Illness perceptions in patients with chronic musculoskeletal pain

Emmanuel Jacobs

Masterproef deel 1 Revalidatiewetenschappen en Kinesitherapie

Academiejaar 2012-2013

Promotor(s): prof. dr. N. Roussel, dra. H. Neels, prof. dr. F. Struyf

artesis
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DANKWOORD

Een systematische literatuurstudie schrijf je nooit alleen, dat werd mij dit academiejaar des te meer duidelijk. Het is dan ook niet meer dan normaal dat, bij aanvang van dit werk, de nodige mensen een speciaal woord van dank krijgen.

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INHOUDSOPGAVE

GEBRUIKTE FIGUREN

GEBRUIKTE TABELLEN

GEBRUIKTE AFKORTINGEN

A	
AUSCAN	Australian/Canadian Hand Osteoarthritis Index
B	
BPCQ	Beliefs about Pain Control Questionnaire
C	
CBO	Central Counseling Institution
CBQ-W	Causal Beliefs Questionnaire Whiplash
CLBP	Chronic Low Back Pain
D	
DLV	Dutch Language Version
E	
EBRO	Evidence Based Guide Development
F	
FM	Fibromyalgia
G	
GP	General Practitioner
I	
IPQ	Illness Perception Questionnaire
IPQ-R	Illness Perception Questionnaire Revised version
IPQ-R-FM	Illness Perception Questionnaire Revised version for Fibromyalgia
L	
L.O.E.	Level Of Evidence
LBP	Low Back Pain
O	
OA	Osteoarthritis
P	
PAIRS	Pain And Impairment Relationship Scale
S	
SD	Standard Deviation
SRM	Leventhal's Self-Regulation Model
W	
WAD	Whiplash Associated Disorders
WOMAC	Knee and Hip Osteoarthritis Index

SITUERING

Deze longitudinale studie kadert binnen de onderzoekslijn P.A.I.N. van de vakgroep musculoskeletale kinesitherapie. Sinds verschillende jaren word er onder leiding van prof. dr. J. Nijs en prof. dr. N. Roussel aan de Artesis Hogeschool Antwerpen, de Universiteit Antwerpen en de Vrije Universiteit Brussel (VUB) onderzoek verricht naar patiënten met chronische pijn en in het bijzonder chronische lage rugklachten (LRK). Deze masterproef situeert zich binnen het onderzoeksproject 'Ziektepercepties bij patiënten met chronische pijn: een internationaal multicenter studie'.

ABSTRACT EN TREFWOORDEN

Inleiding:

Patiënten met chronische musculoskeletale pijn vormen hun eigen ziektepercepties om een verklaring te geven aan hun klachten. Het doel van deze studie is om een vergelijking te maken van de ziektepercepties volgens het 'Common Sense Model' van Leventhal tussen verschillende patiëntengroepen met chronische musculoskeletale pijn. Daarnaast is het doel van deze studie om het verband te onderzoeken tussen ziektepercepties en andere parameters, net als het effect van een behandeling nagaan op ziektepercepties.

Methode:

Een systematische review werd uitgevoerd, waarbij 2 databanken werden gebruikt (Pubmed and Web of Science), 5 zoektermen en 3 studievragen: 1) welke ziektepercepties komen voor bij patiënten met chronische musculoskeletale pijn, 2) wat is het verband tussen ziektepercepties en de algemene prognose, net als specifieke uitkomstparameters (zoals levenskwaliteit, fysieke activiteit en andere ziektepercepties) en 3) wat is het effect van een behandeling die gericht is op het verbeteren van deze ziektepercepties en andere parameters? Tien artikels werden methodologisch gescoord door drie onderzoekers en de intraclass correlatiecoëfficiënt werd berekend. Deze studiestrategie resulteerde in 263 abstracts die werden gescreend op hun inhoud. Vervolgens werden 28 full-text artikels gelezen en gescreend. Uiteindelijk werden 17 artikels geïncludeerd in deze systematische review.

Resultaten:

Slechts 3 van de 17 studies hadden een evidentielevel B en de overige 14 studies een level C. De intraclass correlatiecoëfficiënt bedroeg 0,91. Patiënten met een chronische musculoskeletale aandoening ervaren hun aandoening over het algemeen ook als chronisch met zware gevolgen. Negatieve ziektepercepties kunnen leiden tot verscheidene negatieve biopsychosociale gevolgen. Andersom kan functionaliteit een significant positief effect hebben op ziektepercepties. Verder zijn ziektepercepties een sterke voorspeller voor de eigenschappen van een ziekteproces. Ziektepercepties

kunnen en zouden behandeld moeten worden bij patiënten met chronische musculoskeletale pijn, door middel van een gespecialiseerd behandelingsprogramma.

Discussie:

Ziektepercepties sterk zijn afhankelijk van de studiepopulatie en schijnen één van de meest bepalende factoren te zijn voor dit ziekteproces bij patiënten met chronische musculoskeletale pijn, via verschillende biopsychosociale parameters. Ziektepercepties zijn beïnvloedbaar door een behandelend programma dat gericht is op het veranderen van deze percepties.

Conclusie:

Ziektepercepties oefenen een grote invloed uit op een ziekteproces bij patiënten met een chronische musculoskeletale aandoening. Het is daarom belangrijk om de ziektepercepties te evalueren in deze patiëntenpopulatie en deze te behandelen, ten einde het ziekteproces positief te beïnvloeden.

Trefwoorden:

Chronische pijn, chronische musculoskeletale pijn, ziektepercepties, fibromyalgie, arthrose, aspecifieke lagerugklachten.

ABSTRACT AND KEYWORDS

Introduction:

Patients with chronic musculoskeletal pain form their own illness perceptions in order to explain their complaints. This study aims at comparing illness perceptions according to Leventhal's Common Sense Model, between different groups of patients with chronic musculoskeletal pain. In addition, we want to assess the relationship between illness perceptions and other parameters and analyze the effect of treatment on illness perceptions.

Method:

A systematic review was performed, using two databases (Pubmed and Web of Science), 5 search terms and 3 study questions: 1) which illness perceptions appear in patients with chronic musculoskeletal pain, 2) what is the relationship between illness perceptions and general prognosis and specific outcome parameters (like quality of life, physical activity or other illness perceptions) and 3) what is the effect of a treatment directed to improve these illness perceptions and other parameters? Ten articles were scored by 3 researchers for methodological quality and the interclass correlation coefficient was calculated. The study strategy resulted in 263 abstracts which were screened for their content. Next, 28 full text articles were read and screened, and finally 17 articles were included in this systematic review.

Results:

Only 3 of the 17 studies had a level of evidence B and 14 articles had a level C. Intraclass correlation coefficient was 0,91. Patients with a chronic musculoskeletal condition overall perceive their condition to be chronic with serious consequences. Negative illness perceptions can lead to different negative bio-psychosocial effects but also: functionality can have a significant positive effect on illness perceptions. Furthermore illness perceptions are great predictors of the characteristics of the illness process. Illness perceptions can and should be treated in patients with chronic musculoskeletal pain by a specialized program.

