Gap between self perception and the vision of the future to strengthen insecurity, hopelessness and loss of sense of coherence	Very high
[42]	Experience of pain and legitimacy	Qualitative	England	Purposive. 16 back pain participants (6 men, 10 women), group age 30-59	Meaning of pain and its articulation in clinical context show language adaptations (using biomedical language) for legitimizing pain experience and maintaining an acceptable self-image	High
[43]	Domestic strain and rehabilitation outcomes	Qualitative	Sweden	Purposive. 20 participants with MSD (10 men, 10 women), age group 25-34	When experiencing domestic strains, women face more social isolation and less familial support. This has consequences on return to work outcomes	Very high

Authors	Main focus	Type of study	Place	Sample	Main findings	Quality assessment
[44]	Experience of rehabilitation	Qualitative	Sweden	Theoretical. 20 participants with MSD (10 men, 10 women), age group 35-47	The importance of social and emotional support in rehabilitation process	High
[58]	Experience of chronic pain among men workers	Qualitative	Sweden	Purposive. 14 fibromyalgic men.	Self-image is associated to body image and cultural discourse on gender and masculinity. Reduced functions at work correlated to a breach in personal identity	High
[45]	Barriers to return to work	Qualitative	England	Purposive. 38 chronic pain participants (15 men, 23 women), mean age 49	Many psychosocial and work environment factors are explored, but the most significant emerging theme lies in the feeling of uncertainty about the future as determinant for returning to work	High
[46]	Experience of pain and work status	Qualitative	Sweden	Convenience. 10 chronic back pain participants (6 men, 4 women)	Association between work status and coping and attitudes toward pain. Catastrophizing as the main factor	High
[119]	Gender differences in quality of life	Quantitative	Norway	Randomised. 454 chronic pain participants (202 men, 252 women), mean age 48	Stronger association between women, work status, matrimonial situation and level of pain intensity, pain reports and quality of life	Very high
[120]	Illness perceptions	Qualitative	Canada	Purposive. 11 participants with MSD (8 men, 3 women)	Perceptions of work and perceived disability influence return to work outcomes	High
[121]	Self-efficacy and return to work expectancy	Qualitative	United States	Convenience. 51 low back pain participants (26 men, 25 women)	Perceived self-efficacy to control pain symptoms and perception of work environment influence return to work expectancy	Very high
[47]	Gender differences in pain expression and rehabilitation outcomes	Quantitative	United States	Purposive. 351 chronic pain participants (152 men, 199 women), mean age 51	Women experience more domestic burden, familial environment influences pain expression	Very high

Authors	Main focus	Type of study	Place	Sample	Main findings	Quality assessment
[122]	Experience of rehabilitation	Qualitative	Norway	Purposive. 8 chronic pain women, mean age 42	Acquiring better knowledge of oneself through rehabilitation process	High
[48]	Therapist / patient relationship	Qualitative	Norway	Purposive. 10 women with medically unexplained symptoms, mean age 43	Presentation of self in clinical encounter for establishing credibility as a patient and for maintaining self-esteem	Low
[54]	Experience of pain and legitimacy	Qualitative	Norway	Purposive. 10 chronic pain women, mean age 43	Cultural discourse on gender and disease and its influence on personal pain narrative. How pain is enacted according to gender social stereotypes	High

Legend for the quality assessment scores: 12-13 Low but acceptable; 14-17 High; 18-20 Very high.

Experience of distrust

The experience of distrust can be defined as a situation where a person in pain feels or perceives that he or she is not believed or legitimized in his or her ill-being, preventing him/her from entering what is called a sick role and receiving proper healthcare services. The sick role theory is a temporary withdrawal from occupational and / or domestic duties for the sake of recovery [35]. In this case, the social institutions have a clear representation of what is happening and provide a patterned response. Entering the sick role leads to adopting a specific, socially understood, and expected illness behaviour, e.g., an expected duration and attitude toward illness that promotes recovery and appropriate coping behaviours [31]. Without obvious lesions, prolonged disability due to MSK pain limits the possibility of a clear diagnosis.

