



Original article

Patients' experiences of how symptoms are explained and influences on back-related health after pre-surgery physiotherapy: A qualitative study

Yvonne Lindbäck*, Paul Enthoven, Birgitta Öberg**

Department of Medical and Health Sciences, Division of Physiotherapy, Faculty of Medicine and Health Sciences, Linköping University, Linköping, SE-581 83, Sweden

ARTICLE INFO

Keywords:

Content analysis
 Exercise therapy
 Patients' experience
 Physiotherapy
 Qualitative study
 Spinal surgery

ABSTRACT

Background: Since the pre-surgery phase is a new setting for physiotherapy, exploring patients' experiences might contribute to new insights for future development of care in patients with degenerative lumbar spine disorders.

Objectives: To describe patients' experiences of how symptoms are explained, and their experiences of the influences on back-related health after pre-surgery physiotherapy.

Design: Explorative qualitative design using semi-structured interviews analysed with content analysis.

Participants: Eighteen patients with degenerative lumbar spine disorder scheduled for surgery, participated in pre-surgery physiotherapy.

Findings: Five categories were identified: Influences on symptoms, physical function and sleep; Influences on coping and well-being; Explanations of back-related symptoms and wanting to be well-informed; Influence on social functioning; The ability of the model of care to influence reassurance and prevention.

Conclusion: Improvements in back-related health in all the biopsychosocial dimensions emerged. Even those who expressed no symptom improvements, felt better performing exercises than being inactive, and exercises improved their frame of mind, a useful experience in possible low back pain recurrences. Pre-surgery physiotherapy provided reassurance and gave time to reflect on treatments and lifestyle.

Despite pre-surgery physiotherapy, back-related symptoms were mainly described in line with a biomedical explanatory model. Those using broader explanations were confident that physiotherapy and self-management could influence their symptoms. Suggesting more emphasis on explanatory models suitable for surgery, pre- and post-surgery physiotherapy and self-management in the professionals' dialogue with patients.

1. Background

In patients with degenerative lumbar spine disorders (disc herniation, spinal stenosis, spondylolisthesis, disc degenerative disease) the influences on health with long pain duration, frequent recurrences (Stromqvist et al., 2013) and functional limitations (Winter et al., 2010) are considerable. With an aging population, the number of patients with spinal stenosis is growing, resulting in a greater need for evidence based interventions (Ammendolia et al., 2013). Surgery for spinal stenosis and disc herniation is efficient for pain and function at 3-month follow-up (Machado et al., 2016; Fritsch et al., 2017), but 22%–39% of patients are doubtful or dissatisfied at the 1-year post-surgery follow-up (Stromqvist et al., 2013). Few studies have investigated the effects of non-surgical interventions in patients with spinal stenosis and disc

herniation (Ammendolia et al., 2013; Kreiner et al., 2014), even though non-surgical intervention should be exhausted before surgery (Qaseem et al., 2017; National Guideline, 2016; Koes et al., 2010). Prehabilitation has been defined as augmenting functional capacity prior to surgery (Carli and Zavorsky, 2005), which may have a beneficial effect on post-surgery outcomes (Santa Mina et al., 2014), but prehabilitation before spinal surgery has only been evaluated in a few studies (Nielsen et al., 2010; Louw et al., 2014; Lindbäck et al., 2018; Rolving et al., 2015; Kesanen et al., 2017). In the randomised control trial (RCT) named Prepare, we have evaluated pre-surgery physiotherapy in patients with degenerative lumbar spine disorders, with the aim to improve the different dimensions in the biopsychosocial model (Lindbäck et al., 2018). The results showed a decrease in pain and avoidance behaviour, decreased risk for worsening of psychological well-being,

* Corresponding author..

** Corresponding author.

E-mail addresses: yvonne.lindback@liu.se (Y. Lindbäck), paul.enthoven@liu.se (P. Enthoven), birgitta.oberg@liu.se (B. Öberg).URL: <http://www.imh.liu.se/fysioterapi> (Y. Lindbäck).

improved quality of life and physical activity levels before surgery, compared with waiting-list controls. These differences between the groups were maintained only for activity levels post-surgery (Lindbäck et al., 2018). Since pre-surgery phase is a new setting for physiotherapy, our interest is to add the patients' experiences to the quantitative results. Exploring patients' experiences based on their own stories may contribute to new insights and a deeper understanding (Patton, 2014) useful in the future development of care for their needs early and in the pre-surgery context. The aim was to describe patients' experiences of how symptoms are explained, and their experiences of the influences on back-related health after pre-surgery physiotherapy.

2. Methods

An explorative qualitative design was chosen, where semi-structured interviews were analysed with content analysis, to describe patients' experiences of a phenomenon (Patton, 2014; Hsieh and Shannon, 2005). The Consolidated criteria for reporting qualitative research (COREQ checklist) (Tong et al., 2007) was used.

