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## Stress in chronic disease: Do the perceptions of patients and their general practitioners match?

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**Objective.** To compare the stressors accompanying chronic disease as perceived by patients and their GPs and to explore how incongruence in patients' and GPs' ideas influences patients' health status and use of health care.

**Method.** A total of 580 patients with a diagnosis of diabetes or osteoarthritis and their GPs were interviewed by questionnaire about the stressors accompanying a patient's illness. In addition, information was obtained from each patient on health status and use of health care.

**Results.** The results show that patient and GP diverge in the way they think about chronic illness. Incongruence was larger in the case of osteoarthritis. In both diabetes and osteoarthritis, incongruence between patient and GP was associated with a worse health status of the patient and an increase in health-care use, although the pattern of correlation differed by type of disease.

**Conclusions.** A chronic disease requires an ongoing relationship between patient and GP over years. Therefore, it is especially important that providers recognize the problems with which chronic disease patients are faced. Too often, providers are onesided focused on the medical aspects of disease, neglecting the personal impact that a chronic disease has on the patient's life. In this way, successful treatment is complicated.

The management of a chronic disease requires an ongoing relationship between patients and health-care providers over months or years, which makes adequate health care a joint responsibility of both providers and patients (Anderson & Zimmerman, 1993; Clark et al., 1995). Given such a relationship, it is of utmost importance that health-care providers are able to recognize and understand the problems patients with chronic diseases are faced with. This is not always simple. A patient's perception and presentation of a disease may have only modest correlations with its medically defined characteristics (Lacroix, 1991; Maes, Leventhal, & De Ridder, 1996; Watson & Pennebaker, 1991). Although a patient's experience of a chronic disease will reflect its biology and developmental history, the degree to which it is a source of psychological stress will also depend on the individual's personal and social resources. These factors will moderate the perceived threat of a disease and facilitate or pose barriers to adaptation for the patient (Maes et al., 1996). Patients will determine their subjective well-being, their self-management activities, and their compliance to treatment in relation to their subjective experience of their chronic condition (Heijmans, 1998; Lacroix, 1991; Leventhal, Nerenz, & Steele, 1984; Pennebaker & Watson, 1988). When health-care providers do not acknowledge these subjective

disease experiences of patients and do not go beyond the 'medical' view of illness, this may lead to problems in treatment and the well-being of patients. For example, Kleinman (1980) has proposed that incongruence between a patient's and provider's beliefs about the problems associated with chronic disease correlate negatively with patient outcome variables such as compliance, satisfaction, subsequent use of healthcare facilities, treatment response, and reporting of untoward side-effects of treatment. Others found that an adequate recognition of patients problems results in a better understanding on the part of the patients (Bensing, 1991; Garrity, 1981), more compliance (Anderson & Zimmerman, 1993; Clark et al., 1995), and better outcomes in terms of quality of life and general well-being of patients (McWhinney, 1988; Meyer, Leventhal, & Gutmann, 1985).

Although the importance of recognition of patients' problems by health-care providers has been acknowledged for a long time, there has, to date, been little attempt to systematically compare patients' and providers' ideas about the consequences of a chronic disease. Most studies only focus on the patient's illness perceptions and their association with medical and behavioural outcomes (for a review, see Scharloo & Kaptein, 1997). It has not been studied systematically as to the extent to which health-care providers' ideas about the consequences of a chronic disease match those of patients or how incongruence in patients' and providers' perception of the consequences of a chronic disease affects patients' well-being or use of health-care. The present study was designed to address these issues in a general practitioners setting. More precisely, our aim was to explore and compare the specific stressors accompanying chronic diseases, as perceived by patients and their doctors, and to answer the following questions: which similarities/ dissimilarities in the perception of disease-related stressors, as perceived by patients and general practitioners, come to the fore? Are the differences in some way related to the type of disease? How do differences in illness perceptions relate to the quality of life of patients with chronic diseases and their use of different health-care services? For this purpose, we selected two chronic diseases that vary in the clearness of diagnosis and the availability of a treatment protocol for the general practitioner: diabetes and osteoarthritis. Diabetes mellitus can be considered to be prototypical for those chronic diseases for which clear diagnostic criteria are available and for which general practitioners have detailed guidelines at their disposal. The management of diabetes consists of replacing the lost endogenous insulin production with exogenous insulin, combined with the management of diet, exercise, and the testing of blood glucose levels, in order to keep blood glucose levels within the normal range. By regular testing of their blood glucose levels, patients can monitor the effectiveness of their self-management activities and make informed adjustments (Hampson, 1997). For osteoarthritis, on the contrary, it is true that the diagnostic criteria are rather unambiguous, but a clear treatment protocol is lacking. Treatment by the general practitioner is often restricted to pain management by medication or to referral to a physiotherapist. Many GPs have a 'wait and see' attitude; little time is spent in educating patients on how to cope with their osteoarthritis on a day-to-day basis (Verhoef & van den Bosch, 1995). It is hypothesized that the incongruence between patients' and GPs' ideas about the stressors accompanying the disease will be larger as the diagnosis and/or treatment are less clear. In addition, we expect incongruence between patient and GP to be associated with a more extensive use of health-care services and a worse health status of patients.