Many qualitative studies have found that distrust is associated with the perception of a person having what participants call a “moral flaw”, of being a “bludger”, “whinger”, “smuggler”, etc. [31,36-38]. This perception was found to have a stigmatizing effect [39]. In the field of gender and persistent pain, the experience of distrust is also associated to the sick role, since workers often strive hard to be taken seriously, or to be credible as a patient, and to be considered to have “real pain” versus “imagined” or “psychological pain” [31,40,41]. These issues in causal explanations were explored by Bendelow [25], who reported that while both men and women admitted the existence of physical and psychological pain, only women believed that emotionally loaded events could induce physical pain and men believed that physical pain had only physical roots [25]. Bendelow’s study also reports how both men and women have specific expectations regarding the other gender’s pain behaviour: women were expected by men to display emotional reactions while men were expected by both genders to hide or to conceal their symptoms [25]. Another study by Werner and Malterud reported that women described themselves as “strong” and “not complaining for everything”, and that if mental tension was a factor aggravating pain, it was not merely the cause [38].

Some health professionals may be willing to explore psychological factors in pain and disability because they adopt a biopsychosocial approach; however, they are likely to face rejection from patients who insist upon biomedical explanations. This illustrates another facet of distrust where pain symptoms are believed by the health professional, but the explanatory model provided to the patient does not meet his or her expectations because the patient perceives psychological aspects of pain as a non-real pain, or a “mental disturbance”, rather than real pain [42]. Fear of being labelled as “crazy” emerges as an issue in the interpersonal display of pain [38] and as an issue in social representations of psychological or emotional distress when it is experienced as an object of “shame” [38,43]. A study of men with fibromyalgia and a chaotic path to a diagnosis [44] showed that men were reluctant to accept this diagnosis (fibromyalgia) since it has been associated with “women” and the corresponding social stereotypes of being “weak” or more “emotional”, and more prone to “psychological pain”: the men wanted a “real” disease [44]. In the case of illness due to physical disease or harm, entry into a sick role poses fewer problems than psychological diagnoses or psychological explanations of a painful bodily experience [31]. Health professionals may not always be willing to explore psychological or emotional aspects of pain, as some contradictory results suggested [45-47]. Mental tensions resulting in an emotional response to pain may influence the evaluation of symptoms by the health professionals [47]. For example, pain symptoms and their concomitant emotional distress may be taken less seriously or even distrusted by health professionals in a biomedical paradigm [45,46]. The perception that women complain more than men, along with the perception of being more emotional, may lead to underestimating women's pain symptoms and neglecting psychological distress [25,36,38,46,48]. Experiencing distrust may result in verbal or behavioural displays of pain symptoms to inform others and to set workload limits [43]. Therefore, if women experience more distrust, it is not surprising that they would demonstrate more pain behaviours [43,49]. Gustafsson and colleagues' study revealed that behavioural display of pain symptoms was related to the health professional's response: when personal experience was distrusted, greater pain behaviours resulted. Conversely, validation of pain experience resulted in a reduction of external display of symptoms [43]. These authors argued that people in pain might communicate through sickness. Therefore, symptoms amplification or catastrophizing may be an aspect of communication aiming to express personal distress [40].

Experience of distrust may take another form in the field of medico-legal litigation. A recent study found that the experience of distrust may be more important for women. Women's claims for acceptance and compensation were rejected more often than men's claims [50,51]. It may not be a coincidence that women are more commonly victims of "professional diseases", compared to men, who are more commonly victims of work accidents [51]. A study by Reid, Ewan and Lowy among women workers suffering from repetitive strain injury reported two classes of perceived etiologic factors: aging and work conditions (obsolete equipment, pressure, lack of rest) [52]. This study indicated the difficulty in obtaining acknowledgement of pain as work-related and, obtaining benefits from the workers compensation system. Workers compensation legislation requires a demonstration of the relationship between work conditions and an illness or a diagnosed disease. While it may be obvious that an injury occurred following a work accident, it may be more complicated to scientifically establish the relationship between work conditions and a professional disease [53]. Employment sectors associated with higher risks of developing MSK pain also are sectors predominantly occupied by women (e.g., services, health and social services) [51].

