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## **Is low back pain a symptom of a greater syndrome?**

**Daniel Nowik<sup>1</sup>, Stein Atle Lie<sup>2</sup>, Silje Endresen Reme<sup>2</sup>, Hege Randi Eriksen<sup>2</sup> & Gabriele Helga Franke<sup>1</sup>**

1 = Phone: +49 175 6263042, email: danielnowik@gmx.de, HS Magdeburg-Stendal, Fachbereich Angewandte Humanwissenschaften, Osterburger Straße 25, 39576 Stendal

2 = Phone: + 47 5558 9961, email: stein.lie@uni.no, Uni Helse, Postboks 7810, 5020 Bergen, Norway

### **Abstract**

#### **Background**

Chronic low back pain (CLBP) produces high costs in the health-care-system, yet little is known regarding how low back pain becomes chronic in the absence of physiological pathology. Furthermore, knowledge on reasons for the high degree of comorbidity is sparse. The Cognitive Activation Theory of Stress (CATS) can provide insight into these mechanisms.

#### **Objective**

To determine whether subjective health complaints (SHC), psychological distress, psychiatric disorders, victimization, motivation to change, and disbelief in recovery are correlated and to identify patient subgroups using these criteria.

#### **Method**

As a part of a randomized multicentre study, patients with CLBP and on sick-leave were screened with a diagnostic interview and filled out a questionnaire consisting of demographic data, and various psychometric tests. Bootstrapping-correlations, t-Tests and two-step cluster-analysis were used to test the hypotheses.

#### **Results**

473 participants with equal gender distribution were assessed. SHC, psychological distress, psychiatric disorders, victimization, and motivation to change showed highly significant correlations with each other ( $r=0.118-0.699$ ;  $p<.05$  &  $p<.01$ ). Disbelief in recovery was only partly correlated to the other factors ( $r=0.032-0.185$ , n.s.,  $p<.05$  &  $p<.01$ ). We found that the patients could be divided into four subgroups using the criteria "psychiatric illness", "victimization" and SHC. Those patients who have suffered from violence and psychiatric comorbidity showed the highest amount of SHC, whereas those without any of these burdens showed the least SHC.

#### **Discussion**

Psychiatric comorbidity and victimization are highly prevalent in this patient-group and therefore need to be routinely assessed and addressed. Further studies will focus on the predictive value of different clusters for CLBP patients.

**Keywords:** *chronic low back pain, comorbidity, victimization, cluster-analysis, subgroups*

## 1 Introduction

Muscle pain including low back pain (LBP) is very common in the general population and the reason for about 50% of the long term sickness absence in Norway (Brage et al., 2004). Furthermore, it is among the most frequent reasons for visits to the general practitioner (Hart, Deyo & Cherkin, 1995) and it is widely quoted that 80% to 90% of the health care and social costs of back pain are for the 10% of patients with chronic low back pain (CLBP) and disability (Indahl, 2004). Even though LBP is common and, in most cases, has a good prognosis, those patients who have had the symptoms for more than 3 to 4 months will continue to be disabled even after 2 years (Mayer & Gatchel, 1998, Frymoyer, 1991). How the “common” complaints of LBP become chronic is poorly understood. The huge amount of uncertainty makes it challenging to treat these patients (Allegretti, Borkan, Reis & Griffiths, 2010, Hage, Svensen & Eriksen, 2005). Recently attribution to neurobiological and psychobiological sensitization mechanisms (Eriksen & Ursin, 2004a) has been made. Additionally, CLBP-patients often present comorbid psychiatric or somatic illnesses, which complicate treatment even more.

A recent Cochrane-review finds evidence for cognitive behavioural therapy’s (CBT) effectivity in treating chronic pain, at least in short-term (Henschke et al., 2010). Still, there are some patients that don’t respond to treatment (Ostelo et al., 2005, Turk & Rudy, 1990) or the effect does not persist for long (Henschke et al., 2010). Based on this one may assume that interventions need to be tailored more to the patients’ needs. We believe CLBP to be less of a distinct disorder, but more of a symptom of a greater syndrome. It has been shown that psychological problems, psychiatric illnesses, victimization, motivation to change and illness-beliefs are connected with health complaints. Thus we propose that they, too, are interconnected and that distinct subgroups might be identified using these criteria.

