Musculoskeletal Science and Practice 57 (2022) 102493

Contents lists available at ScienceDirect

Musculoskeletal Science and Practice

journal homepage: www.elsevier.com/locate/msksp

Original article

Physiotherapists' knowledge, attitude and practice behavior to prevent chronification in patients with non-specific, non-traumatic, acute- and subacute neck pain: A qualitative study

M.J. Verwoerd [a,*], H. Wittink [a], M.E.J.B. Goossens [b], F. Maissan [a], R.J.E.M. Smeets [b]

[a] Research Group Lifestyle and Health, Utrecht University of Applied Sciences, Heidelberglaan 7, Utrecht, the Netherlands
[b] Department of Rehabilitation Medicine, Research School CAPHRI, CIR Rehabilitation, Maastricht University, Eindhoven, the Netherlands

ARTICLE INFO

Keywords:
Non-specific neck pain
Physiotherapists attitude
Practice behavior

ABSTRACT

Background: The purpose of this study was to explore physiotherapists' knowledge, attitude, and practice behavior in assessing and managing patients with non-specific, non-traumatic, acute- and subacute neck pain, with a focus on prognostic factors for chronification.
Method: A qualitative study using in-depth semi-structured interviews was conducted with 13 physiotherapists working in primary care. A purposive sampling method served to seek the broadest perspectives. The knowledge-attitude and practice framework was used as an analytic lens throughout the process. Textual data were analyzed using qualitative content analysis with an inductive approach and constant comparison.
Results: Seven main themes emerged from the data; physiotherapists self-estimated knowledge and attitude, role clarity, therapeutic relationship, internal- and external barriers to practice behavior, physiotherapists' practice behaviors, and self-reflection. These findings are presented in an adjusted knowledge-attitude and practice behavior framework.
Conclusion: A complex relationship was found between a physiotherapist's knowledge about, attitude, and practice behavior concerning the diagnostic process and interventions for non-specific, non-traumatic, acute, and subacute neck pain. Overall, physiotherapists used a biopsychosocial view of patients with non-specific neck pain. Physiotherapists' practice behaviors was influenced by individual attitudes towards their professional role and therapeutic relationship with the patient, and individual knowledge and skills, personal routines and habits, the feeling of powerlessness to modify patients' external factors, and patients' lack of willingness to a biopsychosocial approach influenced physiotherapists' clinical decisions. In addition, we found self-reflection to have an essential role in developing self-estimated knowledge and change in attitude towards their therapeutic role and therapist-patient relationship.

1. Introduction

Neck pain (NP) is third in the rating of 'years lived with disability' in non-fatal diseases in Europe (GBD 2015, 2016). NP has a substantial impact on health related quality of life for patients and has significant economic consequences for society (Hoy et al., 2014; Hurwitz et al., 2018). In particular, NP that becomes chronic causes high healthcare costs (Childs et al., 2008). The incidence of NP in the general population is estimated between 15 and 18% per year (Côté et al., 2004; Croft et al., 2001). In the Netherlands, NP is the most prevalent musculoskeletal disorder presented at physiotherapy practices (Dool, 2016). Childs et al. (2008) and others suggest that rates of persistent NP are substantial: 30% of patients with NP will develop chronic symptoms, and 37% of individuals who experience NP will report persistent problems for at least 12 months (Childs et al., 2008; Côté et al., 2004; Bovim et al., 1994).

Chronic pain interferes considerably with a person's everyday activities, is associated with depressive symptoms, and affects relationships and interactions with others (Reid et al., 2011). The reported effect of physiotherapy treatment of chronic musculoskeletal pain is, at best, only moderate (Geneen et al., 2017; Bertozzi et al., 2013; Gross et al., 2015). It is therefore important to prevent chronicity and this must preferably occur in the (sub)acute phase of musculoskeletal pain.

It is known that neurophysiological changes responsible for the

* Corresponding author.
E-mail address: martine.verwoerd@hu.nl (M.J. Verwoerd).

https://doi.org/10.1016/j.msksp.2021.102493
Received 23 September 2021; Received in revised form 30 November 2021; Accepted 9 December 2021
Available online 11 December 2021

chronification of pain are modulated by psychosocial factors (Swinkels and van der F-C, 2010). Therefore, to prevent chronification of non-specific acute- and subacute, non-traumatic NP, a biopsychosocial view on patients seems important and is recommended by the Dutch Physiotherapy guideline (Verwoerd et al., 2020; Bier et al., 2016a). However, previous research shows that the need to recognize psychosocial disturbances is only partially recognized amongst physiotherapists, and practice behavior often shows that physical problems are prioritized above psychosocial aspects (Alexanders et al., 2015; Jeffrey and Foster, 2012; Sanders et al., 2013). Based on the theoretical Knowledge, Attitude, and Practice (KAP) framework, practice behavior is determined by the knowledge and attitudes about health and illness and directly influences preventive practice (Ajzen, 2001). Therefore, the knowledge and attitudes held by physiotherapists likely play a key role in their practice behavior and thus the approach they take in treating their patients. So far physiotherapists' practice behavior has mostly been studied in patients with chronic musculoskeletal complaints (Alexanders et al., 2015). What physiotherapists know about the biomedical and psychosocial aspects in non-specific, acute- and subacute NP, and their attitudes and practice behavior is unknown, however.

Therefore, the purpose of this qualitative study is to explore physiotherapists' knowledge, attitude, and practice behavior in assessing and managing patients with non-specific, non-traumatic, acute- and subacute NP with a specifical focus on how they identify and try to modify prognostic factors for chronification in these patients.

2. Methods

This qualitative study using semi-structured interviews with physiotherapists working in primary care and was conducted and reported according to the COREQ 32-item checklist for Qualitative studies to strengthen rigor and comprehensiveness (Appendix 1). (Tong et al., 2007)

2.1. Participant selection

The inclusion criteria were that participants are working in primary care, with a minimum of one year of work experience, and dealing with at least one patient with non-specific NP per week. These inclusion criteria and purposive sampling were employed for maximum variance based on sex, age, clinical experience level, specialization, and previous courses (Parsons and Greenwood, 2000). The purposive sampling was performed as follows; a LinkedIn call approached the first four participants. These four self-registered therapists were very consciously engaged in their development within physiotherapy. That is why it was decided, from the fifth participant onwards, to select the participants via an internet search and approaching mental health physiotherapists and manual therapists via the professional associations. We searched the internet via a google search with the words 'physiotherapist' and 'neck pain' linked to a specific land region. The participants were always selected and invited after two taken and analyzed interviews to support the purposive sampling. The inclusion criteria and analyzed interview data were used to select the new possibly deviating participants. No participants dropped out, and only two refused to participate due to the time load.

Ethical approval and consent to participate was not required based on the Medical Research Involving Human Subjects Act (WMO). Written informed consent was obtained from all participants before conducting the interviews, including their approval for using audio recording for our research.

