Pain, gender norms and psychosocial resources

A critical appraisal of taken for granted ideas on men and women with pain

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Cover illustration: Sverker Andersson

"That's the thing about pain, it demands to be felt."

John Green

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ABSTRACT

Background: Gender norms concerning pain are important to consider as they
might lead to unequal treatment of men and women in health care.

Aim: The overall aim of this thesis was to explore and describe gender norms
concerning long-lasting pain, and to estimate associations between
psychosocial resources and pain in men and women.

Methods: In study I, a theory-guided, integrative literature review, patterns of
gender norms in pain research were analysed qualitatively. In study II,
individual interviews with 5 women and 3 men were analysed using qualitative
content analysis. In study III (n=4010; n=881) and study IV (n=2263), cross-
sectional and longitudinal data from a Swedish general population sample were
analysed with linear and logistic regressions. Sex differences in the
psychosocial resources general self-efficacy, instrumental and emotional
social support among individuals with and without frequent pain were
estimated, as well as the associations between baseline psychosocial resources
and pain at follow-up, among men and women.

Results: Study I showed that men and women with pain were depicted by
means of gender norms in scientific articles. These patterns were in line with
hegemonic masculinity and andronormativity in pain research and health care.
Gender norms in social support, shown in study I were not reflected by
patients' experiences in study II. In study III, general population samples with
and without frequent pain did not share the same sex patterns in instrumental
social support. In study III and IV, instrumental and emotional social support
predicted pain differently for men and women with and without frequent pain.
In the frequent pain group, women with strong (compared to weak) emotional

social support had 55% higher chance of no frequent pain at follow-up; men with strong (compared to weak) emotional social support had a 28% lower chance of no frequent pain at follow-up (study III). Among individuals with no frequent pain at baseline, women with weak instrumental social support had a 62% higher risk of frequent pain at follow-up than women with strong support. Men with weak emotional social support had a 100% higher risk of frequent pain at follow-up than men with strong support (study IV).

Conclusions: This thesis demonstrated a variety of gender norms. In addition, some of the results challenged expected gender norms related to men's and women's social support, in this thesis referred to as gender norm disruptions. Raised awareness about gender norms and gender norm disruptions might be a starting point to redefine or dissipate gender norms and may give the paradigm shift towards equity in pain prevention, treatment and research a push forward.

Keywords: Chronic pain, gender norms, psychosocial resources, social support, general self-efficacy, gender bias, gender norm disruptions

SAMMANFATTNING PÅ SVENSKA

Genusnormer, stereotypa föreställningar om hur kvinnor och män är eller borde vara, kan påverka bemötande och behandling av personer med smärta inom hälso- och sjukvården. Denna avhandling undersökte vilka genusnormer kopplade till långvarig smärta det finns och sambanden mellan genusnormer, långvarig smärta och psykosociala resurser, så som socialt stöd.

En litteraturöversikt (studie I) undersökte hur kvinnor och män med smärta beskrivs i vetenskapliga artiklar och visade flera könsstereotypa mönster. Det var exempelvis vanligt att kvinnor beskrevs som känsliga och förväntades att lära sig att anpassa sitt liv till smärtan. Män beskrevs som smärttåliga och förväntades att söka efter orsak och behandling av sin smärta utanför sig själva. I studie II intervjuades fem kvinnor och tre män. Resultaten visade att smärtrehabilitering hade hjälpt deltagarna att få en känsla av kontroll över sin smärta och sitt liv. Trots att tidigare forskning visat att socialt stöd är betydelsefullt för patienter med smärta var deltagarna i denna studie tveksamma till att använda socialt stöd för att hantera sin smärta.

Enkätdata från en befolkningsstudie (n=4010 och n=881 i studie III; n=2263 i studie IV) bearbetades statistiskt och visade att medan kvinnor utan smärta hade ett starkare instrumentellt socialt stöd än män, så hade kvinnor med smärta inte det (studie III). Kvinnor med långvarig smärta och ett starkt socialt stöd hade smärta mindre ofta vid uppföljningen än kvinnor med svagt stöd (studie III). Män med långvarig smärta och starkt emotionellt socialt stöd hade långvarig smärta oftare vid uppföljningen än män med svagt emotionellt socialt stöd (studie III). Kvinnor utan långvarig smärta och med ett svagt instrumentellt socialt stöd hade en 62% högre risk att utveckla smärta än kvinnor med ett starkt stöd. Män med svagt emotionellt socialt stöd hade en 100% högre risk att utveckla smärta än män med ett starkt stöd (studie IV).

Resultaten visade genusnormer men utmanade också förväntade genusnormer, framför allt kopplade till socialt stöd. Möjliga konsekvenser av genusnormer och så kallade normbrott diskuterades. Att bli medveten om normer och normbrott kan bidra till en mer jämlik vård, förbättra kvaliteten inom forskningen och leda till nya strategier inom den förebyggande vården.

LIST OF PAPERS

This thesis is based on the following studies, referred to in the text by their Roman numerals.

I. Samulowitz A, Gremyr I, Eriksson E, Hensing G.
"Brave men" and "emotional women": a theory-guided literature review on gender bias in health care and gendered norms towards patients with chronic pain.
Pain Research and Management. 2018:6358624

II. Samulowitz A, Nordström P, Wiklund M, Stankovic N, Hensing G.
"Sense of control": patients' experiences of multimodal pain rehabilitation and its impact in their everyday lives.
Journal of Rehabilitation Medicine-CC. 2019;2:1000014

III. Samulowitz A, Hensing G, Haukenes I, Bergman S, Grimby-Ekman A.
General self-efficacy and social support in men and women with pain – irregular sex patterns of cross-sectional and longitudinal associations in a general population sample.
BMC Musculoskeletal Disorders. 2022:23:1026
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IV. Samulowitz A, Haukenes I, Grimby-Ekman A, Bergman S, Hensing G.
Psychosocial resources predict frequent pain differently for men and women: a prospective cohort study.
Submitted

CONTENT

ABBREVIATIONS

CI	Confidence Interval
ESS	Emotional social support
GSE	General self-efficacy
HAP	Health Assets Project
ISS	Instrumental social support
OR	Odds Ratio
RR	Risk Ratio

1 INTRODUCTION

Almost everybody knows how it feels to have pain. And everybody feels it in his or her own, individual way. For instance, the McGill Pain Questionnaire [1] offers 78 different words to describe pain, like beating, flashing, cutting, pinching, stinging, aching, splitting, rasping, tiring and so on.

Pain can affect people's mental well-being and quality of life. Pain can conflict with every part of an individual's life, like work capacity, relations to other people, family life, daily life functioning and leisure activities [2, 3]. Pain, especially long-lasting pain, is a global health problem [4] and is frequently reported by patients seeking health care [5, 6]. Still, there is no way to measure pain objectively [7]. Pain perception and expression are marked by individuals' personal experiences and the pain of others is understood and appraised through the lens of own experiences [8]. The subjectivity of pain and the substantial impact of pain on individuals' personal lives makes it compelling to understand more about the psychological and social factors involved in pain perception, the judgment of others pain, and psychosocial resources that might protect individuals from developing long-lasting pain.

Among social factors with relevance for pain there are gender norms, conscious and unconscious ideas, often unspoken, about how men and women are, and expected to behave, what is considered "normal" for men and women, like "the strong man" and "the sensitive woman" [9, 10]. Gender norms, enacted in health care, can lead to gender bias, medically unjustified differences in the way men and women are treated in health care [11]. Gender bias have been observed for example in telephone advise nursing [12], dermatological health care [13] and emergency care [14]. Gender bias in health care most often mean disadvantages for women [10, 15]. However, gender bias disfavoring men have also been found, for instance in the undertreatment of men's mental health care needs [16].

Counteracting gender bias in health care is a global goal, adopted by the World Health Organization (WHO), a key condition to achieve equity in health [10]. The Swedish health care law states that the goal of health care is care on equal terms for the entire population, including men and women (HSL 2017:30, 3 kap 1§). Raising awareness about gender norms among health care providers as well as in medical research has been suggested as one way to address gender bias [10, 15]. Given the subjectivity of pain, there is reason to believe that gender norms play a considerable role for the understanding of pain and its treatment.