## 2 Methods

This study focuses on the baseline measures of a four-arm multicentre randomized controlled clinical cross-sectional trial on interventions for chronic low back pain. The participants were recruited through the National Insurance Administration (NAV, [www.nav.no](http://www.nav.no)). Patients on 100% sickness leave for 6 months that geographically belong to one of the participating clinics were invited to participate. The following criteria led to exclusion: being off the sick list, pregnancy, osteoporosis, cancer, and L diagnoses suggesting recent low back pain trauma or specific spinal or other injuries which may account for the current back pain or specific L diagnoses excluding back pain.

### 2.1 Measures

#### *Subjective Health Complaint Inventory (SHC)*

The SHC is composed of 29 items, measuring five fields of common health complaints: musculoskeletal pain, pseudoneurology, gastrointestinal problems, allergy and flu. The authors have demonstrated the scale’s reliability and validity (Eriksen, Ihlebaek & Ursin, 1999).

#### *The Pain Stages of Change Questionnaire (PSOCQ)*

The instrument for measuring patients’ motivation to change was the PSOCQ, which is theoretically based on the Transtheoretical Model (TTM; Prochaska & Velicer, 1997). It reliably identifies different motivational stages in chronic pain patients: Pre-

contemplation, contemplation, noncontemplation action, participation and ambivalent (Kerns et al., 1997, 2005).

#### *The Revised Illness Perception Questionnaire (IPQ-R)*

The IPQ-R measures seven facets of Leventhal's theory of self-regulation (Leventhal et al., 1984, 1997): timeline (acute/ chronic), timeline cyclical, consequences, personal control, treatment control, illness coherence, and emotional representations. It is widely used in psy-chosomatic research and is both reliable and valid (Moss-Morris et al., 2002).

#### *Hospital Anxiety and Depression Scale (HADS)*

The Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith, 1983) was used to assess severity of the patients' anxiety and depression. The HADS is a standard tool in both research and clinical use and has been shown to be a reliable and valid instrument (Bjelland, Dahl, Haug & Neckelmann, 2002).

#### *Mini-International Neuropsychiatric Interview (MINI)*

Using diagnostic interviews is the gold-standard for determining psychiatric illnesses. We used the MINI, which covers 23 Axis I disorders with high reliability and validity (Sheehan et al., 1998).

#### *Victimization*

Victimization was assessed by the yes or no question "Have you ever been subjected to violence by one or more persons?", though obvious accidents and playful child fights were to be excluded. Additional questions on the type and frequency of violence were asked.

## **2.2 Statistical analyses**

We used bootstrapped correlations and independent sample t-tests to test for the variables' interconnectedness. To identify subgroups, we used two-step cluster-analyses. P-values less than 0.05 were considered statistically significant. All statistical analyses were performed with SPSS version 18.

## **2.3 Ethics**

The study was approved by The Regional Ethical Committee and the Norwegian Social Science Data Services (NSD). All principles in the Helsinki declaration were followed. Informed consent was signed by each participant with emphasis on the right to withdraw from the study at any time without any explanation.

## **3 Results**

N=473 patients filled out the questionnaire, 50,2 % were female, the mean age was 45.37 (SD=9.83, min=22, max=62). 25.3 % reported victimization and 30.1 % current psychiatric illnesses, as well as 37.7 % lifetime prevalence; there were no statistically differences between men and women.

As can be seen in table 1, there are significant correlations between almost all variables. Highest correlations were found between Anxiety and Depression, and Health Complaints.