## METHOD

### Participants

The sample consisted of 580 chronic disease patients, distributed over two disease categories: diabetes (N = 392) and osteoarthritis (N = 188). Patients of both disease categories were selected from a larger database (N = 2736) of the 'Patient Panel Chronic Diseases', a longitudinal study on chronic disease patients conducted by Nivel (Wagner, Foets, Peters, & Dekker, 1996). All patients in this panel were recruited via one of 56 randomly selected GPs' practices in the Netherlands and selected according to the following criteria: a diagnosis of a chronic disease by a certified medical practitioner, an age  $\geq 15$ , being non-institutionalized, being aware of the diagnosis, not being terminally ill, being mentally and physically able to participate, and a sufficient mastery of the Dutch language.

## Measures

Information from both the patient and the GP on the different variables was obtained by written questionnaire. However, although patients filled in these questionnaires at home with the researcher not present, GPs answered the questions while the researcher was sitting in front of them.

### *Demographic characteristics*

Patients were asked about their age, gender, highest level of education, and marital status. Because of the small percentages of patients who were living alone, divorced, or widowed, marital status was dichotomized in living with a partner/living alone. Education level was divided into three categories: low (vocational training), middle (high school), and high (college or university).

### *Disease and treatment characteristics.*

Patients were classified by their GP according to their diagnosis using the International Classification of Primary Care (Lamberts & Wood, 1987). In addition, questions about co-morbidity and illness duration were answered by the GP at inclusion. Patients with more than one chronic disease were classified according to their first diagnosis. This diagnosis was used as index disease (Schellevis & Van Lisdonk, 1993). Co-morbidity was dichotomized and defined as one or more chronic conditions additional to the index disease. Patients were asked about the number of visits in the last year to the GP, medical specialist, allied health care, psycho-social care, and alternative healers, as well as whether they took prescribed and/or non-prescribed drugs.

### *Chronic disease stressors.*

The amount and type of stress involving chronic disease were assessed by 10 items. These items were based on the literature on coping with chronic disease (e.g. Felton et al., 1984; Heim et al., 1987; Moos & Schaeffer, 1984) and represent those characteristics of an individual's situation that are changed by a chronic disease and that require adaptation of the person in order to maintain quality of life or at least to minimize damage. These characteristics refer on the one hand to stressful physical or psychological aspects of the disease, such as threat of life or pain and, on the other hand, to the stressful consequences of the disease in terms of disability in psychological, physiological, and social functioning. The characteristics used in this study were: life-threateningness, progressiveness, changing in course, uncontrollability by medical care, uncontrollability by self-care, pain, visible changes of the body, physical impairments, social impairments, and mental impairments. These stressors have been identified as general themes to which chronic patients refer when asked for the consequences of their disease (e.g. De Ridder et al., 1998; Felton et al., 1984; Moos & Schaeffer, 1984). Both patients and their GP rated on a three point scale (1 = 'not at all', 2 = 'to a certain extent', 3 = 'to a large extent') the extent to which the health status of the patient was characterized by each of these stressors. The GP rated these items for each patient separately, having the medical record of the patient lying in front of them.

Incongruence in patients' and GPs' ideas about the presence of disease-related stressors was computed for each patient-GP pair by taking the absolute difference between the two scores on each stressor. In so doing, a variable was created that described the level of incongruence ranging from 0, 'totally congruent' to 2, 'totally incongruent'.