2 BACKGROUND

2.1 Long-lasting pain

2.1.1 Definition and classification

According to the International Association for the Study of Pain (IASP), pain is defined as *"An unpleasant sensory and emotional experience associated with, or resembling that associated with, actual or potential tissue damage"* Raja et al. 2020, p.1 [17]. Pain that persists or recurs for longer than three months is defined as chronic pain [6]. Internationally, the term chronic pain is the most commonly used. In Sweden, the Swedish Agency for Health Technology Assessment and Assessment of Social Services (SBU) recommends replacing the term "chronic pain" with "long-lasting pain" as the term "chronic" risks to imply a non-curable condition. Long-lasting pain is a somewhat more optimistic term for a condition that sometimes can be cured and otherwise must be coped with in everyday life [18]. However, the term long-lasting pain is neither included in common classification systems for pain nor established as a MeSH-term (Medical Subject Headings). In addition, other terms like persistent and longstanding pain are used synonymously to chronic pain [19]. In this thesis, mainly the terms long-lasting pain and chronic pain will be used, and they will be used synonymously[1]. Acute pain, cancer-related pain or pain in children are not included in this thesis.

In health care, international standards for the classification of diseases are used and revised on a regular basis. In 2019, a new pain classification was adopted by the World Health Organization (WHO) and is included in the 11th edition of the International Classification of Diseases (ICD-11) [6]. In Sweden, the National Board of Health and Welfare (Socialstyrelsen) is currently working on a national version of the ICD-11, which is expected to be published in 2024. In the ICD-11 *"chronic primary pain is defined as pain in one or more anatomical regions that 1) persists or recurs for longer than 3 months 2) is associated with significant emotional distress (eg, anxiety, anger, frustration, or depressed mood) and/or significant functional disability (interference in activities of daily life and participation in social roles), 3) and the symptoms*

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[1] In study III and IV another term, frequent pain, is introduced. The definition of frequent pain is close to but not identical with chronic pain. Frequent pain is defined in the methods part of study III and IV.

are not better accounted for by another diagnosis" Nicholas et al. 2019, p.29 [20].

For the first time chronic pain is recognised (and classified) as a disease of its own. In addition, its classification highlights the involvement of biological, psychological and social aspects in chronic primary pain.

2.1.2 Distribution, demographics and consequences

In a European, population-based telephone interview study from 2006, 19% of the participants reported suffering from moderate to severe long-lasting pain, several times during the week for at least 6 months [3]. The average annual incidence of chronic musculoskeletal pain in the UK has been counted as 8% and the annual recovery rate as 5% [21].

Several demographic factors are associated with chronic pain. Earlier research has shown an increase in the prevalence of pain until around the age of 65−70, followed by a plateau [22], while others have stated that age-related changes in pain prevalence largely vary across different pain conditions [7] and depend on the severity of the condition [23]. An association (probably bidirectional) between unemployment and chronic pain has been shown [5]. Low socioeconomic status and educational background are also associated with higher chronic pain prevalence [5, 24], and variations in pain prevalence in different ethnic groups have been discussed [7]. However, results on associations between socioeconomic status, educational background and ethnicity, and the prevalence and consequences of pain are inconsistent and must be interpreted with caution [5, 7]. They are most likely affected by a multitude of synergetic factors like socioeconomic resources, stress, discrimination, and access to health care. How these factors, separately or together affect pain is so far poorly understood [5, 7, 24, 25, 26].

In addition to the consequences for every individual affected by pain [3], long-lasting pain has also consequences for society. For instance, a Swedish study from 2012 estimated the mean direct and societal costs at 6 400 EUR per patient with chronic pain and year [27].

2.2 Differences between men and women with long-lasting pain

2.2.1 Prevalence

General population studies have shown a distribution of approximately 56% women and 44% men among persons suffering from moderate to severe long-lasting pain [3]. Interestingly, the differences between men and women in diagnosed pain conditions are much bigger than sex differences in pain prevalence in the general population. The members of the "Sex, Gender, and Pain Special Interest Group of the International Association for the Study of Pain (IASP)" stated in a consensus report: *"(…) the most robust and striking sex differences in pain in humans are the 2- to 6-fold greater prevalence and greater intensity of chronic pain syndromes in women compared to men"* Greenspan et al. 2007, p.38 [28].

2.2.2 Access to care

Other differences between men and women with pain have been studied. More women than men seek help from primary care for their pain [5]. Still, women, but not men, are referred to pain rehabilitation to a lesser extent if they suffer from high pain intensity or pain in multiple sites [29]. Patients with pain (men and women) also believe that being a women can be a hinderance for access to pain rehabilitation [30]. On the other hand, in an interview study, general practitioners thought that pain rehabilitation programmes may be better suited for women than men [31]. Women get fewer referrals to specialised examinations than men [32] and women with pain and a low educational level are less likely to be referred to pain rehabilitation, compared to women with a higher educational level, a pattern not seen among men [26]. In summary, women seem to be more seriously affected by long-lasting pain compared to men, but they seem to have more difficulties to get access to specialised treatment than men.

2.2.3 Biological differences

Biological differences between men's and women's anatomy, physiology, hormones and genes are widely denoted as sex differences, e.g. [33]. Sex is most frequently used as a binary category, even though there are multiple sexes and a variety in human sex characteristics [33]. In this thesis, the term "sex" will be used in relation to biological differences between men and women or when research is conducted, analysed or presented without any notions about

the psychological, social or cultural base of observed differences between men and women.

Differences in men's and women's pain perception and modulation have been partly explained by biological differences. For example, research has shown variations in pain perception during women's menstrual cycle, during pregnancy and associated with exogenous hormone use, which supports the assumption that sex hormones affect pain sensitivity [34, 35]. Even differences between men's and women's endogenous opioid system, related to opioid-binding receptors have been demonstrated [34, 36], which could explain sex differences in pain inhibition and responses to medication with opioids [34]. An interaction between genotype and sex, related to pain sensitivity has also been shown, mainly in experimental settings [36]. However, there are large variations, results have been inconsistent and further research is therefore needed [34, 35, 36, 37]. In addition, observed differences in pain perception and modulation cannot be explained by biology alone. Other factors such as gender norms have been suggested as relevant to addressing observed differences in men and women [34, 35, 38, 39].

2.3   Gender norms

2.3.1   Definition

"Gender norms are social norms defining acceptable and appropriate actions for women and men in a given group or society. They are embedded in formal and informal institutions, nested in the mind, and produced and reproduced through social interaction" Cislaghi & Heise 2020, pp.415-416 [9].

Gender norms shape individuals' attitudes, related to notions of femaleness and maleness. An individual can be conscious or unconscious about gender norms, which often are unspoken and internalised from childhood onwards [10]. It is a societal and culture-bond phenomenon which means that gender norms can change in different cultures, circumstances and times [9, 10]. Not everyone complies to gender norms, but everyone − men, women and gender diverse people − have to relate to them, unconsciously or with afterthought [40].

2.3.2   Gender theories as the base for gender norms

Gender norms are not neutral. They are a virtual part of hegemonic masculinity, introduced by Connell [40] and further developed by researchers like Schippers [41] and Hølge-Hazelton & Malterud [42]. Notions of men and

women are based on an idealised picture of masculinity and social practices that allow and legitimise men's domination over women [40]. Hegemonic masculinity includes the segregation of men and women (by presenting them as genuinely different), a gender hierarchy and a subordination of non-hegemonic masculinities [40].

Schippers (2007), elaborating Connell's theory, introduced the concept hegemonic femininity [41]. Hegemonic femininity also contributes to a dominant position of men but hierarchies within groups of women are established on other values than hierarchies among men. To enact masculine behaviour as a women usually does not contribute to a higher rank in the gender hierarchy among women or among men and women [41]. Hølge-Hazelton & Malterud (2009) have applied hegemonic masculinity to health care and introduced the term andronormativity, a status where male values have been normalised to such a degree that female values are overlooked [42].

Hegemonic masculinity can manifest in pain health care when gender norms are enacted. When, for example health care providers expect men and women to communicate their pain differently and appraise men's and women's pain reports differently [8, 15, 43]. Or when conditions more common among women rank lower in status hierarchies than conditions more common among men [44].

2.3.3 The embodiment of pain and gender norms

The body is central in long-lasting pain. Pain is located in the body and affects bodily functions. In fact, pain can hamper activities in all areas of life [3]. The image of the body and its functioning is also closely related to gender norms, e.g., muscle strength is associated with masculinity [40]. Pain and gender norms can affect each other, displayed through the body. Physical, pain-related limitations can affect a person's sense of maleness/femaleness and perceived gender norms can affect the way individuals express their pain [38].

A variety of studies have shown that gender norms can alter pain perception. In experimental settings, pain threshold, tolerance and intensity have been altered by giving men and women expectations about how men and women usually can withstand pain [45]. In other studies, the sex of a friend present at the experiment affected participants' pain threshold, tolerance and intensity ratings [46]. In addition, in a series of pain experiments, the sex of the experiment leader affected men's and women's pain tolerance [34]. Taken together, these experimental studies show that gender norms can in fact alter pain perception.

