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RESEARCH PAPER

Life satisfaction in patients with long-term non-malignant pain – relation to demographic factors and pain intensity

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Abstract

Purpose. Life satisfaction can be defined as a measure of a patient's perception of the difference between his reality and his needs or wants. Here we compare life satisfaction in patients with long-term pain to a reference group sampled from the normal population, and relate the results to pain intensity and to demographic factors.

Method. Questionnaires containing the Life satisfaction (LiSat-11) checklist, a visual analogue scale (VAS) for pain, and questions on demographic background.

Results. The prevalence of responders with low level of life satisfaction was larger among the patients than in the reference group. In particular, patients born outside Northern Europe scored significantly lower than patients born in Northern Europe in many of the LiSat-11 domains. Pain intensity did not correlate well to the level of life satisfaction, except for weak negative correlations to satisfaction with physical health and with financial situation.

Conclusion. Long-term pain is strongly associated with low life satisfaction. In order to increase life satisfaction, interventions related to social factors seem to be important.

Keywords: *Chronic pain, life satisfaction, questionnaires, demography*

Introduction

Long-term non-malignant pain conditions are a major challenge to the Swedish healthcare and national insurance systems. A recent systematic assessment [1] of published reports on treatments for long-term pain indicate that multi-professional rehabilitation programmes [2 – 7] (but see [8,9]) that contain psychological interventions and physical exercises improve physical functioning and help patients back to work, at least for some common types of pain.

In order to improve the rehabilitation strategies further we need a more in-depth description of the patients' needs. One approach is to measure Life Satisfaction. The concept of Life satisfaction (LiSat) distinctly focus on the individual's perception of the difference between his reality and his needs or wants regarding several important domains of functioning and activity/participation [10 – 13]. The LiSat questionnaire developed by Fugl-Meyer et al. [13] includes satisfaction with life as a whole, and 10 specific domains and has the advantage that it has been used in a large reference group. LiSat-11 is included in the Swedish National Quality Registry for Pain Rehabilitation (NRS) and therefore offers good opportunities for comparisons on a national level. It was shown that the 10 specific domains in LiSat-11 have four latent factors ('Closeness', 'Health', 'Spare-time' and 'Provision'). If a person is comfortable with those four factors, a high level of life satisfaction will result. There is no previous report which compares life satisfaction measured by LiSat-11 in patients with long-term pain to a reference group.

The first aim of the present study has been to investigate the level of life satisfaction with life in a

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group of patients with long-term pain, and to compare the results with earlier findings in a large reference group [13]. This includes also a test of the possibility that the four latent factors demonstrated in the reference group are applicable also to the patients. The second aim was to study the relation of life satisfaction levels in patients with long-term pain to basic demographic data such as gender, age, immigrant status, educational level, and vocational status. As a third aim we also studied the relation of life satisfaction to pain intensity. This study is the first report in a larger project with the general aim to study different aspects of the process of pain rehabilitation.

Material and methods

Subjects and drop-outs

Participating subjects were 294 consecutive patients diagnosed with long-term non-malignant pain (> 6 months), referred from regional general practitioners, company doctors and specialist clinics to the Pain and Rehabilitation Clinic, University Hospital, Uppsala, Sweden. This clinic is well established and has a long tradition in the evaluation and treatment of patients with long-term pain using multidisciplinary collaboration and approaches. The study was performed from 2002–2005. Mean duration of pain was 2344 days, SD 2264. Demographic data for patients and the reference group are shown in Table I. Inclusion criteria were: Age 18–64 years, ability to communicate in Swedish and to fill in medical questionnaires, and considered by the rehabilitation specialist to be in need of a multi-professional rehabilitation team (nurse, physician, physiotherapist, occupational therapist, psychologist, social counsellor) for their medical investigation. Patients with either depression or ongoing substance abuse so severe that they were judged to be unable to participate in the medical investigation by the rehabilitation team were excluded. Furthermore, among the excluded patients were ten patients who did not fill in the questionnaires at all. The remaining 294 subjects filled in personal

Table I. Demographic data for the reference group ($n = 2533$) and the patients ($n = 294$).

