

BMJ Open Quality Cascade of decisions meet personal preferences in sciatica treatment decisions

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ABSTRACT

Study design An in-depth interview study including patients, general practitioners, neurologists and neurosurgeons.

Objective To gain insight in decision-making in sciatica care, by identifying patients' and physicians' preferences for treatment options, and the differences between and within both groups.

Summary of background data Sciatica is a self-limiting condition, which can be treated both conservatively and surgically. The value of both options has been disputed, and the care pathway is known for a substantial amount of practice variation. Most Dutch patients are taken care of by general practitioners before they are referred to hospital-based neurologists, who might refer to a neurosurgeon, who can perform a surgical intervention. Dutch sciatica care thus follows the principles of stepped care, and a cascade of decisions precedes surgery. Better understanding of the decision-making within this cascade might reveal opportunities to improve shared decision-making and to reduce unwarranted practice variation.

Methods Interviews with 10 patients and 22 physicians were analysed thematically.

Results While physicians were confident of their clinical diagnosis, patients preferred confirmation through imaging to exclude other possible explanations. Furthermore, many patients showed reluctance towards the use of (strong) opioids, while all physicians favoured this and underlined the benefits of opioids in the management of sciatica complaints, to buy time and to allow patients to recover naturally. Finally, individual physicians differed strongly in their opinion on benefits and optimal timing of surgical treatment and epidural injections.

Conclusions Dutch sciatica care is characterised by a cascade of decisions preceding surgery. Preferences differ within and between patients and physicians, which adds to the practice variation. To improve decision-making, physicians and patients should invest not necessarily more in the exchange of options or preferences, but in making sure the other understands the rationale behind them.

INTRODUCTION

Sciatica can be managed both conservatively and surgically. In the Netherlands, sciatica care is organised following the stepped care principle, involving a general practitioner (GP) as gatekeeper for hospital care, and a hospital-based neurologist, before a neurosurgeon is

WHAT IS ALREADY KNOWN ON THIS TOPIC

⇒ Sciatica can be treated conservatively and surgically and is known to have a large practice variation.

WHAT THIS STUDY ADDS

⇒ The decision-making process in sciatica treatment includes two critical steps: (1) diagnosing of the problem and (2) deciding on the type of treatment. For patients certainty of diagnosis was most important, while for physicians timing and type of intervention was most important.

HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE OR POLICY

⇒ This study reveals that individual preferences guide decision in sciatica care, possibly resulting in high practice variation. Implementing shared decision-making in this care pathway as a strategy to reduce unwarranted practice variation can be improved.

consulted. Therefore, a chain of decisions and referrals precede surgery. Both the diagnostic process and timing of surgical treatment and the (societal) value of surgery over conservative treatment are topics of ongoing discussion, and practice variation has been widely reported.¹⁻⁴ This practice variation may be driven by both differences between and within patient and provider preferences.⁵ This makes the management of sciatica of interest. Which preferences of patients and physician(s) shape these decisions?

In the Netherlands, the GP is the point of entry for non-acute health complaints. For sciatica, the GP guideline advises conservative treatment for 6–8 weeks, combining a strategy of watchful waiting, informing the patient and providing painkillers. If the patients' complaints last longer, the GP can refer to a neurologist.⁶ Neurologists can confirm the diagnosis and might order imaging. However, the neurologists' guideline advises against imaging, unless surgery is considered or there is doubt about underlying cause or pathology.⁷ Recent research showed that only 11% of Dutch neurologists routinely order



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imaging.⁸ Apart from conservative options, the neurologist can also prescribe more invasive pain treatments, usually performed by a pain team. In case of persisting complaints, the patient might be referred to a neurosurgeon or orthopaedic surgeon to consider surgery. The Dutch neurosurgery guideline advises not to perform surgery on patients with less than 8 weeks of complaints, and proposes surgery after more than 6 months of complaints without any proper improvement.⁷ In the intermediary period natural recovery could occur. Therefore, a shared decision on treatment should be pursued with the patient. A multidisciplinary guideline exists, of which the implementation faces difficulties.⁹

Resuming, Dutch sciatica care is characterised by involvement of multiple stakeholders, uncertainty in the aetiology of the disease and uncertainty about the value of diverse treatment options in each step of the care pathway. As a result, practice variation in sciatica care persists, despite efforts to harmonise care processes. Shared decision-making (SDM) is warranted in this situation, because given the uncertainties, patients preferences are extra important to take into account. However, research on the actual preferences that guide the different stakeholders in their decision-making process is not available. This qualitative study aims to: (1) identify key moments in this care pathway and (2) map the drivers and arguments in the decisions among the involved stakeholders.