Patients with a lifetime psychiatric diagnosis reported significantly more subjective health complaints ( $t(392) = -4.87, p < 0.001$ ), anxiety ( $t(401) = -8.42, p < 0.001$ ), and depression

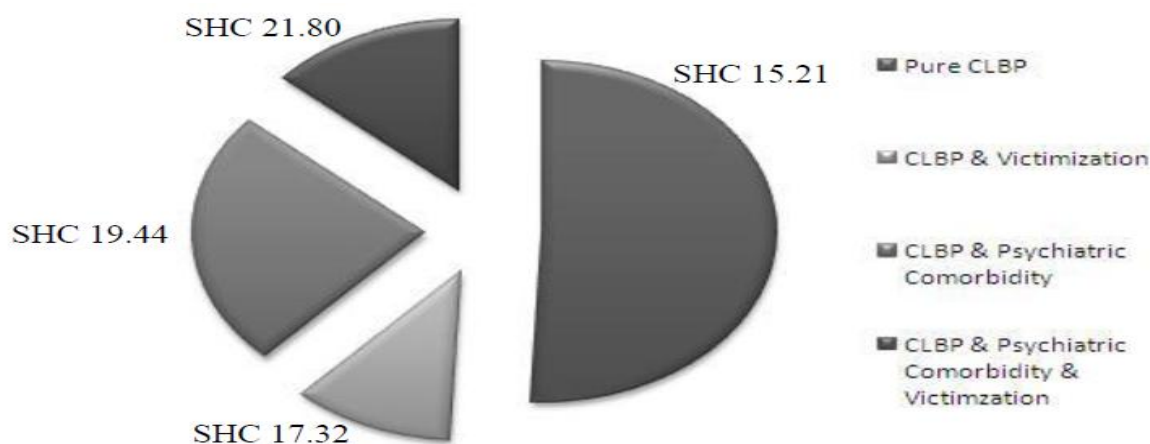
( $t(401) = -7.63, p < 0.001$ ) than those without. No significant differences could be found in their beliefs about treatment outcome, chronicity of their disorder or low motivation. Almost identical results are found in respect to experiences of violence between those with a psychiatric diagnosis and those without. Those patients that have suffered from violence report significantly more subjective health complaints ( $t(401) = 2.82, p < 0.05$ ), anxiety ( $t(410) = 3.83, p < 0.001$ ), and depression ( $t(410) = 3.70, p < 0.001$ ). They differed neither in their beliefs about treatment outcome, chronicity of their disorder, nor in their motivation.

Table 1: Correlations between the measured variables

	<i>Pre-contemplative Stage</i>	<i>Treatment consequences</i>	<i>Timeline beliefs</i>	<i>Anxiety</i>	<i>Depression</i>	<i>Subjective Health Complaints</i>
<i>Precontemplative Stage</i>	1	0.157**	-0.063	0.118*	0.128**	0.191**
<i>Treatment consequences</i>		1	0.071	0.038	0.032	0.073
<i>Timeline beliefs</i>			1	0.082	0.104*	0.185**
<i>Anxiety</i>				1	0.699**	0.546**
<i>Depression</i>					1	0.460**

\*\*  $p < 0.01$ ; \*  $p < 0.05$

A good cluster solution containing all these factors could not be obtained (table 2). Instead, a two-step cluster analysis with the dichotomous variables lifetime psychiatric diagnosis and experience of violence and the dimensional variable subjective health complaints resulted in a 4 cluster solution with good fitness parameters (mean measure of cohesion and separation = 0.7) and equal gender distribution between the four clusters. 38 patients could not be classified, due to missing data.



Graphic 1: The four patient subgroups

## **4 Discussion**

Regarding 473 Norwegian patients suffering from low back pain, subjective health complaints, motivation, illness-beliefs, psychological problems, psychiatric diagnoses, and victimization are associated. On the basis of psychiatric diagnosis, experiences of violence and subjective health complaints, a statistically robust and clinically meaningful categorization of CLBP patients could be obtained.

Victimization (25.3 % prevalence) and psychiatric illnesses (30.1 % point prevalence, 37.7 % lifetime prevalence) are common in CLBP. Both need to be routinely assessed and addressed in therapy in order to provide adequate treatment. Interestingly, men and women have both suffered from violence and are equally distributed among the clusters. Earlier research has almost exclusively focused on victimized women (Eberhard-Gran, Schei & Eskild, 2007). It might be time to broaden the scope and take men into perspective.

