

## Pain intensity and severe pain in young immigrant patients with long-standing back pain

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**Abstract** The aim of this study was to explore if self-rated pain intensity and severe pain differed significantly between immigrants from different regions, and if other socio-economic, or clinical, characteristics could predict severe pain. A total of 129 men and 217 women at a primary health centre in Stockholm, Sweden, 27–45 years, on long-term sick leave, were recruited in consecutive order and grouped into a Turkish ( $n = 122$ ), Southern European ( $n = 52$ ), Middle East ( $n = 69$ ) and one Mixed ( $n = 173$ ) group of immigrants. All were employed in service jobs. Somatic status, depression and level of psychosocial stressors, including pain anxiety, were established by standardized procedures. All reported long-standing disabling back pain. Patients rated intensity of pain “right now” on a 0–100 mm visual analogue scale (VAS) as a last part of the consultation with two doctors. Severe pain was defined as VAS 75–100. Median values (md) with inter-quartile ranges (IQR) were calculated for interval and ordinal data. Non-parametric statistics were used to calculate significant differences between groups. Crude and age-standardized odds ratios (OR) with 95% confidence intervals (95% CI) as rating severe pain were calculated by binary and forward conditional logistic regression. Men and women were analyzed separately. Women had more tender points, ( $P < 0.001$ ), and reported pain anxiety more often ( $P < 0.01$ ). Frequency

of depression did not differ between the immigrant groups. The VAS-values varied, but not significantly, between the immigrant groups of men and women. Men had lower VAS values than women (md 50, IQR 36–69 vs. md 72, IQR 51–85), ( $P < 0.001$ ). Women had a three-fold risk to rate severe pain (OR 2.9, 95% CI 1.8–4.7). By sex, no immigrant group had significantly elevated OR to rate severe pain. Being 40–45 year old doubled the OR as rating severe pain. Men with depression, or little education, had high risks as rating severe pain (age-standardized ORs 4.1; 95% CI 1.7–10.0 and 2.7; 95% CI 1.1–6.8, respectively), and so had depressed women (age-standardized OR 1.9; 95% CI 1.1–3.4). Women with pain anxiety had a doubled, not statistically significant, elevated risk (age-standardized OR 2.0, 95% CI 0.95–4.3). The groups did not differ significantly in pain intensity or severe pain. Severe pain was predicted by depressed mood and probably linked to gender, age and sick roles.

**Keywords** Pain severity · Primary care · Psychosocial stress · Immigrants · Gender · Depression

### Introduction

Some patients find it hard to explain locations and intensity of chronic pain [20, 37], leading to difficulties for health care personnel [18], not least in cross-cultural settings [6, 9, 15, 22]. Some health professionals have remarked on how differently patients from various cultural groups (immigrant groups) declare how much it hurts in spite of similar clinical findings [7, 22, 32]. Further, patients' reported pain intensity influence doctors' sick listing practices [10] as possibly reflected in the Swedish census on sick leave where some groups of young women seem more disabled from chronic pain than other women [38].

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Different visual analogue scales (VAS) transfer the subjective experience of pain and help the caregiver “become aware” of how strong the pain is perceived [11, 14, 17, 33]. Cultural factors, however, influence styles of communicating pain, which should be regarded when evaluating pain [3]. This was done in a treatment programme for young immigrant patients with chronic pain at a primary health care centre (PHC) in Stockholm, Sweden [24]. The treatment was effective in some ways but intensity of pain remained high, especially among the poorly educated and some women [25]. Similar results were reported from a pain clinic in Stockholm [29]. Some health professionals believe that these patients deliberately exaggerate pain (personal comments). However, severe pain could also be attributed to learned factors [6, 26, 36], to work load [19], emotional distress [2, 12, 21, 22] or doctor-patient interactions [15].

Facing varying descriptions of pain intensity, and the complexity of trans-cultural care, we aimed to explore if there were, in clinic, significant differences in self-rated pain intensity “right now” and severe pain among pre-defined geographical groups of young immigrants having long-standing disabling backache. Second, we wanted to explore which other socio-economic or clinical factors could predict self-rated severe pain.