2.2. Setting

As the COVID pandemic and associated measures prohibited personal contacts after September 2020, the data were collected both in the clinic and through the secured chat-based collaboration platform Microsoft Teams.

2.3. Data collection

Semi-structured interviews with practicing physiotherapists were conducted between June 2020–April 2021. All interviews were audio-recorded.

The final interview guide (Table 1) was developed in advance by the research team. Questions were developed through a literature review, the clinical experience of the research team, and the KAP- framework. In addition, we added a vignette with clinical questions, in order to get a broad sense of the knowledge, attitude and practice behavior of the therapist. Three pilot interviews with a physiotherapist studying mental health, one physiotherapist specialist in manual therapy, and one physiotherapist-researcher were audiotaped, transcribed, and reviewed by the first author to refine the interview guide. The main change was that the physiotherapists were asked to describe two diverse cases of their patients with NP, rather than to reflect on a vignette supplied by the interviewer, to elicit a more comprehensive range of beliefs and candid opinions from personal experiences. The three pilot interviews were not included in the analysis.

After the first official four interviews, the interview guide was revised through an iterative process. This revision allowed us during the following interviews to focus more on the physiotherapist's attitude and practice behavior in patients with NP. All questions that did not add relevant information to answer the research question were removed (e.g., generic questions such as years of work experience or what kind of patients do you treat); no questions were added.

2.4. Personal characteristics interviewers

All interviews were conducted by both a researcher and one mental health physiotherapist (M.V. and N.K. or F.J.). A conscious decision was made to have two interviewers with different backgrounds conduct the interviews in order to avoid potential information bias (Chenail, 2011). The lead interviewer (M.V.) is a manual therapist with 13 years of work experience in private practice and a clinical and research interest in NP prognostic factors. In addition, this interviewer followed various qualitative research courses with practical exercises in interviewing and data analysis and taught qualitative research methodology and data analysis in physiotherapy master courses. N.K. and F.J. are mental health physiotherapists and were present to observe and ask additional questions. They observed potential discrepancies between non-verbal signs and verbal statements and responded if necessary. In addition, they asked in-depth questions about more mental health-related statements from the participants.

2.5. Theoretical framework

The 'KAP-framework' was used as a sensitizing concept (Fig. 1). (Alzghoul and Chew Abdullah, 2015) This concept was the starting point

Table 1
Final interview guide.

Questions regarding the submitted cases and planned follow up questions
• Why did this patient consult you?
• What do you think caused the neck pain?
• To what extent did you feel that you could help this patient?
• What do you think supported recovery in this patient?
o What role did you/or could you play in this?
• What do you think was holding back this patient's recovery?
o What role did you/or could you play in this?
• Can you tell me what the treatment looked like for this patient?
o Could you tell me why you choose this treatment/strategy?
• What role did you play in this patient's process?
• Have you encountered any obstacles in the treatment of this patient?

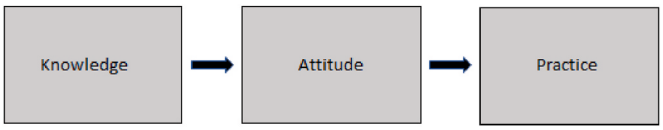

Fig. 1. Sensitizing concept 'Knowledge, attitude and practice framework' (Alzghoul and Chew Abdullah, 2015).

for our data analysis and functioned as an analytic lens throughout the process (Bowen, 2006). However, this sensitizing concept was not forced on the data, facilitating the possibility of an inductive analysis (Bowen, 2006). Qualitative content analysis with an inductive approach was used to analyze the data (Elo and Kyngäs, 2008).

2.6. Data analysis

All interviews were transcribed verbatim by final-year physiotherapy students using Amberscript as support. Amberscript is a website that automatically transforms audio into text using speech recognition.(www.amberscript.com)

The first author checked each transcribed interview for accuracy and sent the transcript to the participant for potential comment.

After the first official interview, all coders (M.V, N.K., and F.J) open-coded the text line by line, following a group meeting to discuss and define the open codes. Subsequently, all interviews were independently open-coded by M.V. and N.K. or F.J. following a consensus meeting. Every second interview was compared by the first author with the previous analysis to identify similarities and differences and discussed with the other two coders. In addition, the data were also triangulated during the analytical process by a continued dialog between the coders to clarify insights where there were disagreements or alternative explanations.

Codes were arranged into categories, evaluated by abstraction, and further reduced to generic and main categories (Elo and Kyngäs, 2008). These main categories are named themes in this paper. After every fourth interview, pre-planned individual regular meetings with the second and third authors (H.W and M.G) were held, providing the opportunity to re-examine the qualitative data with fresh pairs of eyes. Overall saturation was reached during the process when both inductive thematic and data saturation appeared. The inductive thematic saturation appears confined to the level of analysis, focuses on identifying new codes, categories, and themes, and was based on the number of codes. The data saturation was a matter of identifying redundancy in the data; saturation appears distinct from the formal data analysis. Thematic and data saturation appeared when no new data was gathered from participants and added to our model (Saunders et al., 2018).

The computer software Atlas.ti was used to facilitate the data analysis process (Atlas, 2006).

Member checking was carried out to validate themes and categories by sending a video presentation of the results. During the presentation, themes and categories could be read verbatim. A spoken explanation was chosen to clarify the relationship that has been established the mutual relationships and could therefore be reviewed better than by a written check alone. The participants were provided the opportunity to respond by email within 2 weeks to the findings and affirm the accuracy and completeness of the results.

3. Results

Thirteen interviews were held with physiotherapists working in primary physiotherapy care across the Netherlands. Interviews lasted between 43 and 90 min (mean = 62 min, SD = 13 min). Thematic saturation occurred after the 13th interview; as the data of this last interview did not lead to any new emergent themes (Saunders et al., 2018; Olshansky and Chesnay, 2015). Seven males and 6 females, median age 39 (range 25–65) years, participated in the study. All physiotherapists had a bachelor's degree in physiotherapy and participated in different postgraduate courses or were specialists in manual therapy (46%), mental health (39%), or human movement sciences (8%) with a master's degree.

3.1. Sample

The demographic and educational characteristics of the participants are summarized in Table 2.

3.2. Findings

As presented in Table 3, seven themes, 16 categories, and six subcategories emerged from the qualitative analysis resulting in an adjusted knowledge, attitude, and practice model (Fig. 2). This model shows how the various findings are related to each other. Quotes from the participants are used to illuminate the findings.

With regard to the member-checking process, all 13 physiotherapists were invited to provide feedback on a video report of the findings. The four participants who responded, indicated that they were in agreement with the findings.