2.3.4 Doing gender

"Doing gender" is an expression used to describe the ongoing process of enacting femininity and masculinity in social relations and thereby constructing or consolidating gender norms in different social contexts, e.g., in health care [47]. For instance, participants in the above-mentioned pain experiments are doing gender when they act according to current gender norms. Health care providers are doing gender when they, consciously or unconsciously, expect their patients to comply to gender norms. Observing and repeating gendered behaviour might also lead to a (conscious or unconscious) legitimisation of these behaviours [48]. Health care providers have the means to maintain, reinforce or challenge gender norms in the patient–provider relation. They can be part of "doing gender", "redoing gender" or "undoing gender" [49].

2.4 Psychosocial resources

In addition to gender norms, a range of psychological and social factors can affect pain. Starting with psychological factors, bidirectional associations between mental well-being, depression, anxiety, sleep disturbances and chronic pain have been demonstrated [5, 50, 51]. Chronic pain affects the ability to concentrate, can make people constantly tired and is associated with higher levels of feeling lonely, isolated and helpless [52]. Pain acceptance, the willingness to accept that the pain will last and to continue to engage in activities despite experiencing pain has been framed as an important mindset with relevance for pain rehabilitation [53, 54].

General self-efficacy is an individual's belief in his or her own ability to cope with stressful challenges [55]. General self-efficacy is associated with determination and coping behaviour [55, 56] and has a positive impact on functional outcome [50, 57, 58], pain levels [57, 59], disability [57, 60] and self-care [61]. In general population samples, among individuals with chronic pain and in experimental settings men showed higher self-efficacy compared to women [62, 63, 64]. It has also been suggested that high self-efficacy is associated with masculinity and low self-efficacy with femininity [63, 64, 65].

Among the social factors with relevance for long-lasting pain are socioeconomic status, work conditions and household load [66], as well as social support, e.g. [50, 67, 68]. Social support can be conceptualised as emotional, instrumental (tangible) and informational (information or guidance) social support [69] but is in pain research commonly analysed as one concept, e.g. [67]. Social support has been described as a pain coping strategy that is especially important for women [34, 70]. Some earlier research found a

positive effect of social support on pain [67, 68, 71], others concluded that results are inconsistent [50, 72]. The stress-buffering hypothesis, introduced by Cohen & Wills (1985) has been suggested as a possible explanation for the beneficial effect of social support on well-being [73, 74] and pain [67, 72].

The relevance of psychological and social factors for pain is supported by findings on brain structures, especially the so called third-order matrix, which is involved in processing pain, as well as processing beliefs, emotions and expectations [75]. This anatomical closeness might explain how beliefs, thoughts and feelings can modify pain experiences [75].

It is not always obvious how to distinguish between psychological and social factors. For example, loneliness, which is associated with pain, is a feeling of being isolated from others and includes psychological and relational aspects [76]. Another way to conceptualise psychosocial factors is by dividing them into protective and risk factors [50]. Potential protective factors, psychosocial resources like general self-efficacy and social support, are especially important for pain prevention [50].

2.4.1   The biopsychosocial model of pain

Pain research has its roots in a biomedical tradition where the pain has been regarded as a symptom of an underlying injury [77, 78]. This approach has changed over the years and today it is widely recognised, in research and clinical practise, that biological, psychological and social factors interact in the origination and maintenance of long-lasting pain [6, 19, 78]. The biopsychosocial model of pain promotes the inclusion of social factors such as gender norms in pain research, prevention and treatment [37, 78]. Yet, the implementation of the biopsychosocial approach to pain has been slow [78, 79, 80] and it has been noticed that the focus for pain research and treatment still lies on biological and psychological factors [39, 78]. So far, it is not well understood how social factors, like gender norms and psychosocial resources, or the associations between them affect the development and treatment of long-lasting pain [28, 34, 35, 38, 39, 81].

2.5 Rationale

Given the potential importance of gender norms for the understanding, prevention and treatment of pain, there is a need to further explore gender norms and the associations between gender norms, psychosocial resources and long-lasting pain. Increased knowledge provides an important prerequisite to counter gender bias and to support the work for an equitable health care that is more capable of meeting the individual needs of all patients. Increased knowledge may also improve public health and health care strategies aimed to prevent the development of long-lasting pain among men and women.

3 AIM

The overall aim of this thesis was to explore and describe gender norms concerning long-lasting pain, and to estimate associations between psychosocial resources and pain in men and women.

3.1   Specific aims for the included studies

3.1.1   Study I

The aim of this study was to review literature from medical, behavioural, and social sciences on (i) gendered norms about men and women with pain, (ii) gendered norms about how men and women with pain cope with their daily life, and (iii) gender bias in the treatment of pain, including the patient−provider encounter and professional treatment decisions. The second aim was to analyse the findings in relation to concepts of hegemonic masculinity and andronormativity.

3.1.2   Study II

The aim of this study was to examine how women and men who had taken part in multimodal pain rehabilitation experienced its impact in their everyday lives.

3.1.3   Study III

The aims of this study were first to estimate cross-sectional sex differences in psychosocial resources (general self-efficacy, instrumental and emotional social support) across men and women in a population with frequent pain. Second, to compare these differences with a population with no frequent pain. Third, to examine associations between psychosocial resources at baseline and the likelihood of having no frequent pain at follow-up, among men and women with frequent pain at baseline.

3.1.4   Study IV

The aim of this study was to deepen the knowledge about sex and gender patterns in the associations between pain and the psychosocial factors general self-efficacy, instrumental social support and emotional social support. More specifically, to investigate the association between sex and psychosocial factors on the development of frequent pain in a general population sample.

4 METHODS

In this thesis, long-lasting pain, gender norms and psychosocial resources have been explored with qualitative and quantitative methods and from different perspectives (pain research, patients with pain and the general population). An overview of the included studies is presented in Table 1.

Table 1. Overview studies I−IV

	Data collection	Participants	Study design	Data analysis
Study I	Literature search	Scientific articles on chronic pain, n=77	Integrative literature review	Qualitative analysis
Study II	Individual interviews	Former participants in pain rehabilitation, n=8	Interview study	Qualitative content analysis
Study III	Questionnaire data from the Health Assets Project (HAP)	General population sample, n=4010 General population sample with frequent pain at baseline, n=881	Cross-sectional study Longitudinal cohort study	Linear and multinomial logistic regressions Binary logistic regressions
Study IV	Questionnaire data from the Health Assets Project (HAP)	General population sample with no frequent pain at baseline, n=2263	Longitudinal cohort study	Log binomial linear regressions

4.1   Methods study I

The study design was a theory-guided, integrative literature review [82, 83, 84]. A qualitative approach was chosen to enable a search for patterns illustrating gender norms in pain research. It was assumed that there are gender norms in pain research and the study aimed to analyse how they were presented in scientific papers.

4.1.1   Data collection

A literature search was performed, and the following databases were used: PsycINFO, CINAHL, and PubMed. The search term *chronic pain* was used, combined with *femininity*, *masculinity, gender bias*, *gender stereotypes*, and *gender roles.* Search terms were used as text terms and applied to the whole article. The searches were limited to articles written in English and published January 2000−April 2015. The search rendered 688 articles. Duplicates were removed and the remaining abstracts and titles were read and proved for eligibility. The data collection was also completed with back references. With the integrative approach it was possible to collect and analyse data from different scientific fields (medical, behavioural and social sciences), generated through different methodologies (qualitative and qualitative studies, systematic reviews, theory development).

4.1.2   Data analysis

The data was analysed qualitatively. Through the processes of clustering, comparison and synthesis the data was sorted into three theoretical categories, close to the study's aim, which provided the conceptual framework of the study [83, 85]. The data within the three categories, 1) gendered norms about men and women with pain, 2) gendered norms about how men and women cope with pain, and 3) gender bias in the treatment of pain, was further analysed and coded into 12 different substantive categories. Through the coding into theoretical and substantive categories, a strict main structure could be maintained, still allowing for the discovery of new findings and synthesis of the data into new insights and concepts within the substantive categories [85]. The theoretical concepts hegemonic masculinity and andronormativity were not chosen prior to but during the analyses as they applied.

4.2   Methods study II

Qualitative, individual interviews were chosen as a proven method for the understanding of individuals' thoughts and experiences [86].