2.1. Informants, intervention and data collection

The informants were selected from an ongoing RCT, Prepare (Lindbäck et al., 2018), that ran from October 2012 to March 2015, at a spine clinic in a university hospital in Sweden. The criteria for selection of informants were patients who had been randomised to pre-surgery physiotherapy intervention and had participated in ≥ 12 sessions. The pre-surgery physiotherapy content is described in Table 1 and further information elsewhere (Lindbäck et al., 2016, 2018).

In the consecutive sampling, we achieved planned variation in age, gender and distance to the physiotherapy clinic, so no further purposeful sampling was needed. The median age was 65 years (range 49–74) and characteristics of the informants derived from Prepare (Lindbäck et al., 2018) are presented in Table 2. A female physiotherapist PhD student, first author, employed at the university, trained in basic qualitative method, conducted the interviews. She had 20 years' clinical skills of treating patients with low back pain (LBP), and was part of the research group, but not a treating-physiotherapist in the study. Written informed consent was obtained prior to the interviews.

An interview-guide was designed with broad open-ended questions to encourage the informants to describe and explore their experiences (Patton, 2014; Diccico-Bloom and Crabtree, 2006). The main question was "Can you describe your experiences of the physiotherapy you have attended?" Prompt questions were used to encourage describing more or deepen the response (Dicicco-Bloom and Crabtree, 2006). Two pilot

Table 1

The content of the pre-surgery physiotherapy intervention that the informants had received in the randomised controlled trial named Prepare.

The intervention was conducted twice per week in 9 weeks and contained three components (Lindbäck et al., 2016):
1. Active physiotherapy according to a treatment-based classification (TBC) (Stanton et al., 2011): a) Specific exercises and mobilization, or b) Motor control exercises or c) Traction. The aim of TBC was to decrease pain and improve function.
2. Tailor-made general supervised exercise program: The exercise program was performed at the physiotherapy clinic and at least one exercise was progressed every third session. The aim was to improve physical capacity and safe return to everyday activities
3. A behavioural approach aimed to reduce fear avoidance and increase activity level, including: Use of the patient specific functional scale (PSFS) (Stratford PG et al., 1995), three follow-ups of the goal setting and strategies to minimize barriers for goal attainment. Feedback on exercises intended to decrease the fear of movement and reduce maladaptive pain behaviours (Rainville et al., 2011; Henschke et al., 2010). Explanatory models for treatment, ergonomics and postural alignment. The patients also completed a logbook of self-mediated home exercises and general physical activities.

Table 2
Informants' characteristics (n = 18).

Characteristics	n
Gender, women	10
Cigarette smoker	0
Did not have surgery	4
Prior spinal surgery, not for the same segment	
1 surgery	2
2 surgeries	1
Employment situation	
Currently working	6
Retired	10
Sick leave and/or retired due to health problems	2
Diagnosis	
Spinal stenosis	15
Disc herniation	2
Spondylolisthesis	1
Pain duration back-/leg pain ≥ 1 year	11
Oswestry Disability Index ^a	
Minimal disability	3
Moderate disability	8
Severe disability	7
Global Impression of Change after pre-surgery physiotherapy ^b	
Very much better	0
Much better	6
Slightly better	8
Unchanged	3
Slightly worse	1
Much worse	0
Very much worse	0

^a Oswestry Disability Index 0–20% = minimal- 21–40% = moderate-, 41–60% severe disability, 61–80% crippled, 81–100% bed bound/exaggerating symptoms) (Fairbank et al., 1980).

^b Patient Global Impression of Change (Dworkin et al., 2005).

interviews were conducted to validate the interview-guide, and no major changes were needed. The interviews took place between June 2014 and February 2015, 0–35 weeks (median 0.5 weeks) after the pre-surgery physiotherapy intervention and before surgery (if conducted). The informants received information about the study by a physiotherapist employed at the spine clinic. All interviews were performed face-to-face at the spine clinic, and lasted for 50–85 min. The interviews were audio-recorded, and transcribed verbatim. Interviewee transcript review was not used. The intention was to include at least 15 informants. The inclusion stopped when the last three interviews did not provide new information. All the invited informants agreed to participate.

2.2. Data analysis

The data was analysed in an iterative process using both inductive and deductive content analysis. Firstly, the data was analysed inductively because knowledge of the phenomenon studied was limited (Hsieh and Shannon, 2005). All transcripts were read repeatedly, after that read more in detail to find codes, which are texts that seem to capture key thoughts. The codes were organized into subcategories based on how they related to each other. Subsequently, the subcategories were deductively sorted into categories inspired by the biopsychosocial model (Engel, 1977), also used in designing the intervention in Prepare (Lindbäck et al., 2018). The first author coded and did the initial subcategories for all transcripts. The other two authors independently coded three transcripts each. Codes, subcategories and categories were defined during discussion and negotiation between the three authors.