3.3. Theme 1: physiotherapists self-estimated knowledge and attitude

While describing the physiotherapists' individual clinical cases, all physiotherapists mentioned that in general they think that psychosocial factors influence their patients' (non)recovery or pain experience during their treatment process. They often implied that stress from work or personal situations (e.g., children or a hectic social life) contributes to the development and non-recovery of NP. The psychological factors 'fear of movement' and 'anxiety', were most frequently mentioned as negative factors for recovery when describing the treatment process. While ten physiotherapists specifically described the relationships between biomedical and psychosocial factors as the cause of their NP cases, the other three physiotherapists described a purely biomedical cause. These therapists all specialized in manual therapy.

Most of the participating physiotherapists reported that they started their career holding a very biomedical perspective. Due to work experience however, their attitude did change to a more biopsychosocial approach. Only the three youngest physiotherapists reported that their post-bachelor education had a role in their change toward a more biopsychosocial attitude. One physiotherapist described:

> *"I was convinced that as a manual therapist, you are the only person who can help a patient with NP. And fortunately, I am now thirteen years further, and I have taken those blinders off and started to look wider. A broader look is needed at neck complaints than just looking purely somatically, segments that are stuck, or muscles that are hypertonic. That is much less of a concern to me. So, I'm actually a lot more concerned about the person I have actually in front of me."(Physiotherapist 4)*

3.4. Theme 2: role clarity

The majority of the physiotherapists described a broadening of their treatment roles over the years. Manual therapists in particular experienced expanding into the psychosocial domain, whereas the biomedical domain was their sole standard in their first working years. Some described long waiting lists to psychologists led them to trying to address the psychosocial aspects themselves, which added to their knowledge and experience in the ensuing patients. Although almost all therapists experience this role broadening, there are differences in their role boundaries when treating psychosocial aspects in patients with NP. Two therapists mentioned that they did not have any boundaries when assessing or treating psychosocial aspects (e.g., depression, burn-out,

Table 2
Demographic and educational characteristics of participants.

Participant	Gender	Age	Experience in years	Qualification and specialization	Postgraduate courses	Number of NP patients per week
1	Male	25–30	4	BPT, MPT Manual Therapy	Dry needling Pain Sciences Practical manual therapy techniques	>5 patients per week
2	Female	25–30	3	BPT, MPT Mental health	None	>5 patients per week
3	Male	35–40	14	BPT, MPT Manual Therapy	(Sport) Rehabilitation	>5 patients per week
4	Male	35–40	13	BPT, MPT Manual Therapy	Pain Sciences Practical manual therapy techniques	>5 patients per week
5	Male	60–65	40	BPT, MPT Manual Therapy	Communication Dry needling Practical manual therapy techniques	>5 patients per week
6	Female	50–55	32	BPT, MPT Mental health	Behavioral therapy Mental Health Practical manual therapy techniques	>5 patients per week
7	Male	60–65	34	BPT, MPT Manual Therapy	Practical manual therapy techniques (Sport) Rehabilitation	>5 patients per week
8	Male	30–35	5	BPT	Central disorders (Sport) Rehabilitation	1 to 5 patients per week
9	Female	60–65	36	BPT, MPT Mental health	Alternative Medicine Mental Health Practical manual therapy techniques	1 to 5 patients per week
10	Female	45–50	15	BPT, MPT Human Movement Sciences	Central disorders Communication (Sport) Rehabilitation	<5 patients per week
11	Female	45–50	25	BPT, MPT Mental health	Communication Mental Health Practical manual therapy techniques	>5 patients per week
12	Male	35–40	16	BPT, MPT Mental health	Behavioral therapy Coaching Taping	>5 patients per week
13	Female	25–30	4	BPT, MPT Manual Therapy	None	1 to 5 patients per week

Abbreviations; BPT = Bachelors of Physiotherapy, MPT = Masters of Physiotherapy.
Postgraduate course categories: Communication, Taping, Dry needling, Coaching, Mental Health, Pain Science, Alternative Medicine mental health, (Sport) Rehabilitation, Behavioral therapy, Practical manual therapy techniques, Central disorders.

stress). Almost half of the physiotherapists were uncertain whether their role should include treating those aspects, and four were very clear that the problem must always be approachable from the physical aspect. These different role boundaries were, in the studied group, independent of specialization or age. Nearly all physiotherapists considered that coaching, advising, and providing insight into the NP complaints were the most important roles they had to play during the therapeutic process.

3.5. Theme 3: therapeutic relationship

The two most frequently mentioned codes within this theme were cooperation and trust. According to the participating physiotherapists, trust between the therapist and patient plays an essential role in how patients cooperate to achieve goals in their recovery.

Most physiotherapists in this study reported that going along with patients is a considered choice that can support the therapeutic alliance, where the therapeutic alliance is described as the positive connection and working relationship between the therapist and the patient.

One physiotherapist described this as follows:

"What I sometimes do, in the beginning, I also want to gain confidence when a patient asks a lot. 'You are going to help me with that'.. and it goes against my principles; often, I do what they ask of me to gain confidence." (Physiotherapist 1)

In addition, hands-on approaches were often used to support the alliance between the therapist and the patient.

Almost all physiotherapists in this study shared a similar opinion on dependency and responsibility for recovery:

"You really want to avoid dependency."(Physiotherapist 3)

"She must understand that she must do something to help herself."(-Physiotherapist 12)

Only one physiotherapist said that he accepted that some patients just came for his physical treatment and did nothing by themselves to recover or prevent the next NP episode.

3.6. Theme 4: internal barrier practice behavior

Some physiotherapists argued that their knowledge about psychosocial factors and skills in assessing and/or treating them are only basic and considered themselves inadequate to deal with more complex psychosocial factors (e.g., depression, anxiety, and catastrophizing). The most frequently mentioned skill to approach these psychosocial factors was adequate verbal and non-verbal communication. Although several therapists reported that they have developed communication skills over the years, some physiotherapists still questioned their own competence. Two physiotherapist described this as:

"Those prognostic factors, I think we are very well able to identify them, but not always able to deal with them."(Physiotherapist 13)

"After signaling psychosocial prognostic factors, I try to put the neck complaints in perspective. Then I try to adjust my communication techniques accordingly. And I have to say, maybe that would be nice, to have some basis in that, to have certainty in that to be more competent … conscious ability instead of getting it done unconsciously."(Physiotherapist 3)

The majority of the physiotherapists who implied that patients' external factors such as work or personal situations contribute to the development and non-recovery of NP found it challenging to deal with these factors in the treatment process. Although they know this can be important, they did not expect that they could influence it. One physiotherapist described this as:

"Some patients just have a job and have children, then it is often just busy. You notice that these are factors that you cannot really change; those children and that work is there. How are you going to influence that? And

Table 3
Themes, categories and subcategories.