## Materials and methods

### Setting

The study was carried out at the only PHC in a district with 15,200 inhabitants in Stockholm, Sweden. A majority, 82%, of the population in the 16–45-year age group were first- or second-generation immigrants from 70 countries, mostly from Somalia, Turkey, other Middle East countries and Southern (S.) Europe [38]. Long-term unemployment was about 9%. Several city districts in Sweden had comparable populations where immigrant groups have settled in close vicinity making it possible to maintain home language and traditions [4, 5, 23, 40].

### Procedure

During 1993–2004, patients aged 18–45 years, employed but on continuous sick leave >6 weeks for non-malignant pain disorders, were asked by their doctors at the PHC if they agreed to have a consultation with two other doctors, and to participate in a local 4-week treatment programme. Those who agreed were referred to a team of two doctors. All were offered free-of-charge help from professional

interpreters. Patients on long-term social security were referred to another study.

The patients were recruited in consecutive order. Two specialists in general practice (male and female) collected data about the patients during the first (initial) assessment by using a multi-dimensional assessment procedure [24]. The two doctors alternated every other time in acting as the consultant leading the consultation including the somatic examination, or as observer and note-taker, responsible for the standardized schedules, questionnaires and semi-structured interviews of concepts of pain. The whole procedure was mainly based on the multi-diagnostic scheme from the Diagnostic and Statistical Manual of Mental Disorders, third revised edition (DSM-III-R) [2]. This contains criteria for psychic disorders (axis I), personality disturbances (axis II), degree of psychosocial stress (axis IV) and global functioning (axis V). Axis III is used for somatic diagnoses. We also used a sixth variable with different aspects of pain: a pain behaviour scale [35], a visual analogue scale for measuring pain intensity, and a five-graded scale for rating degree of reduced ability to work because of pain [24]. In this study, we used only the VAS measure and the axes I–IV. In addition, patients gave information on socio-demographic data, prior examinations, diagnosis, treatments and sick leave, confirmed by official data.

Also included in the initial assessment was a semi-structured interview about concepts of pain [22]. Data from the interview was not used here.

No self-administered material was used because many had limited education or knowledge of language. Further, qualities of interpreters could differ. Also differing concepts of body and self would make it difficult to interpret collected data. No material was read in advance in order to meet them freshly as individuals and to diminish prejudices. Under-rating of symptoms was diminished by using the most pathological of the doctors’ ratings in the calculations.

The same pair of doctors acted during the whole study, in the same environment, and on the same weekday. There was no major change in Swedish societal politics during the study period.

A 4-week program of daily physiotherapy and four, weekly, 30-min dialogue sessions to start in the next week with the consultant doctor, based on the patients’ concepts of pain, were then offered.

### Measures in this study

In this paper we used data collected from the initial assessments.

### Socio-demographic data

Categorization was based on places of birth of the three pre-defined larger groups—Middle East, Turkey, and Southern (S.) Europe. The remaining patients came from disparate countries and could not form meaningful groups. They were clustered into a “background” group (mixed group) of people born in different parts of the world.

Data about education, job situation and civil status was categorized. Family situation was described by number of children 0–19 years of age,  $\geq 3$  vs. 0–2 children.

### Clinical data

Depression was diagnosed by using criteria from DSM-III-R (axis I) with the two mandatory variables (sadness and/or loss of happiness). Any suspicion of personality disorder was noted as yes or no (axis II).

Somatic diagnoses (axis III) were established according to standardized procedures [24]. Backache was defined as all pain located at the back of the trunk. Here, somatic status was represented by number of locations of tender points defined as reproducible tenderness in anatomical structures in e.g., the lower or upper back, shoulders or hips, categorized as many ( $\geq 3$  tender points) or few (0–2 tender points), divided by the median value [24, 25].

Fasting blood glucose, hemoglobin and urine tests were analyzed on the next day.

The degree of severity of psychosocial stressors in various areas (family, close relations, finances, housing, own well-being, trauma, war etc.) was rated by using the DSM-criteria, axis IV (1 = none, 2 = mild, 3 = moderate up to 6 = catastrophic). For the purpose of this study, the scale was categorized as much (grades 2.5–6) or mild (grades 1–2). Anxiety about the pain was also noted separately (here: pain anxiety).