3. Findings

Five categories were identified describing patients' experiences of how symptoms are explained and their experiences of the influences on

Table 3

Categories and subcategories used to describe how symptoms are explained, and patients' experiences of the influences on back-related health after pre-surgery physiotherapy.

Categories	Subcategories
1. Influences on symptoms, physical function and sleep	1A Pain and numbness 1B Physical function and sleep
2. Influences on coping and well-being	2A Feelings of stress, fear and insecurity 2B Ability to manage symptoms 2C An opportunity to reflect on interventions
3. Explanations of back-related symptoms and wanting to be well-informed	3A The symptom is mainly an injury in the spine 3B The symptoms can be influenced by exercises 3C Searching for feelings of trust to the spine 3D Strategies to become well-informed about symptoms 3E Uncertainty how intervention can influence symptoms
4. Influences on social functioning	4A Daily routines, work and social role 4B Longing for a more active life
5. The ability of the model of care to influence reassurance and prevention	

back-related health after pre-surgery physiotherapy (Table 3). Quotations are reproduced in italics and comments by the authors and the informants' numbers in parentheses.

3.1. Influences on symptoms, physical function and sleep

Influence on pain and numbness were described, from complete disappearance or decreased to little or no change. Less frequent use, discontinuation of strong or all analgesics due to reduced pain, and improved ability to handle the pain were reported. Relief of symptoms was described, although they still could fluctuate;

"It was already after a few, only three or four sessions that the leg problem at least partly went away. Then it could come back sometimes, but not like it was last summer and autumn when it was terrible." (Informant 16)

"No, it was just that I noticed that I didn't have as much pain anymore. And I'm taking significantly fewer tablets." (Informant 17)

Experiences of various degree of change from being deconditioned because of pain and limited function during recent years, to improvements in walking quality and distance emerged. Other descriptions were, ability to more easily change position and remain in a less painful posture, as well as minor or no changes after pre-surgery physiotherapy. Informants also expressed improved sleep and decreased need of rest;

"Yes, because I could sleep maybe 10 hours during the night ... and even then I had to rest two or three hours in the afternoon, yes, and now I don't have that need at all" (Informant 15)

3.2. Influences on coping and well-being

The back-related symptoms had earlier caused feelings of fear in activities. Pre-surgery physiotherapy contributed to feelings of security and an ability to do activities more freely and with confidence, as one informant expressed it;

"I had to have someone with me because my back often locked up, so I couldn't move. But now I'm not afraid to walk by myself, which I think is great." (Informant 10)

The ability of the exercises to reduce feelings of stress and improved feeling of well-being were described in different ways;

"It's not just the pain that gets less, but also that I feel much, well my whole life, becomes much, much better. The situation, or environ- ... well joy of life, or how should I put it?" (Informant 17)

*"That was what got me going. Yes, *giggles* both physically and mentally*

*that you feel that you are strengthened by it, that you don't sink deeper *giggles* because you have pain it, it is hard, sort of, to get yourself out of it maybe"* (Informant 12)

An improved ability to cope with symptoms by discovering that it is not dangerous to move with some pain or by having greater knowledge about the pain were described. Other strategies to manage symptoms were the use of postural or specific exercises, being more attentive while performing activities, and during periods of intense pain occasionally using medication to be able to be more active.

*"But otherwise, *eh* walking and moving around and so on isn't dangerous, that's what I think. *giggle* Then someone can argue that it is, but I don't think it's dangerous."* (Informant 14)

"When I feel that it starts to hurt or when I feel unsteady; then I know that I can use an exercise, by leaning slightly forward, or like put the forces in a certain way. I feel stable then and it feels good. It is a very good exercise." (Informant 7)

Experiences of a change in thinking, from previously wanting surgery as soon as possible, to feeling comfortable doing pre-surgery physiotherapy while being on the waiting list were expressed. This was linked to a feeling that the symptoms were not as acute as before. Other reflections were that they felt better being active with exercises compared to being inactive, even if the pain is the same, and that exercises helped to feel better mentally. Reflections on improvements led to confidence in the intervention and decisions to extend the timeframe for exercising before a final decision about surgery, as well as cancelling scheduled surgery.

"So now I have expectations that this last thing will also start to go away, but I don't know if it ever will ... And of course, if with a little focus and physiotherapy, and if I'm a bit careful, I can come back to a position where I feel quite good, then I don't want to take the risks (of surgery)." (Informant 6)

Reflections that an inactive lifestyle was negative and that exercising must be undertaken regularly to maintain its effect led to a plan for lifestyle changes and the resumption of exercise after surgery.

