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Quality of life in elderly subjects with pain in the hip or knee

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This study examines the quality of life (QOL) of community living elderly people aged 55–74 with chronic, episodic or sporadic pain in the hip or knee and of a reference group without pain (total $n = 306$). Firstly, it was hypothesized that the experienced QOL is lower in people with more chronic pain. Secondly, the potential mediating and moderating roles of disability and of coping with problems in general on the relationship between pain chronicity and QOL were assessed. A Visual Analogue Scale was used to assess global QOL. Physical as well as psychosocial disability was assessed with the Sickness Impact Profile (SIP). Coping with problems in general was assessed with the Utrecht Coping List. As expected, a significantly lower QOL was found in people with more chronic pain ($p = 0.045$). The difference in QOL between the group with chronic pain and a reference group without pain was 10%. A multivariate regression model showed that physical and especially psychosocial disability are mediators in the relationship between pain chronicity and QOL and that 'seeking social support' as a coping style is a more important predictor of the experienced QOL than either pain chronicity or physical disability. No moderating role of the style of coping with problems was found.

Key words: Aged; coping; disabled; osteoarthritis; pain; quality of life.

Introduction

Pain in the hip or knee and locomotor disability are common phenomena in elderly community living populations.[1–5] A significant part of these problems is caused by osteoarthritis (OA) in one of the large joints of the lower extremities.[6,7] OA is usually 'a slowly evolving articular disorder characterized by the gradual development of joint pain, stiffness, and limitation of motion'.[8] A useful indicator of the progression of this disorder is the chronicity of pain. Another indicator is the presence of abnormalities seen on radiographs (radiological OA, or ROA). However, little or no association exists between the presence of joint symptoms and the existence of ROA.[9–11] OA is not curable and most elderly people with symptoms are told by their doctor that they have to learn to live with it. Major and permanent changes in behaviour that are often inevitable in long-term illness and disability are conceptualized as 'coping'. Coping may be defined as 'the cognitive and behavioural efforts made to master, tolerate, or reduce external and internal demands and conflicts among them'.[12]

Chronic pain and disability and the way people cope with these problems can affect the quality of life (QOL) of elderly people in a negative way. From studies of patients with OA[13–16] it is known that OA negatively affects health-related QOL.* In QOL research among patients there is a lack of consensus about theoretical approaches,[17] and there are several definitions of QOL in the literature.[18,19] Because we wanted to compare the QOL of people with pain with a reference group without pain, we chose to use an assessment of global QOL instead of health-related QOL. We defined QOL according to Szalaï as 'the subjective *evaluation* of the good or satisfactory character of life as a whole'.[20] We used a Visual Analogue Scale to assess this global form of QOL.

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* In fact, health-related QOL mostly involves the determination by the individual of certain problems in physical and psychosocial functioning. We regarded these problems as forms of disability, rather than as QOL.

Research was carried out in 306 community living people aged 55–74 years with chronic, episodic and sporadic pain in the hip or knee and in a reference group without pain. Firstly, we hypothesized that elderly people with relatively more chronic pain in the hip or knee would experience a lower QOL. Secondly, we examined the presence of disabilities and the style of coping with problems as potential mediating and moderating variables in the relationship between pain chronicity and QOL. The definitions of mediation and moderation by Baron & Kenny[21] were used (see Method section). A variable may be said to function as a mediator to the extent that it accounts for the relation between the predictor (pain chronicity) and the criterion (QOL). A moderator affects the direction or strength of the relation between the predictor and the criterion.

Methods

Study population

Participants in the present study were members of a cohort of the Rotterdam Study.[22] The aim of the Rotterdam Study is to investigate determinants of disease occurrence and progression in people older than 55 years (total $n = 10{,}275$; response: $n = 7{,}983$) living in the Ommoord district in Rotterdam. In 1991 a substudy on a randomized sample, representative with respect to age and sex, was carried out on the relationship between locomotor disability, joint pain and ROA.[23] All subjects were asked the following two questions during an interview at home (occasion 1; response 83%) and during a medical examination at the research centre (occasion 2; response 95%) several weeks later: 'Did you have any pain or other complaints about your joints in the past month?' (yes or no) and 'can you point out the painful joints?' There were 2,895 subjects in this substudy, 2,178 of whom were aged 55–74 years.