Age	Reference group		Patients	
	Mean 39.1 years, SD 12.6		Mean 38.1 years, SD 9.4	
	No.	%	No.	%
Gender				
Females	1207	47.6	193	66
Men	1326	52.4	101	34
Origin				
Raised in Northern Europe[1]	2394	94.5	unknown	unknown
Raised outside Northern Europe[1]	139	5.5	unknown	unknown
Born in Northern Europe[1]	unknown	unknown	239	81
Born outside Northern Europe[1]	unknown	unknown	49	17
Education				
Compulsory school only	483	19.1	53	18
Upper secondary school	1358	53.6	176	60
Higher education	652	25.7	51	17
Other	40	1.6		
Source of income[2]				
Salary	1763	70.0	84	27
Sickness benefit	40	1.6	220	69
Sickness pension	30	1.2	13	4
Social allowance	unknown	unknown	3	1
Main pain location[3]				
Neck	unknown	unknown	59	20
Shoulder and/or arm	unknown	unknown	38	15
Thoracic back	unknown	unknown	13	4
Lumbar back	unknown	unknown	24	8
Pain estimated by VAS scale (100 mm)[4]	unknown	unknown	mean 60.6, SD 19.3 median 62, IR 24.5	
Duration of pain			mean 2344 days, SD 2264	

[1]Northern Europe is here defined as Sweden, Denmark, Finland, and Norway; [2]Several sources of income are possible; [3]Patients were asked to answer this question only if they were able to clearly point out a single region of intense pain; [4]VAS = 100 mm Visual Analogue Scale.

demographic data, and a life satisfaction checklist (LiSat-11). The frequency of internal drop-outs was 9–25% for LiSat-11, and 0.7–4.8% for questions related to demographic background. Reference data for LiSat-11 was obtained from a previous investigation of LiSat-11 in a nationally representative Swedish population (see acknowledgements and ref [13]). From this material, we extracted persons aged 18–64, in order to comply with our patient data.

Methods

Each patient referred to the Pain Clinic received two different sets of postal questionnaires to be filled in at home; the first shortly before the initial consultation with the pain physician, and the second at the time they were investigated by the multi-professional rehabilitation team, which could take place 1–2 months later (i.e., each single questionnaire was administered only once). These questionnaires are parts of the Swedish National Quality Registry for Pain Rehabilitation (NRS). It includes socio-demographic data, The West-Haven Yale Multidimensional Pain Inventory ((WHY)MPI), the checklist LiSat-11, the Disability Rating Index (DRI), the Hospital Anxiety and Depression scale (HAD), Modified Somatic Perception Questionnaire (MSPQ), and the Visual Analogue Scale (VAS) for pain intensity. All these were answered at home and only once before the medical investigation, i.e., no 'baseline' was established. Only the socio-demographic data, the LiSat-11 checklist and the VAS scale were used in the present study.

The Life Satisfaction checklist (LiSat-11) [13,14] reflect estimations of satisfaction with life as a whole as well as satisfaction in ten specific domains: vocation, economy, leisure, contacts with friends and acquaintances, sexual life, activities of daily living (ADL), family life, partner relationship, physical health, and psychological health. The responses are given on a 6-point Likert scale: 1 = very dissatisfied; 2 = dissatisfied, 3 = rather dissatisfied, 4 = rather satisfied, 5 = satisfied, 6 = very satisfied. The answers were dichotomized into 1–4 (dissatisfied) and 5–6 (satisfied).

The Visual Analogue Scale (VAS) [15–17] for pain is a 100-mm horizontal scale requiring patients to rate their current pain intensity. The scale is anchored with endpoints labelled 'No pain' and 'Worst Possible Pain'. It has been widely used in pain research and demonstrates good reliability, validity and responsiveness in patients with chronic pain [16,17]. Pain described as 30 mm or less has been defined as weak, and pain above 70 mm is a strong pain by Kelly [15]. We chose to compare life satisfaction in patients who scored above and below

the median VAS value. We also compared life satisfaction in groups of patients who reported pain in the following intervals: VAS 0–40, 41–60, 61–80, and 81–100.

Statistics

Data analyses were made by using SPSS (Statistical Package for Social Sciences) 11.5 and LISREL 8.51 software. χ^2-tests were used to test the hypotheses of equal distributions of satisfaction and dissatisfaction with different aspects of life. The domains of life satisfaction followed an approximate normal distribution. We used parametric statistics including T-tests and analysis of variances (ANOVA) for independent groups to test the hypothesis of equal means in each aspect of life satisfaction between the different demographic groups of the referred patients. Mann-Whitney U-test was used to test the hypothesis of equal life satisfaction among those who estimated an average pain above and below the median VAS value for the group, Kruskall-Wallis for corresponding tests of groups with different VAS intervals, and Spearmen's rho non-parametric rank correlation to analyse relations between pain intensity and different LiSat-11 domains. Pearson's product-moment correlation was used to evaluate the covariance between domain specific life-satisfaction.