3.3. Explanations of back-related symptoms and wanting to be well-informed

Informants described that the back-related symptoms were linked to the anatomy of the spine as viewed on image report or as envisioned by the physician's description. These included a narrow spinal canal, the nerve being mechanically loaded, or age-related changes in the discs. High confidence in the MRI reports emerged. There were descriptions that the spine had an injury.

“Well *eh* he (the surgeon) said that in principle we will do this, screw together these disks and remove material, in principle, and fix it, and that bit you will notice the day after. And *eh* it feels bloody well actually, that it is like that ...” (Informant 6)

There were descriptions that the back-related symptoms could be influenced by exercise. Other factors that were mentioned were the importance of muscle function for reducing back-related symptoms, and that muscle strength and muscle function could improve loading of the spine. Disc herniation could be reduced by exercises, and gain of general fitness by exercises prior to surgery were also reported.

“Well, if I strengthen the muscles in my back so I get stronger there, it will be more resistant against my problem, that it gets pinched and things like that. I’m absolutely convinced that this is correct, because I’ve had less problems, not so often, compared to before I started doing exercises. So that is a good explanation that it is beneficial.” (Informant 2)

“My thought is that the recovery process will take longer if I just lie still and wait for the operation. That is how I see it.” (Informant 11)

Searching for feelings of trust about the spine was the reason for surgery for some informants, while others stated that the reason was to become pain-free, to be able to do all activities, and not being afraid of relapses.

“Yes, it is good (no symptoms now), just scared to death that it will come back. That’s the only thing I’m afraid of, that it will come back. So that’s why I want to have surgery. Even though there is a risk with surgery, I’ll take that risk. Because I don’t want to go around being afraid all the time. Yes, I want to be able to walk more and move more safely. So that I can feel confident with my back.” (Informant 13)

Informants reported challenges in communication with healthcare professionals, relating to their desire to become well-informed about symptoms. They used informal personal networks to interpret their healthcare records, or they needed to be stubborn, and demanding a better dialogue with professionals. Lack of knowledge about LBP limited their ability to formulate adequate questions. When they managed to ask questions, however, they received satisfactory answers.

“Sometimes it’s hard to know what questions to ask (the symptoms), because I don’t have the basic knowledge, but if I know fairly well, then at least I can always get help with the answer, and that’s good.” (Informant 6)

Uncertainty about the clinical justification for surgery, both when the pain had not resolved after a previous surgery and in relation to first-time surgery, was described. A lack of explanation about symptoms, which caused doubt and distress, especially concerning leg symptoms, were also expressed.

“It’s easier, to live with back pain than the symptoms in my feet and legs, because that is both more annoying and more painful. That is one thing that I feel that I would like to know, if feet and leg pains come from the spine or not, if it is not already known.” (Informant 3)

Doubt as to whether physiotherapy could influence symptoms, expressing a biomedical explanatory model, also emerged.

“It (pre-surgery physiotherapy) must have done something, because it (the symptoms) are subsiding. How this works physically in the body, I don’t know for sure.” (Informant 7)

3.4. Influences on social functioning

The ability to resume daily routines, an improved ability to work, and greater social activity were reported. Furthermore, daily activities were less demanding and more pleasant. There were also reports that day-to-day life had previously not been limited, so any changes were

not expected. Being able to start doing more demanding activities after pre-surgery physiotherapy was also described.

“Before I had to sit almost all the time (at work). One day I was so happy, I told my boss that this was the first day in several months that I could stand up the whole time.” (Informant 17)

“Because I can like *eh* I can make contact with them (grandchildren), be with them in another way now. Physically too. Because I run around with them and they chase me and I can chase them, for short periods, because they don’t have to have so much time for that, so, yes. It is really nice.” (Informant 5)

The pre-surgery physiotherapy fulfilled the need for interaction with other people in the same situation, while limited social interaction was also reported.

Independent of improvement levels, a desire for a more active life, such as taking walks, running and a greater degree of socializing, were expressed. They longed to be able to resume more demanding activities, such as downhill skiing, orienteering, sailing, walking in the mountains or carrying a backpack on city trips. These longings were sometimes expressed in terms of longing for a better quality of life.

“And in my daily living, going for walks, in the forest and, yes, in the archipelago and the mountains is what I would like to do. But it stops there. So it affects my quality of life very much.” (Informant 14)

3.5. The ability of the model of care to influence reassurance and prevention

Experiences of pre-surgery physiotherapy led to reflections about the model of care. One reflection was to combine physiotherapy with analgesics prescription or with sick leave when it was expected that it would decrease pain, help people to stay active and maintain a better mood. The description that pre-surgery physiotherapy decreased pain duration and improved function led to reflections that the model of care be changed, making the pre-surgery physiotherapy available earlier. A demand for a guarantee that one would retain the option of future surgery influenced the decision to decline the planned surgery. A need for clear information about this was expressed.