### Pain intensity

After the approximately 60 min consultation (interview about 40 min and somatic examination about 20 min including dressing and mobility testing), the patients were asked to show how much (how severe or intense) the pain was right now when the patient was seated again. The consulting doctor handed the patient a 100 mm long VAS and said: “It is difficult to describe a pain in words. By using this scale you can show us how intense your pains are right now when you are seated”.

The scale had a blue horizontal line, a red movable marker, and a small blue vertical line at the left with the words “no pain” (0), and at right “worst imaginable pain” (100).

### Severe pain

At evaluation, the VAS values were divided into quartiles. The highest quartile (75–100) was labeled severe pain.

### Statistical analyses

Separate analyses were made of men and women for socio-cultural and biological reasons. Median values (md, interquartile ranges = IQR) were calculated for interval and ordinal data. The Chi-square test or Fisher’s exact probability test was used for group comparisons of nominal data. The Mann–Whitney *U* test and Kruskal–Wallis tests of significance were used for two-groups and several group comparisons of non-category data, respectively.

Crude odds ratio (OR) with 95% confidence intervals (95% CI) as rating severe pain was calculated by binary logistic regression. Forward conditional logistic regression was used to calculate age-standardized ORs (95% CI) to rate severe pain for five groups of independent, explaining, variables (sex, age, education, marital status, sick leave, somatic status = tender points, depression, psychosocial stressors, pain anxiety).

A *P* value  $\leq 0.05$  was considered statistically significant. All significance tests were two-sided.

Statistics were calculated on SPSS software, release 11.0.

### Ethics

The North Stockholm Ethics Committee approved the study (No. 00-166).

## Results

### Socio-demographic data

Only few who fulfilled the inclusion criteria opposed participation. Three hundred and eighty six patients were referred. Eight men and five women abstained from coming. One person with personality disorder and ten persons  $\geq 46$  years were excluded. Thus, this study sample consisted of 346 persons, 129 men and 217 women (Table 1). The pre-defined groups were homogenous regarding present social situation but less so concerning religion or education. The Turkish group was the largest ( $n = 123$ , 35.5%, mainly women,  $n = 100$ ), all born in the same area in Anatolia. The S. Europeans were mostly from the northwest of Greece (18 men, 34 women). The Middle East group included many persons from Iraq, and some from

**Table 1** Frequencies of categorized socio-demographic and clinical data by men and women 18–45 years, categorized by geographical regions of birth

	Regions of birth							
	Turkey		S. Europe		M. East		Mixed regions	
	Men	Women	Men	Women	Men	Women	Men	Women
<i>N</i>	22	100	18	34	35	34	54	49
%	17.1	45.1	14.0	15.7	27.1	15.7	41.9	22.6
<i>Socio-demographic data</i>								
<i>Age</i>								
40–45 years	54.5	42.0	33.3	55.9	40.0	47.1	68.5*	46.9
<i>Education &lt; 7 years</i>								
Interpreter	13.6	48.0*	16.7	29.4	34.3*	32.4	11.1	20.2
<i>Occupation<sup>a</sup></i>								
Cleaner	54.5	74.0	61.1	73.5	25.7	50.0	37.0	32.7
Care, service	45.5	25.0	33.3	26.5	68.6	47.1	61.1	65.3
<i>Marital status<sup>b</sup></i>								
Married	95.5**	87.1	72.2	79.4	80.0	70.6	59.3	34.7
<i>Family situation</i>								
≥3 children	72.7***	67.0*	16.7	38.2	22.9	50.0	35.2	49.0
<i>Sick leave</i>								
>6 months	86.4	62.4	61.1	61.8	54.3	47.1	54.7	57.8
<i>Clinical data</i>								
<i>Somatic disorders<sup>c</sup></i>								
≥3 tender points	36.4	54.0	22.2	50.0	34.3	47.1	20.4	50.0
<i>Psychic disorders</i>								
Depression <sup>d</sup>	22.7	26.0	38.9	44.1	22.9	41.2	29.6	34.7
<i>Psychosocial stressors</i>								
Much stressors <sup>e</sup>	45.5	42.0	61.1	58.8	51.4	61.8	61.1	73.5**
Pain anxiety	81.8	86.0	77.8	82.4	65.7	73.5	63.0	79.6
<i>Severe pain</i>								
VAS ≥ 75–100	22.7	49.0	33.3	50.0	11.4	55.9	27.8	34.7

