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ORIGINAL REPORT

PATIENTS' EXPERIENCE OF HEALTH THREE YEARS AFTER STRUCTURED PHYSIOTHERAPY OR SURGERY FOR LUMBAR DISC HERNIATION

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Objective: **To describe the experience of health among patients 3 years after treatment with a structured physiotherapy model or surgery for lumbar disc herniation.**
Design: **A qualitative research study.**
Subjects/patients: **Patients were referred to the orthopaedic clinic at Sahlgrenska University Hospital with sciatica due to lumbar disc herniation. Twenty patients who were eligible for surgery were treated either with a structured physiotherapy model or with surgery.**
Methods: **Open-ended interviews were conducted and analysed using content analysis.**
Results: **Findings were grouped into two themes: feeling of well-being and feeling of ill-being. In the group treated with structured physiotherapy there were a high number of codes in the feeling of well-being theme. In the group treated with surgery there were a high number of codes in the feeling of ill-being theme.**
Conclusion: **Patients treated with structured physiotherapy or surgery experienced feelings of well-being and ill-being 3 years after treatment. Patients treated with physiotherapy and surgery described varying experiences of health 3 years after treatment for lumbar disc herniation. It can be speculated that the experience of well-being may be explained by the ability of structured physiotherapy treatments to empower patients.**

Key words: qualitative research (content analysis); intervertebral disc displacement; rehabilitation; physical therapy modalities and surgery.

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INTRODUCTION

The effects of lumbar disc surgery and various non-operative treatments for patients with sciatica due to lumbar disc herniation have been analysed in a recent systematic review (1), which concluded that early surgery provides more rapid relief of leg pain than non-operative treatment. However, no differences can be seen between treatments after one and two years, when using traditional outcome measures such as back-specific function, generic health status, pain, work disability, and patient satisfaction (1). Patients' experience of health has not been investigated with interviews using open-ended questions, which give patients the opportunity to describe their experiences without being guided by standardized questionnaires (2).

Although many studies have evaluated surgical or various non-operative treatments for patients with disc herniation, only a few qualitative interview studies have evaluated patients' experiences after treatment. An investigation of patient satisfaction 5–8 weeks after lumbar discectomy (3) found that patients were surprised that back surgery could be performed on an outpatient basis and that they were satisfied with the information they received. High levels of anxiety in relation to movement and physical activity have been reported by patients 6 weeks after lumbar microdiscectomy (4). When patients' describe their personal accounts of sciatica, the importance of listening to patients' stories has been emphasized (5). Thus, qualitative studies give diverse, but important, information about how these patients experience surgery.

There are, however, several qualitative studies describing different aspects of how patients experience low back pain. For example, it was suggested that the pain was related to lack of predictability and consequent lack of control experienced by participants with chronic low back pain (6). Patients with recurrent low back pain were interviewed, and differences were found in how relapses were perceived, in addition to differences in attitudes to adopting self-management strategies to prevent future relapses (7). People with low back pain have been described as preferring to participate in exercise programmes designed with regard to their exercise preferences and experiences (8). It has been suggested that healthcare practitioners should facilitate more patient-centred strategies for treatment (9). Furthermore, it has been found that patients with musculoskeletal disorders considered physical activity as a key factor in coping with pain (10). It therefore appears important for patients with low back pain to adopt self-management strategies that include physical activity.

The World Health Organization (WHO) defines health as a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity (11). Health is a fundamental human right, and therefore people should have access to basic resources for health. However, health is an experience full of nuances and thus not easily captured with standardized questionnaires. Experiences of health among patients treated for lumbar disc herniation have, to our knowledge, not been investigated previously through interviews and not several years after treatment. Qualitative interview studies, using open-ended questions, give patients the opportunity to describe their experiences without being guided by standardized questionnaires (2). Therefore, a qualitative study in patients after treatment for disc herniation could provide a better understanding of their experiences of health than questionnaires, which could be of value when designing rehabilitation programmes. Several qualitative studies have examined different experiences for patients with low back pain, but only a few studies have investigated patients after treatment due to disc herniation. Earlier qualitative studies of patients with disc herniation have included patients some weeks after surgery or without any specified treatment. However, there are no long-term qualitative studies after treatment of disc herniation. The aim of this study was therefore to describe the experience of health among patients 3 years after treatment with a structured physiotherapy model or surgery due to lumbar disc herniation.