Fugl-Meyer et al. [13] performed an explorative principal components analysis of the responses from the 10 LiSat-11 domains obtained from the reference group. They found four 'factors' which were latent behind the responses in the different LiSat-11 domains: 'Closeness' (sexual life, family life, and partner relationship), 'Health' (ADL, physical health, and psychological health), 'Spare time' (leisure and contacts), and 'Provision' (vocation and economy). In this study, a similar assessment of LiSat-11 responses was made for patients with long-standing pain with the hypothesis that the same four latent factors affected the responses of the patients too. To test this hypothesis of equal covariance structures in the general reference group and the referred patients a Confirmatory Factor Analysis (CFA [18] was performed. Root Mean Square Error of Approximation (RMSEA) was used to analyse the fitness of factor models found in the reference group and patient sample. The significance level was set to 5%.

Ethics

A Swedish ethical committee has previously confirmed that the national use of the patient sample questionnaires in the NRS-register is in accordance with applicable legislation, and the local ethical

committee found that the design of the present study did not require further formal ethical consideration (Dnr 2004: M-381).

Results

(1) The prevalence of life satisfaction

The internal reliability of the LiSat-11 checklist was good in the patient group, Cronbach's $\alpha = 0.82$. The over all prevalence of satisfied persons was significantly larger in the reference group than in the patient group (Table II). This was valid for life as whole as well as for each of the ten domains. The largest differences between patient group and the reference group were in the domains 'physical health', 'psychological health' and 'life as a whole'. Other domains that showed clear differences were 'vocation' and 'leisure'.

Confirmatory factor analysis. Confirmatory factor analysis (CFA) of the LiSat-11 responses indicates that the covariance structure of the patients in this study is significantly different from the covariance structure of the reference group ($\chi^2_{29} = 62.48$, $p = 0.0003$). Even though the fit of the four-factor model proposed by Fugl-Meyer et al. [13] (see Methods), to the data from the responses of the present sample of patients was acceptable, it is not as good as for the reference group. Certain modifications were performed to find a model that can explain the data and can be generalised to the patient group. By permitting stronger covariance between domains 6, 8 and 9 the modified four-factor model was insignificantly different from the data ($\chi^2_{27} = 37.45$, $p = 0.09$, Table III).

(2) Life satisfaction in the patient sample: Relation to demographic variables

As the patient answers to the LiSat-11 checklist appeared to follow an approximate normal distribution using a Q-Q-plot, we used parametric statistics to test the hypothesis that no differences existed between different demographic groups. The results show that men scored lower than women only on satisfaction with economy (t = −2.58, df = 264, $p = 0.01$). Furthermore, patients born in Northern Europe scored significantly higher on satisfaction with life as whole, economy, leisure, sexual life, ADL, family life and partner relationship when compared to patients born outside Northern Europe (Table IV).

No significant effects of education (past through compulsory school, secondary school, or higher education) on satisfaction with any LiSat-11 domain were shown (one-way ANOVA). No significant differences were shown between age groups. As expected, working respondents were more often satisfied with vocation (t = 4.64, df = 233, $p = 0.00$), and economy (t = 4.66, df = 244, $p = 0.00$) than those who did not work.

(3) Life satisfaction in the patient sample: Relation to pain intensity

We first compared LiSat in patients reporting pain intensity above and below VAS 62 (median value). None of the LiSat-11 domains or satisfaction with life as a whole were found to be statistically different between these two patient groups, except physical health (Mann-Whitney U-test, $p = 0.028$). We then divided the patients into four groups after reported pain intensity: VAS 0–40, VAS 41–60, VAS

Table II. LiSat-11 scores in the reference group and in the patient group.