Discussion:

Illness perceptions are clearly influenced by the study population and seem to be one of the most determining factors for the illness process in patients with chronic musculoskeletal pain. Illness perceptions can be influenced by a treatment program aimed at changing these perceptions.

Conclusion:

Illness perceptions exercise a huge influence on an illness process in patients with a chronic musculoskeletal condition. Therefore it is important to evaluate illness perceptions in this population and to treat these perceptions adequately, in order to influence the illness process positively.

Keywords:

Chronic pain, chronic musculoskeletal pain, illness perceptions, fibromyalgia, osteoarthritis, aspecific low back pain.

INTRODUCTION

Chronic musculoskeletal pain is a major cause of activity limitations, work absenteeism and huge health care expenses, and strikes a vast majority of an entire population (prevalence of 23% for chronic non-specific low back pain, 2-3% for fibromyalgia, 25%-80% for osteoarthritis and 25% for other chronic musculoskeletal pain) (1–4). Illness perceptions are an individual's personal representations about the illness. Leventhal's Self-Regulation Model (SRM) states that an individual first form a representation of the illness, trying to make sense of his illness related experiences. These perceptions are based on former experiences and information provided by others with significant influence on that individual. Subsequently patients adopt a behavior to cope with these illness perceptions. Negative illness perceptions can have a negative influence on an illness process and vice versa (1,5,6). Illness perceptions are built up based on different categories, these categories will be discussed further on in the clarification of the different dimensions of the Illness Perception Questionnaire (IPQ).

Illness perceptions may be assessed by questionnaires such as the IPQ, the revised version of IPQ (IPQ-R) or an adaptation of the IPQ to the condition, such as the IPQ for fibromyalgia patients (IPQ-R-FM). Other questionnaires are the Beliefs about Pain Control Questionnaire (BPCQ) or the Causal Beliefs Questionnaire Whiplash (CBQ-W).
The IPQ(-R) evaluates illness perceptions by categorizing them in different domains, and assesses as well cognitive perceptions about one's illness and emotional responses generated by the illness (6); 1: identity (number of symptoms attributed to the disease), 2: cause of the disease, 3: timeline (does the patient experience his/her disease as acute or chronic) and timeline cyclical (does the patient experience recurrent symptoms), 4: consequences of the disease (number of consequences and severity), 5: personal control and treatment control (does the patient have influence on his/her symptoms), 6: coherence (does the patient understand his/her symptoms) and 7: emotional response (does the patient experience psychological reactions on his illness).
Negative illness perceptions can be recognized by low scores on the dimensions personal control, treatment control and coherence, and high scores on identity, timeline (acute/chronic), timeline cyclical, consequences and emotional response (3).

While illness perceptions have been described in specific groups of patients with chronic musculoskeletal pain, no comparison has been made between different conditions. Therefore, the first aim of this study is to compare illness perceptions between groups of patients with chronic musculoskeletal pain. In addition, the relationship between illness perceptions and other parameters (such as prognosis, illness behavior,…) will be assessed. Finally, this study aims at analyzing the effect of treatment (such as an informational leaflet, multidimensional treatment programs for illness perceptions, acupuncture, etc.) on illness perceptions.

METHOD

Search strategy

To identify relevant articles regarding illness perceptions in patients with chronic musculoskeletal pain, PubMed (http://www.ncbi.nlm.nih.gov/entrez) and Web of Science (http://isiwebofknowledge.com) were searched for existing literature until 22 November 2012. This systematic search aims at answering the following 3 questions: 1) which illness perceptions appear in patients with chronic musculoskeletal pain, 2) what is the relationship between illness perceptions and general prognosis and specific outcome parameters (like quality of life, physical activity or other illness perceptions) and 3) what is the effect of a treatment directed to improve these illness perceptions and other parameters?

Search terms
1) Illness perceptions OR illness beliefs
2) (Illness perceptions OR illness beliefs) AND chronic pain
3) (Illness perceptions OR illness beliefs) AND (chronic musculoskeletal pain)
4) (Illness perceptions OR illness beliefs) AND (Fibromyalgia OR Chronic low back pain OR CLBP OR whiplash associated disorders OR WAD OR whiplash injuries OR whiplash associated syndrome OR osteoarthritis)
5) (Illness perceptions OR illness beliefs) AND (Fibromyalgia OR Chronic low back pain OR CLBP OR whiplash associated disorders OR WAD OR whiplash injuries OR whiplash associated syndrome OR osteoarthritis) AND (IPQ OR IPQ-R OR IPQR OR Illness perception questionnaire OR IPQR FM OR IPQ-R FM OR brief IPQ OR IPQB OR PAIRS OR pain and impairment relationship scale)

Table 1 – Search terms

The search strategy was based on a combination of different search terms. The search strategy was based on a combination of the search terms, derived from the "PICO".

- P: patients with chronic musculoskeletal pain (more specific chronic low back pain [CLBP], fibromyalgia [FM], whiplash associated disorders [WAD] and osteoarthritis [OA]).
- I: the measuring of illness perceptions by questionnaires

such as the (brief) IPQ (-Revised [IPQ-R], - for Fibromyalgia [IPQ-FM], -Revised for Fibromyalgia [IPQ-R FM]) and PAIRS (Pain And Impairment Relationship Scale), or the treatment of this illness perceptions in order to improve them.

- C: /.
- O: illness perceptions, illness beliefs, prognosis, physical activity and quality of life. The search strategy used a combination of key words and MeSH terms as illustrated in Table 1. The search strategy (see Table 1) was refined until the amount of articles for each combination was less than 200.

Study selection

To be included in this systematic review, a study had to meet the following criteria: 1) the author(s) studied illness perceptions in patients with chronic musculoskeletal pain, 2) the studies were published in English or Dutch; 3) articles were full text reports, and not abstracts, letters, reviews or editorials. All titles and abstracts that resulted from the search were screened to identify relevant articles. The full-text article was included if the citation was considered potentially relevant. Articles were classified based on the study design.

Assessment of study quality

A methodological scoring tool was used to evaluate the methodological quality of studies with different designs, obtained via the manual of Evidence Based Guide Development (EBRO) at the Central Counseling Institution (CBO) website (www.cbo.nl). If some items of this assessment list were not applicable for the study, they were scored as 'not applicable' and the total score was adapted. Ten studies (randomly chosen) were evaluated by 3 researchers, who were blinded to each other results, in order to evaluate inter-observer reliability.