4.2.1   Participants

Among patients who had participated in a multimodal pain rehabilitation program at a specialised pain clinic in Gothenburg, Sweden, in 2013 or 2014 and had returned a 1-year follow-up questionnaire, 15 individuals were randomly selected and received a letter of invitation. Multimodal pain rehabilitation is characterised by a combination of physical, social and psychological interventions [18]. Those who agreed to participate were contacted by the interviewer. Five women and three men participated, with different age, work status and length of pain experience.

4.2.2   Data collection

Semi-structured interviews were conducted, tape-recorded and transcribed verbatim. The open-ended questions focused on the following domains: life situation before and after pain rehabilitation; quality of life before and after pain rehabilitation; patients' own, as well as their social network's and health professionals' view of pain, before and after pain rehabilitation; pain management strategies after pain rehabilitation; the role of sex/gender. One of the questions asked was: "Do you believe you would have been treated differently if you had been a man/woman instead?"

4.2.3   Data analysis

Qualitative content analysis [87] was used to analyse the interviews. Two researchers read the interviews individually, identified meaning units and coded those. The two researchers compared their analyses and discussed, when needed, to reach consensus. A random set of examples was coded by a third researcher, in accordance with previous coding. The codes were categorised, and an overall theme emerged.

4.3   Methods study III and IV

Study III, with cross-sectional and longitudinal analyses, and study IV, a prospective cohort study, were both based on data from the Health Assets Project (HAP), a study on health and work participation.

4.3.1   Data collection

The HAP is a longitudinal cohort study of a general population sample. Data collection was carried out by Statistics Sweden (SCB). Questionnaires were sent, by mail, to a random sample of all individuals aged 19−64 (n=7984) in Västra Götaland, Sweden, April–June 2008, followed by two reminders. The response rate was 50% (n=4027). A follow-up questionnaire was sent

September–December 2009, with a response rate of 79%. A non-response analysis showed that men, individuals born outside the Nordic countries, age group 19−30 years, individuals with low income, and individuals living alone had significant higher drop-out rates [88]. The HAP is described in detail by Holmgren et al. [89].

As part of the questionnaire, the participants answered questions about pain. The 17 individuals who did not answer the questions about pain in the back or neck/shoulder at baseline were excluded, leaving n=4010 as the study population. Based on the answers about pain, the study population was divided into the subpopulations frequent pain and no frequent pain, building the base for longitudinal analyses. Figure 1 shows the study populations for study III and IV.
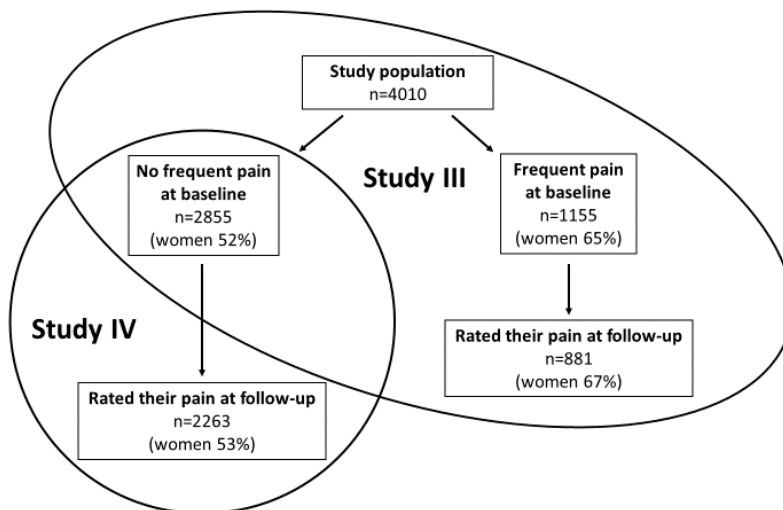

Figure 1. Study populations in the studies III and IV, based on a general population sample from the Health Assets Project

4.3.2 Variables

Variables assessed were frequent pain, sex and the psychosocial resources general self-efficacy (GSE), instrumental social support (ISS) and emotional social support (ESS).

Pain. In the questionnaire, a modified version of the scale "Common Symptoms in the General Population of Women" was used to capture common physical and psychological symptoms [90]. Participants were asked: "How often have you had the following symptoms during the past twelve months?". Back pain and neck/shoulder pain were listed among twelve different symptoms. Possible answers were "nearly every day", "now and again during the week", "now and again during the month" or "almost never or never". Participants reporting pain in the back or neck/shoulder nearly every day or now and again during the week were coded as **frequent pain**. Participants reporting pain in the back or neck/shoulder never, almost never or now and again during the month were coded as **no frequent pain**. Study III and IV focused on musculoskeletal pain. Questions about headache and chest pain in the questionnaire were not considered.

GSE was measured with the General Self-Efficacy scale (GSE scale) [91], the Swedish version, validated in 2012 [92]. The GSE scale is a psychometric 10-item scale, rated at a four-point Likert scale. For statistical analyses the mean score was used.

Social support was measured with four questions from the ENRICHD Social Support Inventory (ESSI) [93], which has been used, for instance in coronary heart disease research [94]. **ISS** included answers to the questions "Do you have a relative or a friend who is willing to help you if you are sick?" and "Do you have a friend or relative who is willing to help you if you need to borrow 15 000 SEK?". **ESS** included answers to the questions "Do you have a friend or relative who is willing to help you if you want company?" and "Do you have a friend or relative who is willing to help you if you want to talk with someone about personal problems?". Possible answers for each of the four questions were "yes", "no" and "do not know".

For *study III* the scores for each variable (ISS and ESS) were divided into three categories: strong ISS/ESS (yes + yes), mixed ISS/ESS (yes + no; yes + do not know) and weak ISS/ESS (no + no; no + do not know; do not know + do not know).

For *study IV* the scores for each variable (ISS and ESS) were dichotomized into strong ISS/ESS (yes + yes; yes + do not know) and weak ISS/ESS (no + no; no + do not know; do not know + do not know; no + yes).

4.3.3   Data analysis study III

The IBM SPSS Statistics, version 27 were used for descriptive statistics, linear and logistic regressions.

Linear regression was used to estimate sex differences in GSE (used as a continuous variable) in the population with frequent pain and the population with no frequent pain.

Multinomial logistic regression was used to estimate sex differences in ISS and ESS (with three category dependent variables) in the population with frequent pain and the population with no frequent pain.

Binary logistic regression was used to estimate associations between baseline GSE, ISS, ESS in the frequent pain population and no frequent pain at follow-up. In these models, GSE was dichotomized into a 25/75% distribution with 2.70 as cut-off. The lowest 25% (1.00−2.70) represented low GSE and 26−100% (2.71−4.00) represented high GSE [95].

Results were presented unadjusted and adjusted for age, level of education and place of birth. Significance level was set at $p<0.05$.

4.3.4   Data analysis study IV

The IBM SPSS Statistics, version 28, were used for descriptive statistics and log binomial linear regressions in a generalised linear model.

GSE, ISS and ESS were used as predictive variables. Each variable was dichotomized and thereafter combined with sex, so that each variable included 4 values.
GSE: Men with high GSE, men with low GSE, women with high GSE, women with low GSE.
ISS: Men with strong ISS, men with weak ISS, women with strong ISS, women with weak ISS.
ESS: Men with strong ESS, men with weak ESS, women with strong ESS, women with weak ESS.

Frequent pain at follow-up was used as the outcome variable.

Log binomial linear regression was used to calculate risk ratios (RRs), with 95% confidence intervals (CIs), with men with high resources (high GSE, strong ISS, strong ESS) as the reference group. Using estimated model means, risks could be calculated, and RRs could be calculated for all pairs of values

within each variable. For example, for the predictor GSE at baseline, six different RRs could be calculated:

- women with low GSE compared to women with high GSE
- women with low GSE compared to men with low GSE
- women with low GSE compared to men with high GSE
- women with high GSE compared to men with low GSE
- women with high GSE compared to men with high GSE
- men with low GSE compared to men with high GSE.

The same model applied to ISS and ESS. Results were presented unadjusted and adjusted for age, level of education and place of birth. Significance levels were set at $p < 0.05$.

4.4 Ethics

All studies were carried out in accordance with principles stated in the Declaration of Helsinki. Ethical approvement was received for study II, III and IV. The Regional Ethical Review Board in Gothenburg (Sweden) approved study II (registration number 784−15). All participants received information (verbal and written) and signed an informed consent form. They were also informed that they could withdraw from the study at any time. The interviews and the coding were carried out by researchers who were not part of the rehabilitation team. To avoid recognition, the participants were listed numerically in the table with study population characteristics and given fictive names were used after quotes. All participants were also offered a follow-up talk, in case the interviews would have given rise to further questions or memories they wanted to discuss.