Theme	Category	Subcategory
1. Physiotherapists self-estimated knowledge and attitude	Nonspecific neck pain can have an underlying mechanical and/or psychosocial factor	
	Potential prognostic factors are mostly of a psychosocial character	
	Awareness and importance for a 'broad view' on the patient	
2. Role clarity	Role boundaries differ regardless of specialization or age	
	A physiotherapist has to be coach, advisor, providing insight into the NP complaints and has the role to comfort the patient	
3. Therapeutic relationship	Therapeutic alliance is an important aspect of the therapeutic process	Going along with patient expectations and hands-on treatment can support alliance
	Responsibility for recovery rests with the patient	
4. Internal barriers practice behavior	Basic knowledge and skills	
	Routines and habits	
	Feeling of impotence to modify patients' external factors	
5. External barriers practice behavior	Patients are not interested in a broader approach	
6. Physiotherapists' practice behaviors	Experience based assessment rather than structured assessment on (prognostic) psychosocial factors	Minimal use of questionnaires by physiotherapists and manual therapists
	Experience based support as interventions rather than structured interventions on (prognostic) psychosocial factors	Minimal use of guidelines
	Physical approach for assessment and treatment	Physical approach with objectives on several dimensions within the bio-psychosocial domain
	Tendency to go along with patient expectations	Tendency 'to feel' whether there is an opening for a psychosocial approach under mental health physiotherapists
7. Self-reflection	Confidence in knowledge and skills among physiotherapists increases with work experience	Learning by doing and experience- based practice

you don't want to keep treating this patient forever. Those are the cases where I find it difficult."(Physiotherapist 1)

Although most physical therapists described that a broad view of assessing and treating a patient with NP is essential, some manual therapists found it challenging to always accomplish this and therefore reverted to their routines and habits, falling back on their somatic approach.

In addition, some physiotherapists indicated that to think and act from one perspective, it is also something that happens automatically. This can be the somatic as well as the psycho-social perspective. For example, one physiotherapist described is as:

"I think that we as physiotherapists play a major role in the identification and that it is also a pitfall for me, for every therapist, to quickly go in one direction and not first outline the bigger picture."(Physiotherapist 2)

3.7. Theme 5: external barriers practice behavior

All physiotherapists specialized in mental health mentioned that they regularly recognized psychosocial factors that influence patients' pain and (non)recovery. However, and in their opinion unfortunately, patients were not always open to address these factors during a treatment process. The physiotherapists described this as:

"Which, on the one hand, is sometimes a bit of a shame, isn't it, because I would like to do a little more with him in the part of self-reflection and stress reduction and the catastrophic part, to make him a bit more resilient for the future. But yes, at the moment, I can hardly attract him to my practice.."(Physiotherapist 6)

The physiotherapists described that patients become more interested in a broader approach when they experience chronic NP. In an acute or sub-acute phase of NP, patients are mostly looking for a quick fix.

3.8. Theme 6: physiotherapists' practice behaviors

Nearly all physiotherapists described an experience-based way of assessing psychosocial factors during their history taking. This experience-based assessment characterizes itself by intuitive examining for psychosocial factors based on a gut feeling, careful attention to non-verbal signals, follow-up questioning, an open attitude and engaging in the conversation with a patient. Only one therapist described the use of the Somatic, Cognition, Emotion, Behavior and Social method to support her broad view (Speckens et al., 2004).

Only the physiotherapists who specialized in mental health mentioned using additional psychosocial questionnaires in their clinical decision-making. The other physiotherapists and manual therapists did not feel confident to use - or questioned the usability of these questionnaires. The following quotes indicate the reasons for this:

"I think that if you use a questionnaire, you should be able to interpret it. And you also have to do something with it..and that, I often find that very difficult.."(Physiotherapist 7)

"We always take standard questionnaires. But, I have to say that I do not attach great value to them because I think that there are some questions that I personally believe that people do not always understand completely or sufficiently understand answers … I think that I mainly get my information through the history taking."(Physiotherapist 13)

The majority of the physiotherapists were clear about treating somatic factors (e.g., segmental mobility limitations) in how often, how long, or what outcomes they expect from their treatment. In contrast, there was an unclearness and sometimes uncertainty regarding how to treat psychosocial factors. Treatment strategies were described as *"based on feeling"* and *"estimate* per *treatment."*

Almost none of the physiotherapists mentioned to use the Dutch Physiotherapy Guideline for patients with NP in their clinical decision-making. Some physiotherapists were not aware of the content, and some described that their patients did not fit in, and others indicated that the guideline did not add to their basic knowledge and experience. For example, one physiotherapist said:

"I am also a bit against it. Let me put it this way, I can't get away with it properly. I don't have the clients who fit in."(Physiotherapist 9)

While describing the assessment and treatment choices, the majority described a physical approach, including human touch. The description of their assessment and/or treatment was often in the biomedical domain (e.g., segmental mobility assessment, mobilization, or muscle strength training); even though their objective of treatment often was directed a more psychosocial domain/factor. For example; mobility assessment or mobilization of the neck was used with the objective to reduce anxiety or fear of movement. In addition, the objective of muscle

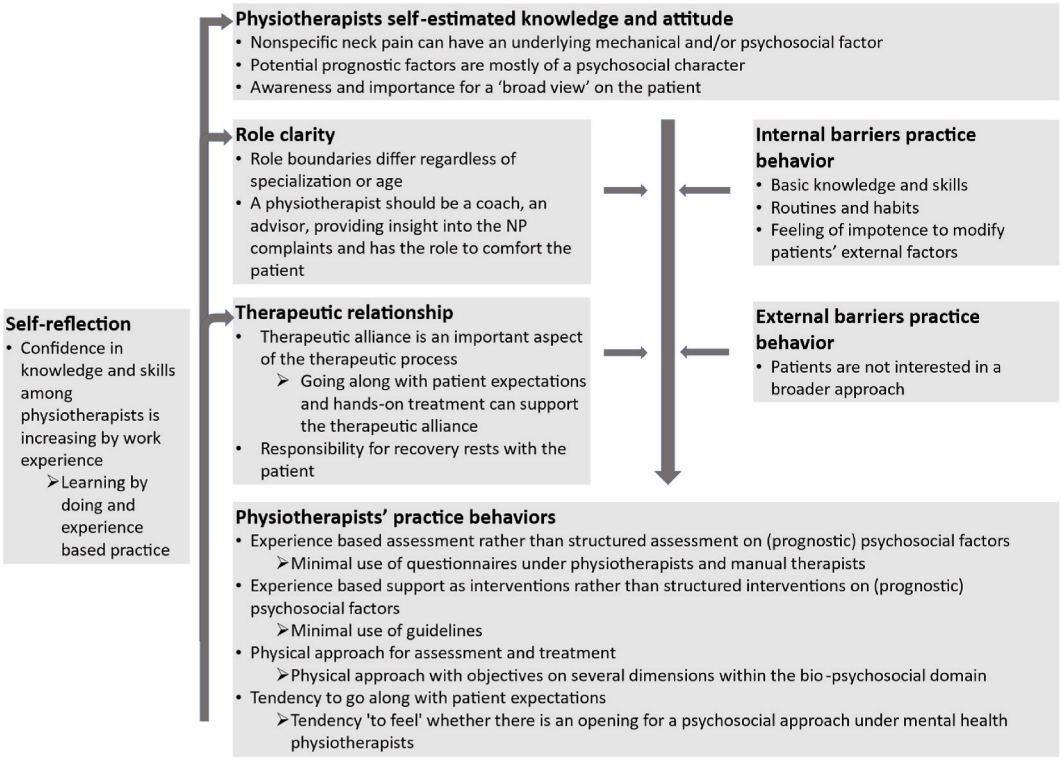

Fig. 2. Themes, categories and subcategories in an adjusted knowledge, attitude and practice model.

