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Life satisfaction in patients with chronic musculoskeletal pain and its predictors

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Abstract

Purpose To determine the life satisfaction of patients with chronic non-malignant musculoskeletal pain (CMP) compared to the general population (GP) and to identify predictors of life satisfaction.

Methods Subjects were patients with CMP ($n = 1,082$) admitted to multidisciplinary rehabilitation and a general population sample ($n = 506$). Lisat-9 measures satisfaction with life as a whole and eight life domains. Physical, emotional and social functioning and pain intensity were assessed using the SF-36. Ordinal logistic regression was used to analyse differences between patients with CMP and the GP, and predictors of life satisfaction in patients with CMP.

Results Compared to the general population, patients with CMP reported lower satisfaction with 'life as a whole', and with six life domains: self-care, leisure, vocational and financial situation, sex life and contacts with friends. In the CMP group, pain was associated with satisfaction with self-care, vocational situation, partnership, family life and contacts with friends. Marital status, age and mental health were associated with most satisfaction scores.

Conclusions Compared to the general population, patients with CMP reported lower satisfaction with 'life as a whole' and most life domains. The most consistent predictors of life satisfaction were marital status, mental health, vitality and pain.

Keywords Life satisfaction · Musculoskeletal pain · Quality of life

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Abbreviations

95% CI	95% confidence interval
AIC	Akaike information criterion
Be	Benefit
CI	Confidence interval
CMP	Chronic non-malignant musculoskeletal pain
Ed	Education
Ge	Gender
GP	General population
HRQOL	Health-related quality of life
Lp	Living with partner
Mh	Mental health
Ms	Marital status
OR	Odds ratio
Pr	Physical role
SD	Standard deviation
SF-36	Short form (36) health survey
St	Student
Vit	Vitality

Introduction

Life satisfaction is a subjective part of the quality of life and concerns a person's feelings about their functioning and circumstances [1–3]. The concept of life satisfaction differs from that of health-related quality of life (HRQOL) [4, 5], in that the term HRQOL refers to the biopsychosocial conception of health used by the World Health Organisation [6, 7] and includes physical, mental and social aspects of health. In contrast, definitions of subjective quality of life equate quality of life with concepts like well-being, happiness or life satisfaction [4, 8, 9].

Since it is an important goal of rehabilitation that persons with disabilities secure or restore happiness [10], studying life satisfaction is important for rehabilitation medicine. Life satisfaction has been intensively studied in many patients groups encountered in rehabilitation medicine, especially patients with spinal cord injury [3, 10–20]. To our knowledge, however, it has scarcely been studied among patients with chronic pain [21–23]. Although both Brox et al. [21] and Heikkilä et al. [22] found low life satisfaction in their study groups, one [21] used only a single item measure, while the other [22] lacked a control group. The main disadvantage of using a single item measure is that it does not yield information on satisfaction with the domains of life, for example self-care, partnership and job situation, while the lack of a control group makes it impossible to establish the magnitude of the difference. Silvemark et al. [23] studied the relationship between life satisfaction levels, basic demographics and pain intensity, but did not examine associations with disability.

The aims of the present study were to determine life satisfaction among patients with chronic musculoskeletal pain (CMP) and compare it with the life satisfaction in the general population (research question 1), and to identify predictors of life satisfaction specifically for patients with CMP (research question 2). We hypothesised that life satisfaction in patients with CMP would be lower than in the general population, for all domains. We aimed to answer the second research question by examining the associations between HRQOL (physical, emotional and social factors), demographic factors and pain levels on the one hand, and life satisfaction on the other. Knowledge about predictors could help clinicians develop effective treatments to increase life satisfaction in patients with CMP.