MATERIALS AND METHODS

Qualitative methods were appropriate for this research question, because the goal was to discover underlying arguments and considerations. region. The COREQ checklist (COnsolidated criteria for REporting Qualitative research) was followed and is included in the online supplemental file 1.¹⁰

Data collection

WD conducted in-depth semistructured interviews with sciatica patients (10), physiotherapists (3), GPs (7), neurologists (6) and neurosurgeons (6). Respondents were purposively recruited. Respondents were approached in several ways. The physicians mostly with snowballing, after first contacts were made through the personal networks of the project team. For the GPs, the working group 'movement disorders' of the Dutch General Practitioners' Society was contacted. Physicians were asked to distribute a leaflet among eligible patients in their practice. In addition, an online call on the website of the Dutch association for sciatica was placed. One patient was reached through the personal network of one of the project group members. We aimed to reach a diverse sample of representatives from all stakeholders involved in sciatica care.

The semistructured interview guide for physicians contained prompts and questions about experiences with care for sciatica patients and the deliberations regarding treatment alternatives. The interview guide for patients

focused on the personal patient journey and deliberations patients recalled regarding their treatment decisions. Table 1 provides an overview of the composition of the sample of physicians, table 2 provides an overview of the composition of the sample of patients.

The interviews with physiotherapist quickly revealed that, although they treated patients with back complaints, their involvement in patients with severe sciatica complaints (with surgery as a treatment option) was limited. As the decisional trajectory towards surgery was our main topic, we decided not to pursue further interviews with physiotherapists.

During the interview, patient 2 appeared to have misunderstood the inclusion criteria. He suffered not from sciatica. Therefore, this respondent was excluded from the analysis.

Data analysis

All interviews were transcribed verbatim and anonymised. Thematic analysis was conducted with three coders (WD1, EV2 and RS3), using Atlas.ti.¹¹ WD1 and EV2 coded and analysed all physicians, WD1 and RS3 coded and analysed all patients. First, a sample of the same two interviews was coded separately. Next, the coders compared their findings and discussed shared themes. Then each coded two more interviews, further developing the code scheme. The previously coded interviews were reread using the improved code scheme, to check if coding could be more accurate. The team selected and translated (from Dutch) the key quotes that illustrated the themes. Literal translation was pursued, with respect to the natural 'flow' or 'stammer' in a quote.

RESULTS

Four steps in the care process proved relevant for the clinical pathway of patients. These were uncertainty about the diagnosis, analgesia, epidural injections and surgery. Patients and physicians differed in opinion on the subjects of a certain diagnosis and analgesia. They had relatively similar opinions with respect to the different treatment options. Different options existed on the topic of surgical treatment, within both the group of patients as well as the group of physicians. A summary of the positions of patients and physicians on the four steps is presented in table 3.

Certainty and diagnosis

After the onset of sciatica, two prominent decisions or conflicts appear, concerning (1) diagnosing sciatica and the need for MRI-imaging to confirm the diagnosis and (2) the appropriate timing for referral to the hospital. Physicians felt confident about diagnosing sciatica, although the GPs mentioned that they sometimes doubted their diagnosis. They would discuss such doubts with their patients and generally would wait to see how symptoms developed. GPs acknowledged that their first objective in patients with subjected sciatica is to help the patient through the first period of pain and restricted