RESULTS

Search strategy

Keywords [22/11]	Pubmed: Before screening (no limits)	Pubmed: Before screening (limits)	Pubmed: After screening	Web of Knowledge: Before screening (no limits)	Web of Knowledge: After screening	
1] Illness perceptions OR illness beliefs	22574	21053	/	12296	/	
2] (Illness perceptions OR illness beliefs) AND chronic pain	546	513	/	486	/	
3] (Illness perceptions OR illness beliefs) AND (chronic musculoskeletal pain)	39	(37)	7	(63)	9	13
4] (Illness perceptions OR illness beliefs) AND (Fibromyalgia OR Chronic low back pain OR CLBP OR whiplash associated disorders OR WAD OR whiplash injuries OR whiplash associated syndrome OR osteoarthritis)	355	333	/	289	/	
5] (Illness perceptions OR illness beliefs) AND (Fibromyalgia OR Chronic low back pain OR CLBP OR whiplash associated disorders OR WAD OR whiplash injuries OR whiplash associated syndrome OR osteoarthritis) AND (IPQ OR IPQ-R OR IPQR OR Illness perception questionnaire OR IPQR FM OR IPQ-R FM OR brief IPQ OR IPQB OR PAIRS OR pain and impairment relationship scale)	89	(81)	14	(82)	15	19
DEDUPLICATION:			**20**		**22**	**28**

263 articles

Table 2 – Search strategy

The study selection is presented in Table 2. Twenty-eight full-text articles were included in the qualitative synthesis of the review. Those 28 articles were screened and reviewed. Most studies were excluded based on the first inclusion criterion: adult humans with chronic musculoskeletal pain.

The search strategy and the study selection are presented in Table 2 and Figure 1. In total, 263 abstracts were screened based on the content of the abstract. Duplicates were removed. Twenty-eight full-text articles were screened. Eleven full text articles did not meet inclusion criteria and were excluded. Table 3 presents the 17 included studies.

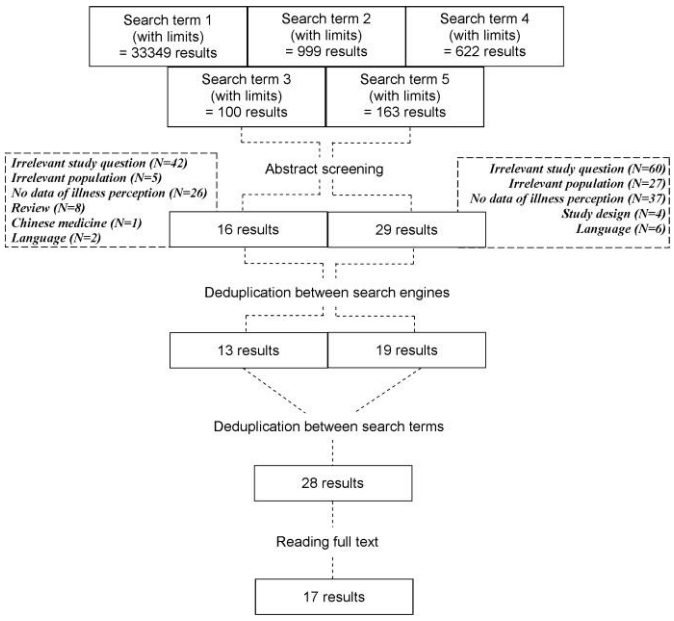

Figure 1 – Screening procedure

This figure represents the screening procedure with all the results. 263 articles were filtered down to 17 articles.

Author	Year	Population	Study design	1	2	3	4	5	5a	6	7	8	9	10	11	12	13	14	L.O.E.	Score
Sluiter	2007	Chronic Repetitive Strain Injury	Case control	I	/	I	I	O	I	I	I	/	I	I	/	/	/	/	C	8 // 9
Foster	2008	CLBP	Case control	I	/	I	I	O	I	/	I	/	I	I	/	/	/	/	C	7 // 8
Cabak	2011	CLBP	Case control	I	I	I	I	O	I	I	I	/	I	I	/	/	/	/	C	9 // 10
van Wilgen	2008	Fibromyalgia	Case control	I	/	O	I	O	I	/	I	/	I	I	/	/	/	/	C	6 // 8
van Ittersum	2009	Fibromyalgia	Case control	I	/	O	I	O	I	/	I	/	I	I	/	/	/	/	C	6 // 8
Stuifbergen	2006	Fibromyalgia (female)	Case control	I	/	I	I	O	I	/	I	/	I	I	/	/	/	/	C	7 // 8
Glattacker	2010	Fibromyalgia (female)	Case control	I	/	O	I	O	I	/	I	/	I	I	/	/	/	/	C	6 //8
Botha-Scheepers	2006	Osteoarthritis	Case control	I	I	I	I	O	I	I	I	/	I	I	/	/	/	/	B	9 // 10
Bijsterbosch	2009	Osteoarthritis	Case control	I	/	I	I	O	I	/	I	/	I	I	/	/	/	/	C	7 // 8
Kaptein	2010	Osteoarthritis	Case control	I	I	I	I	O	I	/	I	/	I	I	/	/	/	/	C	8 // 9
Hill	2007	Osteoarthritis (hand)	Case control	I	I	I	I	O	I	I	I	/	I	I	/	/	/	/	C	9 // 10
Buitenhuis	2008	Whiplash	Case control	I	/	I	I	O	I	/	I	/	I	I	/	/	/	/	C	7 // 8
Gamus	2008	Chronic musculoskeletal pain	Cohort	O	I	I	I	O	I	O	I	I	-	/	I	I	/	/	C	8,5 // 12
Moss-Morris	2007	Chronic musculoskeletal pain	Cohort	I	I	I	I	O	I	I	I	I	I	/	I	I	/	/	C	11 // 12
van Ittersum	2010	Fibromyalgia	Cohort	/	O	I	I	O	I	I	I	I	I	/	I	I	/	/	C	9 // 11
Van Abbema	2011	Fibromyalgia	Cohort	O	O	I	I	O	I	O	/	I	I	/	I	I	/	/	B	7 // 11
Siemonsma	2012	CLBP	RCT	I	I	O	I	I	/	-	I	I	I	I	/	I	I	/	B	10,5 // 12

Table 3 – Methodological scoring

L.O.E. = Level of Evidence
Case control: 1= Group defined? 2= Controlgroup defined? 3= No selection bias? 4= Clearly defined exposure and adequate method of evaluating exposure? 5= Blind exposure? 5a= Influence of blind exposure on evaluation of exposure? 6=Clear definition of most important cofounders and consideration in design of research/analysis? 7= Results valid and applicable? 8= Results 9= Applicable in Flemish setting? 10= Applicable on whole population? 11= Conclusion
Cohort (=prospective cohort study): 1= Groups defined? 2= No selection bias? 3= Exposure clearly defined and adequate method of evaluating exposure? 4= Outcome clearly defined and adequate method of evaluating outcome? 5= Blind outcome measuring? 5a= Influence of blind measuring on evaluation of outcome? 6= Good follow up? 7 = No loss-to-follow-up? 8= Clear definition of most important cofounders and prognostic factors? 9= Results valid and applicable? 10= Results 11= Applicable in Flemish setting? 12= Applicable on whole population? 13= Conclusion
RCT: 1= Randomized attribution of intervention? 2= Inclusion of individuals blind to randomization sequence? 3= Patients blind to treatment? 4= Treaters blind for treatment? 5= Evaluators of effects were blind for treatment? 6= Groups comparable at beginning of trial? 7= Decent follow up data? 8= All patients analysed in their own group? 9= Equal treatment (excl. intervention) of both groups? 10 = Results valid and applicable? 11= Results 12= Results applicable in Flemish setting? 13= Results applicable on whole population 14= Conclusion.
I = Yes; O = No; - = doubtful; / = not mentioned

Methodological quality

Seventeen studies were included and scored for their methodological quality. The methodological quality of the studies varied between 7/11 (64%) (7) to 11/12 (92%) (8). Overall, the average score was 8/10, with mainly level of evidence C (case control). A minority of studies compared patients with a healthy controls .