The Regional Ethical Review Board in Gothenburg (Sweden) approved study III and IV (registration number 039−08). Also in these studies, all participants were informed about the study and their informed consent was obtained. The risk for physical or psychological harm was assessed as minimal. Data collection was administrated by Statistics Sweden (SCB), an organisation which is, among other things, responsible for official and governmental statistics in Sweden. The HAP database is archived at Swedish National Data Service (SND), which is run by a consortium of universities in Sweden. The key code is now destroyed (as planned), which means all data is depersonalised.

5 RESULTS

5.1   Main results study I

Study I showed gender patterns and gender norms in the descriptions of men and women with long-lasting pain in scientific papers (Table 2). Gender norms concerning women included being sensitive, emotional, hysterical, preoccupied with family and household, balancing differing societal expectations, and to adjust life to the pain. Gender norms concerning men included denying pain, being stoic, reluctant to consult health care, preoccupied with a strong body, the sense of masculinity being challenged by pain, and looking for the cause and the treatment of pain outside of themselves. Gender bias in the patient−provider encounter and professionals' treatment decisions were also demonstrated. In addition, the results showed a pattern for medically unexplained chronic pain conditions, predominant in women. These conditions did not fit the traditional biomedical system, they were questioned by health care personnel and poorly defined in research. The results from study I indicated that hegemonic masculinity and andronormativity could have a considerable influence on pain health care.

Table 2. Results study I, theoretical and substantial categories, examples of gender patterns and gender norms in the descriptions of men and women with pain in pain literature

Theoretical category	Substantial category	Examples of gender patterns and gender norms
Gendered norms about men and women with pain	Stoic men	Tolerate and deny pain, take risks, autonomous, avoid talking about pain, reluctant to seek health care
	Sensitive women – in comparison	Women compared to men. More sensitive to pain, talk more about pain. Used to have internal pain, contrary to men
	Hysterical women	Emotional, malingerers, complain, fabricate pain. Pain caused by psychological distress
	Inexplicable – unfit	No clear classification of conditions with pain as the only symptom, predominant in women
Gendered norms about how men and women cope with pain	Men's gender identity in jeopardy	Diagnoses perceived as feminine threaten men's sense of masculinity, leading to frustration, irritation, grief and shame
	The strong body	The strong body central for men's gender identity. Men's need to prioritise sport and leisure activities
	Men's approach – this is not me	Refuse to accept diagnoses perceived as feminine, do not follow doctors' advice, try to hide pain in public. Search for cause and cure outside of themselves
	The female patchwork	Women live up to societal demands despite pain (paid and unpaid work, family obligations, social relations)
	Women's approach – I have to learn	Life adjusted to pain, expected to set limits to demands from outside. Coping strategies, e.g., social support are less effective than men's strategies
Gender bias in the treatment of pain	Struggle for legitimacy	Women mistrusted and psychologised, sometimes leading to a vicious circle of distress
	How do I look? (appearances)	Women's appearances affected how their pain was appraised. Appearance affected pain ratings in experimental pain
	Differences in medication	Women received less effective pain medication than men but more antidepressants and mental health care

Modified version of Table 2 in study 1 [96] p. 6

5.2   Main results study II

The participants in study II experienced a sense of control over their life and their pain after having taken part in multimodal pain rehabilitation. The process of gaining control included 1) a trustful patient−provider relation, feeling treated as a trustworthy patient and being able to trust the health care provider's expertise, 2) pain acceptance and 3) knowledge about body and medication. The participants reported that the process of gaining control started first when they attended the multimodal pain rehabilitation program at a specialised clinic. Another category in the results concerned social support. The participants valued social support but preferred not to use it as strategy to handle the pain. They did not want to burden others and they rather dealt with their pain on their own. When asked if they believe they would have been treated differently had they been a man or a woman instead, women and men described perceived gender norms with women at risk not being taken seriously (in primary care, prior to the specialised pain clinic), and not receiving as much medical care as men. Men also reported experiences of masculine gender norms, implying that men should sustain pain, which could result in men being treated with less sympathy than women. Categories and subcategories are listed in Table 3.

Table 3. Main results study II, categories and subcategories

Category	Subcategory
Importance of the patient−provider relationship	Experienced obstacles prior to pain rehabilitation
	The pain rehabilitation team as a starting point to regain control
	Importance of the patient−provider encounter for the acceptance of pain
	Gender norms experienced as hindrances
Knowledge gained	Control of the body provides control in everyday life
	Knowledge about medication provides control in everyday life
Pain in a social context	The feeling of isolation and the need to withdraw
	Family and friends are important but rather uninvolved in handling the pain
	Other patients were perceived as both support and hindrance

Shortened version of table II in study II [97] p. 3

5.3 Main results study III

5.3.1 Cross-sectional part

In study III, men had higher **GSE** than women in the population with frequent pain (mean 2.9 vs 2.8; p<0.001) and the population with no frequent pain (mean 3.1 vs 3.0; p<0.001). The effect sizes were small and similar for the frequent pain and no frequent pain group.

Sex differences in strong **ESS** were statistically significant in the frequent pain group (OR=0.43; 95% CI 0.31−0.61, men compared to women) and in the no frequent pain group (OR=0.50; 95% CI 0.33−0.75, men compared to women).

In the no frequent pain group, sex differences were statistically significant for strong **ISS** (OR=0.64; 95% CI 0.47−0.87, men compared to women) and mixed ISS (OR=0.54; 95% CI 0.39−0.74, men compared to women). In the frequent pain group, sex differences were not statistically significant for strong ISS (OR=1.32; 95% CI 0.86−2.01) and mixed ISS (OR=1.19; CI 0.76−1.85). The interaction between sex and pain group was statistically significant for strong and mixed ISS. Men with no frequent pain had a 66% *higher* probability of weak ISS than women. Men with frequent pain had a 14% *lower* probability of weak ISS than women (Table 4).

Table 4. Prevalence of weak ISS across men and women, with and without frequent pain, based on a logistic regression model

	Weak instrumental social support	Prevalence (%)	Prevalence ratio men/women
No frequent pain	Men	9.1	1.66
	Women	5.5	
Frequent pain	Men	10.0	0.86
	Women	11.7	

Table 4 in study III [98], p.6

5.3.2 Longitudinal part

There were no statistically significant associations, neither for men nor women between baseline **GSE** and no frequent pain at follow-up.

Associations between having strong or mixed **ISS** at baseline and no frequent pain at follow-up were statistically significant unadjusted. Strong ISS: Crude

OR=2.03; 95% CI 1.21−3.55. Mixed ISS: Crude OR=1.86; 95% CI 1.08−3.30. The ORs decreased after adjustment for the controlling variables but with CIs still indicating an association. Strong ISS: OR=1.71; 95% CI 1.01−3.02. Mixed ISS: OR=1.73, 95% CI 1.00−3.10. Separate analyses for men and women showed similar patterns for strong ISS for women but not for men. Women, strong ISS: Crude OR=2.19; 95% CI 1.19−4.28, adjusted OR=1.89; 95% CI 1.01−3.74.

The interaction between sex and strong **ESS** for no frequent pain at follow-up was statistically significant (OR=0.34; 95% CI 0.12−0.94, men compared to women). For women with strong ESS (compared to weak ESS) the probability of no frequent pain at follow-up was 55% *higher*. For men with strong ESS (compared to weak ESS) the probability of having no frequent pain at follow-up was 28% *lower*. For men with weak ESS (compared to strong ESS) the probability of having no frequent pain at follow-up was 39% *higher* (Table 5).

Table 5. Prevalence of no frequent pain at follow-up, across men and women with frequent pain and strong, mixed or weak emotional social support (ESS) at baseline, based on a logistic regression model

	Strong ESS	Mixed ESS	Weak ESS	Prevalence ratio of strong/weak ESS
	Prevalence, 95% CI	Prevalence, 95% CI	Prevalence, 95% CI	
Men	28 (21–36)	41 (27–56)	39 (24–57)	0.72
Women	31 (26–38)	29 (19–42)	20 (11–34)	1.55

Shortened version of Table 6 in study III [98], p.8

Main results in summary:

- Women with no frequent pain had stronger ISS than men with no frequent pain. Women with frequent pain did not have stronger ISS than men with frequent pain
- For women with frequent pain, strong ISS and strong ESS at baseline were associated with no frequent pain at follow-up
- For men with frequent pain, strong ESS at baseline was associated with frequent pain at follow-up

5.4   Main results study IV

In study IV, women with low psychosocial resources at baseline (either GSE, ISS or ESS) had a higher risk of frequent pain at follow-up compared to men with corresponding high psychosocial resources. Women with low GSE compared to men with high GSE: RR 1.82. Women with weak ISS compared to med with strong ISS: RR 2.33. Women with weak ESS compared to men with strong ESS: RR 1.94 (Table 6).