“Twice I have been offered surgery and I have cancelled. Perhaps partly due to the fact that I have been allowed to stay on the waiting list and get help (=surgery) if I need it.” (Informant 6)

It was suggested that pre-surgery physiotherapy should be part of the normal preparation for surgery.

“Yes, but in the healthcare sector, they try to encourage you to use physiotherapy, or I don’t know how to go about that but, they say: Now ‘When you are going to have surgery?’ and that means that ‘Now you should come here for ten physiotherapy sessions, otherwise you won’t get the surgery’. It’s like when they say that you need to stop smoking if you’re going to get surgery. Isn’t it really the same thing? Don’t smoke, don’t be inactive. *eh* I don’t know but it’s really important I think. Absolutely.” (Informant 14)

4. Discussion

There were experiences of improvement in back-related health in various degrees in all dimensions of the biopsychosocial model after pre-surgery physiotherapy. Some described no symptom improvements, but still felt better doing exercises than being inactive. Feelings of uncertainty about symptoms and interventions emerged. Despite participating in pre-surgery physiotherapy, the back-related symptoms were described in relation to a narrow biomedical explanatory model, although, some also stated that exercises could reduce symptoms. The pre-surgery physiotherapy was described as an opportunity to reflect, and their experiences and suggestions about the model of care’s ability

for reassurance and prevention are of interest for further care development.

The pre-surgery phase is a new context for physiotherapy and the current study gives new insights that did not emerge from the quantitative evaluation in Prepare (Lindbäck et al., 2018). First, the informants described their back-related symptoms by relating to the image reports. This way of understanding the symptoms can be referred to a biomedical explanatory model, which is in alignment with the surgical intervention. However, this explanatory model is not optimally aligned to non-surgical interventions such as pre-surgery physiotherapy, and might undermine trust in physiotherapy and patients' self-management of symptoms. This suggests that pre-surgery physiotherapy needs to focus more on patient's thoughts and beliefs and explanatory models for exercise and self-strategies should be based on knowledge about pain biology (Melzack, 2001) and recurrences of LBP. A broader explanation of symptoms including the biopsychosocial dimensions is more in alignment with potential effect mechanisms to common physiotherapy interventions such as exercises, manual techniques and behavioural approaches. Similar challenges in explanations of symptoms have been described in patients with shoulder impingement syndrome (Cuff and Littlewood, 2018). Healthcare professionals' attitudes and beliefs influence the patients' thoughts about their illness and there is moderate evidence that a healthcare professional with biomedical orientation is more likely to advise a reduced activity level and less likely to adhere to current treatment guidelines (Darlow et al., 2012). An important limitation to consider is that all patients were informed that surgery was recommended and patients had decided to be scheduled for surgery, which could influence their expectations and attitudes towards pre-surgery physiotherapy and bias self-reported outcomes.

Explanatory models that exercises can influence symptoms as some informants described, mean confidence in physiotherapy and self-management to influence symptoms.

Second, it was expressed that reasons for having surgery were to avoid recurrences and a desire to be able to trust their spine when taking part in activities. Communication about expectations for outcomes and treatment alternatives as has been recommended (Zaina et al., 2016), might also be part of the care that can be further developed.

Fear avoidance has been proposed to have an impact on disability, work loss (Waddell et al., 1993), and is associated with poorer outcomes in spinal surgery (Havakeshian and Mannion, 2013). Therefore, the description of reduced feeling of fear in daily activities after pre-surgery physiotherapy was an interesting finding. It was in line with the quantitative evaluation in Prepare, showing lower score in Fear Avoidance Belief Questionnaire in Physical Activity (FABQ-PA) in the physiotherapy-group compared to the control-group pre-surgery (Lindbäck et al., 2018). Another RCT also showed lower FABQ-PA at a 1-year follow-up for those participating in exercise-group compared to spinal surgery. (Brox et al., 2003). It has been speculated that physiotherapy may improve empowerment, affecting the patients' described health three years after the intervention (Limback Svensson et al., 2013) in a qualitative study of patients who had undergone either surgery of physiotherapy for disc herniation. To improve understanding the mechanisms of interventions future studies might benefit from using more theory-based approaches when designing studies.

An interesting finding was that patients experienced decreased pain and reported using less analgesics during pre-surgery. In the US between 1997 and 2010, opioid prescription increased in patients seeking for LBP in primary care, while the use of physiotherapy remained on the same level, despite an increase in prevalence and seeking of healthcare for LBP (Zheng et al., 2017). Guidelines recommend non-pharmacological interventions such as physiotherapy as first choice (Qaseem et al., 2017; National Guideline, 2016; Koes et al., 2010) and exercises to patients with spinal stenosis and degenerative disc disease have shown the same results as surgery (Brox et al., 2003; Delitto et al., 2015).