In 1993, a sample from the last mentioned substudy was formed. Inclusion criteria were: (1) the availability of a radiograph (during the medical examination in 1991 radiographs were made for every respondent) of the hips and knees that had been already scored independently by two assessors according to the criteria of Kellgren and Lawrence;[24] (2) age between 55–74 years and (3) participation in 1991 in the interview at home and the medical examination. Criteria for exclusion were participation in one of the other substudies of the Rotterdam study (these studies were unrelated to musculoskeletal complaints), the presence of cognitive impairments and living in a home for the elderly. In February 1993 the 831 selected subjects were asked to complete a short questionnaire with the question: 'Did you have any pain in your hip or knee in the past month?' The overall response to this questionnaire was 83% ($n = 691$). Chi-square testing showed no significant differences in age and sex between the people who completed this short questionnaire and those who did not. Subjects who reported 'pain in the hip or knee in last month' on three occasions, twice in 1991 (during the interview and during the medical examination) and once in February 1993, were classified as having 'chronic pain' ($n = 72$). Subjects who reported pain on two occasions were classified as having 'episodic pain' ($n = 86$). Subjects who reported pain on one occasion were classified as having 'sporadic pain' ($n = 118$). A group of 415 subjects reported no pain at all. From this last group a reference group without pain and without ROA ($n = 94$) was selected and matched for age and sex to the groups with chronic and episodic pain.

In the period March to June 1993 all selected people ($n = 370$) were approached by telephone to ask whether they would participate in the present study (the study was presented as dealing with 'health and physical functioning in elderly people'). The characteristics of the subjects who took part in the study are shown in Table 1. All subjects ($n = 306$, response rate = 83%) completed a series of self-administered questionnaires (see below) and were interviewed at home in the spring and summer of 1993.

Assessment of disability

In accordance with the International Classification of Impairments, Disabilities, and Handicaps (ICIDH), we defined disability as 'any restriction or lack of ability to perform an activity in the manner or within the range considered normal for a human being'.[25] Disability was assessed with the Sickness Impact Profile (SIP).[26] The SIP is a standardized list of 136 statements, ordered in 12 areas, aimed at measuring changes of conduct in everyday activities due to sickness. Examples of statements are: 'I do not do any of the shopping that I would usually do' (Household), 'I stay in one room' (Mobility), 'I take part in fewer social activities than I used to' (Social interaction), 'I do not walk at all' (Walking). Each statement describes a certain dysfunction in a daily activity in one of the 12 areas. Respondents were asked to tick statements that were appropriate for their situation and which were related to their health. Each marked

statement had a weighted score. Besides a total score (percentage of the maximum possible sum score), percentages for a physical and psychosocial dimension of the SIP were calculated (the theoretical maximum is 100%). Physical disability was defined as a weighted sum score of dysfunction in the areas 'Personal Care', 'Mobility', and 'Walking'. The psychosocial disability score was defined as the weighted sum of dysfunction in the areas 'Emotions', 'Social Interactions', 'Cognitive function' and 'Communication'. Other areas were 'Sleep/rest', 'Household', 'Work', 'Recreation' and 'Eating'. Because 'Work' was not a relevant area in this particular population, a total SIP score was not calculated. The reliability and validity of the SIP for use in a Dutch population is good.[27] Some authors consider the SIP a generalistic health-related QOL measure.[13,19]