Table 1 Basic characteristics of the sample of physicians

	Gender	Years of clinical experience	How often do you encounter sciatica patients in your practice, as estimated by respondent	Duration of interview in minutes
GP1	Female	5	Bimonthly	42
GP2	Male	31	Monthly	42
GP3	Male	24	Bimonthly	34
GP4	Male	13	Bimonthly	60
GP5	Female	10	Monthly	40
GP6	Male	16	Twice a month	52
GP7	Male	15	Twice a month	31
PT1	Male	15	Rarely	61
PT2	Male	8	Quarterly	52
PT3	Male	7	Bimonthly	79
N1	Male	20	Daily	63
N2	Female	27	Daily	25
N3	Male	18	Daily	60
N4	Male	8	Daily	30
N5	Male	6	Daily	43
N6	Male	4	Daily	51
NS1	Male	6	Daily	48
NS2	Male	3	Daily	56
NS3	Male	10	Daily	23
NS4	Male	11	Daily	59
NS5	Male	1	Daily	60
NS6	Male	12	Daily	61

GP, general practitioner.

mobility, rather than to determine the ‘true’ diagnosis rapidly. When patients did not improve, or pushed for referral, GPs would refer to a neurologist earlier than the 6–8 weeks suggested in the guideline. However, because of waiting lists, these patients often waited a few weeks before a specialist was available, and the total duration of complaints generally exceeded 6 weeks.

Patients understood the 6–8 weeks of conservative treatment by the GP as mandatory ‘waiting time’, after which their diagnosis would be confirmed by a specialist and with an MRI scan. When a neurologist deemed the scan to be unnecessary, patients were disappointed. Physicians were conscious of such patient expectations. Some kept refusing, others gave in:

Table 2 Basic characteristics of the interviewed patients

	Gender	Age category	Occupation	Duration of complaints in weeks	Duration of the interview in minutes
P1	Male	50s	Truckdriver	16	79
P3	Male	50s	Manager	16	36
P4	Male	40s	Electrician (self-employed)	16	31
P5	Female	30s	Psychiatric home carer	16	49
P6	Female	30s	Housewife	16	26
P7	Female	30s	Dialysis nurse	20	40
P8	Male	60s	Truckdriver	6	23
P9	Female	30s	Nurse in psychiatry	102	40
P10	Male	60s	Retired	52	42
P11	Male	50s	Human research manager	5	65

Table 3 A summary of the perspectives of patients and physicians on the four main topics

	Certainty about the diagnosis	Analgesia	Epidural injections	Surgery
Patients	Some uncertainty remained unless diagnosis was confirmed with an MRI scan	Reluctant towards opiates	Relatively reluctant to receive epidural injections	Ambivalent opinions, some fear surgery
Physicians	Certain about diagnosis, no imaging required	In favour of painkilling, opiates if necessary	Critical about the benefit of epidural injections	Ambivalent opinions about the medical value of surgery

Sometimes you notice within a minute that whatever you say, it won't matter. (...) And in such cases you can say 'according to the guideline you are not entitled to a scan'. But I am not treating the guideline, I am treating the patient. In my experience, if you do not refer such a patient for a scan, if you do not manage to get the patient to understand, and you kind of quarrel with the patient, next month you will receive information from another hospital and they'll have made the scan. (N3)

Actually, I never have angry patients because they want surgery per se. I do have patients who are angry because they are refused to get a MRI. But I consider that to be something different. Why is that different? Because it is not related to the decision to pursue surgery or no surgery. When deciding to pursue surgery or not you always have the patients best interest at heart. (N4)

Sometimes I notice that patients first of all need more certainty about their diagnosis. And when they do have that certainty, they can accept that. This also depends on what they can expect from surgery. How long will the recovery take? How will surgery influence their quality of life, afterwards? In my experience, people sometimes say: 'well, let's wait a little bit more'. They are scared of surgery and have lots of fears about it. For example, the fear that for surgery they need to receive general anaesthesia, and they don't want to. This can all play a role in the decision making. (GP6)

Both neurologists and neurosurgeons stated that they generally did not need an MRI scan to confirm the diagnosis. They trusted their clinical judgement and only required imaging for atypical cases. For patients, this was difficult to grasp. All patients whose diagnosis was not confirmed by a scan kept 'doubting' their diagnosis.

So I say, dear neurologist, that's not my spine. That's a model on a table, my spine is in my back. And you think you can see on that model what's wrong with my back? I thought I came here for a scan and to find out what's in my back. No, he says, that MRI is only needed for the specialist pain team. (P10).