Fourteen studies (1,3–7,9–16) analyzed the illness perceptions in patients with chronic musculoskeletal pain. Eleven studies (1,3,4,6–9,11,12,14,16) discussed the effect of illness perceptions on prognosis, outcome parameters and the influence between illness perception dimensions. Ten studies (1,4–9,12,15,17) evaluated the effect of a treatment on illness perceptions.

Information regarding the methodological scoring of the articles, the included study populations, study designs and levels of evidence is presented in Table 3. Only 3 of the 17 studies had a level of evidence B (1 Randomized Controlled Trial, 1 prospective cohort study and 1 case control study) and 14 articles had a level C (3 prospective cohort study's and 11 case controls). The interclass correlation coefficient was calculated for the methodological quality scores which were evaluated by multiple researchers and was 0,91.

Illness perceptions

Chronic non-specific low back pain (CLBP)

Two studies (1,10) evaluated patients with especially chronic non-specific LBP, one study (9) included as well recurrent as chronic patients with LBP with the use of the IPQ-R) (1,9) (see Table 4) and the BPCQ (10). Most patients consider an accident or injury, ageing and their own behavior as ***cause*** for their complaints (9). Back pain, sleep difficulties and stiff joints are predominating ***symptoms*** in patients with LBP (9). Patients with LBP reported strong will and belief in their own ***pain control***. Although, in case of longer duration of symptoms, patients report less personal control (10).

Author	Year	Patients	Identity	Consequences	Chronic Timeline	Cyclical Timeline	Personal control	Treatment control	Illness Coherence	Emotional representations
			Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
Siemonsma (1)	2012	CLPB	/	19 (0,75)	23,6 (0,7)	13,6 (0,75)	19,1 (0,85)	17,1 (0,5)	14,3 (0,9)	16,9 (0,9)
Foster (2)	2008	CLPB	4,0 (2,4)	17,3 (5,5)	19,6 (5,8)	13,0 (3,4)	20,5 (3,8)	17,0 (3,4)	13,8 (5,0)	16,7 (5,2)
Maximal score range			**(0-14)**	**(6-30)**	**(6-30)**	**(4-20)**	**(6-30)**	**(5-25)**	**(5-25)**	**(6-30)**

Table 4 – Results of the IPQ-R in chronic aspecific LBP

This table presents the results of the several sub-scores of the IPQ-R. Both the mean value and standard deviation (SD) are presented.

Fibromyalgia

Six studies (3,5–7,11,12) evaluated illness perceptions in patients with fibromyalgia. Overused tendo-muscular junctions, rheumatism, sleeping disturbances, stress or worry, chance or bad luck and altered immunity were cited as possible ***causes*** for their illness (mostly somatic causes) (11). The most reported causes can be found in Table 5. Patients with fibromyalgia attribute 43-85% of the presented possible ***symptoms*** to their illness (3,6,12). The most frequently experienced symptoms were pain, stiff joints, loss of strength, fatigue, and sleep difficulties (12).

Author	Year	Somatic	Psychological	Not classifiable
Stuifbergen (8)	2006	Accident of lesion	Stress or worry	
			Being overworked	
Glattacker (9)	2010	Altered immunity	Stress or worry	
			Being overworked	
			Family problems	
			Emotional state	
van Wilgen (4)	2008	Overused tendomuscular junctions	Stress or worry	
		Rheumatism	Chance	
		Sleeping disturbances	Bad luck	
		Altered immunity	Perfectionism	
			Psychologically traumatic event	
		64%	31%	5%

Table 5 – Reported causes

This table represents the most reported causes in this population, divided in categories "somatic", "psychological" and "not classifiable" as proposed by Van Wilgen et al.

Patients in this population perceived serious ***consequences*** from their condition (6,7,11) with a severe impact on their physical (3), social (3,5), financial (5) and psychological (3) functioning. In general, patients perceived their illness as ***chronic*** (3,5–7,11) and fluctuating over time (3,6) or ***cyclical*** (5,6).

Five studies (3,5–7,11) discussed personal and treatment ***control*** in this population. The results of this studies can be found in Table 6.

Author	Year	Personal control	Treatment control	Questionnaire
		Mean (SD)	Mean (SD)	
Stuifbergen (8)	2006	3,1 (0,79)	3,60 (0,73)	IPQ-R
Maximal range		**1-5**	**1-5**	
van Wilgen (4)	2008	19,5 (4,2)	15,7 (3,2)	IPQ-R-FM
van Ittersum (5)	2009	21.1 (0.4)	16.4 (0.3)	IPQ-R-FM-DLV
van Ittersum (6)	2011	19.7 (4.2)	16.0 (3.4)	IPQ-R
Van Abbema (7)	2011	21.5 (3.8)	17.4 (3.3)	IPQ
Maximal range		**6-30**	**5-25**	

Table 6 – Reported personal and treatment control

Mean values and standard deviation (SD) are given for the results of the domains personal control and treatment control, evaluated with the IPQ, IPQ-R and IPQ-R-FM (version for fibromyalgia). DLV stands for Dutch Language Version.

Patients with fibromyalgia often have a low ***coherence*** (i.e. no clear picture of their condition) (3,6). They report no negative emotions generated by their illness (3), but do believe that ***emotional representations*** have a large influence on their complaints (5). Another study however stated that women with fibromyalgia find their condition emotionally distressing (6).

Osteoarthritis

Four studies (4,13–15) evaluated illness perceptions in patients with osteoarthritis, using the IPQ-R (see Table 7). Patients with osteoarthritis reported only 37% of the listed ***symptoms*** (most reported symptoms were stiff joints, pain, fatigue, loss of strength, and sleeping difficulties (4)). They perceived on average serious ***consequences*** due to their illness, and stated their condition to be ***chronic*** and ***cyclical*** (4,13–15). They perceived an average personal and treatment ***control***, an average illness ***coherence*** and small ***emotional representations*** (4,13–15). Their psychological attributions were average, such as their immune function attribution, accident or chance attribution and risk attribution (15).