Health status was assessed by the SF-36 Health Survey, which is composed of 36 items, organized into 8 multi-item scales, including physical functioning, physical role functioning, bodily pain, general health, vitality, social functioning, emotional role functioning, and mental health (Ware, 1993). On the basis of these separate subscales, component summary scores were calculated to provide a global measure of physical and mental health, following the guidelines formulated by Ware, Kosinski, and Keller (1994) and using the means and standard deviations of a general Dutch population (Aaronson et al., 1998). The summary scores range from 0 to 100, with higher scores indicating a better physical- and mental-health status.

## Analysis

To answer the first research question, mean scores and standard deviations of patients and GP's on disease-related stressors were computed for each disease category. Paired t-tests were used to examine

the differences in mean scores between patients and GPs. An independent sample t-test was conducted to determine whether dissimilarities between patient and GP were in some way related to type of disease. Product-moment correlations were used to assess the relationship of health status and health-care use with incongruence in patients' and GPs' ideas. In addition, a series of linear regression analyses were conducted with health status and health-care use as outcome measures, level of incongruence on disease-related stressors as the predictors, and the scores of the patients on disease-related stressors as control variables to prevent the possibility that not the observed incongruence but rather the individual patient scores would be responsible for the explanation of our outcome measures. Especially in those cases where physical and mental health are outcome measures, a conceptual overlap between the perception of stressors and perceived well-being is possible.

## RESULTS

### Description of the sample

The characteristics of the two diagnostic groups are presented in Table 1.

#### [ TABLE 1 ]

#### *Demographic.*

Significant differences between the two patient groups were found with respect to age  $\{t(569) = -4.72, p < .001\}$  and gender  $\{\chi(1,571) = 13.3, p < .001\}$ . Osteoarthritis patients were significantly older than patients with diabetes and were more often female. No significant differences were found with respect to the level of education or living situation.

#### *Disease- and treatment-related variables.*

The diagnostic groups did not differ with respect to co-morbidity or illness duration. However, they did differ on a number of treatment-related variables such as the use of prescribed drugs  $\{\chi(1,580) = 24.5, p < .001\}$ , and the number of visits in the last year to the medical specialist  $\{t(517) = 3.26, p < .001\}$ , paramedical therapist  $\{t(554) = -4.45, p < .001\}$ , and alternative healers  $\{t(575) = -2.75, p < .01\}$ . Patients with diabetes used significantly more prescribed drugs, and visited the GP and medical specialist more often than osteoarthritis patients. On the other hand, osteoarthritis patients payed more visits to paramedical and alternative healers than patients with diabetes. No significant differences were found with respect to the use of non-prescribed drugs and visits to the GP and psycho-social care.

#### *Health status.*

Diabetes patients were functioning significantly better with respect to physical health  $\{t(325) = 7.58, p < .001\}$  than patients with osteoarthritis.

### Patient and GPs' perception of disease-related stressors

Mean scores and standard deviations on the disease-related stressors, as perceived by patients and GPs, are presented in Table 2 and graphically depicted in Fig. 1. The results show that, in general, both patients and GPs view diabetes as less distressing than osteoarthritis. Comparison of the mean scores of patients and GPs shows a number of significant differences in both disease categories. For osteoarthritis generally, GPs judge the health status of their patients as more serious than the patients themselves. Patients with osteoarthritis believe their illness to be less progressive, more controllable by self-care, less painful, and to be associated with fewer visible bodily changes and physical impairments than their GPs. In the case of diabetes, the pattern is less clear. Patients with diabetes judge their illness as less serious than their GPs with respect to life-threateningness, progressiveness, and physical and social impairments, but more serious with respect to the changing course, possibilities of medical control, pain, and the visible bodily changes accompanying their illness.

[ TABLE 2 ]

[ FIGURE 1 ]

### **Incongruence in the perception of disease-related stress: Does the type of disease play a part?**

As we expected that incongruence between patients and GPs in the perception of disease-related stressors would be larger in the case of osteoarthritis for which a clear treatment policy is lacking, the absolute differences were compared for both disease categories. Independent t-tests yielded significant differences in the level of incongruence between the two diseases on all disease-related stressors except for 'changing course' and 'mental impairments' (Table 3). As expected, incongruence was greatest in the case of osteoarthritis. Especially with respect to the possibilities for control, pain, visible bodily changes, and physical and social impairments, osteoarthritis patients differ more from their GPs than do diabetes patients.