Analgesia

When it comes to analgesia, patients were hesitant towards using them, especially opioids, while physicians advocated their benefits. Patients were critical towards potential

side effects, but accepted using them after either the GP, neurologist or pain specialist explained their benefits. They feared to become dependent on opioids and were afraid of using strong painkillers.

It is a mixed feeling, I would prefer to quit all medication. I would prefer to, but I also notice that the medication is necessary to be able to move. That's a very strange balance. It don't think it's right, I struggle with it. Because I feel as if I do not function as the real me. (P10)

Don't reduce your medication too soon, because you need it, take it slow. I thought, well okay, if he says so... because I need someone to slow me down. (P11)

Did it help? The pain medication? Well, not at first. Then we got Tramadol as well and that didn't work either, and then in combination with paracetamol, that knocked me of my feet. Then I just, eh, it was like I was totally drunk. (P4)

Physicians were aware of this hesitance, and stimulated patients to use painkillers to give natural recovery more time. Physicians also stated that they usually followed the WHO analgesic ladder and prescribed stronger medications when necessary, which is supported by the guidelines. They tried to explain why more aggressive painkillers, such as opioids, could be designated for these complaints. Not all patients were equally reluctant to use these medications under the circumstances, but all distrusted opiates.

Because, many patients resist using pain medication. Because they are scared of its side effects, or because they fear that they will be unable to feel the sciatica get worse. You have to discuss these fears, because people might push for surgery to avoid pain medication. (N3)

I almost never meet people who do not want pain medication. Because if it is really a radicular syndrome, well... then you want something... yes, then you really want something. So that is not really a problem. But they do experience difficulty from the side effects. Mostly with the morphine, the opioids. Yes, that makes people drowsy, it makes it difficult to go to the toilet, they are really bothered with it. So, that are problems you meet, but well, they have no other option. (GP1)

Lots of the people I treat need a revision of their pain medication. That is sort of related to who is prescribing. Of course, there a lot of literature about this topic and there also is some fright at the side of the professional, but when people are in a lot of pain you need to prescribe a lot of painkilling quickly. You better start with opioids and then reduce to paracetamol, compared to starting with paracetamol and a bit of this and a bit of that. You see? That's following the WHO pain ladder from bottom to top. But with acute pain you'd better follow it from top to bottom. Yet I do notice, although I cannot support this notion with literature, but I do notice that GP's are careful to be too aggressive with painkilling, so I often meet people who are still in quite some pain. (N5)

Epidural injections

For epidural injections differences were found among physicians, more so than among patients. Some physicians prescribed them regularly for sciatica, although in this small sample there were more opponents than proponents. One neurologist was a strong believer in epidural injections and was setting up a randomised controlled trial to prove their effectiveness.

Why do I prefer epidurals? Because, in my experience it works well, although there are always patients for whom it does not work. Those patients are quick to call and ask for another, the following step. (N5)

And treatment by epidural injection, do you prescribe that as well? Yes, sure. Especially with elderly people, with lots of other morbidities or when you think: 'in this case surgery is really unpleasant, but she has so much pain'. Then we use them sometimes. Or people of whom you think 'well, I have doubts about the amount of compression and the test injection worked very well'. And when the neurosurgeon says: 'I think this compression is to limited for surgery to be of use'. (N6)

However, apart from two proponents, physicians were sceptical and had had more negative than positive experiences. Patients were also moderately inclined against epidural injections, but were willing to give it a try for the doctors sake.

So they discussed it: surgery or an epidural injection? On the one hand I did not want an injection, because I did not believe it would work. On the other hand, if they I advise it you have to be open to it. (P1)

So I had a pain blocker [epidural injection), but that didn't work at all. No, it didn't help? No, those never help, those pain blockers. I've spoken with so many people who had one, but it never helps. (P8)

Surgery

Proponents and opponents of surgery were found among both physicians and patients. Opposing patients expressed fear and doubted the effectiveness of the

procedure. Patients that proposed for surgery underlined the difficulty of their personal situation and hoped for quicker recovery than with conservative treatment.