It is explainable why psychiatric illness, victimization and subjective health complaints worked so well for the cluster-solution. One might argue that PTSD is the connection between these variables and thus choose Sharp and Harvey's "mutual maintenance" (2001) or Liedl and Knaevelsrud's "perpetual avoidance" (2008) model to explain the link between victimization, psychiatric illness, and chronic pain. But only two patients suffered from PTSD, which both explanations rely on. Thus, for this population, it might be more reasonable to refer to the Cognitive Activation Theory of Stress (CATS; Eriksen & Ursin, 2004b, 2010). CATS places less importance on the stimulus (or stressor) itself, but emphasizes the role of expectations and the hazards of sustained arousal. It seems legit to assume that both psychiatric illness and victimization lead to altered expectations of both the stimulus and personal coping abilities. For example, a person that has been assaulted or suffers from general anxiety disorder (or both) is more likely to perceive his/ her environment as threatening and to have less positive outcome expectations. This leads to sustained arousal and central sensitization, which can explain the higher amounts of subjective health complaints in patients (Eriksen & Ursin, 2004a) suffering from psychiatric illness and/ or violence.

There is also a substantial part of the victimization/ psychiatric illness-cluster, which reports to having had experienced bullying at work. These patients suffer from even more severe subjective health complaints, which is also explainable from a CATS' point of view. As with every study, ours has some limitations we need to address. The cross-sectional design does not allow causal interpretations. Additionally there is no information on who the criminal of-fender was and when the violent events happened. This study cannot be judged on its own, but needs to be seen as a prequel to future studies. Further studies need to analyse whether the found subgroups have predictive value and if patients in the high-burden-cluster profit more from specialized treatment.

## **Literature**

- Allegretti A, Borkan J, Reis S & Griffiths F. (2010). Paired interviews of shared experiences around chronic low back pain: classic mismatch between patients and their doctors. *Family Practice*, 0, 1-8.
- Bjelland, I., Dahl, A.A., Haug, T.T. & Neckelmann, D. (2002). The validity of the Hospital Anxiety and Depression Scale: An updated literature review. *Journal of Psychosomatic Research*, 52,69– 77.
- Brage, S., Fleten, N., Knudsrød, O.G., Reiso, H. & Ryen A. (2004). Norsk Funksjonsskjema – et nytt instrument ved sykmelding og uførhetsvurdering. *Tidsskrift for den Norske Laegeforening*, 2004 Oct 7;124(19), 2472-2474.