METHODS

Setting and participants

Patients were selected to this study 3 years after they had been referred to the orthopaedic clinic at Sahlgrenska University Hospital due to sciatica from a lumbar disc herniation. At referral all patients had: undergone magnetic resonance imaging (MRI) confirming disc herniation and explaining the clinical findings; and had symptoms for at least 6 weeks and pain distribution with concomitant neurological disturbances correlated to the affected nerve root, as described by Bono (12). Orthopaedic surgeons determined if the patients qualified for surgery. All patients were assessed as eligible for surgery, but treated with either surgery or structured physiotherapy. Earlier quantitative studies show no differences between surgery and non-surgical treatments after one and two years (1). A decision was therefore made to include both those patients who were treated with surgery and those who were treated with structured physiotherapy, as these patients could be seen as a homogenous group. There was, however, no intention to compare the two groups. The patients were selected from a quantitative study in which some patients were randomized to treatment and some chose their treatment. In this qualitative study a convenience sampling of 10 patients from each treatment group were selected consecutively. Thus, 10 patients had undergone surgery, of which 5 were randomized to treatment and 5 had chosen surgery. This group was named the Operative Group (OG). Correspondingly, 10 patients had been treated with structured physiotherapy, of which 5 patients were randomized to treatment and 5 chose physiotherapy treatment. This group was named the Structured Physiotherapy Group (SPG). Patients who had had surgery on more than one occasion and those who had first received physiotherapy treatment but then required surgery were not selected to this study. In order to prevent uneven distribution in the two groups (SPG and OG) the intensity of pain in the leg and back two years after treatment was checked. In both groups the selected patients had wide spreading of pain intensity in leg and back, documented with a visual analogue scale (VAS) two years after treatment.

The 20 patients were in the age range 25–66 years (median age 43.5 years), 9 women and 11 men. The patients in the SPG, 6 women and 4 men, were in the age range 31–66 years (median age 49.5 years) and the patients in the OG, 3 women and 7 men, were in the age range 25–59 years (median age 40.5 years). During the interviews 3 patients reported other diagnoses that could influence their health. In the SPG 1 patient had a whiplash disorder and another had concentration difficulty after a virus infection of the central nervous system (CNS). In the OG one patient had varicose ulcers. Two years after treatment the patients answered questionnaires, which revealed that 3 patients experienced kinesiophobia, 13 patients had no leg pain, and 13 patients reported no back pain. No disability was reported by 15 patients (Table I). The study was approved by the regional ethics review board.

Structured physiotherapy treatment model

Physiotherapists who were credentialed in mechanical diagnosis and therapy (MDT) treated the patients over a 9-week period. An MDT protocol was followed for the first 2 weeks. This protocol was based on mechanical and symptomatic response to positions and movements. The key management decision was to determine the direction of loading necessary primarily to reduce the symptoms in the leg. The patients were instructed to perform exercises several times a day, with the aim of reducing pain in the leg (13). During the third week graded core stabilizing exercises were introduced. The low-load endurance exercises were gradually increased on an individual basis with respect to the pain in the leg and observed movement control and quality (14). A characteristic of the MDT method is the collaboration between the patient and the physiotherapist. The aim of the MDT method is to encourage empowerment and give the patient tools to treat themselves, thus the MDT method includes both a biopsychosocial and a biomedical view.