Author	Year	Patients	Identity	Consequences	Chronic Timeline	Cyclical Timeline	Personal control	Treatment control	Illness Coherence	Emotional representations
			Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
Scheepers (11)	2006	Osteoarthritis	5 (2)	17 (3)	25 (2,5)	15 (2)	19 (2,5)	14 (2)	18 (2,5)	14 (2,5)
Hill (10)	2007	Osteoarthritis	2,39 (2,1)	14,21 (4,9)	22,65 (4,7)	12,19 (3,5)	17,39 (4,0)	14,14 (3,3)	12,75 (4,2)	14,18 (4,8)
Bijsterbosch (12)	2009	Osteoarthritis	5,3 (2,5)	16,8 (4,6)	25,4 (3,7)	14,3 (3,1)	18,8 (3,5)	13,9 (2,8)	17,9 (4,1)	14,3 (5,2)
Kaptein (13)	2010	Osteoarthritis	5,3 (2,5)	16,8 (4,6)	25,4 (3,7)	14,3 (3,1)	18,8 (3,5)	13,9 (2,8)	17,9 (4,1)	14,3 (5,2)
Maximal score range			**(0-14)**	**(6-30)**	**(6-30)**	**(4-20)**	**(6-30)**	**(5-25)**	**(5-25)**	**(6-30)**

Table 7 – Results of the IPQ-R in osteoarthritis

The mean value and standard deviation (SD) of the several sub-scores of the IPQ-R is given.

Whiplash

The only study (16) evaluating illness perceptions in whiplash patients reveal that neck complaints are ascribed as a ***consequence*** of a muscular cause (but no muscular tears) (mostly 1 month after an accident) or from their whiplash itself (mostly 6 to 12 months after an accident).

Other chronic musculoskeletal pain

No articles mentioned results about the illness perceptions in patients with other chronic musculoskeletal pain.

The relationship between illness perceptions and prognosis or outcome parameters and the mutual relation between the sub-scores of the IPQ-R

Chronic aspecific LBP

Two studies (1,9) analyzed the effect of illness perceptions on other parameters in patients with CLBP using a prospective study. Patients with LBP believing their symptoms are not treatable had an increased risk of poor outcome at 6 months, and this risk increased with increasing perceptions of helplessness (1,9). Especially the dimensions 'consequences', 'personal control' and 'timeline chronic/acute' had an influence on the patients' prognosis (1,9). Patients with good outcome at 6 months follow up showed more favorable scores on the dimensions of consequences, emotional representation, personal and treatment control and illness identity (9). No data were found regarding the relationship between the different dimensions in patients with chronic LBP.

Fibromyalgia

Five studies (3,6,7,11,12) discussed the predictive value of illness perceptions (N=2) and the relationship between illness perception dimensions (N=3). One study stated that patient's illness perceptions have no prognostic value (7). Another study nevertheless concluded that baseline illness perceptions (i.e. illness identity and consequences) are the only predictors of outcome (12). Table 8 demonstrates all the associations between illness perception dimensions and other parameters (6,11,12).

The association between the different dimensions of the IPQ-R is illustrated in Table 8 (3,6,12). Positive or negative associations are based on the results of the IPQ-R. Significant associations are observed between the different dimensions of the IPQ-R: the belief in serious consequences is related to the belief of more symptoms (illness identity), also to a strong belief in a chronic course (timeline) and to negative emotions concerning the condition (emotional representation). In other direction, believing that more symptoms are due to their condition (i.e. illness identity) is related to little personal control and less treatment control. Also, personal control and treatment control are strongly related. There was a significant relation between little treatment control and stronger belief in the chronic character of the condition (timeline) and small illness coherence. Strong emotional representations are correlated to the belief in experiencing more symptoms (illness identity), little personal and treatment control and little coherence (3,6,12).

	Biological				Psychosocial					
	Heredity	Bad eating habits	Fatigue	Illness outcome	Quality of life	Catastrophizing	Anxiety	Depressing feeling	Self efficacy	Social functioning
Illness identity										P = -0,36 [9]
Timeline									P = -0,24 [9]	P = -0,25 [9]
Timeline cyclical						P = 0,41 [4]				
Consequences			P = 0,37 [4]				P = 0,45 [4]		P = -0,43 [9]	P = -0,51 [9]
Personal control			P = -0,37 [4]						P = 0,25 [9]	
Treatment control									P = 0,31 [9]	
Coherence						P= -0,42 [4]		P = -0,36 [4]	P = 0,22 [9]	
Emotional representations						P = 0,64 [4]	P = 0,48 [4]	P = 0,45 [4]	P = -0,5 [9]	
Reference in text	Patients with more psychological attributions for their FM, such as stress or "my emotional state," had more risk factor attributions such as eating habits or heredity. (4)		Fatigue was related to experiencing more consequences of FM and to a low degree of personal control. (4)	Illness representations are also proven to be predictors of outcomes when controlling for the initial impact. The illness representations most strongly related to adaptive outcome in the present study were consequences and illness identity. (9)	The more symptoms the patients attribute to fibromyalgia (identity), the greater the impact they demonstrate with regard to all scales of the SF-36. The quality of life of patients with FM was related to the number of consequences that patients experience. (4)	Catastrophizing was significantly related to a low understanding of the symptoms of FM and positively related to the more cyclical nature of FM and an emotional representation. (4)	Anxiety was related to experiencing more consequences of FM and to an emotional representation of FM. (4)	Feeling depressed was related to a low score for illness coherence. Feeling depressed was also related to an emotional representation. (4)	Illness representations (namely lower values with respect to timeline acute–chronic, consequences, and emotional impact as well as higher values concerning personal control, treatment control, and coherence) are also significantly correlated with better self-efficacy ratings. (9)	The representation of the fibromyalgia as chronic predicts better social functioning. The identity scale is a significant predictor of social functioning. The scale consequences is a significant predictor with regard to the social functioning. (9)

Table 8 – Associations between illness perception dimensions and other parameters in fibromyalgia

This table figures the associations between dimensions of the IPQ-R and other parameters, categorized in biological and psychosocial parameters (quality of life depends on both categories).

Author	Year	Population	Experimental intervention	Control intervention	IPQ(-R)						Quality of life						Note
					Identity	Timeline	Timeline cyclical	Consequences	Personal control	Treatment control	Coherence	Emotional response	Depressing feeling	Morning tiredness	Pain intensity	Fatigue	Total Q.O.L.	
Siemonsma (1)	2012	CLPB	CTIP (Cognitive Treatment of Illness Perceptions)	Waiting list	/	P = 0,899	**P = 0,008**	**P = 0,046**	**P = 0,001**	P = 0,113	**P = 0,024**	P = 0,425	/	/	/	/	/	/
van Ittersum (6)	2011	Fibromyalgia	Informational leaflet	2 week control period	/	**P = 0,030**	P = 0,560	P = 0,200	P = 0,650	P = 0,050	**P = 0,010**	**P = 0,000**	/	/	**P = 0,010**	**P = 0,000**	/	No clinical significant results
Van Abbema (7)	2011	Fibromyalgia	Multidisciplinary programme active living with Fibromyalgia	/	P = 0,130	P = 0,500	P = 0,110	P = 0,840	P = 0,210	P = 0,370	P = 0,760	P = 0,150	**P = 0,010**	**P = 0,010**	**P = 0,050**	/	**P = 0,010**	/

Table 9 – Effects of treatments on different parameters

P-values <0.05 are statistically significant.