Yes, well, choice, they let me choose, surgery or rest. But it was so troublesome that I said if surgery will help, then why not? (P3)

I am scared of surgery, because I am a nurse myself and I know how to judge the evidence. And people tell me that surgery is not scientifically proven to be effective. (P7)

Yes, well, it is quite an operation. I know I'll probably be home within a night, but still, I found it a bit scary, to do. Also because there is another herniated disk underneath. When the one is removed, what will the other do? How will the scare tissue develop? Yeah, I did read a lot about it. So yes... In a way, I think, I'm... I'm a bit scared to get the surgery done. (P9)

Opposing physicians underlined that they wanted to maximise the chance of natural recovery, that they did not want to misuse public money, and that they feared the chance of complications or irreparable damage to a surgical treatment. On the other hand, proposing physicians focused on (the possibility of) quicker recovery with surgery, fewer residual complaints and earlier work resumption. Notably, neurologists held strong views, either pro or con, which influenced their referring behaviour.

Too easy access to surgery can be deadly for patients. Deadly, really? Literally, because of the risk of complications, but also because some patients are operated on who would have recovered without surgery. And surgery always does harm as well. (N1)

Those large studies of Peul, the Sciatica trials, conclude that you should not operate. All neurologists have read that. All policy makers have read that. (...) But that interpretation is completely wrong. What they really say is that if you do want to perform surgery, do it quickly. (NC6)

Interviewer: "And of 5 assessments [of MRI scans], overall, how many proceed to surgery? Respondent: I estimate about 60%. Three out of five. Why do those other two do not receive surgery? Yes, that depends. Partly, I think, it is patient related, like when complaints have decreased, that the situation is improving. Sometimes patients refuse surgery. Or patients want to wait, when they hear about other treatment options. Sometimes they chose one of the other treatment options. And sometimes they just don't want surgery. Or, but that is really rare, if I think the risks of surgery are too high, I'll try to steer them towards an alternative option. That are the patient related aspects. And then there are, well, the MRI related aspects, so to speak, when the MRI does show a herniated disk but it is an atypical case. Or the MRI does not show deviations that can explain

the complaints. Or the deviations do not correspond to the complaints. (NC2)

People do have strong preferences about surgery or not. They really have. When people are self-employed and cannot miss the earnings of 3 months of working, well yes, that is an argument for surgery. I listen to what people say. I do, I do have a certain advice in mind, but then you get into a dialogue, and then you migrate towards an advice that suits them. (N2)

DISCUSSION

The results of this study give insight into the critical decision-making steps in the care pathway of sciatica. The two key elements are: (1) diagnosis of the problem and (2) deciding on the type of treatment. The position that patients and their physicians took differed, also within the groups of patients and physicians.

For patients, certainty about their diagnosis was most important. They preferred the evidence of MRI. This is congruent with earlier research, which showed that patients placed much emphasis on the need for a confirmed diagnosis, as a starting point for further treatment decisions.^{12 13} Patients' preference for imaging is well known, although not fully understood.¹⁴ A systematic review of qualitative studies about patients with low back pain and sciatica concluded that for patients, imaging gives more certainty and excludes other possible explanations.¹³ The patients we interviewed experienced the first weeks of GP-led conservative treatment as mandatory waiting time before they would receive a scan for confirmation.

Physicians seldom felt that they required imaging to confirm the diagnosis. This holds especially for neurologists and neurosurgeons. This is concurrent with research that showed that 89% of Dutch neurologists only order imaging under specific circumstances, such as after a long period of pain or with an abnormal neurological exam.⁸ For 27% of these neurologists, the patient requesting for an MRI is also sufficient reason to order imaging. For physicians, the presentation of sciatica is often so recognisable that confirmation by imaging is not required. Patients find this difficult to grasp.

Among physicians, the timing of intervention was the main subject of discussion. Physicians differed strongly in their opinions about the benefits of surgical or conservative treatment, especially with regard to the timing of surgery. In the Dutch context, the neurologist appears to be the most influential decision-maker here: he or she can accelerate or delay the decision to pursue surgical treatment, and decides about the timing of involvement of the neurosurgeon. Between approximately 6 weeks and 6 months after complaints have started, patients with persisting symptoms see a neurologist, who, with the patient, drives the decision about conservative treatment or surgical intervention. Without referral to a neurosurgeon, surgery is highly unlikely within the Dutch context. Of course, neurosurgeons can delay surgery further. Yet, they are unable to make it happen earlier.