Median values were cut-points for ordinal data

\*  $P < 0.5$ ; \*\*  $P < 0.01$ ; \*\*\*  $P < 0.001$  compared to the same sex (Chi-square test,  $df 3$ )

<sup>a</sup> Missing data

<sup>b</sup> The remainder were single parents including  $n = 7$  (5%) who were single persons without children

<sup>c</sup> 90–100% had pain from muscular structures and 9% men and 9% women had additional disorders, e.g., post fractural pain, arthrosis, diabetes, anemia or asthma

<sup>d</sup> Using criteria from DSM, axis I, 9% had in addition anxiety or post traumatic stress disorders

<sup>e</sup> Using criteria from DSM, axis IV, graded 1(none) to 6 (catastrophic), here categorized as much stress:  $\geq 2.5$ , and mild: 1–2

Syria, Lebanon and Iran (35 men, 34 women). Birthplace and cause for migration varied in the Mixed group (51 men, 49 women), (cf. Table 2).

The median age was 39.0 years (95% CI 37.9–39.3), (Table 1). Many Turkish women had education of 6 years or less (73%,  $P < 0.01$ ). They often used interpreters ( $P < 0.01$ ) despite their long residence in Sweden. Interpreters were mainly used by those having poor education ( $P < 0.001$ ).

Almost all worked in cleaning business, or transportation (men) or child-care (women). The Turkish men and women were more often married and had more children compared with the others. Especially, Turkish men had long prior sick leave ( $P < 0.05$ ).

Most women had both much household and salaried work, but at least some received lot of help from family and rested during the day since they were certified sick by a doctor.

**Table 2** Distribution of the 346 patients by sex and regions of birth, how they were categorized, and the median values (md) with inter quartile ranges (IQR) of self-rated pain intensity “right now” measured on a 0–100 visual analogue scale (VAS)

Category	Region of birth	Men		Women	
		<i>n</i>	md (IQR)	<i>n</i>	md (IQR)
Turkey	Turkey	22	55 (47–75)	100	73 (55–87)
S. Europe	Southern Europe	18	55 (33–78)	34	75 (56–90)
Middle East	Middle East	35	42 (35–64)	34	75 (45–87)
Mixed	All others	54	51 (38–74)	49	66 (41–77)
Mixed, specified					
Mixed	Asia (except Turkey)	10	44 (36–52)	12	72 (55–85)
Mixed	Eastern Africa	14	52 (43–79)	7	57 (31–86)
Mixed	Northern Africa	10	82 (46–88)	5	88 (43–115)
Mixed	Northern Europe	16	51 (20–67)	14	71 (33–75)
Mixed	Southern America	4	40 (34– )	11	75 (56–90)
Total		129	50 (36–69)	217	72 (51–85)***

Ns between immigrant groups by sex (Kruskal–Wallis test)

Ns Non-significant

\*\*\*  $P < 0.001$  (Mann–Whitney *U* test)

**Clinical data**

One-third had depression (Table 1). They felt sad, had no interest, and had difficulties in sleeping and concentrating. A few had anxiety disorders or posttraumatic stress. Men had deeper depressive signs than the women who told of frequent social visits and the sharing of troubles with friends.

All complained of backache, mainly low-back pain. Also, shoulder pain was demonstrated as being located in the back. Pain in the extremities was rare. Paracetamol was the main analgesic used. Tender points at two or more locations (md 2.0, IQR 1.0–4.0) were mostly the only somatic findings (Table 3). Women had more tender points (md 3.0,  $P < 0.001$ ).

A half of the patients had much psychosocial stress (md 2.5, IQR 2.0–3.0), like marital discords (notably women), financial difficulties (notably men) and severe anxiety about the pain often linked to thoughts about further spread of pain, ultimately causing invalidity. Pain anxiety could be a single worry among women but was linked to depression in men ( $P < 0.001$ ).

**Pain intensity**

On an average, both men and women rated pain intensity as moderate with median VAS- values ranging from 49 to 74 (Table 2). There was a gender difference in median values of VAS, (50 in men, 72 in women;  $P < 0.001$ ), most evident in the Middle East group.