Surgery

Surgical treatment comprised a standardized open discectomy performed by spine surgeons. The post-surgery rehabilitation included

Table I. *Occurrence of kinesiophobia, pain and disability 2 years after treatment*

Patients	Sex	Kinesiophobia[a]	Leg pain[b]	Back pain[b]	Disability[c]
SPG 1	M	No	No	Yes	No
SPG 2	F	No	Yes	Yes	Yes
SPG 3	F	Yes	No	No	No
SPG 4	F	Yes	Yes	Yes	Yes
SPG 5	F	No	No	No	No
SPG 6	M	No	No	No	No
SPG 7	F	No	No	No	No
SPG 8	M	No	No	No	No
SPG 9	F	No	Yes	Yes	Yes
SPG 10	M	–	No	No	No
OG 11	M	No	Yes	No	No
OG 12	M	No	Yes	Yes	No
OG 13	F	No	No	No	Yes
OG 14	M	No	No	No	No
OG 15	M	No	No	No	No
OG 16	M	No	No	No	No
OG 17	F	Yes	Yes	Yes	No
OG 18	F	No	Yes	Yes	Yes
OG 19	M	No	No	No	No
OG 20	M	No	No	No	No

[a]Kinesiophobia was defined as >37 on the Tampa Scale for Kinesiophobia (15). [b]No pain was defined as 0–10 mm on the visual analogue scale (16, 17). [c]No disability was defined as 0–10% in the Oswestry Disability Index (17, 18).

F: female; M: male; SPG: Structured Physiotherapy Group; OG: Operative Group.

early active rehabilitation according to Kjellby-Wendt et al. (19). The surgical treatment is expected to reduce leg pain and thereafter the post-surgery rehabilitation aims to restore function, such as strength and flexibility, in order to return to work and physical activity.

Data collection

Data were collected through interviews. An interview guide with open-ended question areas was composed with regard to health and everyday living. For the purpose of this study the following question was analysed: "Please, describe how you are feeling?"

The first author contacted the patients by phone, informed them about the study and asked if they would like to participate. Interviews were conducted in a separate room in the physiotherapy department by the first author, who was familiar with the rehabilitation process concerning patients with disc herniation. Written informed consent was obtained from the patient before the interview commenced.

The interviews took place over a period of 4 months in 2009, approximately 3 years after treatment started. In the SPG, the interviews lasted 25–46 min (median 31.5 min) and in the OG 18–97 min (median 31 min). In total, 11 h and 58 min of interviews were tape-recorded, then transcribed verbatim. The first author listened to the interviews and corrected the transcripts as necessary before commencing the analysis.

Data analysis of interviews

The interview texts were analysed by content analysis (20). The first author (GLS) and the fourth author (ED) read all the interviews in order to grasp the content. Thereafter, GLS analysed the data and ED followed the paths shown in the analysis. In the analysis the meaning units were condensed and coded according to its content. Since there were more negative comments in the OG compared with the SPG, a decision was made to mark the codes as positive, negative or neutral. Thereafter, each patient's codes were summed up in positive, negative and neutral descriptions and a predominant judgement of codes per patient and per group was established. In order to better illustrate the two treatment groups, it was decided to specify the number of codes in each group (20). Codes with similar content were counted and formed into subthemes. Finally, subthemes were formed into themes. All parts of the analysis were continuously re-read and discussed by GLS and ED in order to improve credibility.

RESULTS

The findings were grouped into 2 themes from the data analysis: *feeling of well-being* and *feeling of ill-being*.

Feeling of well-being

The theme *feeling of well-being* includes 3 subthemes: *being fine*; *having no symptoms*; and *being active despite symptoms*.

Being fine. In the subtheme *being fine* the patients mainly reported that they felt fine. The patients often started by describing that they felt good or quite good.

"As it is now, I feel just fine. I am not aware of the herniated disc or anything." (OG15)

Thereafter the patients proceeded to give a more nuanced description. For example, they felt better but not completely good, or that they felt good most of the time. Other descriptions were about symptoms that no longer disturbed them. Patients also talked about "the back" in the third person and said that their back did not disturb them anymore. They also stated that they did not experience any obstacles. Some patients reported that they felt psychologically much better than before. Another account was that they no longer thought that much about the disc herniation.

Having no symptoms. In the subtheme *having no symptoms* the patients described the absence of symptoms. Patients in the SPG reported that they no longer experienced any numbness. Patients expressed that their symptoms were less now in comparison with before treatment. A common statement was "I know what pain is", which implied that they had previously experienced severe pain due to the disc herniation. Patients also expressed that they felt "something", but not pain. Another aspect was that they separated back pain from leg pain. Others reported that the symptoms in the leg had disappeared after treatment, but that they still had back pain.