strength training or exercises was often described as allowing the patient to experience his, for example very high muscle tension or that the patient is capable of doing more than he/she thinks. Two physiotherapists described this as:

> *"Physical assessment of his neck and indicate that I found some increase in muscle tension in particular and that the movements left and right was equal. Well, that actually gave a lot of comfort, and you saw that his fear decreased."(Physiotherapist 6)*

> *"It would be best if I could just give him a bit more, in his opinion, difficult exercises. And can convince him that his body, his neck, his back can actually handle a lot more than he actually thinks."(Physiotherapist 8)*

Going along with patients' expectations of a physical treatment approach often concerned only the first period of the treatment process before eventually arriving at a treatment strategy that may be more appropriate for combating recurrence or chronification. However, in acute NP, the complaints have often already decreased to the extent that patients do not always want to pay more attention to a broader approach.

Physiotherapists specialized in mental health regularly indicated that they *'wait and feel'* if there is an opening to assess or treat psychosocial factors.

3.9. Theme 7: self-reflection

The physiotherapists who completed postgraduate courses or training in manual therapy all indicated that manual therapy specific knowledge and skills are essential for assessing and treating patients with NP. This basis gave them the confidence to rule out underlying pathology or somatic factors as a cause of NP (e.g., radiculopathy, segmental or motor control limitations). However, they described that work and life experience resulted in the way they currently treat patients, namely, using a broader perspective. The knowledge and skills to feel confident in working from a broader perspective are not something they learned in courses, but by experimenting, experience, and just doing.

One physiotherapist described her knowledge and skills as follows:

> *"I always think … what works that works and then after a while, a theory has to be added. That is my approach".(Physiotherapist 11)*

4. Discussion

4.1. Main findings

The purpose of this study was to explore physiotherapists' knowledge, attitude, and practice behavior in assessing and managing patients with non-specific, non-traumatic, acute- and subacute NP with a specifical focus on how they identify and modify prognostic factors for chronification. In this study, the physiotherapists had an overall bio-psychosocial knowledge and attitude regarding patients with non-specific NP. While there was overlap in knowledge about the cause and prognostic factors of chronification of NP, diverse assessment and treatment strategies were reported. These strategies were mainly from a physical approach, with a tendency to go along with patients' expectations, and psychosocial assessment and treatment on prognostic factors were mostly experienced based. Physiotherapists' practice behaviors was influenced by individual attitudes towards their professional role and therapeutic relationship with the patient. Furthermore, individual knowledge and skills, personal routines and habits, the feeling of powerlessness to modify patients' external factors, and patients' lack of willingness to a biopsychosocial approach influenced physiotherapists' clinical decisions. In addition, almost all physiotherapists pointed out that self-reflection was essential for their personal development as a practitioner and that they develop themselves primarily through 'learning by doing'.

4.2. Reflection on main findings

That patients' treatment expectations and the physiotherapists'

desire to maintain a healthy therapeutic relationship have previously been shown to be factors in the choice of practice behavior in low back pain (Corbett et al., 2009). The feeling of tension in the therapeutic relationship was also identified in other qualitative studies (Corbett et al., 2009; Dahan et al., 2007). The experiences of physiotherapists treating patients with non-specific low back pain include conflict among their pain beliefs, attitudes, and working partnerships with patients, and treatment decisions may be influenced when physical therapists modify their beliefs and attitudes to reduce this sense of conflict and interfere with the adoption of evidence based care (Jeffrey and Foster, 2012; O'Keeffe et al., 2016). It can be questioned if going along with patients' expectations is always the best choice, especially when this ensures that psychosocial prognostic factors are not included in the treatment process. It is reported that discrepancies in the explanation of factors involved in pain between professionals and patients were deemed to be disadvantageous to interaction and treatment outcomes (O'Keeffe et al., 2016). This strategy could lead to sufficient treatment results in the short term, but possibly cause adverse effects on the chronification of pain and patient therapeutic dependency.

Although all physiotherapists refer to communication as one of the essential skills in their treatment of patients with NP, most manual therapists particularly took somatically oriented post-graduate courses (e.g., manual therapy techniques). As they mentioned internal barriers of practice behavior, such as 'basic knowledge and skills and 'the feeling of importance to modify patient's external factors', it seems more appropriate to take targeted communication courses to reduce these barriers effectively (Holopainen et al., 2020). The finding that physical therapists reported struggles to find strategies to integrate the clinical explanation within a broader biopsychosocial framework that made sense to patients is reported earlier (Sanders et al., 2013), and that training and expertise in interaction skills are important is also in line with the literature (O'Keeffe et al., 2016; Dukhu et al., 2018). Although some potential prognostic factors are mentioned in the physiotherapists' Dutch Guideline for NP, it does not give explicit instructions on how to assess these in daily practice (e.g., "collecting additional information by asking about the presence of prognostic factors") (Bier et al., 2016a; Corbett et al., 2009). In addition, optional questionnaires focusing on psychosocial factors such as fear-avoidance beliefs, kinesiophobia, anxiety, depression, stress, and somatization are recommended if there is reason to do so in the history taking. Besides, the guideline not only states that the focus should be and remain during treatment on psychosocial factors through communication, less attention should be paid to pain, and more to exercise and that physiotherapists also have to evaluate whether these psychosocial factors change. Our study showed that the assessment and treatment of psychosocial factors are often done in an unstructured way. In addition, some therapists experience deficiency in selecting the appropriate questionnaires, interpreting the scores and finally carrying out the targeted therapy.

Furthermore, the Dutch guideline rightly advises that if psychosocial prognostic factors hinder recovery, it must be determined whether the physiotherapist is the most appropriate professional to target these factors or to advise the patient to contact another more appropriately skilled professional. However, given the different attitudes towards the role and role boundaries of the physiotherapists, it is highly questionable whether this is done accordingly. Not following recommended treatments in evidence-based guidelines when managing musculoskeletal conditions and a difference in the state of science and clinical practice concerning prognostic factors has been reported previously (Dahan et al., 2007; O'Keeffe et al., 2016). It seems advisable for guidelines to provide more substance to their recommendations. For instance, the Pain – Somatic – Cognitive – Emotional – Behavioral – Social – Motivation – model (PSCEBSM-model) during the intake supports a biopsychosocial approach and communication strategies seem to facilitate the coaching and advisory role (e.g., motivational interviewing or pain neuroscience education) (Holopainen et al., 2020; Dukhu et al., 2018).