Assessment of coping

In the Utrecht Coping List[28] (UCL), coping is regarded as a personal disposition. The respondent is asked to imagine 'problems in general'. The UCL consists of 47 items describing a specific coping behaviour. Answers are on a 4-point scale from 'seldom or never' to 'very frequently'. The reliability (Cronbach's alpha) for use of the UCL in a Dutch population is reasonable.[28] The UCL consists of seven coping scales considered as coping styles: active problem solving (seven items, such as 'putting things in a row', 'seeking a way to solve the problem'; $\alpha = 0.79$), palliative reaction (eight items, examples are 'looking for distraction', and 'looking for good company'; $\alpha = 0.71$), avoidance (eight items; such as 'avoiding difficult situations' and 'letting things go'; $\alpha = 0.74$), seeking social support (six items, examples are 'discussing the problem with friends or family' and 'asking somebody for help'; $\alpha = 0.79$), passive reaction (seven items, such as 'worrying about the past', 'isolating self from others'; $\alpha = 0.74$), expression of emotions (three items, such as 'showing anger to the person who is responsible for the problem'; $\alpha = 0.55$), and reassuring thoughts (five items, 'imagining that things could be worse'; $\alpha = 0.60$). Three of the 47 items of the UCL are outside the factors just mentioned.

Assessment of QOL and validation

In this study, we followed the recommendation of de Haes[29] and asked people about their own judgement and evaluation of QOL. A Visual Analogue Scale (VAS) of 15 cm was used to assess global QOL and recoded as a score between 0–100%. To get an insight into the relationship of this QOL-VAS measure with (in our opinion) some important aspects of the life of older people (an aspect of validation of global QOL) we used questions based on De Witte *et al.*,[30] namely, judgement of physical functioning (5-point item), judgement of psychological functioning (5-point item), judgement of own health (5-point item), expectations about future (in 2 years time) functioning (5-point item), image of the future (5-point item), happiness in the last month (7-point item), and satisfaction in the last month (7-point item). The QOL-VAS and the other questions were not introduced to the respondents in relation to eventually existing pain in the hip or knee. The QOL-VAS and the questions used for validation are included in the appendix.

Assessment of ROA

The classification of radiographs of the hips and knees was based on the standard Kellgren criteria[23] (0 = no signs, 1 = doubtful, 2 = mild, 3 = moderate, 4 = severe). Grade 2 or higher was regarded as ROA.

Mediation and moderation

According to Baron & Kenny,[21] there is evidence of mediation if pain chronicity has a significant relationship with QOL, which is reduced to zero if controlled for mediating variables. Another condition a mediator has to meet is that it is significantly related to the independent variable (pain chronicity) as well as to the dependent variable (QOL). A moderator effect of a variable is present if a significant interaction effect exists between the moderator and the predictor (pain chronicity) on QOL.

Data analyses

The UCL and SIP scores and other continuous variables were assessed through analysis of variance (ANOVA). Duncan multiple range tests were used to trace differences between the groups with pain and the reference group. Data analysis was performed with SPSSx.[31] The statistical power for detecting medium-sized effects (differences between groups) in analyses of variance (effect size 0.25, $\alpha = 0.05$) with the four particular groups is > 0.90.[32] Pearson correlation coefficients are given. Chi-square tests were used for nominal data. Multiple regression analysis

was used to investigate mediation and moderation of variables on the relationship between pain chronicity and QOL. We chose a stepwise introduction of blocks of variables to test for mediation. Demographic variables (sex, age in years, education and marital status) were introduced in the model first, followed by the pain variable (four groups), followed by the two disability variables of the SIP, followed by the coping styles of the UCL. In this way we were able to investigate the contribution of disability and coping to the relationship between pain and QOL. The changes in R^2 after the successive steps and the partial correlations (comparable with β) are reported. A partial correlation is the correlation of the independent variable with the dependent variable (QOL) after correction for all the other independent variables in the model. The total R^2 and the adjusted R^2 for the total model are reported. We tested for moderator effects of coping by using a multiple regression analysis on QOL to determine possible significant interaction terms (pain chronicity × a specific coping style) between pain chronicity and the coping style.