"I don't have any sciatica and haven't had it for many years." (SPG3)

The operated patients seemed to have learned that surgery aims at reducing leg pain more than other symptoms. This could be seen as they evaluated the results of surgery according to the amount of remaining leg pain.

"I can say that, that as there is nothing going down the legs in any way, nothing at all, so, so I feel great, actually." (OG19)

Being active despite symptoms. In the subtheme *being active despite symptoms* the patients described their ability and level of activity. The patients in the SPG talked about various types of activity, activity at work and physical activities during leisure time, and the patients in the OG talked mostly about walking and running.

Patients in the SPG reported that movements from the MDT method still decreased their symptoms. Patients reported that physical training could decrease their symptoms. Training also led to positive energy and increased strength. However, some reported that activity could lead to symptoms, but that the symptoms did not stop them from being active.

"I know when I have done things that I perhaps shouldn't have, but sometimes you have to, but it passes, I don't care, it's nothing that stops me." (SPG5)

"As long as I physically keep going, I don't have any direct problems. It is sometimes if I have bad posture at work I can feel it but that's quite normal I guess." (SPG1)

Some patients said that when symptoms arose they were often able to deduce why, which made it easier to cope with their symptoms. Others reported that they were sometimes able to decrease symptoms when they arose. Patients also expressed that they tended not to avoid doing things, but instead reflected and worked out new ways to perform the activity.

A few patients in the OG trained mainly by jogging or running. They described problems associated with running due to weakness in the foot or thigh. These problems were present before surgery and had not improved afterwards. They described, however, that they were still running in spite of the weakness.

"...if I have put more strain on the leg, if I have run a longer distance, then I can feel more of the pins-and-needles. I am

used to it now and it's not painful (laughs). It doesn't bother me so to speak." (OG11)

Feeling of ill-being

Feeling of ill-being includes 3 subthemes: *having psychological symptoms*; *having physical symptoms*; and *avoiding physical activity*.

Having psychological symptoms. The subtheme *having psychological symptoms* included descriptions about feeling bad and being anxious. Anxiety was a symptom that occurred only in the OG, and was described in various situations. Patients reported feeling anxious when they experienced physical symptoms and feeling afraid that the symptoms would get worse. They also reported that they were very observant of symptoms in their back, and worried about the consequences of carrying out activities. Others reported that they were watchful of their back and afraid that symptoms might return, and some were concerned about what might happen if they lifted something heavy.

"You can say that I am very aware of my back, I am, yes, you can say, afraid that something will happen again." (OG15)

Patients feared that physically demanding work at heights might lead to sudden weakness in the leg. In this situation a brief lack of control could be very dangerous, and that was worrying. Another aspect of anxiety was prior to new situations. Patients worried about whether symptoms would arise and how they would be able to handle them in a new context. Patients also described anxiety about future demands at work.

Patients expressed feelings of despair and that they had become "burnt out" after the surgery, experienced their situation as debilitating, with extreme pain. Some patients reported that physical symptoms could also lead to feelings of psychological strain.

"You can say that there are great limitations in what I can do, and that also makes me psychologically feel really bad." (OG17)

Having physical symptoms. In the subtheme *having physical symptoms* various types of physical symptoms were described. Pain in the back or leg was the most common symptom. Patients described various distributions and quality of pain as well as other symptoms, such as numbness, tingling and weakness.

"If I am really tired then I can feel more numbness in my foot, so it can vary from that it feels a bit in my toe to that it feels in a larger area. That, yes, it feels basically like my foot is asleep and I had quite a lot of trouble with cramp in my calf." (OG13)

A vast spread concerning duration of pain was reported. Some patients described short durations of pain, while others reported pain that could take a couple of days to subside. Some experienced constant back pain, while others had recurrent pain and/or pain at various times of the day. Some patients described waking up in the morning with back pain, while others mentioned pain in the evening.