Table 6. Risk ratios and confidence intervals, GSE, ISS and ESS as predicting variables and frequent pain as the outcome variable, based on a log binomial linear regression model

General self-efficacy (GSE)	Risk Ratios (RRs)	Confidence intervals (CIs)
Women low GSE/women high GSE	1.33	0.15 ; 0.28 / 0.12 ; 0.20
Women low GSE/men low GSE	1.51	0.15 ; 0.28 / 0.09 ; 0.21
Women low GSE/men high GSE	**1.82**	**0.15 ; 0.28 / 0.09 ; 0.15[a]**
Women high GSE/men low GSE	1.14	0.12 ; 0.20 / 0.09 ; 0.21
Women high GSE/men high GSE	1.37	0.12 ; 0.20 / 0.09 ; 0.15
Men low GSE/men high GSE	1.20	0.09 ; 0.21 / 0.09 ; 0.15
Instrumental social support (ISS)		
Women weak ISS/women strong ISS	**1.62**	**0.19 ; 0.36 / 0.13 ; 0.20[b]**
Women weak ISS/men weak ISS	1.73	0.19 ; 0.36 / 0.10 ; 0.22
Women weak ISS/men strong ISS	**2.33**	**0.19 ; 0.36 / 0.08 ; 0.14[c]**
Women strong ISS/men weak ISS	1.07	0.13 ; 0.20 / 0.10 ; 0.22
Women strong ISS/men strong ISS	**1.44**	**0.13 ; 0.20 / 0.08 ; 0.14[b]**
Men weak ISS/men strong ISS	1.35	0.10 ; 0.22 / 0.08 ; 0.14
Emotional social support (ESS)		
Women weak ESS/women strong ESS	1.19	0.12 ; 0.33 / 0.14 ; 0.21
Women weak ESS/men weak ESS	0.97	0.12 ; 0.33 / 0.14 ; 0.31
Women weak ESS/men strong ESS	**1.94**	**0.12 ; 0.33 / 0.08 ; 0.13[b]**
Women strong ESS/men weak ESS	0.81	0.14 ; 0.21 / 0.14 ; 0.31
Women strong ESS/men strong ESS	**1.63**	**0.14 ; 0.21 / 0.08 ; 0.13[c]**
Men weak ESS/men strong ESS	**2.00**	**0.14 ; 0.31 / 0.08 ; 0.13[c]**

[a] CIs contiguous, [b] CIs marginally overlapping, [c] CIs not overlapping
Results adjusted for age, place of birth and educational level
A combination of Table 3, 4, 5 in study IV

Even women with strong ISS and strong ESS at baseline had a higher risk of frequent pain at follow-up compared to men with strong ISS and strong ESS. Women with strong ISS compared to men with strong ISS: RR 1.44. Women with strong ESS compared to men with strong ESS: RR 1.63.

Women with weak ISS at baseline had higher risk of frequent pain at follow-up compared to women with strong ISS: RR 1.62. Men with weak ESS at baseline had higher risk of frequent pain at follow-up compared to men with strong ESS: RR 2.00 (Table 6).

Main results in summary:

- Women with low resources at baseline (either GSE, ISS or ESS) had higher risk of frequent pain at follow-up compared to men with corresponding high resources
- Among men, weak ESS was associated with the highest risk of frequent pain at follow-up
- Among women, weak ISS was associated with the highest risk of frequent pain at follow-up

6 DISCUSSION

The overall aim of this thesis was to explore and describe gender norms concerning long-lasting pain, and to estimate associations between psychosocial resources and pain in men and women.

Study I explored gender norms expressed in pain research. Study II explored patients' experiences about the effect of multimodal pain rehabilitation on their everyday life. When comparing the results from study I and II, some of the patients' experiences were reflected in the results from study I, like the challenge and importance to achieve a trustful patient−provider relation. However, other gender norm patterns shown in study I were not reflected by patients' experiences in study II. A gender norm found in study I concerned women's use of social support as a strategy to handle pain. Patients in study II did appreciate social support but were unwilling to ask for help. They also preferred to be left alone when they were in pain and to deal with the pain on their own. This was reported by both men and women. To further examine the associations between psychosocial resources, sex, gender and pain, cross-sectional and longitudinal studies in general population samples with and without frequent pain were carried out (study III and IV). The results showed several "gender norm disruptions". Taken for granted ideas about men and women with pain were challenged. A flowchart illustrating how study I, II, III and IV are related is presented in Figure 2.
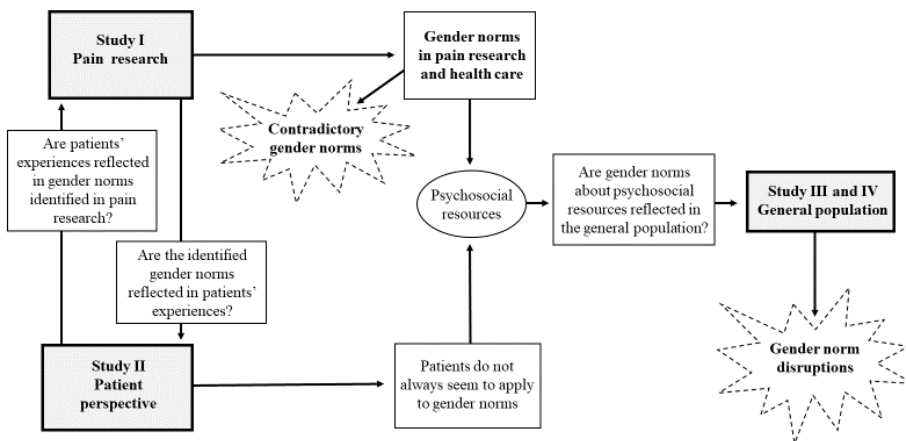

Figure 2. Flowchart illustrating how the studies I, II, III and IV are related to each other

6.1 Gender norms – possible consequences for health care, research and individuals with pain

Gender norms are part of society, embedded in and mirrored by its institutions, such as research and health care [9, 10]. As gender norms often are unspoken [10], they may be uncritically repeated and enacted in these institutions, maintained in a circle of gender norm reproduction. For granted taken ideas about men and women entrenched in pain research can be picked up as such by health care providers, enacted in health care practise, which in turn future research could be based on. Gender norms are deeply rooted and resistant to change [10]. Still, the responsibility of health care providers to treat men and women on equal terms is enrolled in the Swedish Health Care Law, and to critically appraise preconceived ideas is one of the main pillars in all research.

Different approaches on how to address this challenge can be taken into consideration. One way to raise consciousness about gender norms is to analyse how they are reflected in medical research and to discuss the potential consequences of these gender norms for medical treatment and future research [99]. Some examples are given below.

6.1.1 Possible consequences of masculine gender norms

Hegemonic masculinity is based on an idealised picture of masculinity, leading men to position themselves in a hierarchy of masculinities [40]. If men with long-lasting pain experience the need to live up to traditional gender norms, they may engage in behaviours that do not support their pain rehabilitation [48]. The results from study I showed patterns where men with pain in the reviewed articles perceived their loss of physical strength as a threat to their masculinity, sometimes resulting in a reluctance to seek health care, low compliance to doctors' advice or the rejection of diagnoses they associated with femininity. When health care providers do not recognise gender norms or take them for granted, there is a risk of gender bias. For example, health care providers might hesitate or overlook to ask men with pain about their mental well-being, as long as they associate mental well-being with femininity and women's pain [100, 101].

6.1.2 Possible consequences of feminine gender norms

Hegemonic femininity includes enacted gender norms that position women in a female hierarchy that allow men's dominance over women to continue [41]. When women with pain experience expectations to live up to multiple demands

from their surrounding and at the same time are expected to set limits for them (a pattern shown in study I), they may perceive being caught by contradictory demands [102]. When health care providers are affected by traditional gender norms, they may psychologise women and dismiss their pain (a pattern shown in study I), with a risk of gender bias such as unnecessary delays in pain treatment and rehabilitation [8].

6.1.3 Possible consequences for the way pain research is conducted

Gender norms do not only affect individuals, but they can also lead to medical conditions being feminised or masculinised. For instance, long-lasting pain, especially medically unexplained pain, has been associated with women and femininity [101, 103, 104]. Results from study I showed a pattern where these conditions were poorly defined and regarded as strenuous, of both patients and health care providers. Others have shown that conditions like fibromyalgia are at the bottom of diagnoses in medical hierarchies [44]. When long-lasting pain conditions are associated with women and femininity and downgraded in medicine, there is a risk that scientific progress will be unnecessarily slow. When women are seen and described in comparison to men (a pattern found in study I), there is a risk that important knowledge gaps, especially concerning women, remain undiscovered or overlooked by medical research.