Results

The characteristics of the groups with pain and the reference group are presented in Table 1. No age differences between the groups were found ($F = 1.84$, $p = 0.14$), nor were differences in sex, marital status, and education (non-significant χ^2 tests). Most subjects were women (62–75%), had completed a secondary education (67–79%), and were married or living with a pertner (61–75%). A substantial number of subjects with pain had ROA (38–54%). No significant differences (χ^2 tests) between responders and non-responders in this study were found with respect to age, sex or chronicity of the pain.

Internal consistency of the UCL

The internal consistency of the subscales of the UCL used in the present study was satisfactory, with Cronbach's α being: 0.82 (active problem solving), 0.77 (palliative reaction), 0.66 (avoidance), 0.78 (seeking social support), 0.70 (passive reaction), 0.69 (expression of emotions), and 0.75 (reassuring thoughts).

Validity aspects of the QOL-VAS

The correlations and partial correlations between the QOL-VAS scores and seven relevant aspects of life in the total group ($n = 272$, due to missing values) are shown in Table 2. The highest correlation was between the QOL-VAS scores and 'Happiness in the last month' (0.55) and 'Satisfaction in the last month' (0.52). Because the seven life aspects were correlated with each other we also determined partial correlations. The partial correlations are shown after correction for all the other life aspects in a regression

Table 1. Characteristics of the reference group and three groups of community living subjects (55–74 yrs, $n = 306$) with pain in the hip or knee

	Reference (no pain)	Sporadic pain	Episodic pain	Chronic pain
Number	72	101	74	59
Age[a] in years (mean and SD)	64.1 (5.5)	65.5 (5.8)	65.5 (5.4)	63.7 (5.6)
Sex[a] (% women)	72%	62%	65%	75%
Marital status				
Living together (married)	75%	70%	73%	61%
Living alone	25%	30%	27%	39%
Education				
Primary	15%	20%	19%	19%
Secondary	79%	67%	69%	75%
College/university	6%	13%	12%	7%
ROA in hip or knee	0%[b]	38%	38%	54%

[a] Reference group matched on age and sex distribution with the episodic and chronic pain groups; no statistically significant differences between groups were found for marital status and education.

[b] Reference group selected on absence of ROA

Table 2. Correlations and partial correlations after regression analysis of the QOL-VAS scores with seven relevant aspects of life. Community living people aged 55–74 years ($n = 272$)

Life aspects	Correlation with QOL-VAS	Partial correlations with QOL-VAS
Judgement physical functioning	0.30**	0.04
Judgement psychosocial functioning	0.30**	0.07
Judgement own health	0.35**	0.09
Expectations in two years	0.14*	–0.05
Image of the future	0.36**	0.14**
Happiness in last month	0.55**	0.17**
Satisfaction in last month	0.52**	0.12*
R^2		0.36**
(Adjusted R^2)		(0.35**)

* = $p < 0.05$, ** = $p < 0.01$

Table 3. Physical disability ($n = 304$), psychosocial disability ($n = 304$), QOL-VAS ($n = 292$), and coping styles ($n = 299$) in community living subjects aged 55–74 years with pain In the hip or knee and a reference group without pain ($n = 306$)