[ TABLE 3 ]

### **Incongruence in relation to aspects of health status and health-care use**

In order to avoid Type I errors, a significance level of  $p < .01$  was adopted for these and later calculations. The correlations between the level of incongruence between the patient and GP in their perception of disease-related stressors and the physical- and mental-health status, as reported by the patient, are presented in Table 4. For both diseases, some strong significant correlations exist between the level of incongruence in the perception of chronic disease stressors and the two outcome measures. In general, a higher level of incongruence between patients and GPs is associated with a poorer physical and mental health. In diabetes, incongruence is most strongly related to a poorer physical health, whereas in osteoarthritis, disagreement is most strongly associated with a poorer mental health.

[ TABLE 4 ]

Table 5 presents the correlations between the level of incongruence between patients and GPs in their perception of disease-related stressors and different sorts of health-care use. In general, the correlations are weak. Moreover, the pattern of significant correlations differs by type of disease. In diabetes, higher levels of incongruence are associated with an overall increase in health-care use; that is, diabetes patients pay more visits not only to the GP, but also to medical specialists, allied health care, and psycho-social care, and they use more non-prescribed drugs. Incongruence between osteoarthritis patients and their GPs seems to discourage patients to visit their GP, to encourage them to use non-prescribed drugs, and to pay visits to psycho-social and alternative healers.

[ TABLE 5 ]

In order to determine the extent to which incongruence between patients' and GPs' perception adds to the explanation of the health status and health-care use<sup>1</sup> of diabetes and osteoarthritis patients, a number of regression analyses were undertaken. In the regression model, we controlled for patients' perceptions at step 1. Our results show that patients' individual perceptions of the disease-related stressors are most important in predicting health status and health-care use. However, incongruence between patients' and GPs' perceptions also adds significantly to the explanation of all three outcome measures in both disease groups.

For diabetes, problems in physical functioning were best explained by patients' perception of diabetes as changing, painful, and physically and socially impairing, and by an incongruence in

<sup>1</sup>As an outcome measure in the regression analyses, a total score for health-care use was computed by summing the scores for the seven different aspects of health care.



patients' and GPs' perceptions of the level of pain and the social impairments accompanying diabetes. Problems in mental health increased when patients viewed diabetes as bringing about social- and mental impairments and when the patient and GP differed more in their perception of the pain and social impairments accompanying diabetes. Health-care use by diabetes patients was increased by the perception of diabetes as painful, causing visible changes in the body, and mental impairments and by incongruence between patient and GP on these three aspects.

In osteoarthritis, problems in physical functioning seemed to be enhanced by the perception of osteoarthritis as painful, physically impairing, with few possibilities for medical control and by incongruence in patients' and GPs' ideas concerning the life-threateningness and controllability of osteoarthritis by self-care. The perception of osteoarthritis as life-threatening, changing in course, causing mental impairments, having few possibilities for self-control, and incongruence between patient and GP about the progressiveness of osteoarthritis were strongly related to more problems in mental health. A more intensive use of health-care services was associated with a belief in osteoarthritis as progressive, bringing about visible changes in the body and social and mental impairments and with incongruence in patients' and GPs' ideas about the changing course.

## DISCUSSION

The present study was designed to systematically compare patients' and GPs' perceptions of some important stressors accompanying chronic disease and to explore how incongruences in these perceptions may influence health status and health-care use. Before discussing the results, some methodological limitations in relation to the measures of the present study need to be noted. First, because the study involves a single assessment of the patients' and GPs' ideas, it was not possible to study the process of mutual influence over time, which would certainly represent a more accurate view of the way in which patient and GP perceive chronic disease. The cross-sectional nature of this study also does not allow conclusions to be made about the relationships found between incongruence and health status and use of health-care. In order to determine the actual value of the exploration of the perceptions of patients and providers, corroboration from a prospective study is needed. Second, the three-point scales that we used to assess stressors are rather limited and increase the change in unreliable answers. However, for logistic reasons, more extensive questioning was not possible. Third, this study only addresses the perception about two chronic disease categories. As every chronic disease has its own unique problems, the results can not be automatically generalized to other illness groups.

Despite these limitations, the results look interesting. They clearly show that patients and doctors can diverge in the way they think about illness. Moreover, patients with osteoarthritis differed significantly more from their doctors in their perception of stressors than did patients with diabetes, confirming our hypothesis that incongruence is larger in a disease with a less clear treatment policy.