- Eberhard-Gran, M., Schei, B. & Eskild, A. (2007). Somatic Symptoms and Diseases are more Common in Women Exposed to Violence. *Journal of General Internal Medicine*, 22(12),1668–1673.
- Eriksen, H.R., Ihlebaek, C. & Ursin, H. (1999). A scoring system for subjective health complaints (SHC). *Scand J Public Health*, 1, 63-72.
- Eriksen, H.R., Ursin, H., (2004a). Subjective health complaints, sensitization, and sustained cognitive activation (stress). *Journal of Psychosomatic Research*, 56, 445-448.
- Eriksen, H.R., Ursin, H., (2004b). The cognitive activation theory of stress. *Psychoneuroendocrinology* 29, 567-592.
- Eriksen, H.R., Ursin, H., (2010). Cognitive activation theory of stress (CATS). *Neuroscience and Biobehavioral Reviews*, 34, 877–881.
- Frymoyer, J.W. (1991). Low back pain. The role of spine fusion. *Neurosurgical Journal of North America*, 2(4), 933-954.
- Hagen, E. M., Svensen, E., & Eriksen, H. R. (2005). Predictors and modifiers of treatment effect influencing sick leave in subacute low back pain patients. *Spine*, 30(24), 2717-2723.
- Hart, L.G., Deyo, R.A. & Cherkin, D.C. (1995). Physician office visits for low back pain. Frequency, clinical evaluation, and treatment patterns from a U.S. national survey. *Spine* 1995 Jan 1;20(1), 11-9.
- Henschke, N., Ostelo, R.W.J.G., van Tulder, M.W., Vlaeyen, J.W.S., Morley, S., Assendelft, W.J.J. & Main, C.J. (2010). Behavioural treatment for chronic low-back pain (Review). *Cochrane Database of Systematic Reviews*. 2010 Jul 7;7
- Indahl, A. (2004). Low back pain: diagnosis, treatment, and prognosis. *Scandinavian Journal of Rheumatology*, 33(4),199-209.
- Kerns, R.D., Rosenberg, R., Jamison, R.N., Caudill, M.A. & Haythornwaite, J. (1997). Readiness to adopt a self-management approach to chronic pain: the pain Stages of Change Questionnaire (PSOCQ). *Pain*, 72 (1-2), 227-334.
- Kerns, R.D., Wagner, J., Rosenberg, R., Haythornwaite, J. & Caudill-Slosberg, M. (2005). Identification of subgroups of persons with chronic pain based on profiles on the pain stages of change questionnaire. *Pain*, 116, 302-310.
- Leventhal, H., Nerenz, D.R. and Steele, D.S. (1984). Illness representations and coping with health threats. In: Baum, A. Taylor, S.E. and Singer, J.E. (Eds.), *Handbook of psychology and health*. Vol. IV. pp. 219–252. Hillsdale, NJ: Erlbaum.
- Leventhal, H., Benyamini, Y., Brownlee, S., Diefenbach, M., Leventhal, E., Patrick-Miller, L. and Robitaille, C.(1997). Illness representations: Theoretical Foundations. In: Petrie, K.J. and Weinman, J. (Eds.), *Perceptions of health and ill-ness: Current research and applications*. pp. 19–45. Amsterdam: Harwood Academic Publishers.
- Liedl, A. & Knaevelsrud, C. (2008). PTBS und chronische Schmerzen: Entstehung, Aufrechterhaltung und Zusammenhang. *Schmerz*, 22, 644-651.
- Mayer, T.G, Barnes, D., Nichols, G., Kishino, N.D., Coval, K., Piel, B., Hoshino, D., Gatchel, R.J (1988). Progressive isoinertial lifting evaluation. II. A comparison with isokinetic lifting in a disabled chronic low-back pain industrial population. *Spine* , Sep;13(9), 998-1002.
- Moss-Morris, R., Weinman, J., Petrie, K. J., Horne, R., Cameron, L.D., & Buick, D. (2002). The Revised Illness Perception Questionnaire (IPQ-R). *Psychology and Health*. 17, 1-16.
- Ostelo, R.W., van Tulder, M.W., Vlaeyen, J.W., Linton, S.J., Morley, S.J., Assendelft, W.J. (2005). Behavioral treatment for chronic low-back pain. *Cochrane Database Syst Rev*. 2005 Jan 25;(1), CD002014.
- Prochaska, J.O. & Velicer, W.F. (1997). The transtheoretical model of health behavior change. *American Journal of Health Promotion* 12(1), 38-48.
- Sharp, T.J. & Harvey, A.G. (2001). Chronic Pain and Posttraumatic Stress Disorder: Mutual Maintenance? *Clinical Psychology Review*, 21(6), 857-877.
- Sheehan, D.V.; Lecrubier, Y.; Sheehan, K.H.; Amorim, P.; Janavs, J.; Weiller, E., et al. (1998). The Mini-International Neuropsychiatric Interview (M.I.N.I.): the development and validation of a structured diagnostic psychiatric interview for DSM-IV and ICD-10. *J Clin Psychiatry*, 59 Suppl 20, 22-33;quiz 34-57.
- Turk, D.C. & Rudy, T.E. (1990). Neglected factors in chronic pain treatment outcome studies--referral patterns, failure to enter treatment, and attrition. *Pain*, 43(1) 7-25.
- Zigmond AS, Snaith RP. The Hospital Anxiety and Depression Scale. *Acta Psychiatr Scand*, 67, 361–370.