The main interest for the theme of experiencing distrust resides in the reconstruction of the course of illness through social interactions, health institutions, and the insurance and compensation system. In Quebec (Canada), pain acceptance and the compensation for work-related MSK pain are reviewed by a workers' compensation board known as *Commission de la santé et de la sécurité du travail* (CSST). This course of illness is one of legitimization and of being a credible patient. Workers experience distrust after they experience their pain being unacknowledged by the social environment. This theme may highlight the possible differential attitude toward pain, depending on gender, and the emotional load that impinges on such an experience, causing additional psychosocial distress. Overall, these studies provide an account of the illness trajectory and its cross-personal consequences.

Self-identity

Self-identity can be defined as the way people see themselves in interactions with their social environment, questioning who they are and what they're capable of [54]. Self-identity confronts their sense of normalcy and their fit within social values and expectations [55,56]. Over a lifetime, self-identity will change and transform since it is based on social interactions and experiences. Alteration of self-identity is an important theme that emerged in our critical review. The feeling of "loss" [57], such as loss of physical capacities, technical skills, competitiveness, self-esteem, and reputation, is an important theme associated with the construction of self-identity [11,38,44,46,48,49,58-64]. Ideas and feelings of loss in the construction of self-identity have even been compared to the experience of bereavement for workers anticipating a partial recovery [65]. More precisely, women have a stronger tendency than men to perceive themselves incapable of performing specific tasks. This is an important source of fear, anxiety [4,15,66-68], and loss of self-esteem [66,69]. Anxiety and fear are correlated with catastrophizing [70]. This association is not surprising, considering how the feeling of loss, in terms of social relations and roles, may fracture the feeling of self-identity. Overestimating the negative consequences of pain may be common, considering a woman's vulnerability when combining social roles (familial and professional), and her possible feelings of being overwhelm due to multiple commitments [71].

In Werner and Malterud's study among fibromyalgic women [39], the authors reported that women struggled with two key elements: a) maintaining an acceptable self-identity while b) behaving in a way they would be understood or believed. In handling the presentation of self in a clinical encounter, women are convinced that their pain behaviour will not result in being labelled with a stigmatizing condition [72]. Women in that study reported how they tried to look "not too good" but "not too sick" when they met the health professional (nicely dressed up, make up applied, etc.). The women expected to look good enough to prevent being labelled with distress but they also expected to look sick enough to be taken seriously. They had to balance both perspectives to adjust to their own feeling of self-integrity [38]. The same study showed how women are impinged with the social stigma of being "weak" and "emotional" while they create an image of "robustness" for themselves [38]. As an output of experiencing distrust, the emotional aspects of pain may become an input for self-image disruption. Criticizing the lack of studies on the experience of persistent pain in men, Paulson and colleagues [44] recruited exclusively male participants to describe their experiences with pain. It has been reported that, aside from women's studies, the experience of persistent pain is related to changes in self and body perceptions, and to cross-personal relations. Feelings of loss and shame were present in pain narratives, as reported in exclusively female samples [43]. Interestingly, Paulson and colleagues found a very high level of distress (including suicidal ideations) among men who returned to work with light duties when those duties were perceived as diverging from the typical or socially accepted work pattern for men [44]. In this study, high levels of distress were associated with the loss of self-identity as a worker, and fostered feelings of humiliation and failure [44]. Strong identity as a worker and the work ethic of competitiveness did not correspond to the return to work with light duties. It also did not correspond to the masculine ideal constructed upon stoicism and endurance. Indeed, the men generally hid emotions and symptoms, rather than show them to obtain sympathy, because they feared the loss of the masculine ideal [44]. Stoicism and enduring pain were the prescriptive norms held by those men, agreeing with other studies [25,73]. We must remember, however, that this reflects a male gender stereotype and does not necessarily reflect a woman's self perception, as presented below[38].

Alteration of self-identity is a common concern for both men and women with prolonged disability. Yet each gender may live this experience differently. For example, work loss due to pain could be of primary importance to men, while women may focus more on the loss of social support and social network [46], and the perception of a weakened family role due to physical limitations [64]. Men's work associated self-identity may foster social stereotyping and age-old cultural representations of gender roles, especially that of men as the breadwinner [74]. For some women rigid identification to work is associated with difficulties in adjustment to pain [65]. These women also present an experiential profile closer to that of men, with strong professional identification [65].