To further exemplify how gender norms are enacted in pain research and treatment, the example "pain acceptance" will be discussed below.

6.1.4 Hegemonic masculinity illustrated by the example pain acceptance

Acceptance has been emphasised as an important strategy for pain rehabilitation [105, 106] and psychological interventions like Acceptance and Commitment Therapy (ACT) have been promoted [105, 106, 107]. Pain acceptance is associated with better functioning, less medication use, and earlier return to work [105]. However, besides its benefits as a treatment strategy, pain acceptance could also be an expression of hegemonic masculinity in health care.

Pain acceptance seems to be mostly studied in and directed towards women. Even if pain acceptance is recommended in general, mainly women with long-lasting pain have been studied [107, 108], as well as unspecific, medically unexplained pain conditions, predominant in women [105, 106, 107]. Earlier research has also shown higher pain acceptance in women than men, prior to and after pain rehabilitation [53, 109]. Pain acceptance as directed more

towards women than men is also reflected in one of the main results from study I. A pattern of gender norms pictured women as responsible for taking care of themselves, their body and their pain, and learning how to live their life despite the pain. In contrast, gender norms concerning men pictured them as rejecting chronic pain diagnoses and locating the cause of and the cure for their pain outside themselves.

These gender patterns can be analysed in terms of hegemonic masculinity. Women, being in a subordinated position are expected to be compliant to health care advice, responsible for handling their medical condition and to choose pain relief strategies that do not burden others [41, 48, 110]. By focusing on acceptance as a major pain treatment, women can be held responsible for the treatment outcome, leading the attention away from the current lack of knowledge about medically unexplained chronic pain conditions [103, 111]. The focus on pain acceptance and ACT also puts psychological reasons and solutions at the centre of attention for women's pain. The psychologization of women's pain is a gender pattern shown in study I, which can contribute to the separation of the sexes and maintaining the gender order. Mental illness is associated with femininity and ranked lower than somatic complaint in health care [112]. In addition, ACT seems to affect functioning and pain disability but not pain intensity [105, 107, 108]. Focusing on functioning over pain relief in pain conditions predominant in women can also be seen as contributing towards the perpetuation of the gender order.

Pain acceptance was discussed by the participants in study II, seen as a prerequisite to start the process of handling pain in daily live, but the participants seemed to put in a reservation. Only if they could trust their providers' expertise, they could put down the struggle to search for other treatments and start the process of pain acceptance. Pain acceptance was approved as an important step in pain rehabilitation, but only when there was no alternative left. Similar findings have been described in a focus group study with women by LaChapelle et al. [54].

6.2 Gender norm disruptions identified in the included studies

6.2.1 Gender norm disruptions

Another way of including a gender perspective in research is to interpret sex differences in quantitative research in terms of gender norms [99]. Yet, there is a risk that binary analyses could consolidate gender stereotypes instead of challenging them [99]. That makes it important not only to explore differences

between men and women, but also within groups of men and women, and not to assume that observed sex patterns apply to all men and women [99]. This was a starting point for study III and IV. The estimation of associations between sex, psychosocial resources and pain in a general population sample showed patterns that were not in line with results from study I. In this thesis they are interpreted as gender norm disruptions, discussed below.

Women do not always have stronger social support than men

In pain research it has been stated that women have more social support than men [34, 36, 109, 113, 114]. Study III showed that this was true for a general population sample with no frequent pain, but not for a general population sample with frequent pain. Women with frequent pain did not have stronger ISS than men with frequent pain. The results indicate that it should not be taken for granted that sex differences in populations with and without pain are alike and it should neither be taken for granted that women generally have stronger social support than men.

Women's use of social support can be beneficial

In earlier research the use of social support has been described as a maladaptive coping strategy, mainly used by women [113, 115, 116]. This is not confirmed by the results in study III. For women with pain (but not for men) strong ISS and strong ESS at baseline were associated with no frequent pain at follow-up. It should not be taken for granted that women's use of coping strategies, especially the use of social support, is inefficient.

Emotional social support can be significant for men

ESS is associated with traditional femininity [37, 41, 74, 117] and the significance of ESS for men is seldom discussed in pain research. One exception is an interview study concluding that psychosocial support for men with fibromyalgia is lacking [100]. The results from study III and IV showed that ESS affected men with and without frequent pain. For men with pain, strong ESS was associated with frequent pain at follow-up. For men without frequent pain, weak ESS was associated with the highest risk of frequent pain at follow-up, compared to GSE and ISS. It should not be taken for granted that ESS is not relevant for men.

6.2.2   Contradictory gender norms

Contradictory gender norms can also be seen as a form of gender norm disruption. For instance, one gender norm found in study I was that men contrary to women, were expected to be stoic, to endure pain. Another gender

norm found in study I expressed the expectation that women, contrary to men, accept pain and learn to live with it. Still, women were not pictured as stoic or enduring pain, as men were.

Another example of contradictory gender norms is that men in study I were described as independent and autonomous. They were also pictured as expecting health care providers to find the cause and cure to their chronic pain. Women, however, were expected to take care of their body and their pain. Similar patterns, where women were expected to be responsible for self-care to a higher degree than men have also been demonstrated for other medical conditions [12, 13]. Still, in study I, women were not pictured as independent or autonomous, as men were. In addition, the denial of need for help has been described as a masculine gender norm [118]. On the other hand, Wratten et al. (2019) found that pain relief strategies for women were only socially accepted when they did not burden others [110].

A third example of contradictory gender norms is based on a gender pattern from study I, implying that women are attentive to pain, used to verbalise pain and used to recognise internal pain. Still, another gender norm from study I showed that women's pain is expected to be exaggerated and frequently dismissed by health care providers.

The identified gender norm disruptions confirm that gender norms are not given. They may be persistent, but they are changeable [9, 10]. To scrutinise existing gender norms and to identify gender norm disruptions could be an important step forward in the process of undoing gender, which in turn might challenge the picture of men and women as inherently different and counteract gender bias in pain health care and research.

To challenge gender norms is not only important in the patient–provider encounter or a matter for the individual researcher. Gender norms are embedded in societal institutions, like health care organisations or research institutes, who can set the tone for their employees, members, clients, suppliers, and visitors. Institutions can encourage an active work on gender awareness. They can also maintain traditional values that can lead to gender bias in health care, research and pain prevention, like ineffective or delayed health care, or remaining knowledge gaps. A gender norm awareness that permeates the whole organisation can also contribute to more employees, members, clients, suppliers, and visitors – men, women and gender diverse people – experiencing recognition, inclusion and participation.

6.3 Methodological considerations

A strength of this thesis is its approach, exploring pain, gender norms and psychosocial resources from three perspectives: pain research, patients with pain and the general population. Another strength is the use of qualitative and quantitative methods.

Each included study also had its own strengths and faced methodological challenges that should be addressed.

6.3.1 Study I

Study I started out from the presumption that gender norms exist in health care and research, which might have affected the selection of search terms and, consequently, the findings. The potential impact of the authors' preunderstanding on the data analysis should also be addressed. The knowledge and experience of gender norms differed among the authors and they continuously discussed how individual experiences could impact the results, which is a challenge in all research [119]. The large number of studies included, within different scientific fields and with different research designs is a strength of study I. Despite being a strength, this comes also with a risk of fragmentation. We balanced that risk by using distinct and clearly defined theoretical categories, close to the study's aim, and the subsequent coding, which resulted in 12 different substantive categories, allowing for a deeper and wider analysis of the data [83, 85].

6.3.2 Study II

The inclusion of eight interviewees, five women and three men, all former participants in a pain rehabilitation programme, limits the transferability of the results from study II. However, the varying sex, pain experience, age, work and marital status of the participants provided a broad range of experiences, and the interviews provided a rich material to analyse. A strength of study II was that two researchers with different backgrounds coded and analysed the interviews and a third researcher coded a set of quotes subsequently. Alternative understandings were discussed with all authors, with and without experience from pain rehabilitation, to reinforce dependability. Even though the focus for this study did not lie on sex differences or gender norms, the participants talked about gender norms. Their reports, not least on social support gave important input for the subsequent studies.