Materials and methods

Patients

The study sample consisted of patients who participated in a project assessing the outcome of rehabilitation in patients with CMP at the 'Revalidatie Friesland' rehabilitation centre and whose treatment started between September 2003 and October 2010. This rehabilitation centre is situated in the north of the Netherlands and consists of four sites offering outpatient rehabilitation programmes and one site offering an inpatient rehabilitation programme. Inclusion criteria were age over 18 years, non-malignant musculoskeletal pain that had been present for more than 3 months and admission for an inpatient or outpatient rehabilitation programme. Exclusion criteria were insufficient command of Dutch, co-morbidity with serious negative consequences for physical functioning and unwillingness to provide data for research purposes. All eligible patients received questionnaires by post prior to or in the first 2 weeks of the treatment, with a pre-paid envelope to return the questionnaire to the secretary of the outcome project. A reminder was sent after 2 weeks to those who failed to respond. The cover letter guaranteed confidentiality by explaining that the data would be treated anonymously. Out of 1,852 patients, 1,110 returned the questionnaire (response rate: 60%). Twenty-three patients did not give permission to use their data for research purposes. Five patients had missing data on all scores of the life satisfaction questionnaire (see methods). In the end, 1,082 patients were included in the analysis.

Population sample

A random sample of 1,200 persons aged between 18 and 65 years was drawn from the municipal register of the city of Utrecht in 1997 [12, 13]. The study in the general population (GP) was presented as an explorative study on the perceived health and life satisfaction of Utrecht citizens. The questionnaire was sent through the Utrecht Municipal Health Service and was accompanied by an introductory letter from the health service, an introductory letter from Utrecht University and a pre-paid envelope to return the questionnaire to Utrecht University, guaranteeing anonymity. The respondents were offered a small reward for their participation (about €5). No reminder was sent. The response rate was 42% ($n = 506$), which is in line with that reported by other research using this method [24]. Women were overrepresented in the response group (58%, against 52% for the whole population of Utrecht, according to figures provided by the municipal authorities), but their age distribution did not differ from that of the total city population.

Ethics

The study was performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki.

All included persons gave permission for use of their data for research purposes.

Instruments

Life satisfaction was assessed by means of the Dutch version of Lisat-9 [12]. Lisat-9 includes one question about general life satisfaction and eight questions about specific life satisfaction for the domains of 'self-care ability', 'leisure situation', 'employment situation' (including home-making), 'financial situation', 'sex life', 'relationship with partner', 'family life' and 'contacts with friends and acquaintances'. All questions have to be answered on six-point Likert scales (1 = very dissatisfied, 6 = very satisfied). An answer category 7 = 'not applicable' was introduced for the domains of 'relationship with partner' and 'family life', to match the answer categories of 'have no steady partner relationship' and 'have no family' in the original Lisat-9 [10]. Lisat-9 is reliable for use in patients with CMP [25].

Patients' and control subjects' characteristics were assessed by means of a questionnaire including questions about age (in years), gender, marital status (married or living together; single), educational level (eight levels, from primary school up to university), being employed, being a student and receiving a benefit (e.g. social benefit and unemployment benefit). The patients with CMP were also asked where their main painful areas were located and how long the current complaints had existed. This information about pain location or duration of the pain complaints was not obtained from the respondents in the GP sample who reported to have pain. Missing data from patients with CMP were completed, as far as possible, with data retrieved from the medical files.

Physical, emotional and social functioning and pain intensity were assessed using the SF-36. This instrument includes 36 questions and measures 8 dimensions: physical functioning, social functioning, physical role restriction, emotional role restriction, mental health, vitality, pain, general health and health change [26]. Scores range from 0 to 100 for each dimension, and a lower score means more disability or more pain. In view of the research questions we had formulated, we did not use the domains of 'general health' and 'health change' in our analyses.

Statistical analysis

Demographic characteristics are presented as mean and standard deviation (age) or median and quartiles or percentages (other variables). Since the duration of current complaints and the Lisat-9 and SF-36 data were ordinal and/or had a skewed distribution, medians and quartiles

were calculated. To enable comparison with other studies, we also present means and standard deviations for the duration of complaints, satisfaction scores, SF-36 scores and the percentages of satisfied respondents. Respondents with scores of 5 or 6 on the Lisat-9 were considered satisfied [10]. Differences between the general population and patients with CMP in terms of age, gender, marital status, educational level, employment, being a student and benefit status were analysed by means of Student's t test (age) and Pearson's chi-square test (other variables). Differences in SF-36 domains were tested by means of the Mann–Whitney U test.