The interviewed sciatica patients were reluctant to use strong painkillers. This is congruent with earlier research that reports relatively reserved use of opioids in the Netherlands.¹⁵⁻¹⁷ Nevertheless, the use of analgesia has increased dramatically over the last decades.¹⁵ Broad concern has risen about opioid use and epidemics of opioid deaths, especially in the USA.¹⁸ In the Netherlands, this does not seem an immediate problem, as problematic use of opioids is relatively rare and at the fourth-lowest level in the EU.¹⁹ This study suggests that physicians were less scared of opioids than their patients.

Implications for practice

This study gives some indications for why practice variation still prevails in sciatica treatment. Personal preferences of patients and physicians guide decisions, within the boundaries set by guidelines and evidence. Based on this observation, SDM, as a strategy to reduce unwarranted practice variation, can be improved. A basic model to reach SDM is by following three steps: choice talk, option talk and decision talk.²⁰ While Dutch patients are aware that there is a choice in this situation and do form individual preferences, this study suggests that the underlying, supporting process of deliberation is not fully developed. As a result, individual preferences of either the patient or the physician guide the care pathway more strongly than acknowledged or preferable. To improve SDM Dutch physicians and patients should invest not necessarily more in the exchange of options or preferences, but in making sure the other understands the rationale behind them, as well as the applicability of the situation to the patient's individual context. This means not only presenting the treatment options, but an in depth discussion of which option is most fitting for what situation, and why both parties in the conversation think so. The revised model of the three steps of SDM places active listening and deliberation at the centre.²¹ Implementation of this improved model would possibly bridge the gap between patients and physicians in this stage of decision-making. Implementing SDM in clinical practice takes training, practice and requires adjustment in the way physicians were used to work.²² For the implementation of SDM in this care pathway, explicating the benefits and risks, adjusted to the situation of the patient, could be included more prominently in the clinical guidelines.

Strengths and limitations

One major strength of our study is that we have added the perspective of all important physicians involved. We learnt that a range of physicians, notably neurologists, have a profound influence on patients' chances to receive surgery. The neurologist times the moment of referral to the neurosurgeon, and thereby strongly influences the timing of surgery. Patients' expectations or preferences appeared to be influential, be it moderated through the guidance of the physicians they met. Since our sample covered neurosurgeons working both in public and private clinics and patients that underwent surgery in public hospitals or private clinics, our interviews reflect a broad sample of physicians

and patients in this decision-making process in the Dutch context. Though we included all important physicians involved in the care pathway, the inclusion of pain specialists might have contributed to the further understanding of the use of painkillers and opiates.

An important limitation of this study is that we were unable to reach patients who had complaints for less than 6 weeks. Furthermore, we may have missed typical patients who bypass classical care pathways. However, bypassing the GP is uncommon in the Netherlands, because a referral by a GP is needed to get hospital care. Further, GP consultations are fully covered by health insurance without any copayment.²³

CONCLUSION

In conclusion, this study shows how the stepped care pathway of sciatica patients in the Netherlands is influenced by individual patient and physician preferences. The neurologist appears to be of central influence. To improve SDM, investments should be made in the deliberation about options and preferences and in a better understanding of the underlying rationale for an individual patient and the physician.

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COREQ (Consolidated criteria for REporting Qualitative research) Checklist (1)