LiSat-11 domains	Reference group (n = 2533)		Patients (n = 294)		χ^2	p
	Satisfied %	Dissatisfied %	Satisfied %	Dissatisfied %		
Life a whole	70	30	21	78	277.5	<0.001
Vocation	54	46	11	89	197.3	<0.001
Economy	39	61	19	81	45.7	<0.001
Leisure	57	43	12	88	209.8	<0.001
Contacts	65	35	32	68	121.4	<0.001
Sexual life	56	44	28	72	83.4	<0.001
ADL	95	5	44	56	153.0	<0.001
Family life	81	19	59	41	75.9	<0.001
Partner relationship	82	18	64	36	55.2	<0.001
Physical health	77	23	7	93	608.9	<0.001
Psychological health	81	19	28	72	402.3	<0.001

The prevalences in the reference group were set to 100% in all domains (drop-outs in single domains are not shown), and expressed as percent of all responses in the patients. Chi-square test of equal number of persons satisfied (LiSat-11 score 5 and 6) vs. dissatisfied (LiSat-11 score 1–4). LiSat-11 = Life Satisfaction checklist. ADL = Activity of Daily Living. χ^2 = Chi-two analysis. p = p-value.

Table III. Confirmatory factor analysis of LiSat-11 in the patient group.

Model	χ^2	df	p	RMSEA
1. Four factor	62.48	29	0.000	0.08
2. Modified four factor	37.45	27	0.09	0.05

RMSA, Root Mean Square Error of Approximation. Model 1: Four factor model suggested by Fugl-Meyer 2002 [13]. Model 2: Correlated four-factor model (see text). RMSEA: acceptable below 0.08, excellent fit below 0.05. $\chi^2 =$ Chi two analysis. df = degrees of freedom. $p = p$-value.

Table IV. Differences in LiSat-11 scores between patients born in and outside Northern Europe.

LiSat-11 domains	t	df	p
1 Life as a whole	−2.39	258	0.02
2 Vocation			n.s.
3 Economy	−2.14	261	0.03
4 Leisure	−2.56	259	0.01
5 Contacts with friends and acquaintances			n.s.
6 Sexual life	−1.97	246	0.05
7 ADL	−2.75	261	0.01
8 Family life	−3.57	220	0.00
9 Partner relationship	−5.04	259	0.00
10 Physical health			ns
11 Psychological health			ns

ns, not significant; LiSat-11, Life satisfaction checklist; ADL, Activity of Daily Living; df = degrees of freedom; t = t-value; $p = p$-value.

61–80, and VAS 81–100, and compared LiSat-11 domains between the groups. The only domains found to be slightly different between these groups were satisfaction with financial situation and with physical health (Kruskall-Wallis test). Third, similar but only minimal associations were found when we tried to correlate pain intensity to patient scores on individual LiSat-11 domains (Spearman's rho non-parametric rank correlation, Table V).

Discussion

The general results of this study were: (a) The overall prevalence of dissatisfied persons was significantly larger among the patients than in the reference group, (b) the internal structure of the LiSat-11 profile was similar among patients and in the reference group, (c) the association between LiSat-11 and demographic factors was most obvious for patients born outside Northern Europe who scored significantly lower than patients born in Northern Europe on most LiSat-11 domains, and (d) the only LiSat-11 domains that weakly correlated to pain intensity were financial situation and physical health (negative correlation).

Table V. Spearman's rank correlations between scores on each Lisat-11 domains and estimation of pain (VAS).

LiSat-11 domains	Spearman's rho
1 Life as whole	−0.101
2 Vocation	−0.066
3 Economy	−0.197
4 Leisure	−0.087
5 Contacts with friends and acquaintances	−0.058
6 Sexual life	0.018
7 ADL	−0.116
8 Family life	−0.014
9 Partner relationship	−0.014
10 Physical health	−0.137
11 Psychological health	−0.072

Methodological considerations

The inclusion criteria in this investigation conform well to inclusion criteria for a general rehabilitation team. Patients with severe depression or substance abuse were considered to be unable to benefit from rehabilitation and were referred elsewhere for suitable medical care. We do not know the number of patients excluded for these reasons even though our impression is that they were very few. More than 20% among the LiSat-11 drop-outs did not respond to questions about family life and partner relationship, which is a higher frequency than the other of the dropouts, which were closer to 10%. It is likely that many in this subgroup did not engage in family life or partner relationship at the time the questions were answered, but we did not examine this possibility. The internal drop-out on LiSat-11 domains among the patients was larger than in the reference group. This is possibly due to the patient's perception of the situation (being in a bad mood due to pain or unwillingness to disclose personal conditions). A substantial number of patients were unable to point out an isolated region of intense pain (see Table I). These patients probably had widespread pain.