Ordinal logistic regression (generalised linear model) was used for both research questions. Although we used the same type of analysis for both research questions, the model used for question 1 can be regarded as an association model, while that used for question 2 was a prediction model. The association model assessed the effect of one specific determinant (i.e. CMP) on life satisfaction, while the main outcome of the analyses for research question 2 was the identification of predictors.

Research question 1 (comparison of the life satisfaction scores between patients with CMP and the general population) was answered by performing nine analyses, using a different Lisat-9 domain as the dependent variable in each analysis. We calculated the unadjusted and adjusted odds ratios (OR). Although the adjusted ORs show the association adjusted for the confounders in the model and therefore reflect the true association more closely, we also present the unadjusted ORs to allow data from other studies to be compared with ours. The group variable (GP versus CMP) was included as an independent variable, and demographic characteristics were included as potential confounders in each analysis. Age was included as a scale variable. The following variables were dichotomised: marital status (single (0) versus married or living with a partner), non-student (0) versus student and unemployed (including students and homemakers) (0) versus employed. Educational levels were trichotomised: low (primary school or lower vocational education) (0), intermediate (lower level secondary school or intermediate vocational education) (1) and high (pre-university education and up, including university students) (2). The respondents in the GP and CMP groups differed in terms of the demographic variables, and a percentage of the respondents in the GP sample also reported that they had pain complaints (see 'Results' section). Subjects with pain in the GP sample may be similar in some respects to the patients with CMP, which may obscure the differences between the two groups. The differences in demographic characteristics between the groups may not be sufficiently corrected by the regression analysis. We therefore did a subgroup analysis in which we matched those respondents in the GP sample

who had no substantial pain (SF-36 pain score 90 or above) with the CMP sample in terms of the two variables that were found to be the predictors of satisfaction in most domains, viz. age and marital status (see 'Results' section and Table 3). We argued that finding similar results in the sub-analysis and the main analysis would strengthen the results of the main analysis.

Nine analyses were performed to answer research question 2 (identifying predictors of life satisfaction of patients with CMP), using a different Lisat-9 domain score as the dependent variable in each analysis. This analysis included only the patients with CMP. Demographic characteristics and SF-36 scores were included as independent variables. Gender, age, marital status, being a student and being employed were dichotomised and the educational level trichotomised as above. Age and SF-36 domain scores were included as scale variables. The Akaike information criterion (AIC) was calculated for each model, as a measure of the relative goodness of fit.

The strength of the associations between the independent variables and the Lisat scores (i.e. the dependent variables) was calculated using adjusted ORs. All potential confounders or predictors were kept in the model that was used in the ordinal logistic regression.

Missing values for SF-36 item scores were replaced by the mean value of the respondent's other scores for that particular domain. The score for a particular domain of the SF-36 was labelled 'missing' if half or more of the questions of that domain had not been answered, with the exception of the pain domain, for which a missing value was recorded only if both questions of this domain (i.e. the scores of the pain domain being calculated from two questions) had not been answered. Missing data for other questions were not replaced.

Level of significance was set at $p \leq 0.01$, two-tailed, for all analyses, and all data were analysed using SPSS, version 18.0.

Results

Patient and population characteristics are summarised in Table 1. Compared to the GP sample, the CMP patient group included fewer students (3 versus 20%), men (29 versus 42%) and singles (24 versus 49%) and more people with a lower or intermediate education (78 versus 41%) and persons receiving a benefit (50 versus 26%). SF-36 scores were lower in the CMP patient group. Thirty-six per cent of the respondents in the GP sample reported substantial pain (score < 90), while all respondents in the CMP patient group reported substantial pain. The sum of the percentages of respondents who were employed were receiving a benefit or were students were higher than 100%

in both groups, because people can have a part-time job or be a student and also receive a benefit.

Table 2 presents the results of the ordinal regression analyses focusing on possible differences in life satisfaction scores between the GP sample and the patients with CMP (research question 1). Compared to the general population, patients with CMP reported lower satisfaction with 'life as a whole' and six life domains, similar satisfaction with family life and higher satisfaction with partnership. The subgroup analysis including only those respondents in the GP sample who had no substantial pain, matched with patients with CMP in terms of age and marital status ($n = 648$, mean age in both groups 34 years, 51% single), showed that the medians of the Lisat scores in these two groups were the same as those for the respondents in the main analysis. The differences in Lisat scores between the GP sample and the patients with CMP in the subgroup analysis, represented by the adjusted ORs, were significant ($p \leq 0.01$), except for satisfaction with family life (p-value 0.39) and with the financial situation (p-value 0.073).