Osteoarthritis

Two studies (4,14) discussed the influence of illness perceptions on outcome parameters. High scores on illness identity, believing in serious consequences, high emotional representation and higher belief in the chronic course of the condition lead to increased risk of limitations in activity (4,14). The same is true for the belief in immunity as a causal factor of their condition. Patients with stronger functional impairment showed less perceived control and illness coherence (4). Illness perceptions did not have a significant influence on pain intensity in this population. However, there was a significant effect noticeable from illness perceptions on the outcome measured by functional impairment scales, namely the Australian/Canadian Hand Osteoarthritis Index (AUSCAN) and the Knee and Hip Osteoarthritis Index (WOMAC).

Whiplash

High scores on illness identity are related to a higher rate of disability (as evidenced by higher scores on the Neck Disability Index) and the duration of the complaints in chronic whiplash patients (16).

Other chronic musculoskeletal pain

Beliefs in less serious consequences from their condition, was strongly associated to an improved outcome (measured by the physical and mental component scores of the Short Form Health Questionnaire). There was a small to moderate correlation (correlation coefficient = 0,20-0,40) between the different illness perceptions (except for illness coherence, which has only a negative relation with emotional representations) (8).

Effect of a treatment program or other parameters on illness perceptions

Chronic non-specific low back pain

Two studies (1,9) evaluated the effect of a treatment program on illness perceptions in LBP patients (especially chronic patients in one study (1) and as well chronic as recurrent patients in the other study (9)). A "Cognitive Treatment of Illness Perceptions approach" had a significant favorable effect compared to control group without intervention on dimensions timeline cyclical (p=0,008), consequences (p=0,046), personal control (p=0,001) and coherence (p=0,024). However, there was no effect on timeline acute/chronic, treatment control and emotional representations (9). Also, a specialized "perception treatment program" designed to improve illness perceptions significantly increased the functionality of the patients with LBP, as evidenced by lower scores on the Patient Specific Functioning List (1).

Fibromyalgia

Four studies evaluated the effect of an intervention program (N=1) (7), an informational leaflet (N=1) (5), and parameters like age, years since diagnosis, education etc. (N=2) (6,12) in patients with fibromyalgia (see Table 9). A better quality of life was observed in patients with fibromyalgia following a multidisciplinary program aimed at promoting active living ($p<0.05$) (7). This 17-weeks lasting intervention consisted of an educational part, a physical part and self-management. The educational part (consisting of cognitive treatment and information sessions) and self-management both used goal setting, pacing, distraction and assertiveness training. The physical program contained behavioral changes using a graded activity program, relaxation and goal setting. In another study, written education about pain neurophysiology was given as intervention, including the mechanisms of central sensitization, where pain was presented as no anatomic deficit but as a hyperactive stimulation of neurons in the spinal cord. No clinical relevant effect was noticed following this form of intervention, although the participants appreciated that relevant information was given (5). Two studies stated that age, education, years of symptoms and years since diagnosis showed no significant effect on illness perceptions (6,12).

Osteoarthritis

Two studies (4,15) evaluated the effect of a follow-up period on illness perceptions in patients with osteoarthritis, one study researched the effect of some parameters on the illness perception dimensions (13).

A significant evolution in different dimensions was observed at the 6-year follow up assessment compared to baseline assessment in an observational study: patients with osteoarthritis perceived their condition to be more chronic (timeline acute/chronic) and less cyclical (timeline cyclical), they perceived less personal control, more illness coherence and less strong negative emotional response compared to the baseline assessment (4,15). Table 10 represents the effect of different parameters (such as pain or General Practitioner consultation) on the dimensions of illness perception (13).

	Illness identity	Timeline (chronic)	Timeline (cyclical)	Consequences	Personal control	Treatment control	Coherence	Emotional representation
Worse hand/finger function	2.32 (1.73–3.12)			1.18 (1.14–1.23)				
More pain		1.41 (1.06–1.87)		1.18 (1.13–1.22)				
Anxiety	1.72 (1.31–2.25)							1.07 (1.03–1.11)
Depression								1.10 (1.06–1.15)
GP consultation	1.50 (1.06–2.13)			1.09 (1.05–1.14)		1.17 (1.10–1.25)		1.09 (1.04–1.14)
Medication consumption	2.52 (1.91–3.34)		1.05 (1.01–1.09)	1.12 (1.08–1.16)		1.09 (1.04–1.15)		

Table 10 - Effect of parameters on dimensions illness perception (13)

GP = general practitioner. A blank box means that there is no influence of that parameter on that dimension.

Whiplash

There are no studies evaluating the effect of an intervention on illness perceptions in patients with whiplash.

Other chronic musculoskeletal pain

In this population, 2 studies (8,17) contained information about a treatment program focused on illness perceptions (8) and a treatment with indirect influence on illness perceptions (17). A multidisciplinary pain management program leads to decreased perception of serious consequences, less emotional representations and first an increase than a decrease in perception of chronic timeline. Also an increase in illness coherence and small differences in pain control were perceived. A follow up period of 6 months after a 4 weeks lasting program showed a decrease in patient's beliefs about

severe consequences of their pain and their emotional representation. Patient's coherence improved in this follow up period, their perception of personal and treatment control remained stable for 4 weeks of the program, then decreased in the follow up period. This study also concluded that pain catastrophizing is associated with stronger emotional representations (8).

An uncontrolled study, patients receiving 1 to 2 treatments a week of acupuncture according to traditional Chinese medicine for 4-8 weeks, showed more beneficial perception and better perception of treatment control and personal control (17).

DISCUSSION

It is noticeable that the illness perceptions vary in different chronic musculoskeletal pain patients. Illness perceptions are not just a negligible part of an illness process, but seem to be one of the most determining factors for this process in patients with chronic musculoskeletal pain, through many parameters such as functionality, psychological condition, social functioning, etc (1,4,6,8,9,11,12,14,16). Illness perceptions can be influenced by a treatment program aimed at changing these perceptions (1,5,7,8,17). Perceptions thus can be used as a relatively new way of treating the illness process in patients with chronic musculoskeletal pain.