	Reference group		Sporadic pain		Episodic pain		Chronic pain		Test statistic (ANOVA)	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	*F*	*p*
Physical disability (SIP)	1.0	(4.1)^{e,c}	1.9	(4.3)	3.5	(6.0)	5.4	(6.7)^{s,e}	8.9	< 0.01
Psychosocial disability (SIP)	1.5	(3.8)^{c}	2.2	(4.3)	3.1	(5.7)	5.4	(8.5)^{s,e}	5.9	< 0.01
QOL-VAS (0–100%)	65.5	(23.8)^{c}	63.5	(22.1)^{c}	60.8	(20.4)	54.4	(25.7)	2.72	0.045
UCL coping styles:										
Active problem solving (max 28)	15.7	(4.2)	16.5	(3.8)	15.5	(3.8)	16.4	(4.2)	1.16	0.32
Palliative reaction (max 32)	15.0	(4.2)	16.0	(3.6)	16.2	(4.1)	16.8^{r}	(3.9)	2.39	0.07
Avoidance (max 32)	15.5	(3.4)	15.3	(3.6)	15.1	(3.2)	16.0	(3.1)	0.85	0.47
Seeking social support (max 24)	10.3	(2.7)	10.1	(3.0)	10.1	(3.1)	10.2	(2.9)	0.07	0.97
Passive reaction (max 28)	10.1	(2.7)	10.3	(2.6)	10.8	(2.6)	11.7^{r,s}	(3.8)	3.83	0.01
Expression of emotions (max 12)	5.4	(1.4)	5.7	(1.8)	5.6	(1.7)	5.3	(1.7)	1.14	0.33
Reassuring thoughts (max 20)	11.8	(2.7)	12.2	(3.1)	12.3	(2.8)	13.3^{r,s}	(3.2)	2.84	0.04

Duncan Multiple Range Test: ^{r} = different from reference group ^{s} = different from sporadic group ^{e} = different from episodic group, ^{c} = different from chronic group

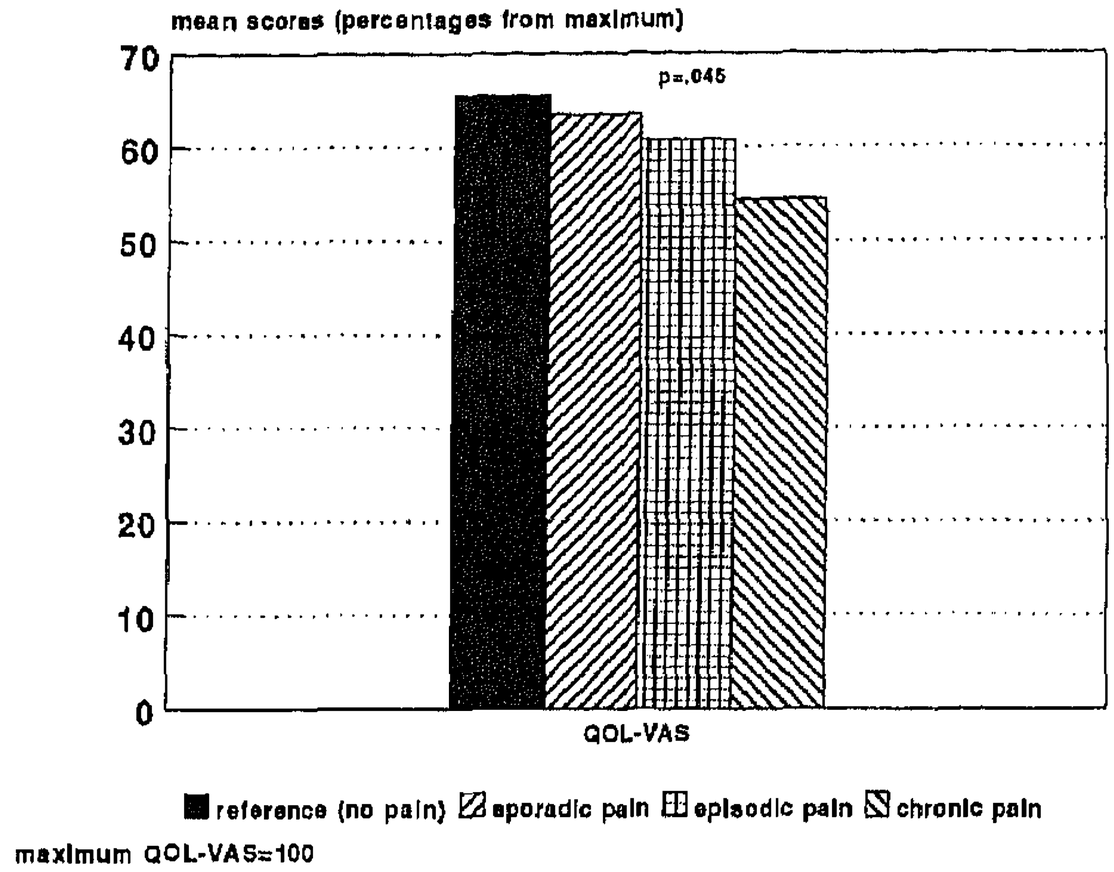
model. 'Happiness in last month', 'Satisfaction in last month' and 'Image of the future' all contributed, independently of each other, significantly to the variance in the QOL-VAS scores. These three life aspects explained 35% of the total variance in QOL-VAS scores.