Table 3 shows the predictors of life satisfaction for the patients with CMP (research question 2). Only significant associations (i.e. adjusted odds ratios) are shown. Due to the missing data and listwise deletion, the analysis included fewer respondents per satisfaction score than the total number of respondents. Several demographic variables and SF-36 scores were associated with satisfaction with 'life as a whole' as well as with the individual domains, to varying degrees. Physical functioning and physical role were associated with domains that involve physical aspects. Mental health influenced the largest number of satisfaction scores; it was associated with all but three of the domains (viz. self-care, job situation and family life). Pain was associated with the domains of self-care, job satisfaction, partnership, family life and contacts with friends (Table 3). Patients with more pain were likely to be less satisfied with self-care and job situation, but more satisfied with partner relationship, family life and contacts with friends. Although the ORs were nearly equal to 1, the associations reached the significance level.

Discussion

Our hypothesis that life satisfaction among patients with CMP would be lower than that in the GP was largely confirmed. Whereas the life satisfaction score for the 'family life' domain was found to be unrelated to chronic pain, scores for 'life as a whole' and for six of the other domains were found to be lower in patients with CMP compared to the GP sample. By contrast, patients with CMP were actually found to be more satisfied with

Table 1 Characteristics of patients with CMP ($n = 1,082$) and a sample from the general population ($n = 506$) with regard to demographics, functioning (domains of SF-36), pain intensity (SF-36 score) and duration of current complaints

	Patients with CMP		General population		*p*-value
Characteristics		*n*		*n*	
Age (years; mean (SD), range)	44 (13,18–84)	1,082	35 (12,19–68)	503	<0.001*
Male %	29	1,082	42	504	<0.001**
Marital status: % married or living with partner	76	1,081	51	502	<0.001**
Education level					
% low	30		24		<0.001**
% intermediate	48	1,077	17	491	
% high	22		59		
Employed (% yes)	60	1,072	65	500	0.09**
Student (% yes)	3	1,071	19	500	<0.001**
Benefit (% yes)	50	1,080	26	492	<0.001**
Location of pain (%)					
Back	37				
Neck	11				
Other (mostly widespread pain)	52				

	Median (quartiles)	Mean (SD)	*n*	Median (quartiles)	Mean (SD)	*n*	*p*-value
Functioning (SF-36 scores in %, median score (quartiles); mean (standard deviation))							
Physical functioning	45 (30–65)	46.1 (22.4)	1,061	95 (90–100)	90.6 (16.6)	506	<0.001***
Social functioning	50 (38–75)	55.2 (27.0)	1,067	88 (75–100)	81.9 (21.7)	506	<0.001***
Physical role	0 (0–25)	13.6 (25.5)	1,055	100 (75–100)	81.5 (33.8)	506	<0.001***
Emotional role	67 (0–100)	53.0 (44.1)	1,038	100 (67–100)	76.7 (36.3)	506	<0.001***
Mental health	68 (52–80)	65.8 (18.2)	1,056	76 (64–84)	80.0 (16.1)	505	<0.001***
Vitality	40 (30–55)	41.4 (19.7)	1,056	65 (50–75)	62.7 (17.6)	504	<0.001***
Pain	33 (22–45)	36.4 (17.7)	1,065	100 (78–100)	85.7 (20.4)	506	<0.001***
Duration of current complaints in years							
Mean (standard deviation)	4.9 (6.2)		1,072				
Median (quartiles)	2.2 (1.0–6.0)						

* Students' *t* test, ** Pearson chi-square test, *** Mann–Whitney U test

partnership than respondents from the general population sample. Although pain may change some aspects of the relationship with one's partner and family members [28], it has no negative impact on satisfaction with these relationships. It is likely that emotional aspects such as love and affection dominate a person's feelings towards their partner and family. Patients with CMP may become more focused on their partners because outdoor activities are reduced and they may experience greater affection from their partners because of their health situation, which may explain their higher satisfaction.