Illness perceptions

Causes of the illness and illness identity are two dimensions that are strongly influenced by the specificity of the different groups of patients (3,4,6,9,11–16). It is noticeable that the reported causes are very divert. Furthermore, women with fibromyalgia (12) report more symptoms than patients with fibromyalgia in general (3) and patients with osteoarthritis (15) report less symptoms than patients with fibromyalgia (3,12).

Patients with chronic musculoskeletal pain perceive their condition to have serious consequences (1,3,5–7,11,14,15) (with dominating impact on physical, social, financial and psychological functioning (3,5)) and to be chronic (3,5–7,11,13–15) and cyclical (1,3,5,6,14,15). Since the population of this study consisted of patients with chronic

musculoskeletal pain, it is not surprising that the conditions will be perceived as chronic and that this feeling of chronicity will grow in time.

It is not possible to draw conclusions regarding perceptions of personal and treatment control, since different studies report contradicting results. A possible explanation would be that these feelings of control are not influenced by the chronic character of the condition, but are mostly influenced by the personality and self-efficacy of the patient. However, feelings of control have a noticeable influence on the prognosis of a patient with chronic musculoskeletal pain and the perception of low personal control can lead to fatigue and anxiety.

Patients with chronic musculoskeletal complaints perceive overall low coherence in their illness (1,3,4,14,15). Emotional representation is not a significant characteristic of chronic musculoskeletal pain (1,4,9,13–15).

The effect of illness perceptions on prognosis, outcome parameters and influence between the sub-scores of the IPQ-R

The higher the number of symptoms, the higher the negative effect on the quality of life (11) and the higher the disability (4,7,16). However, it should be mentioned that the number of symptoms has a strong influence on other illness perceptions (3,6,12), so that these perceptions could also be the cause of the change in quality of life. The perception of serious consequences was seen in combination with this perception of chronic character of the condition in most populations (except for osteoarthritis patients) (1,3,5–7,9,11,14,15). Chronic conditions appear to enhance the perception of serious consequences. Furthermore patients with a chronic condition are more limited in their activities (4,14). The cyclical perception of their condition leads to catastrophizing behavior (11). Domains timeline and consequences have a significant influence on the prognosis of a patient in our population (8,9,12), and the perception of serious consequences affects the quality of life (11), leads to fatigue (11) and to high limitations in activity (14). Therefore it is important to integrate the evaluation of illness perceptions in the treating programs.

Emotional representations have a large influence on risk factors for chronic musculoskeletal conditions (11). Furthermore, emotional representations can lead to catastrophizing behavior (11), depression (3,11,13) and limitation in activity (14). The lower the illness coherence, the more patients demonstrate a catastrophizing behavior and feelings of anxiety and depression (11).

Mostly, patients with strong perception of serious consequences believe to have high number of symptoms, their condition to be chronic and perceive strong emotions about their illness (1,3,5,6,12,14,15). Patients who believe their number of symptoms to be high, perceive low personal and treatment control (1,6,7,11,12,14,15). Mostly when patients have low treatment control, they also have low personal control, perceive their condition to be chronic and have no clear picture of their illness (1,3,6–9,11,13–15). Patients with high emotional representations believe to have a higher number of symptoms, little personal and treatment control and small illness coherence (1,6,8,11,12,14,15).

The more beneficial the illness perceptions for the patients, the better their self-efficacy (12). It is noticeable that illness perceptions, especially with extreme (positive or negative) values, have great influence on each other, which is why a treatment program should be applied, and why this treatment program should be able to cover all illness perceptions.

Effect of a treatment program or other parameters on illness perceptions

When illness perceptions are not treated, patients will perceive less serious consequences and less emotional representations over time (8,9). After a longer period however, they will perceive less personal control, less cyclical character and emotional representation and perceive more coherence (4,15).

Two treatment programs were directly aimed at improving illness perceptions. A “Cognitive Treatment of Illness Perceptions approach” has a positive influence on the dimensions timeline cyclical, consequences, and coherence (1). Another treatment program (educational part, physical part and self management) obtained a better quality of life and less emotional response (7).

Two other treatments aimed at improving illness perceptions indirectly, one with a pure somatic treatment (acupuncture) and one with an educational brochure. Acupuncture has a beneficial effect on dimensions timeline and control (17). Written education through brochures as only intervention seems to have no influence on the complaints. This study concluded also that personal and individual information and advice had better effects than impersonal information and/or information in group (5).

The results of this study should be seen in the light of some methodological considerations. Overall, this study included essentially studies with a lower level of evidence, mostly level C (without control group). One possible explanation therefore is that a valid control group should have to consist of healthy individuals without any complaints, since every patient has illness perceptions, and therefore could be a form of bias. Even a patient group with one specific illness (other than the included pathology's of this study's population) would not be valid as a control group, since some illness perception domains could be overlapping between the study population and the control group.

CONCLUSION

Patients with chronic musculoskeletal conditions perceive their condition to be chronic and perceive serious consequences. Negative illness perceptions can lead to different negative effects, such as lower quality of life, higher disability, anxiety, etc. This influence however can also be present in the other direction: functionality can have a significant positive effect on illness perceptions. Furthermore illness perceptions are important predictors of the characteristics of the illness process (impact of illness, evolution, coping,…). Illness perceptions can and should be treated in patients with chronic musculoskeletal pain by a specialized (possible multidisciplinary) program. These treatments have shown to have positive effects. Written informative brochures however seem to have no positive effect on illness perceptions.

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ONDERZOEKSPROTOCOL: MASTERPROEF REVAKI (DEEL I)

1. Student: *Emmanuel Jacobs* E-mail: *emmanuel.jacobs@student.artesis.be*
2. Titel : *Illness perceptions in patients with chronic musculoskeletal pain*
3. Interne promotor (Artesis): *Dr. Roussel* Vakgroep: *MSK*
4. Externe promotor: *Prof. Dr. Nijs, Dr. Van Wilgen*

   E-mail / Adres / Postcode / Gemeente /
5. Vraagstelling (formuleer volgens PICO methode):
   - P: *graduated physiotherapists*
   - I: *measure attitudes and beliefs regarding the management of chronic LBP and osteoarthritis (with the HC-PAIRS, PABS-PT and IU)*
   - C: */ (there is no specific control group thinkable to compare with, since another intervention or no intervention would not be relevant in this study question)*
   - O: *attitudes and beliefs*
6. Doelstellingen:
   a. *To evaluate the attitudes and beliefs regarding the management of chronic LBP of physiotherapy students of several universities (Gaëlle Sneyers en Sebastiaan Naessens)*
   b. *To evaluate the attitudes and beliefs regarding the management of chronic LBP and osteoarthritis in graduated physiotherapists (Emmanuel Jacobs)*
7. Literatuurstudie (citeer 3 artikels die als bron dienen voor je onderwerp):
   a. *Bishop A, Thomas E, Foster NE. Health care practitioners' attitudes and beliefs about low back pain: a systematic search and critical review of available measurement tools. Pain 2007;132:91–101.*
   b. *Bishop A, Foster NE, Thomas E, Hay EM. How does the self-reported clinical management of patients with low back pain relate to the attitudes and beliefs of health care practitioners? A survey of UK general practitioners and physiotherapists. Pain 2008;135:187–95.*
   c. *Morris H, Ryan C, Lauchlan D, Field M. Do medical student attitudes towards patients with chronic low back pain improve during training? a cross-sectional study. BMC Medical Education 2012;12:10.*