4.3. Strengths and limitations methodology

Several methodological choices have been made to accomplish credibility and dependability.

First of all, this study explored knowledge, attitude, and practice behavior and their potential interaction. We provided a confidential context for our physiotherapists by using personal cases. Through this, we attempted to explore physiotherapists' attitudes as reliable and closely as possible to their actual practice, instead of measuring the explicit attitude with the commonly used Pain Attitudes and beliefs Scale for physiotherapists. (Bier et al., 2016b; Walton, 2013), which is open to social-desirability bias. In addition, we experienced limitations in our pilot interviews when using a vignette, even though a vignette has previously been shown to have acceptable validity (Zadro et al., 2019; Nijs et al., 2020). The physiotherapists' descriptions of their own patients gave us in-depth information about their attitude and practice behavior. However, to further reduce potential bias in exploring physiotherapists' implicit attitude, a practice observational study should be done.

Secondly, to prevent the risk of potential bias in data collection, all interviews were conducted by two researchers with both mental health and manual physiotherapy background, and all with many years of clinical experience in working with patients with acute NP. Familiarity with the context can be a valuable asset to collect, interpret and analyze data, facilitating face validity (Krippendorff, 2013).

Thirdly, the analytical rigor was strengthened by data and investigator triangulation by: (1) interviewing multiple participants, (2) independently coding the transcripts by two coders, (3) continued dialog between the coders, and (4) the regular meetings with the second and third author to re-examine the qualitative data. In addition, the results of the analysis were checked by the participants and approved by four participants.

Fourth, there was a fair distribution of male and female participants, a broad range in age, and various physiotherapy treatment specializations, allowing to present a general picture of physiotherapists in the Netherlands. However, 92% of the physiotherapists had a master's degree; it can be questioned whether these findings also apply to physiotherapists holding a bachelor's degree. Fifth, the quality of the interview data allowed us to provide detailed descriptions and quotations throughout the article, which strengthened the credibility of the findings.

In addition, we attempted transferability by accurately describing the context, characteristics of participants, data collection, and data analysis process. However, the findings of data provided by physiotherapists working in Dutch primary care practice might not be transferable to other countries and settings.

In qualitative research, there is no commonly used method to calculate the sample size. As advised, our sample size was based on a combination of careful stratification, information power and achieving saturation (Mutsaers et al., 2014; Ostelo et al., 2003). Information power indicated that the more information the sample holds relevant to the actual study, the lower the number of participants is needed (Malterud et al., 2016). Based on information power, our sample size is likely sufficient; the primary substantiation is the quality of our in-depth interviews and the narrowness of our study aim. Concerning saturation, theme saturation occurred after 13 interviews.

4.4. Clinical message and future directions

This study highlights the importance of factors other than knowledge in physiotherapists' practice behavior. Physiotherapists seem to know the biopsychosocial character of non-specific, acute- and subacute NP. However, the translation from knowledge to practice behavior involves more factors that need to be addressed to develop knowledge-based coherent practice behavior. In particular, the physiotherapist's self-reflective ability can help the physiotherapist to continue developing

and applying behavioral change within his practice behavior. The self-reflective ability must be an essential point of attention in physiotherapy education, and professional associations should concentrate on self-reflection in the form of peer review, aimed at optimizing attitude and practice behavior.

In addition, further research must be done on reducing the internal and external barriers effectively, with the main aim that the biopsychosocial model, for which the knowledge already appears to be present, is standardly applied within both assessment and treatment in patients with non-specific NP.

4.5. Conclusion

This is the first study to explore the knowledge, attitude, and practice behavior of physiotherapists regarding non-specific acute- and subacute NP and potential modifiable prognostic factors. We found a greater understanding of the non-coherent relation between knowledge, attitude, and practice behavior in the biopsychosocial approach and potential barriers connecting these domains in patients with non-specific NP.

Funding

This research was partly supported by the Institute of Movement studies and partly by a research voucher by Utrecht University of Applied Sciences. The funders had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript.

Declaration of competing interest

The authors declare that they have no competing interests.

Acknowledgments

The authors thank the participants in this study for their time and willingness to share their views and provide data for our study.

We would also wish to extend our special thanks to Nienke Kil and Femke Jacobs for their role during the interviews and coding process.

Appendix 1

COREQ 32- item Checklist for Qualitative studies

No. Item	Guide Question/description	
Domain 1 Research team and reflexivity		
Personal Characteristics		
1. Interviewer/facilitator	Which author/s conducted the interview or focus group?	First author (M.V.) and two mental health physiotherapy students N.K. and F.J.
2. Credentials	What were the researcher's credentials?	Msc (M.V.) and Msc third year students (N.K. and F.J.) and physiotherapists.
3. Occupation	What was their occupation at the time of the study?	Phd student and lecturer Msc manual therapy (M.V.) Msc third year students mental health and working in physiotherapy practice (N.K. and F.J.).
4. Gender	Was the researcher male or female?	Females
5. Experience and training	What experience or training did the researcher have?	Qualitative research courses with practical exercise in interviewing and data analysis. Teaching qualitative research methodology and data analysis in physiotherapy master courses. Specific for this study; three pilot interviews with observation of experienced interviewers.
Relationship with participants		
6. Relationship established	Was a relationship established prior to study commencement?	The participants had only contact by email before the interviews.
7. Participant knowledge of the interviewer	What did the participants know about the researcher? e.g. personal goals, reasons for doing the research?	Only two participants (number 1 and 2) knew the researcher from earlier physiotherapy courses. An introduction email was sent with information about the research question, and the participants were asked to think about two cases that we would discuss during the interview.
8. Interviewer characteristics	What characteristics were reported about the interviewer/facilitator? e.g. Bias, assumptions, reasons and interests in the research topic.	All interviews were conducted by a researcher and a mental health physiotherapist. The lead interviewer was a female manual therapist with 13 years of work experience in private practice and a clinical and research interest in neck pain prognostic factors. N.K. and F.J. were mental health physiotherapists (N.K. and F.J.) and were present to observe and added questions. N.K. had F.J. both had eight years of work experience in private practice.
Domain: study design		
Theoretical framework		
9. Methodological orientation and Theory	What methodological orientation was started to underpin the study? E.g. grounded theory, discourse analysis, ethnography, phenomenology, content analysis	Qualitative content analysis.
Participant selection		
10. Sampling	How were participants selected? E.g. purposive, convenience, consecutive, snowball	Purposive sampling.
11. Method of approach	How were participants approached? E.g. face-to-face, telephone, mail, email	The participant were approach by email.
12. Sample size	How many participants were in the study?	13 participants
13. Non-participation	How many people refused to participate or dropped out? Reasons?	No participates dropped out. Two refused to participate due to time load.
Setting		
14. Setting of data collection	Where was the data collected? E.g. home, clinic, workplace	The data were collected in the clinic and through MSteams.