Women with cumulative social roles (e.g., workers, mothers, and householders) may be more prone to delaying return to work [65]. Ockander and Timpka report that women might postpone their intent to return to work, choosing to stay home. In that study [65] 3 types of narrative accounts on long-term sickness absence due to pain were reported: 1) crisis, 2) breakpoint, and 3) migration. These help us to understand the possible set of emotional reactions and coping, and their time-line progression. The crisis type of discourse corresponds to the gap between self perception and vision of the future, resulting in hopelessness, insecurity and the loss of a "sense of coherence" [65]. This crisis is also manifested with little adjustment to the health condition. Maintaining roots in past family or work conditions offers few options or motivation for change. Women with strong and rigid identification to their work are placed in that category. The second narrative, the breakpoint, includes women with a strongly shaken self image. This forces them to put into question their life goals, habits and work orientations. As for crisis type, women speak of a past / present with a sense of loss, but they still show willingness to change. In the third narrative, the migration, a new meaning of life is constructed that includes pain; pain is no longer an "it" [75] or an external threat and invading entity [64], but part of an "embodied self" [76,77]. Here, embodied self is understood as the attached idea of "self" or "I" to one's own body. In learning from long-term sickness, absence becomes a core meaning, allowing for the creation of a new everyday life or the formulation of a new vision regarding the future [65]. Despite interesting cues in work and/or family identification, this same study should be performed with men to allow the comparison of men and women. Also, the lack of a longitudinal perspective did not determine how these women shifted from one narrative type to another over time.

Some studies have shown how a reduced workload at home may induce feelings of irritation and a possible breach in the idea of “womanhood” [43,48,64]. The idea of “womanhood” interferes with duties and responsibilities attached to “motherhood” (e.g., Childcare and education, house maintenance, cooking). It also conflicts with social role expectations and may be a source of apprehension, fear, anger, and worry [40,48]. The fear of losing one’s own reputation is attached to the fact that “motherhood” and “being a good spouse” are perceived as intrinsic parts of “femininity” [40].

In the (re)construction of self-identity men and women construct a mental representation of who they are and the social position they are expected to take in society. Altered bodily functions, the perception that one is not capable of fulfilling a specific task or to adopt a specific behaviour, may slow down personal expectations and negatively impact the construction of self, especially when the expectation is driven by social constructs related to gender roles and values. Phenomenology calls this “being for others”, or the external look and appreciation of an individual’s “being-in-the-world” [78]. The experience of the body then becomes a major axis for the construction of a mental representation of self-identity. Therefore, a self-perceived “sick”, “disabled” or “diminished” body may alter the feeling of being-in-the-world [25,44,79]. It means that the feeling of self is also the feeling of a situated self in relation to others, and one may anticipate negative or stigmatizing reactions from others in relation to a “diminished” body. It is not only the stigma *per se*, but also the perception of being stigmatized that is important. For example, a high-performance and competitive worker relies upon some criterion that may be translated in terms of normative representations (e.g., orientation of personal conduct) [80]. Not responding those criteria may induce a disruption in the self-identity process and may even be distressing [81].