The VAS-values varied, but not significantly, between the immigrant groups of men and women.

**Severe pain**

Patients aged 40–45 years, had doubled their ORs as rating severe pain (OR 2.5 and 2.2, men and women respectively).

The women had a nearly tripled risk to rate severe pain (Table 3). The crude ORs as rating severe pain varied greatly especially among the immigrant groups of men, and less among the women. No OR was statistically significantly elevated (Table 3).

Depressed men, and men with little education, or using interpreters, had the highest ORs as rating severe pain (Table 4) (age-standardized OR 4.1 and 2.7, respectively), (Table 5).

Women had less clear results. The ORs were doubled for depressed women (OR 2.0, age-standardized OR 1.9). Women anxious about pain also tended to rate severe pain (OR 2.2, but age-standardized OR 2.0; 95% CI 0.95–4.3).

Also, patients with >6 months sick leave and women with  $\geq 3$  tender points had, not significantly, elevated ORs as rating severe pain.

**Table 3** Distribution and odds ratios (OR) with 95% confidence intervals (95% CI) for 129 men and 217 women from different categories of regions as assessing severe pain (range 75–100 on a 0–100 visual analogue scale divided into quartiles)

	OR (95% CI)	
	Men OR (95% CI)	Women OR (95% CI)
By sex	1.0	2.9 (1.8–4.7)
Regions of birth		
Mixed	1.5 (0.7–3.5)	0.6 (0.3–1.1)
All others, ref	1.0	1.0
Turkey	1.0 (0.3–2.9)	1.2 (0.7–2.0)
All others, ref	1.0	1.0
S. Europe	1.8 (0.6–5.3)	1.2 (0.6–2.4)
All others, ref	1.0	1.0
Middle East	0.3 (0.1–1.1)	1.5 (0.7–3.2)
All others, ref	1.0	1.0

**Table 4** Crude odds ratios (OR) with 95% confidence intervals (95% CI) for patients with long-standing pain with different characteristics as assessing severe pain on a 0–100 mm visual analogue scale (VAS)

	Severe pain	
	Men	Women
Sex		
<i>N</i>	129	217
Age (years)	OR (95% CI)	OR (95% CI)
40–45	2.5 (1.0–5.9)	2.2 (1.3–3.9)
18–39, ref	1.0	1.0
Education (years)		
≤6	3.5 (1.5–8.3)	1.5 (0.9–2.6)
≥7, ref	1.0	1.0
Interpreter use		
Yes	3.0 (1.2–7.8)	1.7 (0.97–2.9)
No, ref	1.0	1.0
Marital status		
Married	(0.3–2.0)	1.0 (0.6–1.8)
Single parent, ref	1.0	1.0
Sick leave (months)		
≥6	2.2 (0.9–5.7)	1.5 (0.9–2.6)
2–6, ref	1.0	1.0
Tender points ( <i>n</i> )		
≥3	1.1 (0.5–2.8)	1.6 (0.9–2.7)
0–2, ref	1.0	1.0
Depression <sup>a</sup>		
Yes	4.9 (2.0–11.6)	2.0 (1.1–3.5)
No, ref	1.0	1.0
Psychosocial stressors <sup>b</sup>		
Much	3.4 (0.3–8.5)	1.5 (0.9–2.6)
Mild, ref	1.0	1.0
Pain anxiety		
Yes	1.6 (0.6–4.2)	2.2 (1.1–4.8)
No, ref	1.0	1.0

Severe pain was 75–100 on this scale

<sup>a</sup> Using criteria from DSM-III-R, axis I and <sup>b</sup>Axis IV

## Discussion

There were no significant differences in pain intensity, or severe pain “right now” between the immigrant groups of men and women. Women, and those aged 40–45 years, more often rated severe pain, as did depressed patients and men with little education. Somatic factors played a minor role in women.

The study group was rather small and consisted of the so-called difficult cases, i.e., young immigrants with varying backgrounds feeling disabled for a limited work market. To compare, the studied group was about the same size as the group with diabetes at the same PHC. Nearly 400 young persons with long-standing disability are many

**Table 5** Age-standardized odds ratios (OR) and 95% confidence intervals (95% CI) by forward conditional logistic regression as rating severe pain

	OR (95% CI)	<i>P</i> value
Men		
Depression	4.1 (1.7–10.0)	0.002
Education ≤ 6 years	2.7 (1.1–6.8)	0.03
Women		
Depression	1.9 (1.1–3.4)	0.03
Pain anxiety	2.0 (0.95–4.3)	0.06

for a PHC to handle, and is probably one of the largest groups of that category in Sweden.