Previous involvement will probably influence how to cope with recurrences of LBP so the experience that exercises can reduce symptoms and analgesics usage can be important for future health behaviour.

A new finding is to consider pre-surgery physiotherapy as an opportunity to reflect on interventions and lifestyle changes. Wanting advice on lifestyle changes emerged in another qualitative study of patients having non-surgical intervention for spinal stenosis (Lynch et al., 2018). The pre-surgery physiotherapy seems to contribute to reflection on behavioural changes in lifestyle. The behavioural approach in Prepare (Lindbäck et al., 2018) was designed for pragmatic use from the patients' questions, needs and PSFS. Although, when physiotherapy pre-surgery before spinal-surgery is new, it might have been more efficient with a theory-based education package. Therefore, in further research, the additive value of the neuroscience education with a cognitive behavioural approach (Louw et al., 2014) to this pre-surgery physiotherapy model is interesting to study.

The informants' descriptions of potentially modifiable factors that might contribute to improve the model of care, such as wanting structured physiotherapy at an earlier stage, are in line with the guidelines' recommendations to exhaust the non-surgical interventions prior to decision-making about surgery (Qaseem et al., 2017; National Guideline, 2016; Koes et al., 2010). In line with the current requirement of non-smoking pre-surgery, informants expressed thoughts about a physiotherapy requirement pre-surgery. The clinical routine with the possibility of returning to the spine clinic within six months without a new referral was described as reassuring and supported the decision to cancel the surgery appointment.

The pre-surgery physiotherapy led the informants' to thoughts to combine physiotherapy with sickness-certificate or with analgesics-prescriptions, in order to increase activity level and decrease pain or feelings of loneliness. A prehabilitation study that combined exercise-programme with optimization of analgesic both pre- and post-surgery, made the post-surgery recovery faster and shortened the hospital stay (Nielsen et al., 2010).

One limitation of this study is that the informants knew that the interviewer was physiotherapist in the research group, which could cause a risk of impact in the data. However, the interviewer did not treat the patients in Prepare (Lindbäck et al., 2018) which might lower the risk. To contribute to the trustworthiness in the data collection, patients having ≥ 12 visits were selected, to ensure sufficient experiences of the phenomenon, pre-surgery physiotherapy.

In the future development of pre-surgery physiotherapy, areas to put emphasis on are fear in physical activities, improved explanation models and time for reflections and reassurance. Since findings showed a wide range in their longings for an active life, a more individually based approach, both in physiotherapy prior to decision making about surgery and in the pre- and post-surgery phase is of interest to study further.

5. Conclusion

Pre-surgery physiotherapy was described as a tool for reassurance and time to reflect on treatments and lifestyle. Added to our previous quantitative study, time for reflection and reassurance seems to be of importance for patients before considering surgery. The patients experienced improvements in back-related health in all the biopsychosocial dimensions. Even those who expressed no symptom improvements, felt better performing exercises than being inactive, and exercises improved their frame of mind, useful experiences in coping with possible LBP in the future.

Patients described their back-related symptoms in line with a biomedical explanatory model. Those using broader explanations were confident that physiotherapy and self-management could influence their back-related symptoms. Suggesting a need for more emphasis on explanatory models suitable for surgery, pre- and post-surgery physiotherapy and self-management in the professionals' dialogue with patients.

Ethics

The study was approved by the Regional Ethical Review Board (2014/218-31).

Conflicts of interest

None.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.msksp.2019.01.003>.

Funding

This work has been supported by a grant from the County Council of Östergötland, Linköping, Sweden.