Table II. *Themes, subthemes and number of codes in each group*

		Number of codes	
Themes	Subthemes	Structured Physiotherapy Group $n=10$	Operative Group $n=10$
Feeling of well-being	Being fine	41	27
	Having no symptoms	19	17
	Being active despite symptoms	31	16
Feeling of ill-being	Having psychological symptoms	1	34
	Having physical symptoms	46	65
	Avoiding physical activity	14	46

Tiredness in the back was a common symptom that could arise if patients did not take care of themselves. Feelings of stiffness, strain in the back and that the back was very sensitive were also expressed. In addition, some patients described how sudden leg pain could be followed by weakness in the leg. Other reports were about loss of sensation in the leg and muscle cramp. Reduced motor function in the foot and leg existed only in the OG, and was described as problematic, causing patients to stumble when walking on uneven ground. Several patients also compared their current symptoms with those prior to treatment.

Avoiding physical activity. In the subtheme avoiding physical activity patients described avoidance behaviour. Patients in the two groups used various expressions. The SPG used words that described that they tried to avoid some specific activities. Patients in the OG reported that they were generally cautious, acted carefully and felt worried in different situations. They reported that when they felt strain in the back they stopped immediately and rested, as they were afraid it would get worse.

"If I was lifting a lot and felt that I it was straining my back or something then I would stop immediately." (OG15)

Number of codes

The numbers of codes is illustrated in Table II, for each theme and for the two groups (SPG and OG). In the SPG, a high number of codes were found in the theme *feeling of well-being*, and in the OG, a high number of codes were found in the theme *feeling of ill-being*. The patients reported many negative codes (Table III). When the codes were summed up in judgement groups there were 3 patients in the positive group, 6 in the neutral group and 11 in the negative group. In the SPG the codes had an equal distribution of patients in the 3 judgement

Table III. *Number of positive, neutral and negative codes in each group*

Group	Positive codes	Neutral codes	Negative codes
SPG	83	64	100
OG	89	59	169

SPG: Structured Physiotherapy Group; OG: Operative Group.

groups; positive ($n = 3$), negative ($n = 3$) and neutral ($n = 4$). In the OG there were 8 patients in the negative judgement group, 2 in the neutral group and none in the positive judgement group.

DISCUSSION

The main finding of this study is that patients treated with structured physiotherapy or surgery experienced *feeling of well-being* and *feeling of ill-being* 3 years after treatment due to lumbar disc herniation. The number of codes in the themes varied. In the physiotherapy group there was a high number of codes in *feeling of well-being*. In the surgery group there was a high number of codes in *feeling of ill-being*. These findings were surprising, as earlier studies have shown that surgery provides rapid relief from leg pain, although follow-up after one and two years show no differences between treatments (1). One explanation could be that qualitative studies, reflecting the patients' own experiences, reveal results that cannot be obtained with standardized questionnaires (2). Another possible explanation could be the effect of the structured physiotherapy treatment that aims at increasing the patients' autonomy.

The high degree of *feeling of well-being* after structured physiotherapy treatment may be explained by the MDT methods strategy for empowerment of the patient. The use of empowerment in physiotherapy treatment for patients with low back pain has been advocated, since it probably would improve the results of the physiotherapists' interventions (21). One component of empowerment can be shared decision-making. Only a minority of patients do not wish to have a role in, or responsibility for, treatment decision-making (22). The present study employed the MDT method, which encourages patients to take responsibility for their treatment. Improved responsibility can be achieved with physiotherapists working to empower their patients. It can be speculated that increased patient empowerment in the SPG can best explain the high degree of well-being among patients treated with structured physiotherapy. To be able to increase well-being post-surgery it is therefore suggested that measures to enable increased patient empowerment are developed.

Furthermore, empowerment could also explain why patients in the SPG had many codes in the subtheme *physically active despite symptoms*. Another aspect of the positive effect of the structured physiotherapy treatment is that increased physical activity is shown to reduce anxiety in healthy adults (23). In accordance with these findings, Elfving et al. (24) showed that low levels of physical activity in patients with back pain is associated with high levels of fear-avoidance beliefs and pain catastrophizing. This appears to be in agreement with the present study, since patients in the SPG were active despite symptoms and they were not anxious.