To the best of our knowledge, there is no previous clinical study in primary care on pain intensity and severe pain of young immigrant patients with backache. The objective is important because pain and depression lead to greater ill-health in the western world [41].

To point out, this was a cross-sectional consecutive clinical study from the viewpoint of doctors in their daily practice. The assessment procedure had been adapted to patients with high stress with limited language abilities. One risk in such patient groups is under-rating of psychosocial problems, which despite our precautions, could have been underrated here. Also, gynecological status was not done systematically to reveal other undetected disorders [30]. However, the risks of other co-morbidity, common among older patients [43], were reduced by choosing a young study population with previous doctor contacts. With this in mind, the results should be interpreted with caution and the results cannot be generalized but probably possible to transfer to similar patient populations. Notably, our women from Turkey showed similar VAS-values, as did the female pain patients in a Turkish study [13]. Further, it would have been interesting to compare with Swedish backache patients, but there were very few in the target group.

A slider model of VAS is good for measuring pain intensity [14]. It has also proved to correlate with visible and reported signs of pain [35]. Also, here it proved to be valid, reliable and easy to use as a “thermometer of pain”.

A significant difference in VAS measurements seems to be around 20 units [16, 27] and four categories of pain intensity seem logical to the majority [31]. Differences in pain reporting according to ethnicity, gender and age have been shown previously [3, 34]. Here, there were noticeable generation shifts, as it was mainly the patients 40–45 years of age who were poorly educated. Also, the women’s demonstrated pain might have had other meanings than did the men’s, who more often used less words, see for example the Middle Eastern group. Total work load

differed between men and women, and women with cleaning jobs, who being a little older and with large families had, in contrast to the men, signs of widespread muscular strain, to bear in mind when evaluating individual cases of severe pain [19].

The patients had various social and religious backgrounds. Yet, they had much in common. They had settled and lived in Sweden for about 15 years in a segregated work and housing market, they had similar family, social and health problems, and not least, they were familiar with the Swedish health care system [1] and many lived with holistic family traditions [15]. Thus, similarities, rather than differences, in culture might have contributed to the results.

#### Fear, anger and duration

Pain severity might correlate to anxiety and fears [8, 12], poor pain coping [28], anger in men [21], and pain duration [28].

Depression and pain is often linked, but our depressed patients were comparatively few, possibly due to being younger [13, 42]. Many women here seemed to have escalated pain intensity caused rather by frightful ideas than sad mood [3], in contrast to most men. Pain related fears were particularly common among Turkish patients implying the sharing of frightening concepts of pain in this community where relatives, neighbors and friends offer support while spreading notions around illnesses [15, 22, 40]. Further, some of the patients, both men and women, at first displayed an angry attitude. Also, secondary gains influence pain presentations [9]. Here, the patients with prolonged sick leave tended to show severe pain, which could be interpreted as a learned behaviour, or a wish for an extended sick leave since many patients lived in communities where sickness is a family issue [23, 40] and a return to work means less than a low sick pay.

#### Cultural influences

Socio-cultural factors influence pain behaviors [44]. This might explain part of the varying pain intensity seen in the mixed group. Education is such a factor that influences understanding, coping styles, concepts of the body, and the verbal language as indicated here by the frequent use of interpreters among the Turkish patients.

Strain above the personal limit can contribute to pain [19]. Pain intensity and tender point counts may correlate well [39]. Here, some women had somatic findings possible to connect to their work situation, but severe pain and tender points did not clearly correlate, maybe because many had a very long prior sick leave.

#### Clinical implications and further studies

According to this study, one should not pre-judge pain descriptions by patients' places of birth. Instead, men showing severe pain should evoke further questions about depressive symptoms or feelings of being dejected, and in women, also of catastrophic thoughts.