6.3.3   Study III and IV

Among the strengths of study III and IV is the longitudinal prospective design. The large sample sizes (n=4010 and n=881 in study III, n=2263 in study IV) and data based on a random population-based sample makes it possible to generalise the results to the general population and to provide new knowledge, complementary to pain research, which is often based on clinical samples. However, the 50% drop-out rate in the HAP sample should be considered. A non-responder analysis of the study population showed that non-participants were more likely to be men, born outside the Nordic countries, in the age-group 19–30 years, having low income, and living alone [88]. It is unlikely that the attrition was biased in relation to pain assessment since the HAP was presented as a study on general health and work participation. Still, it is possible that the drop-out was higher among men with than without frequent pain, as a higher drop-out among people with lower health is common (health selection) [88]. If the drop-out among men included more men with frequent pain, there might have been an overestimation of sex differences in frequent pain prevalence. But a potential overestimation of sex differences in pain prevalence would probably not have affected observed sex differences in the associations between psychosocial resources and pain.

Another consideration concerns the data collection in 2008 and 2009, more than 10 years ago. Pain prevalence and gender norms are relatively stable over time [2, 10, 37] but as gender norms can be altered, societal changes might influence the results over time. Research on the HAP data (used in study III and IV) has recently been published [16, 120] and contributed with important knowledge to the field of mental health care, indicating the data's recency.

Study III and IV analysed sex differences and discussed gender norms as possible explanations for observed sex differences. This is one way of broadening knowledge about men and women with pain and a strength of study III and IV. But not only sex and gender affect pain. Age, place of birth and educational level were used as controlling variables in study III and IV, with only marginal effect on the results. Other demographic factors, like partner relations or household income might have affected self-reported social support, but it is unlikely that it would have altered observed sex differences.

Frequent pain and no frequent pain were used as variables in study III and IV. Chronic pain is a more common variable used in pain research. The definition of frequent pain used in study III and IV is close but not identical to the definition of chronic pain [6]. That means, our results cannot be generalised to chronic pain populations without caution, and they should be further explored in populations with and without chronic pain.

6.3.4 Conceptual considerations

Associations between pain, gender norms and psychosocial resources can be found in a multitude of contexts, not all of them can be addressed in one thesis. One example is the association between violence and long-lasting pain. More women than men are victims of sexual abuse in childhood and domestic violence in adulthood [121, 122], which are associated with long-lasting pain [5, 50, 123]. To further explore these associations lies outside the scope of this thesis but is an important area for future research.

A distinction has been made between the concepts sex and gender in this thesis. Sex and gender are interrelated and the associations between them are bidirectional [124]. Some studies have introduced the term sex/gender while others prefer to examine sex and gender apart but combined in the analysis of results [37]. In study III and IV, sex differences were estimated and analysed in terms of gender. To separate sex and gender was chosen, as distinction and conceptual clarity has been argued for [33, 39, 124, 125, 126]. The importance to include both sex and gender in health research [33, 125], clinical research [127] and pain research [38] has also been emphasised.

In this thesis gender norms were related to men and women. Not everyone identifies as a man or a woman, and gender norms can also affect gender diverse people, an important target group for future pain research. Even though a question about gender identification was included in the HAP questionnaire, too few individuals identified themselves as non-binary to enable statistical analyses. The literature search in study I did not render any article addressing gender identities.

It can also be argued that the classification of individuals into two separate groups might reinforce the separation of the sexes and disregard variations within the groups of men and women [37, 126, 128, 129]. That was balanced by the estimations and analyses of differences between and among men and women in study III and IV. It has also been argued that, besides the need to go beyond binary categories in future research, it is still of importance to describe and analyse gender norms attached to men's and women's pain and the consequences thereof [37].

7 CONCLUSION

This thesis demonstrated a variety of gender norms, taken for granted ideas on men and women with pain, as well as contradictory gender norms and gender norm disruptions. Increased knowledge about the role of gender norms responds to the need to further develop social aspects of the biopsychosocial understanding of pain and to counter gender bias in health care. Pain research and clinical practise can be improved by raised consciousness about gender norms. Instead of reproducing them by redoing gender, pain researchers and health care providers can become part of the process of undoing gender and recognise the variations in men's and women's individual needs to a greater extend. The identification of gender norm disruptions in social support might be a starting point to redefine or dissipate gender norms and may give the paradigm shift towards equity in pain prevention and treatment a push forward.

8 FUTURE PERSPECTIVES

8.1 Research

The implementation of the biopsychosocial model of pain might be a promising start to include gender norms in pain research, as the model recognises biological, psychological and social factors, like gender norms, as important for the understanding of pain [71, 78, 79, 130]. Still, social factors are so far underexplored [39, 68, 78, 130]. To move forward, there is, first of all, a need of clarification. Gender norms are a social factor with relevance for pain, as study I showed, but gender norms can also affect other social factors, like social support, as study III and IV showed. In addition, a "conceptual muddle" of the terms sex and gender in medical research has been demonstrated, even though both concepts should be applied [33, 39, 124, 125, 126]. The interchangeable use of the terms might lead to confusion whether gender is a separate research field within the biopsychosocial model of pain or more of a demographic factor that should be included as a controlling variable. An uncertainty how to place gender within the biopsychosocial model is also illustrated by the use of alternative terms. Some pain researchers refer to gender as a sociocultural, others as a socioenvironmental aspect [39, 71, 79]. The term bio-psycho-socio-cultural has also been suggested, to highlight the importance to include factors like gender, race, education, religion and sexual preference [131]. Gender norms as a social factor, important for the understanding of pain, should be visualised and clearly positioned, through changes in terminology if necessary and, in particular, through a more solid framework that conceptualises the role of gender norms within the biopsychosocial model of pain.

Another way to make gender norms and gender norm disruptions visible would be to revise pain questionnaires, commonly used in pain research and health care to measure, among other, quality of life, activities in daily life, mental health, pain coping and social support [34]. It is reasonable to believe that gender norms affect the design of diagnostic tools. To revise and complete the most common used tools on the basis of gender norm awareness is highly recommended.

In addition to gender norms, other sociocultural aspects should also be addressed, in the revision of pain questionnaires and in pain research generally. Patients and health care providers are affected and positioned by individual characteristics like level of education, age, gender identity, ethnicity and the social norms attached to those characteristics [25, 39]. To study the associations between pain and different social norms, and to analyse the

associations intersectionally is an upcoming, intriguing and highly important area for future research.

There are several other aspects that should be further explored, like the role of the health care provider for men's and women's social support [38, 132]. From the beginning it was planned, as part of this thesis, to estimate associations between men's and women's trust in the health care provider and their need of social support; and the associations between trust in the health care provider and pain rumination (an excessive focus on pain, its causes and consequences). That would have been a way to address the role of health care providers for patients' psychosocial resources and their role in doing gender more explicitly. The need of empirical studies exploring how professionals and patients enact gender norms in the patient−provider encounter and the consequences thereof has been highlighted [15, 37, 110]. Due to the Covid-19 pandemic, this thesis took another direction. Still, the role of the patient−provider encounter for doing and undoing gender is so far underexplored, as well as the importance of the health care provider for men's and women's psychosocial resources. Extended knowledge might hold important implications for pain treatment.

The included studies also showed the significance of general population studies. Long-lasting pain is a public health challenge but is often regarded as a medical problem [4]. A closer cooperation between public health and medical research could be beneficial to find new ways to improve pain prevention. And, not least, to recognise, admit and consider gender norms and gender norm disruptions in pain research could add a well-needed improvement to research design, data collection, the analysis of results, and, in the end, contribute to more adequate and equal pain prevention and treatment.

8.2   Health care

Consciousness about gender norms and how they are enacted in the patient−provider encounter is a prerequisite to challenge them. Doing gender can lead to gender bias, undoing gender can lead to increased equity in health care [15]. This thesis did not only show gender norms but also contradictory gender norms and gender norm disruptions. To recognise gender norm disruptions might be a step forward in the process of "not-taking-for-granted", to unravel stereotyped pictures of men and women with pain and to acknowledge a greater variability among men and among women. That might support health care providers addressing patients' individual needs instead of the needs health care providers expect men and women to have.

To gain awareness about gender norms is an ongoing process [133, 134]. "To keep the discussion about gender norms alive" among health care providers can be facilitated by practical tools. "The Pain Cube"[2], based on the results from study I and II in this thesis is one of several examples, the "gender equality tool" another one [134]. Incentives from health care organisations, as well as health care policies and guidelines pointing to the importance of recognising gender norms might also be helpful. Hopefully, a better gender norm consciousness among health care providers can also open-up for an awareness about other social norms, and an awareness how social norms can affect the treatment of other conditions than long-lasting pain.

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[2] https://www.vgregion.se/smartkuben

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