The pattern of incongruence appeared to differ by type of disease. In osteoarthritis, doctors judge the disease as more serious than the patients themselves. Despite medical evidence of osteoarthritis being a chronic, progressive, incurable disease that causes distress and disability for its sufferers, patients in this study viewed their disease as rather stable, controllable, and bringing about only moderate impairments. In diabetes, it appeared that patients saw more problems than their doctors in the changing course of diabetes, the possibilities for medical care, the painfulness, and the visible changes in the body, whereas doctors, on the contrary, judged the life-threateningness, progressiveness, and physical and social impairments accompanying diabetes as more serious than the patients. Although the patterns of incongruence were different, the results of both groups suggest that the perceptions of GPs in this study are more congruent with medical knowledge than are patients' perceptions. For doctors, medical knowledge is the main source of information on which perceptions and ideas about a certain disease are based. These perceptions are more or less static mental templates that provide patterns for action. In this context, it is questionable whether doctors in this study were not given their general perception of diabetes and osteoarthritis, instead of their perception of the health status of an individual patient. Doctors lack the personal experience with the disease that patients have. For patients, their own day-to-day experience with their disease and its symptoms is most important in determining the ideas about disease (Heijmans, 1998; Petrie & Weinman, 1997). The interaction with a health-care provider and the medical knowledge obtained are, for patients, only two of many social

situations that have a decisive impact on the nature of their perceptions of their chronic disease. Health-care providers' ideas and explanations for symptoms and disease are rarely accepted by patients as replacements for their own ideas or perceptions (Hunt, Jordan, & Irwin, 1989; Petrie & Weinman, 1997). They are important, however, as patients can 'use' providers' perceptions to correct any inconsistencies in their own ideas.

Our finding that osteoarthritis patients and diabetes patients generally judge their illness as not very serious is comparable to the results of a number of studies on chronic diseases conducted by Johnston, Gilbert, Partridge and Collins (1992), who found that patients with diabetes, asthma, and epilepsy viewed their condition as being less serious than did healthy people or their medical practitioners. Johnston argued, as have others, that the most likely explanation lies in the personal experience with disease and, in turn, the way this experience is processed cognitively. Empirical studies have shown that, despite the incurability, treatment regimes, and reality of disability accompanying most chronic conditions, most patients adapt to a chronic disease. For example, Cassileth et al. (1984) have shown that most outpatients with diabetes, cancer, and rheumatic, renal, and skin diseases do not report higher levels of stress and lower levels of well-being throughout the history of their disease in comparison to comparable healthy subjects, the exceptions being the initial- and end-stages of a disease. The population in this study generally scored rather low on the stressors assessed, indicating that they view their illness as not being very serious. Patients were ill for a number of years, with very few being ill in the first year of their illness or terminally ill.

Differences between the perceptions of patients and health-care providers about the main stressors confronting chronic disease patients may produce misunderstandings and disrupt communication. In this study, incongruence between patients' and GPs' ideas about the main stressors was associated with an increase in health-care use and poorer physical and mental health. Patients' expectations should be taken into account when setting goals and evaluating treatment efficacy. Perceptions of patients should also inform the design of psycho-educational intervention, ensuring that these interventions are sensitive to the needs and beliefs of participants.

## TABLES

Table 2. Presence of illness-related stressors as perceived by patients and their GPs

Stressors	Scores on disease-related stressors					
	Diabetes ( <i>N</i> = 392)			Osteoarthritis ( <i>N</i> = 188)		
	Patient <i>M</i> (SD)	GP <i>M</i> (SD)	<i>t</i>	Patient <i>M</i> (SD)	GP <i>M</i> (SD)	<i>t</i>
Life-threatening	1.18 (.41)	1.49 (.63)	-8.08**	1.09 (.31)	1.10 (.38)	-.34
Progressive	1.52 (.56)	1.74 (.68)	-5.06**	1.66 (.56)	2.07 (.73)	-5.98**
Changing course	1.63 (.62)	1.35 (.58)	6.15**	1.68 (.60)	1.85 (.71)	-2.16
No medical control	1.60 (.74)	1.31 (.56)	6.05**	1.97 (.76)	1.88 (.68)	1.04
No self-control	1.57 (.71)	1.61 (.70)	-.75	1.87 (.68)	2.38 (.68)	-6.98**
Pain	1.47 (.64)	1.13 (.41)	9.28**	2.20 (.65)	2.40 (.63)	-3.13*
Visible changes in body	1.32 (.52)	1.18 (.48)	3.59**	1.68 (.66)	1.90 (.80)	-3.25*
Physical impairments	1.46 (.63)	1.63 (.70)	-4.12**	2.02 (.66)	2.46 (.60)	-6.96**
Social impairments	1.36 (.60)	1.52 (.64)	-3.68**	1.66 (.70)	1.73 (.73)	-.91
Mental impairments	1.48 (.61)	1.42 (.59)	1.49	1.42 (.60)	1.39 (.60)	.56