The reference group for LiSat-11 [13] used in the present study differed from the patient group in several aspects. First, whereas only 5.5% of the reference group were raised outside Northern Europe, more than 17% of the patients were born outside Northern Europe (here defined as Sweden, Denmark, Finland, and Norway). The reference group and the patients are not directly comparable due to differences in the way their origins were defined. Thus, whereas persons from outside Northern Europe in the reference group were described as 'raised outside Northern Europe', the patients gathered from the NRS registry from outside Northern Europe were described as 'born outside Northern Europe'. The significance of this

difference is unclear. It is possible that those born outside Northern Europe meet more difficulties in significant aspects of life compared to those born in Northern Europe (as defined above), and that this may have lowered the total level of life-satisfaction in the patient group for other reasons than pain. In support of this, we found that patients born outside Northern Europe scored lower on life satisfaction than patients born within Northern Europe. We did not compare the reference group with patients born in Sweden in this study. Second, it is important that the reference group used in this study cannot be considered as a non-pain control group as about 18% of the normal Swedish population report 'chronic' pain [19]. Provided that the Swedish population is comparable to that of the Northern Europe used in this study, this feature is likely to have lowered the difference found in the present study to some extent.

In this study, like in previous studies [13,20,21], the LiSat-11 scores were dichotomized into satisfied (grades 5 – 6) and not satisfied (grades 1 – 4). Indeed, the results might have been different if the cut-off had been set at a lower level. We did not check this possibility.

LiSat-11 and quality of life

There is little previous information on life satisfaction in patients with long-term pain. Early studies [22,23] indicate that pain, social support and internal control over health are associated with lowered life satisfaction, using partly other definitions of the concept and instruments based on the Cantril's [24] Self-Anchoring Striving scale, a 10-step ladder, and on the Life Satisfaction in the Elderly Scale (LSES) [25]. There is also a study by Peolsson and Gerdle [26] who used LiSat-11 as one of several methods to describe the complex relation between coping strategies and health-related quality of life in patients with chronic whiplash-associated disorder.

Several studies have shown that long-term pain is associated with low health-related quality of life in physical, psychological and social domains, using instruments such as the Medical Outcomes Study Short Form (SF-36) [27 – 29], Sickness Impact Profile (SIP) [30], and Nottingham Health Profile (NHP) [31].

This study shows that also life satisfaction is much lower in patients with long-term pain using the LiSat-11 instrument. This instrument is well suited to define the difference between ones subjective reality and ones needs or wants, the 'goal achievement gap' [32]. This focus on basic human values makes it attractive as a possible evaluation method and an outcome measure in a rehabilitation program for long-term pain.

LiSat-11 scores in the patient sample as compared to the reference group

The overall prevalence of dissatisfied persons was significantly larger among the patients than in the reference group. This finding is in accordance to earlier studies, confirming the severe multidimensional impact of long-term pain [26,28,33]. The largest differences in this study between patients and the reference group were in the domains 'physical health' and 'psychological health' for which more patients expressed dissatisfaction. Also, 'life as a whole', 'vocation', and 'leisure' showed great difference in life satisfaction between these two groups. The subjective nature of life satisfaction implies that the patient respondents perceived their own health, their working and leisure conditions and the other areas of life, as bad. We cannot exclude, however, that even without pain, patients might have scored lower than the reference group on those domains, perhaps as a result of a concomitant mood disorder.

We also confirmed the hypothesis of four latent factors behind life-satisfaction ('Closeness', 'Health', 'Spare time', 'Provision'), suggested by Fugl-Meyer et al. [13], although the internal correlation was stronger in their material. This implies that life satisfaction is a stable construct and that pain patients in general, show a lower but structurally similar pattern of satisfaction with life domains compared to the general population. The finding that patients scored all Li-Sat domains and 'life as a whole' lower than the reference group indicates that also the four latent factors were lower and therefore that they also should be possible to use for evaluation or outcome measurements.

The results of the present study show an association between long-term pain and low life satisfaction, but they say little about causality. It could be that the patients had low life satisfaction before the pain started, and were particularly prone to develop long-term pain. If so, then low life satisfaction would be a predictor rather than a consequence to long-term pain. Furthermore, we did not separate different pain diagnoses in the present study. It could be that the LiSat-11 pattern differs between for instance low back pain and generalized pain.

Association of LiSat-11 domains to demographic factors

We also related the results from the LiSat-11 in patients with long-term pain to basic demographic factors. Only one of these variables was of significant importance; patients born in Northern Europe had a higher level of life satisfaction than patients born outside Northern Europe (for definition, see Materials and methods). This was obvious particularly in the domains 'family life' and 'partner relationship',

perhaps attributed to interactions with other psycho-social factors such as living conditions, economy and vocational situation. These results are in accordance with those of Fugl-Meyer et al. [13] who showed that being a first-generation immigrant is a general risk factor for a relatively low level of satisfaction with life.