(*continued on next page*)

(*continued*)

No. Item	Guide Question/description	
Domain 1 Research team and reflexivity		
15. Presence of non-participants	Was anyone else present besides the participants and researchers?	No.
16. Description of sample	What are the important characteristics of the sample? E.g. demographic data, date	Seven males and females, median age 39 (range 25–65) years, participated in the study. See Table 1 in the results section.
Data collection		
17. Interview guide	Were questions, prompts, guides provided by the authors? Was it pilot tested?	The interview guide was developed in advance by the research team. Questions were developed through a literature review, the clinical experience of the research team, and the knowledge, attitude and behavior framework. Three pilot interviews were audiotaped, transcribed, and reviewed by the first author to refine the interview guide further.
18. Repeat interviews	Were repeat interviews carried out? If yes, how many?	No
19. Audio/visual recording	Did the research use audio or visual recording to collect the data?	Audio recording.
20. Field notes	Were field notes made during and/or after the interview or focus group?	Field notes were made by the second interviewer. Focused on non-verbal interaction.
21. Duration	What was the duration of the interviews or focus group?	Interviews lasted between 43 and 90 min (mean = 62 min, SD = 13 min).
22. Data saturation	Was data saturation discussed?	Yes, both with data coders and the research team.
23. Transcripts returned	Where transcripts returned to participants for comment and/or correction?	The transcripts were returned to the participants.
Domain 3 Analysis and findings		
Data analysis		
24. Number of data coders	How many data coders coded the data?	There were three data coders involved. Every interview description was coded by two data coders. Only the first interview was coded by all three data coders.
25. Description of the coding tree	Did authors provide a description of the coding tree?	After the first interview, all researchers (M.V, N.K., and F.J) open-coded the text line by line, following a group meeting to discussed and defined the open codes. Subsequently, all interviews were independently open-coded by M.V. and N.K. or F.J. following a consensus meeting. Every second interview was compared with the previous analysis to identify similarities and differences by the first author and were discussed with the other two coders.
26. Derivation of themes	Were themes identified in advance or derived from the data?	Derived from the data.
27. Software	What software, if applicable, was used to manage the data?	Atlas.ti
28. Participant checking	Did participants provide feedback on the findings?	The participants received a video presentation of the findings and had the opportunity to react.
Reporting		
29. Quotations presented	Were participant quotations presented to illustrate the themes/ findings? Was each quotations identified? E.g. participant number	Yes See quotations in the text in the result section.
30. Data and findings consistent	Was there consistency between the data presented and the findings?	Yes See Table 3 and Fig. 2 and text in the result section.
31. Clarity of major themes	Were major themes clearly presented in the findings?	Yes See Table 3 and Fig. 2 and text in the result section.
32. Clarity of minor themes	Is there a description of diverse cases or discussion of minor themes?	Yes See text in the result section.

References

Ajzen, I., 2001. Nature and operation of attitudes. Annu. Rev. Psychol. 52, 27–58. https://doi.org/10.1146/annurev.psych.52.1.27.

Alexanders, J., Anderson, A., Henderson, S., 2015. Musculoskeletal physiotherapists' use of psychological interventions: a systematic review of therapists' perceptions and practice. Physiother (United Kingdom) 101, 95–102.

Alzghoul, B.I., Chew Abdullah, N.A., 2015. Psychosocial theories and pain management practices: a review of empirical research. Mediterr. J. Soc. Sci. 6, 60–67.

Atlas, T.M., 2006. Ti Scientific Software Development GmBH.

Bertozzi, L., Gardenghi, I., Turoni, F., Villafañe, J.H., Capra, F., Guccione, A.A., et al., 2013. Effect of therapeutic exercise on pain and disability in the management of chronic nonspecific neck pain: systematic review and meta-analysis of randomized trials. Phys. Ther. 93, 1026. (Accessed 14 February 2018).

Bier, Jasper D., Scholten-Peeters, G.G.M., Staal, J.B., Pool, J., Tulder van, M., Beekman, E., Meerhoff, G.M., Knoop, J., Verhagen, A.P., 2016a. KNGF-richtlijn Nekpijn - Praktijkrichtlijn.

Bier, Jasper D., Scholten-Peeters, G.G.M., Staal, J.B., Pool, J., Tulder van, M., Beekman, E., Meerhoff, G.M., Knoop, J., Verhagen, A.P., 2016b. KNGF-richtlijn Nekpijn Verantwoording en toelichting.

Bovim, G., Schrader, H., Sand, T., 1994. Neck pain in the general population. Spine (Phila Pa 1976) 19, 1307–1309. https://doi.org/10.1097/00007632-199406000-00001.

Bowen, G.A., 2006. Grounded theory and sensitizing concepts. Int. J. Qual. Methods 5, 12–23.

Chenail, R.J., 2011. Interviewing the investigator: strategies for addressing instrumentation and researcher bias concerns in qualitative research. Qual. Rep. 16, 255–262.

Childs, J.D., Cleland, J.A., Elliott, J.M., Teyhen, D.S., Wainner, R.S., Whitman, J.M., et al., 2008. Neck Pain: clinical practice guidelines linked to the international classification of functioning, disability, and health from the orthopedic section of the american physical therapy association. J. Orthop. Sports Phys. Ther. 38, A1–A34. https://doi.org/10.2519/jospt.2008.0303.

Corbett, M., Foster, N., Ong, B.N., 2009. GP attitudes and self-reported behaviour in primary care consultations for low back pain. Fam. Pract. 26, 359–364.

Côté, P., Cassidy, D.J., Carroll, L.J., Kristman, V., 2004. The annual incidence and course of neck pain in the general population: a population-based cohort study. Pain 112, 267–273. https://doi.org/10.1016/j.pain.2004.09.004.

Croft, P.R., Lewis, M., Papageorgiou, A.C., Thomas, E., Jayson, M.I., Macfarlane, G.J., et al., 2001. Risk factors for neck pain: a longitudinal study in the general population. Pain 93, 317–325. http://www.ncbi.nlm.nih.gov/pubmed/11514090. (Accessed 14 February 2018).

Dahan, R., Borkan, J., Brown, J.B., Reis, S., Hermoni, D., Harris, S., 2007. The challenge of using the low back pain guidelines: a qualitative research. J. Eval. Clin. Pract. 13, 616–620.

Dool, J van den, 2016. NIVEL Zorgregistraties eerste lijn - Zorg door de fysiotherapeut jaarcijfers 2016 en trendcijfers 2011-2016. https://www.nivel.nl/sites/default/files/bestanden/2016_jaarrapport_fysiotherapie.pdf. (Accessed 15 February 2018).

Dukhu, S., Purcell, C., Bulley, C., 2018. Person-centred care in the physiotherapeutic management of long-term conditions: a critical review of components, barriers and facilitators. Int Pract Dev J 8, 1–27.

Elo, S., Kyngäs, H., 2008. The qualitative content analysis process. J. Adv. Nurs. 62, 107–115. https://doi.org/10.1111/j.1365-2648.2007.04569.x.