Disabilities, QOL and coping

Table 3 presents the results of the ANOVA tests on differences between pain groups with respect to disabilities (SIP), QOL and coping styles. Statistically significant differences were found for both forms of disability (more chronic pain was related to more disability) and for QOL (chronic pain was related to lower QOL). There was less difference between the four groups with respect to coping style, with the exception of 'passive reaction' and 'reassuring thoughts' (both coping styles were reported the most often by people with chronic pain). The group means (in percentages from the maximum score) of the QOL for the three pain groups and the reference group are shown in Figure 1.

The correlation of the QOL-VAS scores with the scores on the physical and psychosocial dimensions

Figure 1. Group means (percentages from maximum scores) on the QOL-VAS of a reference group without pain and three groups with sporadic, episodic and chronic pain in the hip or knee (community living elderly, aged 55–74, $n = 306$).



of the SIP was –0.14 and –0.29, respectively. Both correlations were significantly different from zero.

Moderate correlations were found between the coping style 'passive reaction' and the QOL-VAS scores (–0.30). Other low but significant correlations between coping style and QOL were found for 'active problem solving' (0.16), 'seeking social support' (0.18), and 'reassuring thoughts' (0.13).

Mediators of the relationship between pain chronicity and QOL

To check for possible multicollinearity problems, we screened the correlation matrix for correlations higher than 0.70 before performing the regression analyses. No such correlations were found. Correlations higher than 0.50 were found between 'passive reaction' and 'psychosocial disability' (0.52); between 'reassuring thoughts' and 'active problem solving' (0.52); and between 'reassuring thoughts' and 'palliative reac-

Table 4. Stepwise multiple regression analysis of demographic variables, pain, disability and coping styles on the score of the QOL-VAS (community living subjects aged 55–74 years; $n = 278$)

Independent variables	Step 1 PC	R^2 change	Step 2 PC	R^2 change	Step 3 PC	R^2 change	Step 4 PC	R^2 change	Step 5 PC	R^2 change
1. Demographic										
Sex	0.11		0.11		0.11		0.06		0.05	
Age in years	0.10		0.09		0.12*		0.07		0.09	
Education	0.07		0.07		0.08		0.07		0.06	
Marital status	–0.16**	0.04*	–0.15**		–0.15		–0.11*		–0.10	
2. Pain chronicity			–0.13*	0.02*	–0.08		–0.05		–0.03	
3. Physical disability					–0.15**	0.02**	–0.02		–0.04	
4. Psychosocial disability							–0.24***	0.06***	–0.15**	
5. Coping style										
Active problem solving									0.11*	
Palliative reaction									–0.06	
Avoidance									0.12*	
Seeking social support									0.20***	
Passive reaction									-0.06	
Expression of emotions									-0.10	
Reassuring thoughts									0.002	0.09***
TOTAL R^2										0.23***
(adjusted R^2)										(0.19)***

Key: PC = partial correlation of the independent variables with the dependent variable after correction for the other independent variables in the model. Sex: 1 = male, 2 = female; education: 1 = lower, 2 = secondary 3 = higher; marital status: 1 = together, 2 = alone; pain chronicity: 0 = no pain, 1 = sporadic pain, 2 = episodic pain, 3 = chronic pain.