   Sleutelwoorden: *Attitudes, Beliefs, Physiotherapists, Phystiotherapy Students, Low back pain*
8. Type van het onderzoek (retro- of prospectief, interventioneel, ...): *cross-sectional and longitudinal design*
   a. Informatie- en toestemmingsformulier (informed consent):
      /
   b. Indiening van dit experiment aan een commissie medische ethiek:
      /

9. Werkwijze, methoden onderzoek:
    a. Proefpersonen, rekrutering, onderzoeksveld (hoe en waar?):
    Physiotherapy students of different universities and graduated physiotherapists will be asked to participate. Inclusion criteria for physiotherapy students are full time enrollment, and being in the 2nd or 4th year. Inclusion criteria for graduated physiotherapists are working with patients with chronic LBP or osteoarthritic patients.
    b. Materiaal, meetinstrument (indien meetinstrument referentie):
    the Pain Attitudes and Beliefs Scale for Physiotherapists (PABS-PT), the Health care providers' pain and impairment relationship scale (HC-PAIRS), the physical therapists' attitudes & beliefs regarding exercise and knee osteoarthritis questionnaire and the intolerance of uncertainty (IU). Two case vignettes will be used to evaluate physiotherapists' clinical decisions.
    c. Bespreking statistische verwerking (wie en hoe?):
    SPSS
10. Keuze vrije stageperiode en/of stageplaats: /
11. Afspraken, communicatie, streefdata, ... :

BIJLAGE 1: IPQ-R

ILLNESS PERCEPTION QUESTIONNAIRE (IPQ-R)

Name..... *Date*.....

YOUR VIEWS ABOUT YOUR ILLNESS

Listed below are a number of symptoms that you may or may not have experienced since your illness. Please indicate by circling *Yes* or *No*, whether you have experienced any of these symptoms since your illness, and whether you believe that these symptoms are related to your illness.

	I have experienced this symptom *since my illness*			This symptom is *related to my illness*	
Pain	**Yes**	**No**	_____	**Yes**	**No**
Sore Throat	**Yes**	**No**	_____	**Yes**	**No**
Nausea	**Yes**	**No**	_____	**Yes**	**No**
Breathlessness	**Yes**	**No**	_____	**Yes**	**No**
Weight Loss	**Yes**	**No**	_____	**Yes**	**No**
Fatigue	**Yes**	**No**	_____	**Yes**	**No**
Stiff Joints	**Yes**	**No**	_____	**Yes**	**No**
Sore Eyes	**Yes**	**No**	_____	**Yes**	**No**
Wheeziness	**Yes**	**No**	_____	**Yes**	**No**
Headaches	**Yes**	**No**	_____	**Yes**	**No**
Upset Stomach	**Yes**	**No**	_____	**Yes**	**No**
Sleep Difficulties	**Yes**	**No**	_____	**Yes**	**No**
Dizziness	**Yes**	**No**	_____	**Yes**	**No**
Loss of Strength	**Yes**	**No**	_____	**Yes**	**No**

We are interested in your own personal views of how you now see your current illness.

Please indicate how much you agree or disagree with the following statements about your illness by ticking the appropriate box.

	VIEWS ABOUT YOUR ILLNESS	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE NOR DISAGREE	AGREE	STRONGLY AGREE
IP1	**My illness will last a short time**					
IP2	**My illness is likely to be permanent rather than temporary**					
IP3	**My illness will last for a long time**					
IP4	**This illness will pass quickly**					
IP5	**I expect to have this illness for the rest of my life**					
IP6	**My illness is a serious condition**					

	VIEWS ABOUT YOUR ILLNESS	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE NOR DISAGREE	AGREE	STRONGLY AGREE
IP7	My illness has major consequences on my life					
IP8	My illness does not have much effect on my life					
IP9	My illness strongly affects the way others see me					
IP10	My illness has serious financial consequences					
IP11	My illness causes difficulties for those who are close to me					
IP12	There is a lot which I can do to control my symptoms					
IP13	What I do can determine whether my illness gets better or worse					
IP14	The course of my illness depends on me					
IP15	Nothing I do will affect my illness					
IP16	I have the power to influence my illness					
IP17	My actions will have no affect on the outcome of my illness					
IP18	My illness will improve in time					
IP19	There is very little that can be done to improve my illness					
IP20	My treatment will be effective in curing my illness					
IP21	The negative effects of my illness can be prevented (avoided) by my treatment					
IP22	My treatment can control my illness					
IP23	There is nothing which can help my condition					
IP24	The symptoms of my condition are puzzling to me					
IP25	My illness is a mystery to me					
IP26	I don't understand my illness					
IP27	My illness doesn't make any sense to me					
IP28	I have a clear picture or understanding of my condition					
IP29	The symptoms of my illness change a great deal from day to day					
IP30	My symptoms come and go in cycles					
IP31	My illness is very unpredictable					
IP32	I go through cycles in which my illness gets better and worse.					
IP33	I get depressed when I think about my illness					
IP34	When I think about my illness I get upset					
IP35	My illness makes me feel angry					
IP36	My illness does not worry me					
IP37	Having this illness makes me feel anxious					
IP38	My illness makes me feel afraid					

CAUSES OF MY ILLNESS

We are interested in what <u>you</u> consider may have been the cause of your illness. As people are very different, there is no correct answer for this question. We are most interested in your own views about the factors that caused your illness rather than what others including doctors or family may have suggested to you. Below is a list of possible causes for your illness. Please indicate how much you agree or disagree that they were causes for you by ticking the appropriate box.

	POSSIBLE CAUSES	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE NOR DISAGREE	AGREE	STRONGLY AGREE
C1	Stress or worry					
C2	Hereditary - it runs in my family					
C3	A Germ or virus					
C4	Diet or eating habits					
C5	Chance or bad luck					
C6	Poor medical care in my past					
C7	Pollution in the environment					
C8	My own behaviour					
C9	My mental attitude e.g. thinking about life negatively					
C10	Family problems or worries caused my illness					
C11	Overwork					
C12	My emotional state e.g. feeling down, lonely, anxious, empty					
C13	Ageing					
C14	Alcohol					
C15	Smoking					
C16	Accident or injury					
C17	My personality					
C18	Altered immunity					

In the table below, please list in rank-order the three most important factors that you now believe caused <u>YOUR illness.</u> You may use any of the items from the box above, or you may have additional ideas of your own.

The most important causes for me:-

1. _____
2. _____
3. _____