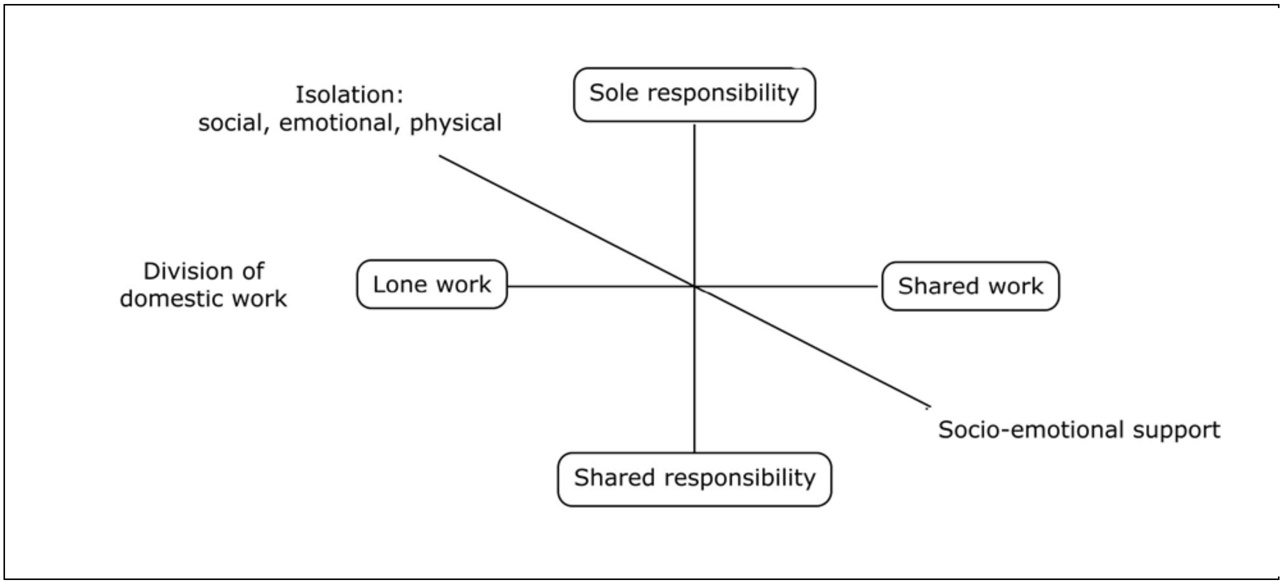
The strength of the topic of self-identity in rehabilitation is to present and provide analytic tools for better understanding gender-specific issues (e.g., alteration of the ability to fulfill social and family roles), and to point out their possible consequences on rehabilitation outcomes. Self-identity embraces many dimensions of personal experience, from inner feelings to interpersonal relations, though it may better situate variables centered on individual within a specific social environment. Studies in gender and self-identity remain theoretical in persistent MSK, limiting the development of a gender specific intervention strategy.

Domestic Strain

Domestic strain is our third emerging theme closely associated with the experience of distrust and self-identity. It may be seen as a logical possible consequence of self-identification processes where men and women integrate a representation of their roles, tasks, and duties based on their gender affiliation. Domestic strain may be defined as the result of an irreconcilable and stressful process of combining a double workload, causing alteration in cross-personal interactions [82,83]. Domestic strain is also a dimension of daily living and practical realities [82]. Commitment to high personal work standards as well as fulfilling domestic responsibilities (e.g., Childcare, washing, cooking) may have consequences in spousal relations when the division of labour at home remains unchanged from the time before the onset of disabling pain [83]. Few studies have explored domestic strain in relation to occupational rehabilitation outcomes, and it has been suggested that men and women would not experience disability and rehabilitation in the same way [40,43,82]. Gustafsson and colleagues suggested that physical or mental tensions at work or at home due to housework duties may have been obstacles to return to work [43]. In the rehabilitation process, women participants recounted how they maintained their housekeeping identity by adjusting workload. Precisely, these women successfully adjusted self-demand, set limits for others, and developed a sense of self-confidence that was absent at the beginning of their therapy [43]. Staying at work for women may depend largely on family commitments and responsibilities, and on socially constructed values and norms related to work roles [10,22,84].

Describing similar results, Östlund and colleagues [82,85] developed the *Domestic strain model* based on the division of work and responsibilities for domestic life, and on the level of social, emotional and physical support. As presented in figure 1, the *Domestic strain model* suggests that the success of work rehabilitation relies upon the degree of social and emotional support a woman receives from her siblings, spouse and children. In a gender mixed sample, it was observed that women in a prolonged work disability situation stayed at home longer and experienced domestic strain and social isolation [82]. Women also emphasize, more than men, the burden of domestic duties. Indeed, women tend to be the “family coach” who organizes domestic tasks and fulfills family needs. This representation of women’s roles results in neglecting rehabilitation activities. Conversely, men reported having ample time to spend on rehabilitation. Overall, this Swedish study suggested that despite the presence of a disability related to MSK pain, few changes, if any, take place in the work organization at home [82]. Östlund and colleagues concluded that working alone or sharing tasks and responsibilities may be a determinant factor for the total workload at home, and its hindrance to return to work. This shows that domestic and work responsibilities are inseparable in real life, and that domestic strain should be considered an intrinsic dimension of rehabilitation [40,82,84].