The unadjusted and adjusted ORs were largely comparable. One difference deserves discussion. The univariate analysis seemed to show that subjects belonging to the CMP group were likely to be more satisfied with family life than those belonging to the general population, and the multivariate analysis showed that subjects belonging to group the CMP group were *not* likely to be

more satisfied with family life. Because in the univariate analysis potential confounders were not included, it does not reflect the true association. The unadjusted ORs were presented to allow data from future studies to be compared with ours.

Since the GP sample and the patients with CMP differed in terms of demographic characteristics, we used multivariate analysis to correct for these differences. Whether this correction was sufficient remains unclear, so the findings about differences in life satisfaction between patients with CMP and the GP sample have to be interpreted with some caution. Our subgroup analysis, which included only those respondents in the GP group who had no substantial pain complaints and matched with patients with CMP in terms of age and marital status, found the same significant differences between the GP sample and the patients with CMP, except for satisfaction with the financial situation. This supports the findings of the main analysis. Although

Table 2 LiSat-9 scores for a sample of patients with chronic musculoskeletal pain (CMP, $n = 1,082$) and a sample from the general population (GP, $n = 506$): median (quartiles), mean (standard deviation) and percentage satisfied (score 5 or 6)

	CMP median (quartiles)	Mean (SD)	% satisfied	n	GP median (quartiles)	Mean (SD)	% satisfied	n	OR (95% CI) unadjusted		OR (95% CI) adjusted	
Life as a whole	4 (3–5)	4.0 (1.3)	41	1,025	5 (4–5)	4.7 (1.0)	67	503	2.8	(2.4–3.4)	2.4	(1.9–3.0)
Self-care ability	5 (4–5)	4.4 (1.3)	46	1,028	6 (6–6)	5.7 (0.8)	94	506	13.5	(10.5–17.4)	10.4	(7.8–13.8)
Leisure situation	4 (3–5)	3.7 (1.3)	28	1,019	5 (4–5)	4.8 (0.9)	69	505	5.3	(4.4–6.5)	4.7	(3.7–6.0)
Vocational situation	3 (2–4)	3.0 (1.4)	18	995	5 (4–5)	4.4 (1.3)	60	499	6.6	(5.3–8.2)	5.6	(4.4–7.2)
Financial situation	4 (3–5)	4.1 (1.4)	47	1,018	5 (4–5)	4.3 (1.3)	52	504	1.3	(1.1–1.6)	1.5	(1.2–1.9)
Sex life	4 (3–5)	3.9 (1.5)	41	915	5 (3–5)	4.3 (1.4)	53	494	1.6	(1.4–2.0)	1.6	(1.2–2.0)
Partner relationship[a]	5 (5–6)	5.2 (1.0)	82	823	5 (4–6)	4.7 (1.4)	68	481	0.5	(0.4–0.6)	0.7	(0.5–0.9)
Family life[a]	5 (5–6)	5.0 (1.1)	77	779	5 (4–6)	4.7 (1.2)	68	475	0.6	(0.5–0.7)	0.8	(0.6–1.1)
Contacts with friends	5 (4–5)	4.6 (1.2)	61	1,033	5 (4–6)	4.9 (1.0)	75	504	1.8	(1.5–2.1)	1.7	(1.3–2.1)

Unadjusted and adjusted odds ratios ((OR) with 95% confidence interval (95% CI)) of the associations between Lisat scores and sample (CMP versus GP) (with demographic variables used as potential confounders, ORs not shown)

[a] Answer category 'not applicable' is missing data

the satisfaction with financial situation differed between the two groups (median 5, mean 4.3 for GP; median 5, mean 3.7 for CMP), the *p*-value did not reach the significance level in the subgroup analysis. This may be due to a type 2 error, because the main analysis yielded smaller differences between the two groups (mean Lisat score 4.3 for GP vs. 4.1 for CMP), but the *p*-value did reach the significance level, probably because of the larger number of respondents included in the analysis.