References

- Ammendolia, C., Stuber, K.J., Rok, E., Rampersaud, R., Kennedy, C.A., Pennick, V., et al., 2013. Nonoperative treatment for lumbar spinal stenosis with neurogenic claudication. *Cochrane Database Syst. Rev.* (8), Cd010712.
- Brox, J.I., Sorensen, R., Friis, A., Nygaard, O., Indahl, A., Keller, A., et al., 2003. Randomized clinical trial of lumbar instrumented fusion and cognitive intervention and exercises in patients with chronic low back pain and disc degeneration. *Spine* 28 (17), 1913–1921.
- Carli, F., Zavorsky, G.S., 2005. Optimizing functional exercise capacity in the elderly surgical population. *Curr. Opin. Clin. Nutr. Metab. Care* 8 (1), 23–32.
- Cuff, A., Littlewood, C., 2018. Subacromial impingement syndrome - what does this mean to and for the patient? A qualitative study. *Musculoskel. Sci. Pract.* 33, 24–28.
- Darlow, B., Fullen, B.M., Dean, S., Hurley, D.A., Baxter, G.D., Dowell, A., 2012. The association between health care professional attitudes and beliefs and the attitudes and beliefs, clinical management, and outcomes of patients with low back pain: a systematic review. *Eur. J. Pain* 16 (1), 3–17.
- Delitto, A., Piva, S.R., Moore, C.G., Fritz, J.M., Wisniewski, S.R., Josbeno, D.A., et al., 2015. Surgery versus nonsurgical treatment of lumbar spinal stenosis: a randomized trial. *Ann. Intern. Med.* 162 (7), 465–473.
- Dicicco-Bloom, B., Crabtree, B.F., 2006. The qualitative research interview. *Med. Educ.* 40 (4), 314–321.
- Dworkin, R.H., Turk, D.C., Farrar, J.T., Haythornthwaite, J.A., Jensen, M.P., Katz, N.P., et al., 2005. Core outcome measures for chronic pain clinical trials: IMMPACT recommendations. *Pain* 113 (1–2), 9–19.
- Engel, G.L., 1977. The need for a new medical model: a challenge for biomedicine. *Science (New York, NY)* 196 (4286), 129–136.
- Fairbank, J.C., Couper, J., Davies, J.B., O'Brien, J.P., 1980. The Oswestry low back pain disability questionnaire. *Physiotherapy* 66 (8), 271–273.
- Fritsch, C.G., Ferreira, M.L., Maher, C.G., Herbert, R.D., Pinto, R.Z., Koes, B., et al., 2017. The clinical course of pain and disability following surgery for spinal stenosis: a systematic review and meta-analysis of cohort studies. *Eur. Spine J. Offic. Publ. Eur. Spine Soc. Eur. Spinal Deform. Soc. Eur. Sect. Cerv. Spine Res. Soc.* 26 (2), 324–335.
- Havakeshian, S., Mannion, A.F., 2013. Negative beliefs and psychological disturbance in spine surgery patients: a cause or consequence of a poor treatment outcome? *Eur. Spine J. Offic. Publ. Eur. Spine Soc. Eur. Spinal Deform. Soc. Eur. Sect. Cerv. Spine Res. Soc.* 22 (12), 2827–2835.
- Henschke, N., Ostelo, R.W., van Tulder, M.W., Vlaeyen, J.W., Morley, S., Assendelft, W.J., et al., 2010. Behavioural treatment for chronic low-back pain. *Cochrane Database Syst. Rev.* (7) Cd002014.
- Hsieh, H.F., Shannon, S.E., 2005. Three approaches to qualitative content analysis. *Qual. Health Res.* 15 (9), 1277–1288.
- Kesänen, J., Leino-Kilpi, H., Lund, T., Montin, L., Puukka, P., Valkeapaa, K., 2017. Increased preoperative knowledge reduces surgery-related anxiety: a randomised clinical trial in 100 spinal stenosis patients. *Eur. Spine J. Offic. Publ. Eur. Spine Soc. Eur. Spinal Deform. Soc. Eur. Sect. Cerv. Spine Res. Soc.* 26 (10), 2520–2528.
- Koes, B.W., van Tulder, M., Lin, C.W., Macedo, L.G., McAuley, J., Maher, C., 2010. An updated overview of clinical guidelines for the management of non-specific low back pain in primary care. *Eur. Spine J. Offic. Publ. Eur. Spine Soc. Eur. Spinal Deform. Soc. Eur. Sect. Cerv. Spine Res. Soc.* 19 (12), 2075–2094.
- Kreiner, D.S., Hwang, S.W., Easa, J.E., Resnick, D.K., Baisden, J.L., Bess, S., et al., 2014. An evidence-based clinical guideline for the diagnosis and treatment of lumbar disc herniation with radiculopathy. *Spine J. Offic. J. North Am. Spine Soc.* 14 (1), 180–191.
- Limbäck Svensson, G., Kjellby Wendt, G., Thomee, R., Danielson, E., 2013. Patients' experience of health three years after structured physiotherapy or surgery for lumbar disc herniation. *J. Rehabil. Med.* 45 (3), 293–299.
- Lindbäck, Y., Tropp, H., Enthoven, P., Abbott, A., Oberg, B., 2016. PREPARE: pre-surgery physiotherapy for patients with degenerative lumbar spine disorder: a randomized controlled trial protocol. *BMC Musculoskel. Disord.* 17, 270.