Topic	Item No.	Guide Questions/Description	This study
Domain 1: Research team and reflexivity			
<i>Personal characteristics</i>			
Interviewer/facilitator	1	Which author/s conducted the interview or focus group?	<i>The first author</i>
Credentials	2	What were the researcher's credentials? E.g. PhD, MD	<i>MSc.</i>
Occupation	3	What was their occupation at the time of the study?	<i>Phd Student</i>
Gender	4	Was the researcher male or female?	<i>Female</i>
Experience and training	5	What experience or training did the researcher have?	<i>Experience with interviews, focus groups and analysis of qualitative data. Participated in several relevant short courses</i>
<i>Relationship with participants</i>			
Relationship established	6	Was a relationship established prior to study commencement?	<i>No, with the exception of one patient recruited through the network of the interviewer</i>
Participant knowledge of the interviewer	7	What did the participants know about the researcher? e.g. personal goals, reasons for doing the research	<i>Interviewer introduced the research goal in terms of 'learning from experiences, interested in decision making in this context'</i>
Interviewer characteristics	8	What characteristics were reported about the interviewer/facilitator? e.g. Bias, assumptions, reasons and interests in the research topic	<i>Interviewer introduced herself as being a trained researcher, with a background in sociology. On some occasions the personal experience of the interviewer with sciatica was also discussed</i>
Domain 2: Study design			
<i>Theoretical framework</i>			
Methodological orientation and Theory	9	What methodological orientation was stated to underpin the study? e.g. grounded theory, discourse analysis, ethnography, phenomenology, content analysis	<i>Thematic analysis</i>
<i>Participant selection</i>			
Sampling	10	How were participants selected? e.g. purposive, convenience, consecutive, snowball	<i>Combination of convenience, snowball and purposive sampling</i>
Method of approach	11	How were participants approached? e.g. face-to-face, telephone, mail, email	<i>Per e-mail</i>
Sample size	12	How many participants were in the study?	<i>35</i>

Non-participation	13	How many people refused to participate or dropped out? Reasons?	<i>About the same number of people. Physicians for reasons of time, patients because they turned out they did not meet inclusion criteria (mostly stenosis patients)</i>
<i>Setting</i>			
Setting of data collection	14	Where was the data collected? e.g. home, clinic, workplace	<i>Patients at home or per telephone. Physicians at their workplace or per telephone.</i>
Presence of non-participants	15	Was anyone else present besides the participants and researchers?	<i>During one patient interview the partner of the patients was present, she contributed some comments to the interview</i>
Description of sample	16	What are the important characteristics of the sample? e.g. demographic data, date	<i>See table 1 and 2 in the main text</i>
<i>Data collection</i>			
Interview guide	17	Were questions, prompts, guides provided by the authors? Was it pilot tested?	<i>Open ended questions were provided, sometimes followed by a prompt to steer the respondent towards providing more information on a topic ("difficult?..."). guide was not pilot tested, but it was discussed with an experienced colleague and adjusted after the first few interviews</i>
Repeat interviews	18	Were repeat inter views carried out? If yes, how many?	<i>None</i>
Audio/visual recording	19	Did the research use audio or visual recording to collect the data?	<i>Audio recorded</i>
Field notes	20	Were field notes made during and/or after the interview or focus group?	<i>Yes, after every interview a short summary of the interview was written by the interviewer, to support future interviews, these were no part of the overall analysis</i>
Duration	21	What was the duration of the inter views or focus group?	<i>On average 49 minutes with physicians and 44 minutes with patients</i>
Data saturation	22	Was data saturation discussed?	<i>Saturation within groups was difficult to reach, however, responses in interviews were remarkably constant. Especially amongst physicians. In the overall picture, we thus feel to approach saturation quite closely</i>
Transcripts returned	23	Were transcripts returned to participants for comment and/or correction?	<i>Every respondent was offered this option, but all patients and most physicians declined. Two physicians did receive their transcript, one made come corrections</i>
Domain 3: analysis and findings			

<i>Data analysis</i>			
Number of data coders	24	How many data coders coded the data?	<i>3, in 2 sets of 2</i>
Description of the coding tree	25	Did authors provide a description of the coding tree?	<i>No, we choose not to do so, for reasons of space and relevance</i>
Derivation of themes	26	Were themes identified in advance or derived from the data?	<i>Derived from the data</i>
Software	27	What software, if applicable, was used to manage the data?	<i>Atlas-ti®(2)</i>
Participant checking	28	Did participants provide feedback on the findings?	<i>No</i>
<i>Reporting</i>			
Quotations presented	29	Were participant quotations presented to illustrate the themes/findings? Was each quotation identified? e.g. participant number	<i>Yes, yes</i>
Data and findings consistent	30	Was there consistency between the data presented and the findings?	<i>Topic 30 and 31 are difficult to state for our own work, but we did aim to meet these goals</i>
Clarity of major themes	31	Were major themes clearly presented in the findings?	
Clarity of minor themes	32	Is there a description of diverse cases or discussion of minor themes?	<i>We did aim to present the variability in the findings. We did not have enough space to discuss specific cases or minor themes</i>

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