Figure 1. Östlund and colleagues' *Domestic Strain Model* [82]



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Similar conclusions have been reported by Ahlgren and Hammarström [45] and Hamberg and colleagues [83] when exploring family disagreement over a tacit agreement on household tasks and duties. It was shown how spousal attitude (rigidity, openness) was crucial in the rehabilitation process: when rehabilitation measures disagreed with the familial terms and patterns, outcomes were more likely to be negative. Hamberg and colleagues [83] identified three types of outcomes: 1) accepting the terms, 2) negotiating the terms, or 3) breaking the terms (including a possible rupture). Smith and colleagues noted this issue of family pattern in the "communication model of pain" where the effects of spouses' facilitative responses to their partner's pain behaviour were observed [86]. A stronger relationship was observed between wives' facilitative responses and husbands' pain behaviours than between husbands' facilitative responses and wives' pain behaviours [86]. Here too, the effects of facilitative responses on pain behaviour were relevant to clinical settings [86]. Less spousal empathy may not be facilitative in rehabilitation [85,87,88], but being over solicitous may create similar outcomes by reinforcing pain behaviours [86]. It has been reported that women generally show greater empathy related to pain behaviours than do men [86], however, domestic strain or interactions may be constructed upon more that just the amount of work done and the share of responsibilities. Strain may be self generated through a cultural mechanism of gender role integration. This dynamic process is closely linked to the construction of self-identity presented earlier.

Studies sensitive to domestic strain have identified the family factors influencing the rehabilitation process. They highlighted the possible double workload for women and the particular family patterns and spousal relationships that would likely hinder rehabilitation or return to work [82,87,88]. Double workload was mainly influenced by gender role construction and sociocultural learnings; therefore, it must be closely connected to self-identity. Conversely, domestic strain studies appraise the interaction phenomenon through self-report measures, not observation. Studies on domestic strain may help us to understand another aspect of social and environmental factors that generally focus on work conditions, health and compensation system [89], and to paint a broader picture of men's and women's experiences in persistent pain and disabling conditions.

Discussion

This critical literature review describes the theoretical models available for gender issues in the rehabilitation process for workers with MSK pain. The main objective was to document the emerging themes and factors helping us to draw a distinctive picture of men and women, and to show their relevance to rehabilitation. Three main themes were identified and explored: the experience of distrust, self-identity, and domestic strain. These themes were seen as overarching elements of personal experience of MSK pain. A summary of the major findings is presented in table 4 where the main tenets, strengths, weakness, and impacts on persistent pain and on occupational rehabilitation are shown.

Table 4. Summary of the emerging themes in relation to gender, disability and the rehabilitation process.

	Main tenets	Strengths	Weaknesses	Impacts on MSK pain research and rehabilitation
Experience of distrust	Reconstitution of the course of illness legitimacy through social interactions and health institutions. Contribution to the theory of sick role.	Highlights the possible differential attitude toward pain depending on the sex of the patient and the emotional load impinged on it that may cause additional distress.	Few gender comparisons in that topic, studies are mostly based on a women sample.	Helps provide an experience-near understanding of the illness trajectory and its personal and cross-relational consequences.
Self-identity	Alteration of self-image may happen during the onset of prolonged disability and may influence the life goals, habits, and work orientations	Points out the consequences of an altered self-identity on the fulfilment of social and family roles.	Main focus on the feminine identity and the gender social roles expectations; Few studies on altered masculinity.	Reconstruction of self throughout a prolonged disability may not fit the pre-injury job or rehabilitation unit's objectives.
Domestic strain	Identification of the family factors influencing the rehabilitation process.	Highlights the possible double workload for women and the particular family patterns and spouses' relationship that may hinder rehabilitation or return to work.	Spouses' relationships are self reported, not observed *in vivo*. An important number in the reviewed studies only account for women experience and lack men's representations of domestic tasks and interactions.	Helps understand another aspect of social and environmental factors generally focused on work and compensation system