The life satisfaction score we found for our GP sample is similar to that reported in other studies [29]. The lower life satisfaction score among patients with CMP is also in agreement with the results reported by others [21], but they assessed life satisfaction on a numerical scale in a single item measure (0–10), so their results cannot be directly compared with ours. Silvemark et al. [23] studied patients with CMP and observed a lower satisfaction with 'life as a whole' as well as for all Lisat domains. Their findings are contradicted by our observation that satisfaction with family life was equal and satisfaction with partnership was higher in patients with CMP compared to the general population sample. The differences between the findings may be explained by cultural differences or differences in study population characteristics. The negative impact of pain on life satisfaction has not only been observed in comparisons between patients with CMP and the general population, but also for patients with pain due to stroke [3] or due to spinal cord injury [19, 27, 30]. Since pain seems a strong predictor of life satisfaction, it is important that all

studies of predictors of life satisfaction, regardless of the patients' diagnosis, include pain in their models.

The second research question was to identify predictors of life satisfaction specifically for patients with CMP. Several variables affected life satisfaction in these patients. No overview of variables associated with life satisfaction is available in the literature, making comparisons with other studies difficult. Not all statistically significant associations are also clinically relevant, however, and it might depend on the clinical situation, which ones are and which ones are not. A look at the results clearly shows that demographic factors are much less often associated with life satisfaction than self-reported health, lower self-reported health being associated with lower life satisfaction. Several domains of HRQOL were strongly associated with lower satisfaction; for example, the domains of leisure and job situation. An explanation for this may be that leisure and occupational activities are mostly complex and both requires good physical and mental health.

Pain was not a predictor of satisfaction with 'life as a whole', leisure, financial situation or sex life. Satisfaction was not influenced by pain, but by the consequences of pain.

Age was associated with the satisfaction scores for four domains. While older patients were generally more satisfied than younger respondents, this was not the case for sex life. This is plausible in view of declining physical and sexual functioning with age. The odds ratio of the association between pain and partner relationship was below one,

Table 3 Adjusted odds ratios (with 95% confidence intervals) of the significant associations of demographic characteristics, physical, social and emotional factors and pain with Lisat scores, and AIC as a measure of relative goodness of fit

	Life as a whole	Self-care	Leisure	Job situation	Financial situation	Sex life	Partner relationship	Family life	Contacts with friends
N	993	996	993	974	986	894	804	760	1,000
Demographic characteristics									
Gender — Female (0)/male									
Benefit — No (0)/yes				1.76 (1.37–2.26)	1.72 (1.33–2.22)				
Marital status — Single (0)/married or living together	0.68 (0.50–0.91)				0.36 (0.27–0.48)	0.42 (0.30–0.59)	0.30 (0.18–0.49)	0.29 (0.19–0.44)	
Employed — Not employed (0)/employed	0.68 (0.51–0.90)	0.60 (0.46–0.79)			0.51 (0.39–0.67)				
Education — Low (0)/intermediate [1]/high [2]									1.60 (1.14–2.25)/1.28 (0.97–1.70)
Age				1.02 (1.01–1.03)	1.03 (1.02–1.04)	0.98 (0.97–0.99)			1.02 (1.004–1.03)
Student — Not a student (0)/student		0.32 (0.16–0.62)							
Physical, social and emotional factors, pain (SF-36 scores)									
Physical functioning		1.04 (1.03–1.05)							
Social functioning			1.02 (1.01–1.03)				1.01 (1.006–1.02)	1.01 (1.005–1.02)	1.02 (1.01–1.03)
Physical role			1.01 (1.004–1.02)	1.01 (1.001–0.013)					
Emotional role									
Mental health	1.05 (1.04–1.06)		1.02 (1.01–1.03)		1.02 (1.015–1.03)	1.03 (1.02–1.04)	1.02 (1.01–1.03)		1.02 (1.01–1.03)
Vitality	1.01 (1.003–1.02)			1.01 (1.003–1.02)	1.01 (1.006–1.02)	1.01 (1.003–1.02)			1.02 (1.01–1.03)
Pain		1.02 (1.01–1.03)		1.03 (1.02–1.04)			0.98 (0.97–0.99)	0.98 (0.97–0.99)	0.99 (0.98–0.996)
Measure of relative goodness of fit									
AIC	2,810	2,775	2,986	3,008	3,005	2,873	1,905	1,912	2,786