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

tion' (0.55). Table 4 presents the results of the stepwise multiple regression analysis. The demographic variables explained 4% of the variance in QOL, with marital status as the only significant predictor (people living together had a higher QOL). Addition of pain chronicity to the model significantly increased the explained variance in QOL (0.02; $p < 0.05$). Addition of physical disability increased the explained variance significantly by 0.02. After psychosocial disability was added, this last mentioned variable appeared to be the best predictor of QOL (partial correlation –0.24). Introduction of the coping styles explained another 9% of the variance. After this last step, the coping style 'seeking social support' was clearly the best predictor of QOL (people who sought more social support had a higher QOL); the second best predictor was psychosocial disability as measured with the SIP. In the multivariate model, the relationship between pain chronicity and QOL and between physical disability and QOL was no longer significant.

Moderating effects of coping

To test whether coping with problems had a moderating effect on the relationship between pain chronicity and QOL, we performed a separate multiple regression analysis. Pain chronicity, the coping styles and all the specific interaction terms of the coping styles with pain chronicity were introduced. Pain chronicity explained 2% of the variance in the QOL, and the coping styles explained 16% (*passive reaction, partial correlation –0.26; seeking* social support, partial correlation 0.21). The interaction terms did not significantly contribute to the variance in the QOL-VAS scores.

Discussion

As expected, a relatively low QOL was found in elderly people with more chronic pain symptoms in the hip or knee. The difference in QOL between the group with chronic pain and the reference group without pain was 10%. The QOL-VAS scores of the group with chronic pain was comparable with the QOL-VAS scores of a group of patients with rheumatoid arthritis ($n = 179$, mean = 52%, SD = 24, 0) from another study.[30] Also, physical disability and psychosocial disability (problems in areas such as communication and social interactions as far as these problems are related to health) were negatively associated with QOL. In fact, physical and psychosocial disability were mediating variables in the relationship between the chronicity of pain and the experienced QOL. We consider that these variables meet the criteria of a mediator (after correction with this variable the relationship between pain chronicity and QOL was reduced to zero; and a significant relationship with pain chronicity as well as with QOL). After correction for both forms of disability, psychosocial disability seemed to play the most important mediating role. These results may suggest that more chronic pain caused more physical and psychosocial disability, resulting in a lower QOL. It is in the nature of a mediator that the causal pathway can also shift from the outcome to the independent variable depending on the focus of the analysis.[21] In other words, a lower QOL may cause more psychosocial disability, resulting in more self-reported pain symptoms. The nature of these processes can only be studied in a longitudinal research design.

People with more chronic pain used a coping style such as 'a passive reaction' and 'reassuring thoughts' more often than other people did. The first behaviour can be regarded as a predominantly negative way of coping and means that people are 'worrying', perhaps resulting in more health care utilization. The second behaviour may regarded as a more positive way of coping with people reassuring themselves 'that things can always be worse'. Also, people with chronic pain used a palliative coping style more than the reference group without pain did. This finding is in agreement with the results of the study of Downe-Wamboldt[33] in osteoarthritic women.

'Psychosocial disability' and 'seeking social support' were the variables with the highest partial correlation coefficients contributing to QOL, meaning that the people who had problems with communication about their health and people who did not ask other people for help had the relatively lowest QOL. No evidence was found for mediating or moderating effects of coping with problems on QOL.

We conclude that there is evidence that more chronic pain in the hip or knee, especially as it is related to psychosocial disability, is associated with lower QOL. Because this was not a longitudinal study, we cannot know for certain the direction of this relationship.