\**p* < .05; \*\**p* < .01.

Table 1. Characteristics of study groups

Characteristics	Diabetes (N = 392)	Osteoarthritis (N = 188)	<i>p</i>
<b>Demographic</b>			
Age	59.4 (15.0)	65.1 (12.5)	*
Percentage female	49	66	**
Percentage living with a partner	76	67	n.s.
<b>Education level</b>			
Percentage low	53	53	n.s.
Percentage middle	34	39	
Percentage high	13	8	
<b>Disease-related</b>			
Illness duration	9.3 (8.6)	9.7 (9.0)	n.s.
Percentage co-morbidity	26	28	n.s.
<b>Treatment-related</b>			
Percentage taking prescribed medication	94	81	**
Percentage taking non-prescribed medication	68	63	n.s.
Visits to GP (last year)	5.3 (4.9)	4.4 (4.4)	n.s.
Visits to medical specialist (last year)	3.9 (6.4)	2.3 (3.0)	*
Visits to allied health care (last year)	5.3 (12.8)	11.9 (22.0)	**
Psycho-social treatments (last year)	0.6 (4.5)	0.2 (1.2)	n.s.
Alternative treatments (last year)	0.8 (4.0)	2.0 (8.7)	*
<b>Health-related</b>			
SF-36 Physical Health	47.1 (10.1)	37.5 (10.5)	**
SF-36 Mental Health	48.9 (10.4)	50.0 (12.4)	n.s.

\**p* < .01; \*\**p* < .001.

Table 3. Mean discrepancies between patients and their GPs in the perception of disease-related stressors according to type of disease

Stressors	Mean discrepancy between patients' and GPs' scores		<i>t</i>
	I Diabetes (N = 392)	II Osteoarthritis (N = 188)	
Life-threatening	.51 (.59)	.16 (.43)	7.46**
Progressive	.58 (.60)	.72 (.63)	-2.34*
Changing course	.62 (.59)	.65 (.70)	-.44
No medical control	.62 (.71)	.81 (.70)	-2.85*
No self-control	.64 (.68)	.84 (.64)	-3.24**
Pain	.46 (.62)	.61 (.61)	-2.51*
Visible changes in body	.42 (.57)	.64 (.64)	-3.75**
Physical impairments	.52 (.60)	.67 (.63)	-2.63*
Social impairments	.51 (.61)	.71 (.66)	-3.27**
Mental impairments	.50 (.61)	.57 (.63)	-1.22

\**p* < .05; \*\**p* < .01; \*\*\**p* < .001.



Table 4. Pearson correlations between the level of incongruence and aspects of health

Stressors	Diabetes ( <i>N</i> = 392)		Osteoarthritis ( <i>N</i> = 188)	
	Physical health	Mental health	Physical health	Mental health
Life-threatening				-.30**
Progressive	-.14*	-.18*		
Changing course	-.21*	-.19*		
No medical control				
No self-control				
Pain	-.48**	-.25**	-.34**	
Visible changes in body		-.20**		-.25*
Physical impairments	-.23**			-.24*
Social impairments	-.29**	-.23**		-.32**
Mental impairments		-.21**		-.38**

\**p* < .01; \*\**p* < .001.