Odds ratios are only listed if the specific variable was significantly associated with the life satisfaction domain

indicating that patients with more pain are likely to be more satisfied with their partner relationship. This is in agreement with the finding that patients with CMP are more satisfied with their partner relationship than subjects in the general population. Comparable associations were found between pain and family life and contacts with friends. Although the (unadjusted) mean score of the satisfaction with family life of the patients with CMP was higher than that of the general population sample, the difference did not reach the significance level. The difference between the two analyses (i.e. those for research questions 1 and 2) may be caused by the difference in independent variables included in the analyses. Patients with CMP were less satisfied with their contacts with friends than the general population sample. This seems to contradict the finding that patients with more pain were more satisfied with these contacts than patients with less pain. The explanation may be that patients with more pain were more satisfied with these contacts because they may have been more focussed on relationships than on material issues and more thankful for attention, while patients with less pain were less satisfied with these contacts than subjects in the general population, although the mean score for all patients with CMP was still lower than the mean score for the GP.

The GP sample was taken from Utrecht, a town with approximately 300,000 inhabitants, whereas the patients were living in Friesland, a region of low urbanisation with approximately 193 persons/km². A minor association between urbanisation and life satisfaction has been found in Western European countries [31], but that study concerned much larger differences in urbanisation than between Utrecht and Friesland. It is therefore unlikely that the differences in life satisfaction observed between our two samples were caused by the difference in urbanisation. Whether this difference in urbanisation caused differences in predictors between the two groups is unclear. Near and Rechner [32] studied differences in the predictors of life satisfaction among ten West European countries (with different degrees of urbanisation), and although life satisfaction differed between the countries, the predictors included in their study were quite similar for the various countries they studied.

Limitations of the study

Although we studied several potential predictors of life satisfaction, some potentially important predictors may have been missed. For example, we did not evaluate coping behaviour or mood, which might have provided a satisfactory explanation for the differences in satisfaction with partnership between the general population sample and the patients with CMP. Future studies should therefore include other potential predictors. The cross-sectional design of the study only enabled us to identify associations, not to distinguish between cause and consequence. We therefore cannot tell whether chronic pain leads to decreased life satisfaction or whether persons with low life satisfaction are more prone to developing chronic pain. Since this study included only patients eligible for rehabilitation treatment, generalisations beyond this patient group may not be valid. The response rates of the general population sample as well as of the patients with CMP were low (42 and 60%), which is in line with the findings of other research of this type. Although these low response rates may have biased the results, we cannot tell to what degree and in which direction. Finally, we assumed that the Lisat-9 scores found in the general population in 1997 had remained unchanged by the time of our study of patients with CMP, but we have not tested this assumption. A substantial change in these scores is not likely, however, as a survey of overall life satisfaction in the Netherlands shows no major changes over the last three decades [33].

Clinical implications

Our results indicate that patients with CMP generally have a lower level of life satisfaction than the general population. This underlines the importance of interventions for patients with CMP. Several variables associated with satisfaction (gender, age, marital status and education) cannot be modified by rehabilitation, however, and after pain has become chronic, it can hardly been influenced either. If a possible therapy to decrease pain is available, it is obvious that the patient should have this therapy, provided it is not contraindicated and the complication rate is acceptable. If such a therapy is not available, life satisfaction can be modified by influencing its physical, social and/or mental consequences. Multidisciplinary rehabilitation focuses on all three of these aspects.

Conclusions

Patients with CMP experienced lower overall life satisfaction than respondents in a general population sample. Patients with CMP also experienced lower satisfaction regarding the specific domains of self-care, leisure, job situation, financial situation and contacts with friends, but higher satisfaction with partnership. Predictors of satisfaction with life as a whole include marital status, being employed, mental health and vitality. Predictors of satisfaction with separate domains were diverse. The four independent variables that influenced the largest number of satisfaction domains were marital status, mental health,

vitality and pain: three of them influenced life as a whole, and all of them influenced four to five domains.

Conflict of interest   None.

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