- Lindbäck, Y., Tropp, H., Enthoven, P., Abbott, A., Oberg, B., 2018. Prepare: pre-surgery physiotherapy for patients with degenerative lumbar spine disorder: a randomized controlled trial. *Spine J. Offic. J. North Am. Spine Soc.* 18 (8), 1347–1355.
- Louw, A., Diener, I., Landers, M.R., Puentedura, E.J., 2014. Preoperative pain neuroscience education for lumbar radiculopathy: a multicenter randomized controlled trial with 1-year follow-up. *Spine* 39 (18), 1449–1457.
- Lynch, A.D., Bove, A.M., Ammendolia, C., Schneider, M., 2018. Individuals with lumbar spinal stenosis seek education and care focused on self-management - results of focus groups among participants enrolled in a randomized controlled trial. *Spine J. Offic. J. North Am. Spine Soc.* 18 (8), 1303–1312.
- Machado, G.C., Witzleb, A.J., Fritsch, C., Maher, C.G., Ferreira, P.H., Ferreira, M.L., 2016. Patients with sciatica still experience pain and disability 5 years after surgery: a systematic review with meta-analysis of cohort studies. *Eur. J. Pain* 20 (10), 1700–1709.
- Melzack, R., 2001. Pain and the neuromatrix in the brain. *J. Dent. Educ.* 65 (12), 1378–1382.
- National Guideline, C., 2016. National Institute for Health and Care Excellence: Clinical Guidelines. Low Back Pain and Sciatica in over 16s: Assessment and Management. National Institute for Health and Care Excellence (UK) Copyright (c) NICE, London.
- Nielsen, P.R., Jorgensen, L.D., Dahl, B., Pedersen, T., Tonnesen, H., 2010. Prehabilitation and early rehabilitation after spinal surgery: randomized clinical trial. *Clin. Rehabil.* 24 (2), 137–148.
- Patton, M.Q., 2014. *Qualitative Research & Evaluation Methods*, 4 ed. Sage, Thousand Oaks, CA, USA.
- Qaseem, A., Wilt, T.J., McLean, R.M., Forcica, M.A., 2017. Noninvasive treatments for acute, subacute, and chronic low back pain: a clinical practice guideline from the American college of physicians. *Ann. Intern. Med.* 166 (7), 514–530.
- Rainville, J., Smeets, R.J., Bendix, T., Tveito, T.H., Poiraudou, S., Indahl, A.J., 2011. Fear-avoidance beliefs and pain avoidance in low back pain—translating research into clinical practice. *Spine J. Offic. J. North Am. Spine Soc.* 11 (9), 895–903.
- Rolving, N., Nielsen, C.V., Christensen, F.B., Holm, R., Bunger, C.E., Oestergaard, L.G., 2015. Does a preoperative cognitive-behavioral intervention affect disability, pain behavior, pain, and return to work the first year after lumbar spinal fusion surgery? *Spine* 40 (9), 593–600.
- Santa Mina, D., Clarke, H., Ritvo, P., Leung, Y.W., Matthew, A.G., Katz, J., et al., 2014. Effect of total-body prehabilitation on postoperative outcomes: a systematic review and meta-analysis. *Physiotherapy* 100 (3), 196–207.
- Stanton, T.R., Fritz, J.M., Hancock, M.J., Latimer, J., Maher, C.G., Wand, B.M., et al., 2011. Evaluation of a treatment-based classification algorithm for low back pain: a cross-sectional study. *Phys. Ther.* 91 (4), 496–509.
- Stratford PG, C., Westaway, M., Brinkley, J., 1995. Assessing disability and change on individual patients: a report of a patient specific measure. *Physiother. Can.* 47, 258–263.
- Stromqvist, B., Fritzell, P., Hagg, O., Jonsson, B., Sanden, B., 2013. Swespine: the Swedish spine register : the 2012 report. *Eur. Spine J. Offic. Publ. Eur. Spine Soc. Eur. Spinal Deform. Soc. Eur. Sect. Cerv. Spine Res. Soc.* 22 (4), 953–974.
- Tong, A., Sainsbury, P., Craig, J., 2007. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *Int. J. Qual. Health Care J. Int. Soc. Qual. Health Care* 19 (6), 349–357.
- Waddell, G., Newton, M., Henderson, I., Somerville, D., Main, C.J., 1993. A Fear-Avoidance Beliefs Questionnaire (FABQ) and the role of fear-avoidance beliefs in chronic low back pain and disability. *Pain* 52 (2), 157–168.
- Winter, C.C., Brandes, M., Muller, C., Schubert, T., Ringling, M., Hillmann, A., et al., 2010. Walking ability during daily life in patients with osteoarthritis of the knee or the hip and lumbar spinal stenosis: a cross sectional study. *BMC Musculoskel. Disord.* 11, 233.
- Zaina, F., Tomkins-Lane, C., Carragee, E., Negrini, S., 2016. Surgical versus non-surgical treatment for lumbar spinal stenosis. *Cochrane Database Syst. Rev.* (1), Cd010264.
- Zheng, P., Kao, M.C., Karayannis, N.V., Smuck, M., 2017. Stagnant physical therapy referral rates alongside rising opioid prescription rates in patients with low back pain in the United States 1997-2010. *Spine* 42 (9), 670–674.