GBD 2015, 2016. Disease and Injury Incidence and Prevalence Collaborators G 2015 D and II and P. Global, regional, and national incidence, prevalence, and years lived with disability for 310 diseases and injuries, 1990-2015: a systematic analysis for the

Global Burden of Disease Study 2015. Lancet (London, England) 388, 1545–1602. https://doi.org/10.1016/S0140-6736(16)31678-6.
Geneen, L.J.S.B., Andrew Moore, R., Clarke, C., Martin, D., Colvin, L.A., Smith, B.H., 2017. Cochrane Database of Systematic Reviews Physical activity and exercise for chronic pain in adults: an overview of Cochrane Reviews (Review) Physical activity and exercise for chronic pain in adults: an overview of Cochrane Reviews (Review) i Physical acti. Cochrane Database Syst. Rev. https://doi.org/10.1002/14651858.CD011279.pub3.
Gross, A., Langevin, P., Burnie, S.J., Bédard-Brochu, M.-S., Empey, B., Dugas, E., et al., 2015. Manipulation and mobilisation for neck pain contrasted against an inactive control or another active treatment. Cochrane Database Syst. Rev. 23 https://doi.org/10.1002/14651858.CD004249.pub4.
Holopainen, Riikka, Vuoskoski, Pirjo, Piirainen, Arja, Karppinen, Jaro, O'sullivan, P., 2020 Dec 22. Patients'conceptions of undergoing physiotherapy for persistent low back pain delivered in Finnish primary healthcare by physiotherapists who had participated in brief training in cognitive functional therapy. Disabil. Rehabil. 1–12. https://doi.org/10.1080/09638288.2020.1861116.
Hoy, D., Geere, J.-A., Davatchi, F., Meggitt, B., Barrero, L.H., 2014. A time for action: opportunities for preventing the growing burden and disability from musculoskeletal conditions in low- and middle-income countries. Best Pract. Res. Clin. Rheumatol. 28, 377–393. https://doi.org/10.1016/j.berh.2014.07.006.
Hurwitz, E.L., Randhawa, K., Yu, H., Côté, P., Haldeman, S., 2018. The Global Spine Care Initiative: a summary of the global burden of low back and neck pain studies. Eur. Spine J. 27, 796–801. https://doi.org/10.1007/s00586-017-5432-9.
Jeffrey, J.E., Foster, N.E., 2012. A qualitative investigation of physical therapists' experiences and feelings of managing patients with nonspecific low back pain. Phys. Ther. 92, 266–278.
Krippendorff, K., 2013. Content Analysis an Introduction to its Methodology. SAGE.
Malterud, K., Siersma, V.D., Guassora, A.D., 2016. Sample size in qualitative interview studies. Qual. Health Res. 26, 1753–1760. https://doi.org/10.1177/1049732315617444.
Mutsaers, J.-H.A.M., Pool-Goudzwaard, A.L., Ostelo, R.W.J.G., Peters, R., Koes, B.W., Verhagen, A.P., 2014. The psychometric properties of the PABS-PT in neck pain patients: a validation study. Man. Ther. 19, 208–214. https://doi.org/10.1016/j.math.2013.12.004.
Nijs J, International M, Brussel VU, Medicine P, Rehabilitation CP, Brussels H, et al. Jo Nijs, Amarins J. Wijma, ward Willaert, Eva Huysmans, Paul Mintken, Rob Smeets, Mariëlle Goossens, C. Paul van Wilgen, Wouter van Bogaert, Adriaan Louw, Josh Cleland, Megan Donaldson. 2020;100:846–859.
Olshansky, E.F., 2015. Generating theory using grounded theory methodology. In: Chesnay, M de (Ed.), Nursing Research Using Grounded Theory Qualitative Desgings and Methods. Springer, New York, pp. 19–28.
Ostelo, R.W.J., Stomp-van den Berg, S.G., Vlaeyen, J.W., Wolters, P.M.J., de Vet, H.C., 2003. Health care provider's attitudes and beliefs towards chronic low back pain: the development of a questionnaire. Man. Ther. 8, 214–222. https://doi.org/10.1016/S1356-689X(03)00013-4.
O'Keeffe, M., Cullinane, P., Hurley, J., Leahy, I., Bunzli, S., O'Sullivan, P.B., et al., 2016. What influences patient-therapist interactions in musculoskeletal physical therapy? Qualitative systematic review and meta-synthesis. Phys. Ther. 96, 609–622.
Parsons, M., Greenwood, J., 2000. A guide to the use of focus groups in health care research: Part 1. Contemp. Nurse : J. Aust. Nurs. Prof. 9, 169–180.
Reid, K.J., Harker, J., Bala, M.M., Truyers, C., Kellen, E., Bekkering, G.E., et al., 2011. Epidemiology of chronic non-cancer pain in Europe: narrative review of prevalence, pain treatments and pain impact. Curr. Med. Res. Opin. 27, 449–462. https://doi.org/10.1185/03007995.2010.545813.
Sanders, T., Foster, N.E., Bishop, A., Ong, B.N., 2013. Biopsychosocial care and the physiotherapy encounter: physiotherapists' accounts of back pain consultations. BMC Muscoskel. Disord. 14.
Saunders, B., Sim, J., Kingstone, T., Baker, S., Waterfield, J., Bartlam, B., et al., 2018. Saturation in qualitative research: exploring its conceptualization and operationalization. Qual. Quantity 52, 1893–1907. https://doi.org/10.1007/s11135-017-0574-8.
Speckens, A.E.M., Spinhoven, Ph, Rood, YR van, 2004. Protocollaire behandeling van patiënten met onverklaarde lichamelijke klachten: cognitieve gedragstherapie. In: Protocollaire behandelingen in de ambulante geestelijke gezondheidszorg, second ed. Bohn Stfleu van Loghum, Houten, pp. 183–218.
Swinkels, J., van der F-C, C., 2010. Multidisciplinaire richtlijn SOLK en somatoforme stoornissen. Trimbos-instituut, Utrecht.
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 19, 349–357. https://doi.org/10.1093/intqhc/mzm042.
Verwoerd, M., Wittink, H., Maissan, F., Smeets, R., 2020. Consensus of potential modifiable prognostic factors for persistent pain after a first episode of nonspecific idiopathic, non-traumatic neck pain: results of nominal group and Delphi technique approach. BMC Muscoskel. Disord. 21, 656. https://doi.org/10.1186/s12891-020-03682-8.
Walton, D.M., 2013. Results of an international survey of practice patterns for establishing prognosis in neck pain: the ICON project. Open Orthop. J. 7, 387–395. https://doi.org/10.2174/1874325001307010387.
Zadro, J., O'Keeffe, M., Maher, C., 2019. Do physical therapists follow evidence-based guidelines when managing musculoskeletal conditions? Systematic review. BMJ Open 9.