Table 5. Pearson correlations between the level of incongruence and types of health-care use

Stressors	Aspects of health-care use						
	PD	NPD	GP	MS	PM	PS	ALT
Diabetes ( <i>N</i> = 392)							
Life-threatening							
Progressive							
Changing course		.17*			.14*		
No medical control		.15*				.13*	
No self-control							
Pain			.15*		.33**		.17*
Visible changes in body			.19*				
Physical impairments							
Social impairments				.16*			
Mental impairments				.14*			-.20*
Osteoarthritis ( <i>N</i> = 188)							
Life-threatening						.22*	
Progressive							.20*
Changing course							
No medical control			-.20*			.18*	
No self-control							
Pain		.22*					
Visible changes in body							.19**
Physical impairments		.21*					
Social impairments							
Mental impairments		.23*					

Note. 1 = use of prescribed drugs (PD); 2 = use of non-prescribed drugs (NPD); 3 = number of visits to GP (GP); 4 = number of visits to a medical specialist (MS); 5 = number of visits to a paramedical therapist (PM); 6 = number of psychosocial treatments (PS); 7 = number of alternative treatments (ALT). \**p* < .01; \*\**p* < .001.

Table 6. Results of regression analyses predicting physical health, mental health, and health-care use in diabetes

Variables	Dependent								
	Physical health			Mental health			Health-care use		
	$\beta$	AdjR <sup>2</sup>	$\Delta$	$\beta$	AdjR <sup>2</sup>	$\Delta$	$\beta$	AdjR <sup>2</sup>	$\Delta$
Patient scores on		.60**			.29**			.12**	
Life-threatening									
Progressive									
Changing course	-.12*								
No medical control									
No self-control									
Pain	-.28**						.46**		
Visible changes in									
body									
Physical impairments	-.41**								
Social impairments	-.16*			-.30**					
Mental impairments				-.26**			.26*		
Incongruence scores on		.65**			.34**	**		.27**	**
Life-threatening									
Progressive									
Changing course									
No medical control									
No self-control									
Pain	-.20**			-.21**			.27*		
Visible changes in									
body							.26*		
Physical impairments									
Social impairments	-.14*			-.15*			.29**		
Mental impairments									

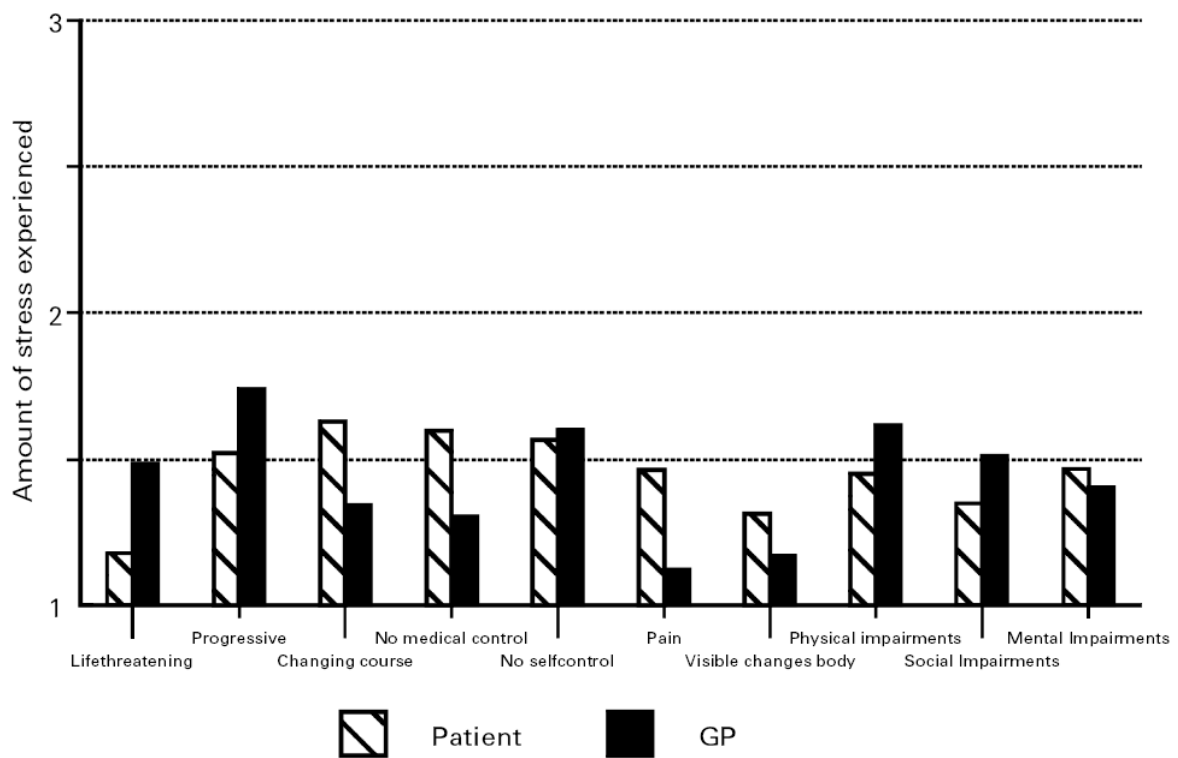
Note.  $\beta$  values are from the last regression equation. \* $p < .01$ ; \*\* $p < .001$ .