There were group variances in the VAS values that could be interesting to study further, since some aspects of pain presentations were not studied here, like different ways of displaying pain [44] and idioms of distress [15]. Other research could include possible associations between lengths of sick leave, doctors' decisions on sick leave, patients' reported pain intensity, and further studies among the African immigrant groups.

#### Conclusion

To sum up, the immigrant groups did not differ significantly in rated pain intensity or severe pain. Severe pain was predicted mainly by depressed mood and was probably also linked to gender, age and sick roles.

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#### References

- Alexanderson K, Norlund A (2004) Swedish Council on technology assessment in health care (SBU) chapter 1. Aim, background, key concepts, regulations, and current statistics. *Scand J Public Health Suppl* 63:12–30
- American psychiatric association (1987) DSM-III-R. Diagnostic and statistical manual of mental disorders, 3rd edn. APA, Washington DC
- Bates M, Edwards WT (1992) Ethnic variations in the chronic pain experience. *Ethn Dis* 63–83
- Berg M (1997) (Selda's second wedding) Seldas andra bröllop. *Etnologiska föreningen i VästSverige*, Gothenburg
- Bäärnhielm S (2003) Qualitative studies of illness meaning and restructuring of illness meaning among two cultural groups of female patients in a multicultural area of Stockholm. *Karolinska Institutet*, Stockholm
- Bäärnhielm S (2004) Restructuring illness meaning through the clinical encounter: a process of disruption and coherence. *Cult Med Psychiatry* 28(1):41–65
- Bäärnhielm S, Ekblad S (2000) Turkish migrant women encountering health care in Stockholm: a qualitative study of somatization and illness meaning. *Cult Med Psychiatry* 24:431–452
- Celiker R, Borman P, Oktem F, Gokce-Kutsal Y, Basgoze O (1997) Psychological disturbance in fibromyalgia: relation to pain severity. *Clin Rheumatol* 16:179–184
- Ciccone D, Just N, Bandilla E (1999) A comparison of economic and social reward in patients with chronic non malignant back pain. *Psychosom Med* 61:552–563
- Englund L, Svärdsudd K (2000) Sick-listing habits among general practitioners in a Swedish county. *Scand J Prim Health Care* 18:81–86