Experience of distrust was the first theme to be introduced to provide comprehensive elements related to the process of legitimizing the personal experience of pain. The experience of distrust underlines the difficulties of feeling trusted and the possible perceived burden of living with a stigmatized condition, or fearing being identified as morally flawed for simulating pain for secondary gains. The experience of distrust brought out the experience of striving for the sick role and the underlying theme of the patient/therapist relationship. The experience of distrust can tip the scales toward the socially constructed idea of a "psychological pain", reinforcing the mind/body axial duality. Pain experience, in general, cannot be objectified and, so, remains a subjective experience, difficult to translate from personal testimony or pain behaviours. Pain expression must be socially recognized and validated [90-93] and, for that reason, pain is a language, *per se* [39,94]. Although men and women are socialized differently regarding the expression of emotions and painful experiences, culture shapes the way pain behaviours are displayed, expected and socially accepted [35,42,95-99].

Entry into the sick role must be regarded as one specific aspect of the pain experience. In the advent of a quick recovery, experience of loss may be quite minimal since the life-disrupting situation (disability) is of short duration. In the opposite case, many aspects of one's own life trajectory must be revised or changed, resulting in a life unlike its previous state. Rigid identification with life as it was "before" may prevent an individual from finding adaptive solutions for the future [65] and may be a possible source of depressive mood [81]. For example, a man who strongly identifies with men's gender stereotypes or roles is highly motivated to preserve or restore his "pre-illness self" life situation [81]. Men's gender experience is usually reported in relation to work identification, whereas women more often identify with one or more combined roles [65]. It was also suggested that women who rigidly and exclusively identify with work, experience the same disrupting effects as men [65].

Strategies to restore a "pre-illness self" may not take into consideration the actual limitations that force a person to rebuild an acceptable sense of self, for example, a post-illness self where there is no option but to look ahead with a reconstructed self. This post-illness self may be the outcome of a reflexive or introspective attitude of accepting pain as a daily reality. It could also be an attitude of struggling *with* pain instead of struggling *against* it [100]. Pain becomes no longer an "it" and becomes a part of one self, inhabiting his or her body [75,79]. Instead of separating the self from the body, such an embodied self may be presented as a "dynamic factor in adaptation to threat" (e.g., pain) [81]. The issues related to the construction of self have been scarcely studied as a category of mental representations and, when included, are rather referred to in variables such as "self-esteem" [81], moderating the perception of disability, psychological distress and coping behaviours [58,66,101].

While self-identity answers the question of who I am, self-esteem answers the question of what I am worth or capable of. Self-identity is constructed through an introspective process and is reconstructed the same way, reconsidering its connection with social identity. It might be suggested that a crack in social identity is important for dismantling the self-identity or the "self system" as evoked by Leventhal and colleagues [81]. As long as the category of self-identity is defined as an interactive construction that implies the perception of gender and social roles, it must go further than the psychological evaluation of a high or low self-esteem.

Some gender identifications may have consequences or cross-personal implications whether they are masculine or feminine. Identification to feminine gender means an association to its corresponding social roles and prerogatives. In an era where women have equal access to the paid labour market, household tasks and educational responsibilities remain their *chasse-gardée*, meaning that women are more likely to be subject to a double workload and possible physical and moral exhaustion. Occupational rehabilitation may be a specific issue for those women who need to avoid an overwhelming double workload. A woman's gender identity, though, may be a constraint because they must fulfil their social role as a mother, worker and / or spouse. Multiple role identity and responsibility takes time and energy, especially when a women is exposed to an "illness self" that limits her social, professional, and domestic involvements. It must also be added that the enactment of social roles in cross-personal interactions is not an independent element without inference from social determinants such as socio-economic status and possible gender inequalities [40,102]. For example, the effect of poverty, precarious work conditions and financial situations, pressure at work, and lack of autonomy, may bring another facet to gender differentiation [16,52,103].