Table 7. Results of regression analyses predicting physical health, mental health, and health-care use in osteoarthritis

Variables	Dependent								
	Physical health			Mental health			Health-care use		
	$\beta$	AdjR <sup>2</sup>	$\Delta$	$\beta$	AdjR <sup>2</sup>	$\Delta$	$\beta$	AdjR <sup>2</sup>	$\Delta$
Patient scores on		.42**			.44**			.38**	
Life-threatening				-.28*					
Progressive							.30*		
Changing course				-.26*					
No medical control	-.16*								
No self-control				-.20*					
Pain	-.41**								
Visible changes in									
body							.38**		
Physical impairments	-.20*								
Social impairments							.33**		
Mental impairments				-.40**			.37**		
Incongruence scores on		.50**	**		.48**	**		.44**	**
Life-threatening	-.22*								
Progressive				-.22*					
Changing course							.29*		
No medical control									
No self-control	-.16*								
Pain									
Visible changes in									
body									
Physical impairments									
Social impairments									
Mental impairments									

Note.  $\beta$  values are from the last regression equation. \* $p < .01$ ; \*\* $p < .001$ .

Diabetes (n=392)



Osteoarthritis (n=188)

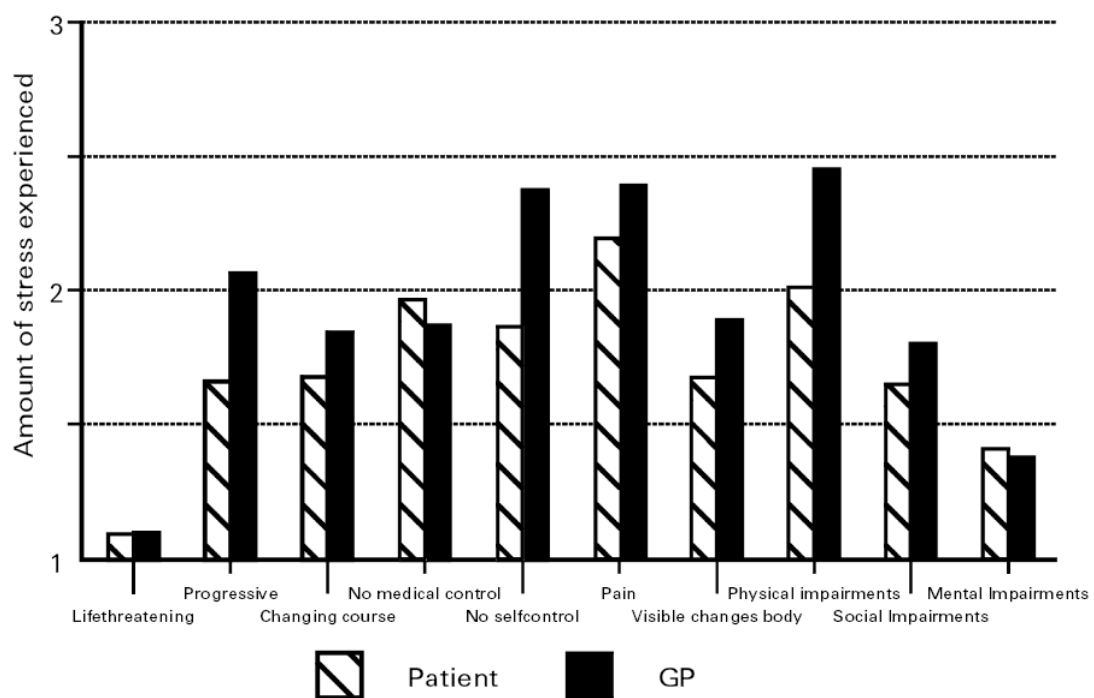


Figure 1. Stressors as experienced by patients and GPs.

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