11. Fink R (2000) Pain assessment: the cornerstone to optimal pain management. *Proc (Bayl Univ Med Cent)* 13:236–239
12. George SZ, Fritz JM, McNeil DW (2003) Fear-avoidance beliefs as measured by the fear-avoidance beliefs questionnaire: change in fear-avoidance beliefs questionnaire is predictive of change in self-report of disability and pain intensity for patients with acute low back pain. *Clin J Pain* 22:197–203
13. Guven A, Kul Panza E, Gunduz OH (2005) Depression and psychosocial factors in Turkish women with fibromyalgia syndrome. *Eura Medicophys* 41:309–313
14. Haefeli M, Elfering A (2006) Pain assessment. *Eur Spine J Suppl* 1:S17–S24
15. Helman C (1997) Pain and culture. In: *Culture, health and illness*. 3rd rev edn. Butterworth-Heinemann, Oxford, pp 179–193
16. Hägg O, Fritzell P, Nordwall A (2005) The clinical importance of changes in outcome scores after treatment for chronic low back pain. *Eur Spine J* 12:12–20
17. Jamison R, Raymond S, Slawsby EA, McHugo GJ, Baird JC (2006) Pain assessment in patients with low back pain: comparison of weekly recall and momentary electronic data. *J Pain* 7:192–199
18. Kenny DT (2004) Constructions of chronic pain in doctor-patient relationships: bridging the communication chasm. *Patient Educ Couns* 52:297–305
19. Knibbe J, Friele R (1996) Prevalence of back pain and characteristics of the physical workload of community nurses. *Ergonomics* 39:186–198
20. Loeser JD, Melzack R (1999) Pain: an overview. *Lancet* 353:1607–1609
21. Lombardo ER, Tan G, Jensen MP, Anderson KO (2005) Anger management style and associations with self-efficacy and pain in male veterans. *J Pain* 6:765–770
22. Löfvander M, Furhoff AK (1996) Backache in Greek immigrants to Sweden: a cultural interpretative approach. *Transcult Psychiatric Res Rev* 33:319–332
23. Löfvander M (1997) Illness, disease, sickness. Clinical factors, concepts of pain and sick leave patterns among immigrants in primary health care. Effects of different therapeutic approaches. Karolinska Institutet, Stockholm
24. Löfvander M (2002) Cognitive-behavioural treatment of chronic pain in primary care. A three-year follow-up. *Eur J Gen Pract* 8:151–158
25. Löfvander M, Engström A (2005) “Unable and useless” or “able and useful”? A before—and—after study in the primary care of self-rated inability to work in young immigrants having long-standing pain. *J Back Musculoskeletal Rehabil* 16:91–100
26. Lumley MA, Radcliffe AM, Macklem DJ, Mosley-Williams A, Leisen JC, Huffman JL, D’Souza PJ, Gillis ME, Meyer TM, Kraft CA, Rapport LJ (2005) Alexithymia and pain in three chronic pain samples: comparing Caucasians and African Americans. *Pain Med* 6:251–261
27. Mehling WE, Hamel KA, Acree M, Byl N, Hecht FM (2005) Randomized controlled trial of breath therapy for patients with chronic low-back pain. *Altern Ther Health Med* 11:44–52
28. Meredith P, Strong J, Feeney JA (2006) Adult attachment, anxiety, and pain self-efficacy as predictors of pain intensity and disability. *Pain* 123:146–154
29. Norrefalk JR, Ekholm J, Borg K (2006) Ethnic background does not influence outcome for return-to-work in work-related interdisciplinary rehabilitation for long-term pain: 1- and 3-year follow-up. *J Rehabil Med* 38:87–92
30. Østensen M, Schei B (1997) Randomized, controlled trial of sociodemographic characteristics and gynecological disease in 40–42 year old women reporting musculoskeletal disease. *Scand J Rheumatol* 26:426–434
31. Palos G, Mendoza T, Mobley G, Cantor S, Cleeland C (2006) Asking the community about cutpoints used to describe mild, moderate, and severe pain. *J Pain* 7:49–56
32. Perreault K, Dionne CE (2005) Patient-physiotherapist agreement in low back pain. *J Pain* 6:817–828
33. Peterson C, Bolton J, Wood A, Humphreys B (2003) A cross-sectional study correlating degeneration of the cervical spine with disability and pain in United Kingdom patients. *Spine* 28:129–133
34. Raspe H, Matthis C, Croft P, O’Neill T (2004) Variation in back pain between countries: the example of Britain and Germany. *Spine* 29:1017–1021
35. Richards JS, Nepomuceno C, Riles M, Suer Z (1982) Assessing pain behavior: the UAB pain behavior scale. *Pain* 14:393–398
36. Sayar K, Gulec H, Topbas M (2004) Alexithymia and anger in patients with fibromyalgia. *Clin Rheumatol* 23:441–448
37. Selve S, Matthews Z, Stones R (1998) Factors influencing outcome in consultations for chronic pelvic pain. *J Womens Health* 7:1041–1048
38. Stockholms utrednings och statistikkontor (2006) (Working population) Förvärsarbetande befolkning. <http://www.stockholm.se/upload/Fackforvaltningar/Utrednings-%20och%20statistikkontoret/Serien%20Statistik%20om%20Sthlm/Förvärsarbetande%20befolkning%202004.pdf>
39. Staud R (2005) Predictors of clinical pain intensity in patients with fibromyalgia syndrome. *Curr Pain Headache Rep* 9:316–321
40. Taloyan M (2004) (Kurdish identity. A study about Kurds from Anatolia, Turkey) Kurdisk identitet. En studie om kurder från Anatolien, Turkiet. Dpt of Ethnology, Stockholm University
41. Wikman A, Marklund S, Alexanderson K (2005) Illness, disease, and sickness absence: an empirical test of differences between concepts of ill health. *J Epidemiol Community Health* 59:450–454
42. Williams A, Richardson PH (1993) What does the BDI measure in chronic pain? *Pain* 55:259–266
43. Wittink H, Rogers W, Lipman A, McCarberg B, Ashburn M, Oderda G, Carr D (2006) Older and younger adults in pain management programs in the United States: differences and similarities. *Pain Med* 7:151–163
44. Zborowski M (1952) Cultural components in responses to pain. *J Soc Issues* 16:16–30