Feeling of ill-being, which included the subtheme *psychological symptoms*, were described by patients in the OG. There are several studies investigating psychological factors in relation to lumbar disc herniation surgery. Disc surgery patients show a higher risk of mental disorders than the general population (25). Screening for pre-surgical distress is likely to identify patients at risk for poor outcome after surgery (26). Presence of trait anxiety before surgery is a prognostic factor for the persistence of pain after surgery (27). The 3 studies described above investigated patients 1 year after surgery. It has also been shown that, 6 weeks post-surgery, patients had high levels of anxiety (4). In the present study it was found that the anxiety was still present 3 years after surgery. One aim of surgery is to relieve leg pain, and this was achieved in most patients in this study. Pain attenuation alone is not a reliable indicator of patients' perception of recovery (28). It appears that improvement in leg pain in this study is not sufficient to achieve high levels of well-being and to reduce ill-being 3 years after surgery.

In the MDT method (13), the physiotherapist and the patient collaborate to explore what positions and activities influence the symptoms. The result is often a self-assured patient who can manage their daily life. In addition, patients have their own specific exercises they can use to decrease their symptoms. This concept empowers the patients and makes them well aware of their responsibility and ability to influence their own symptoms. The patients in the OG may, in contrast, believe that if the symptoms recur they would need a new operation. Williamson et al. (4) reported that operated patients fear "undoing" surgery. This fear of "undoing" may even be present in this study, with the OG patients avoiding physical activity and describing anxiety.

Pain-related fear has been described, in patients with chronic pain, as more disabling than pain itself and related to poor behavioural performance (29). This could support the findings in the present study, since the operated patients were avoiding physical activity because of psychological symptoms. It can be speculated that the MDT method, on the other hand, is the probable cause of high levels of physical activity despite symptoms, and that the patient was feeling fine after structured physiotherapy treatment.

Kinesiophobia, described as the most extreme situation of fear of movement (15, 30–31), has been found in as many as half of the patients 1 year after lumbar disc herniation surgery (32). In the present study, however, only 3 patients reported kinesiophobia 2 years after treatment, and 1 of them had undergone surgery. On the other hand, a majority of the patients in the OG reported that they avoided physical activity, but not to the extent of being classified as having kinesiophobia.

In the International Classification of Functioning, Disability and Health (ICF) one component is activity, and it is described how different components interact and influence activity (33). In the present study it seemed that activity was an important mediator for well-being and ill-being. The operated patients avoided physical activity and they described ill-being. Patients in the SPG were active despite symptoms and expressed well-being.

An implication of this study is to consider patients' experiences of various aspects of health when designing rehabilitation programmes. It appears that the structured physiotherapy treatment model used in this study ought to be considered before surgery for patients with lumbar disc herniation, when

the aim is to improve feeling of well-being after treatment. Another consideration is for patients to be better prepared before surgery, and that a more individually designed rehabilitation programme should be adopted after surgery. It is hoped that this would result in a higher level of physical activity after surgery and that patients would achieve a greater feeling of well-being.

The limitations of this study include that the interviewer was a physiotherapist and therefore may have a more positive attitude to physiotherapy treatment than to surgery. However, the fourth author, ED, an experienced qualitative researcher, who is not a physiotherapist, could not find any bias towards any treatment. In common with most qualitative studies, the results from the present study do not claim to be generalizable, rather to provide insights into the way patients may experience health 3 years after treatment.

In this qualitative study, quantitative content analysis was also used in some parts to illustrate the variation in patient's experiences of structured physiotherapy treatment and surgery. This was decided when it was found that all subthemes and themes were represented in both groups, but that the number of codes varied between the two groups.

In conclusion, this study shows that patients treated with structured physiotherapy or surgery experienced *feeling of well-being* and *ill-being* 3 years after treatment. In the physiotherapy group there was a high number of codes in *feeling of well-being* and the patients described being physically active despite symptoms. In the surgery group there was a high number of codes in *feeling of ill-being* and the patients experienced psychological symptoms and avoided physical activity because of fear of pain.

It can be speculated that the experience of well-being may be explained by the ability of the structured physiotherapy treatment to empower the patient. The results of this study are interesting, and future qualitative research may focus on developing post-surgery rehabilitation that encourages empowerment and gives the patients tools to be more physically active, as well as quantitative studies comparing the structured physiotherapy treatment model with surgery.

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