In the analyses we used ROA only to describe our study population. We previously reported[34] that in people with pain symptoms in the hip or knee a moderate form of ROA (Kellgren score = 2) is related to more psychosocial disability (especially in men), while severe forms of ROA (Kellgren scores >2) are related to more physical disability. Moreover, the existence of other mobility problems (related to other

rheumatic complaints, lung diseases, diabetes, etc.) is of more importance than pain in the hip or knee alone in predicting physical and psychosocial disability in elderly people.[34]

We chose to use the SIP as a measure of disability rather than as a health-related QOL instrument. This is consistent with the opinion of Wade,[35] who discussed the QOL concept as far as it is used to assess health-related QOL. In the context of a certain impairment, he argued that it is better to regard the consequences in relationship to the ICIDH,[24,36] and to speak about 'disability' and 'handicap' instead of QOL. The concept 'handicap' regards an individual's problems in fulfilling social roles as a consequence of certain underlying impairments and (physical) disabilities. Because some parts of the SIP can be regarded as measures of disability and others as measures of handicap, we assessed QOL by using a QOL-VAS. This measure was not introduced to the respondents as bearing a relationship to the pain they had in the knee or in the hip. A problem with the QOL-VAS is the large standard deviation in the scores. It is known that respondents sometimes have difficulty completing a VAS scale correctly, leading to higher non-response.[37] In our study, the respondents had used VAS scales before. Relevant domains of life that contributed significantly to the QOL-VAS scores were well-being variables such as happiness and satisfaction. This result indicated that the respondents weighted well-being as more important in the concept of quality of life than physical or psychosocial functioning in general. This is in agreement with the view of Tennant and McKenna,[38] who with regard to rheumatology, consider QOL as a concept of well-being at the end of the continuum of disease, impairment, disability and handicap.

The multiple regression analyses showed that the independent variables were only partly able to predict QOL (23%). Well-being variables that would probably have had more predictive value on the QOL-VAS scores are the recent loss of a partner or the loss of a paid job. Browne *et al.*[39] recently showed that healthy elderly people (≥ 65 years) consider 'family', 'social and leisure activities' and 'health' as being important for their quality of life. Laborde and Powers[40] found that subjects with OA viewed their past life as more satisfying than their present lives, but their degree of pain did not seem to have a dramatic impact on their overall satisfaction with life.

The most relevant finding of our study is that in a multivariate model corrected for all other relevant variables, neither pain chronicity nor physical disability predict a relatively lower QOL, but that in fact psychosocial problems do. This finding can be explained by the mediating role of psychosocial disability that we found. People who isolate themselves with their health problems are particularly vulnerable. The challenge to health professionals is to reach these people, because they tend to avoid asking others for help, seeking no social support. Future research could focus on the needs of this group and on factors such as the loss of a partner or a paid job at the age of retirement, and the presence of depressive feelings about these life events in relation to the QOL experienced by people with arthritic pain.

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Appendix

Global QOL questionnaire

In the same way as people can have ideas about the quality of, for instance, fruit or wine, they can also have ideas about their quality of life. This can be high, low, or in between. Can you please indicate on this line the quality of your life in the past month? You can do this by putting a cross (X) on a place on the line that best represents your feeling about the quality of your life.

lowest quality ——————————————————— highest quality

Questions about QOL-relevant aspects of life

1. How do you judge your physical functioning (ability to move)?
   (1) very bad (2) bad (3) moderate (4) good (5) very good

2. How do you judge your psychological functioning?
   (1) very bad (2) bad (3) moderate (4) good (5) very good

3. How do you judge your own health?
   (1) very bad (2) bad (3) moderate (4) good (5) very good

4. How do you expect you will feel in two years time, all things considered?
   (1) much worse (2) worse (3) the same as now (4) better (5) much better

5. How do you see the future, all things considered?
   (1) very sad (2) sad (3) neutral (4) optimistic (5) very optimistic

6. How happy did you feel in the last month, all things considered?
   (1) very happy (2) happy (3) moderately happy (4) not happy/not unhappy (5) moderately unhappy
   (6) unhappy (7) very unhappy

7. How satisfied were you in the last month, all things considered?
   (1) very satisfied (2) satisfied (3) moderately satisfied (4) not satisfied/not unsatisfied (5) moderately satisfied
   (6) unsatisfied (7) very unsatisfied

Note: questions 6 and 7 were recoded (1 = 7, etc.)