In the work/family orientation model exposed by Ockander and Timpka, gendered variations in the intent to return to work are bound and tied around a hypothetical choice by women to identify with a family role [65]. This is one reason why the theme of self-identity and its enshrinement into socialisation theory and gender roles is incomplete without considering the power relations attached to it [40,83]. The *Domestic strain model* may be seen as an attempt to complete the figure by emphasizing social and emotional support, and marital interactions [82,85]. This model clearly indicates that domestic strain and the patterns of division of domestic duties and responsibilities may interfere with the rehabilitation process and/or outcomes [82]. Therefore, domestic strain may be seen as a practical outcome of the gendered construction of self. As noted earlier, only few studies have raised this issue in relation to rehabilitation outcome. Larger samples might show stronger evidence of the relationship between absence from work, prolonged MSK pain, and domestic strain.

Experience of distrust, self-identity, and domestic strain are to be situated in the general dimension of social or interpersonal interactions. They highlight the emotionally loaded aspect of such experiences and the social interactions in which emotions evolve, as well as their inductive context. This recalls the affects and emotions' connectedness with their social interactional enactment [104]. For example, a hostile or impassive work environment may propel a worker into a social exclusion process [105] and the negative mood attached to it. The way men and women define themselves and the way this takes place within a network of complex relations and material conditions, forms the background for establishing what could really make a difference in the rehabilitation process. Confronting internalised social gender expectations (e.g., gender roles) and ideations (e.g., gendered related body performance and aesthetics) in the light of a new health condition is certainly a significant dimension of that process.

Finally, despite the important moderating influence of socio-economic factors on the impact of gender in pain experience, few studies, if any, reflected on or criticized the transformation of the family structure in advanced modern societies [106]. Family must be evaluated in the multiple structures and modern transformations of restructured families: single parent families, divorced couples, and shared parenting make up the reality of modern family structure. The modern western nuclear family can no longer be the only yardstick by which we measure family factors [107]. For example, the 2001 census reports that 15.9% of Canada's 8.4 million families are single parent families, most of them led by women [108]. Socio-economic factors are more likely to affect those women because they are more likely to experience low incomes and poverty for a longer period than men [109]. Other family dynamics have been largely ignored. For example, in the context of an aging population, public health authorities encourage the increasing role of informal caregivers in providing care to elder family members. Caregivers have the difficult task of balancing work, their own health, and other responsibilities, potentially representing an additional risk of stress and fatigue [110]. This is just one more pressure on women, who are generally associated with the caring attitude in the family [111-113]. Considering the profound changes that have taken place in modern industrial societies in the last forty years, it is imperative to understand the gender issues influencing every facet of daily life, particularly for those persons experiencing prolonged disability related to persistent MSK pain [65,114,115].

Finally, it may be argued that scientific literature about gender and persistent pain provides clues to understand the role of physiological factors in prevalence of pain. Arendt [21] and Fillingim [116] suggest that hormonal (gonads and oestrogen) factors may influence the sex-related differences in pain experience. But such physiological aspects of pain are difficult to address in occupational rehabilitation, especially among chronically disabled patients where there are growing evidence that psychosocial factors are more often at stake in prolonged disability due to an MSK pain. As long as this literature review focussed on "gender" rather than biological "sex", issues in sexual anatomy, genetics or endocrinology in relation to pain experience were not covered up.

Conclusion

This literature review explores gender issues in the experience of prolonged disability related to persistent musculoskeletal pain. The three emergent themes (distrust, self-identity, domestic strain) are existential accounts of individuals being in the world; each was analyzed through the lens of existing theories and concepts such as sick role, gender identification and social learning, and the double workload. Self-construction issues were found to be important and dynamic factors for adapting to persistent pain. Gender role identification and expectation, and the level to which these are anchored in the representation of self – or its reconstruction – may strongly impact the rehabilitation process and outcomes, such as return to work. This provides an interesting view on how a person manages rehabilitation devices, how flexible and willing to change they are, and how flexible and adjustable to multiple social realities the rehabilitation program is. Strong gender identifications, especially the stereotypical display of the ideal woman being a good mother and spouse, and the ideal man being a tough, high performing worker, likely have a negative effect on adherence to rehabilitation practices. The stronger the gender identification, less likely a person is to be flexible. In considering the return to work, a broader range of personal experiences must be considered along with work status and work conditions to enable us to gain a more complete understanding of the factors that impact the rehabilitation process.

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