Another observation was that men scored lower than women on satisfaction with economy. This may be related to the traditional notion that men are responsible for the financial support to the family. Age and education did not contribute significantly to the level of life satisfaction in the present material. In an earlier study of the reference group [13] life satisfaction was not associated to gender, while age was systematically and positively associated with both vocational and financial satisfaction.

Association of LiSat-11 domains to pain intensity

The importance of long-term pain only for life satisfaction was not possible to evaluate in the present study due to the absence of a no-pain control group (see above). However, a finding likely to be important, is that patient's pain-estimation on VAS above or below 62/100 mm had no bearing on life satisfaction with any of the LiSat-11 domains, except for physical health. In order to study this matter further, we divided the patients in four groups with increasing VAS-intervals of reported pain intensity. We did not find correlations between pain intensity and any of the LiSat-11 domains, except for a slight and probably clinically irrelevant correlation to satisfaction with financial situation and with physical health, which became less with increased pain intensity. Furthermore, the patients described the pain intensity in a questionnaire on only one occasion, and at an unknown time of the day. Therefore, we do not know to what extent the VAS given corresponds to a baseline value based on several measurements on several days. It could be that the VAS measured on one occasion in this study was influenced by for example ongoing painful activity or stress and that another VAS would have been reported if the patient was resting. This, too, could explain parts of the lack of correlation between pain intensity and life satisfaction, found in this study.

The finding that increased pain might be associated with lower satisfaction with physical health is not surprising. We cannot, however, explain why increased pain should be associated with lower satisfaction with the financial situation. One may speculate that increased pain is linked to a level of higher sick leave and therefore a lower income, or that increased pain is linked to more worries about the economy in the future perspective.

Furthermore, it is possible that the relation of pain intensity to satisfaction with life changes with time after the pain started. Provided that the pain intensity remains fairly constant, it could either be that the satisfaction with life becomes reduced when the hope for relief vanishes and depression perhaps sets in, or that it increases if the individual succeeds in finding a way to adapt to the situation. We did not explore this possibility further in this study.

The results show that other characteristics of pain than intensity have important bearing on LiSat, perhaps even more. Peolsson and Gerdle [26] reported that for patients with whiplash-associated disorder, a mixture of symptoms including pain, depression, coping (catastrophizing) contributed to low health-related quality of life, using LiSat-11 as one of several instruments. We will report further on the relation of pain intensity and other implications of pain using the Multidimensional Pain Inventory to LiSat-11 in a study in preparation.

Clinical implications

The results indicate that patients with long-term non-malignant pain generally have a very low level of life satisfaction compared to the normal population. However, within this group, the intensity of pain is a bad indicator of the level of life satisfaction. This emphasizes the importance of interventions for patients with long-term pain but also that pain intensity does not necessarily indicate those with the highest needs, at least if an increased life satisfaction is the goal. The findings that life satisfaction does not correlate well to pain intensity does not, however, exclude that interventions to reduce pain may increase life satisfaction for the individual.

Furthermore, we cannot answer the question whether long-term pain gives rise to lowered life satisfaction, or if persons with low life satisfaction are more prone to develop long-term pain. Low level of life satisfaction is not necessarily bad for the individual. It could be the generator of actions to improve the situation in life, provided that strategies and resources are available. The results indicate that social factors like economy and demographic factors including problems linked to being born in a foreign country are important contributors to low life satisfaction and may be areas where the individual has difficulties to improve the situation. Thus, difficulties like those may contribute to the generation of long-term pain as a feature of somatisation. It has previously been shown that the outcome of a rehabilitation programme differs in certain respects between immigrants and native Swedes [34]. An important goal of rehabilitation is to increase the repertoire of resources and strategies for improvement for the individual. Social factors

should therefore perhaps be considered more, both in clinical investigations and in the designing of rehabilitation programmes for long-term pain.

LiSat-11 has previously been used as an outcome measure after treatments for erectile distress [35] and traumatic brain injury [36]. Further studies will hopefully reveal if LiSat-11 can be used as an outcome measurement in rehabilitation programmes for long-term pain, either as individual domains or as groups of associated domains (the four latent factors or modifications of these: 'Closeness', 'Health', 'Spare time', and 'Provision'.

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