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User perspectives on orthoses for thumb carpometacarpal osteoarthritis

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ABSTRACT

Study Design: Qualitative and interpretive description.
Introduction: Orthoses are often the first-choice treatment for thumb carpometacarpal osteoarthritis (CMCOA). It is unknown to what extent the orthoses are used in the way intended by health professionals and why patients continue using the orthoses despite minimal pain reduction.
Purpose of the Study: The purpose of this study is to investigate user perspectives and experiences with 2 types of CMCOA orthoses.
Methods: Semistructured interviews were conducted with 16 individuals with CMCOA who used the Push-Ortho-Thumb-Brace-CMC (Nea International BV, Netherlands) and a custom-made orthosis. The data were analyzed using the phenomenological and the framework approach.
Results: Four men and 12 women participated (mean age, 57 years; half of whom were employed). Five central phenomena were identified, explaining the essence of the relation between user and orthosis: the orthosis as stabilizer, tool, healer, preventer, and nuisance. Users mentioned better appearance and the ability to do a variety of activities as advantages of the Push-Ortho-Thumb-Brace-CMC and better support and the ability to do strenuous activities as advantages of the custom-made orthosis. The central phenomena were related to the users' understanding of the disease process and the working mechanism of the orthoses and affected the patterns of usage and orthosis preference.
Discussion: It is recommended that the provider recognizes user perspectives and discusses the disease process of CMCOA along with the working mechanism of the orthosis to support therapy adherence.
Conclusions: There is a wide variety in usage patterns of the CMCOA orthoses, which are influenced by different user perspectives.

Introduction

The effectiveness of orthoses for osteoarthritis of the carpometacarpal joint of the thumb (carpometacarpal osteoarthritis [CMCOA]) has been a topic of scientific interest in recent years.[1-6] From the perspective of health professionals, the CMCOA orthosis is meant to reduce pain and support the hand while the patient performs heavy tasks.[7] van der Vegt et al[6] compared Push-Ortho-Thumb-Brace-CMC (Nea International BV, Netherlands) (PB; Fig. 1A) with a custom-made orthosis immobilizing the CMC-I joint (CM; Fig. 1B) in a multicenter randomized controlled trial (RCT) and found no significant differences in pain reduction between the 2 orthoses. More importantly, only slight pain reduction was induced by both orthoses (3 mm on a 0-100 mm visual analog scale). Despite this minimal pain reduction, most patients (90%) stated that they would continue to use an orthosis. The reason for this continuation is not clear. This study revealed a preference for PB, although PB did not provide a benefit in pain reduction over the CM. The authors suggest that this preference might be related to a lesser limitation of function and more reduction of previous symptoms by the PB as compared with the CM. The impact of other aspects of the orthoses, such as comfort, materials used, size, or color, influencing orthosis preference did not become clear. Through diary data gathered in this study and from clinical practice, we know that there are great variations in the way CMCOA orthoses

Source of funding: Nea Company complimentary offered the Push-Ortho-Thumb Braces needed for this study. This firm did not have any influence on patient recruitment, data collection, data analysis, or preparation of the article. There was also no conflict of interest with the manufacturer of the material used for fabricating the custom-made orthosis.

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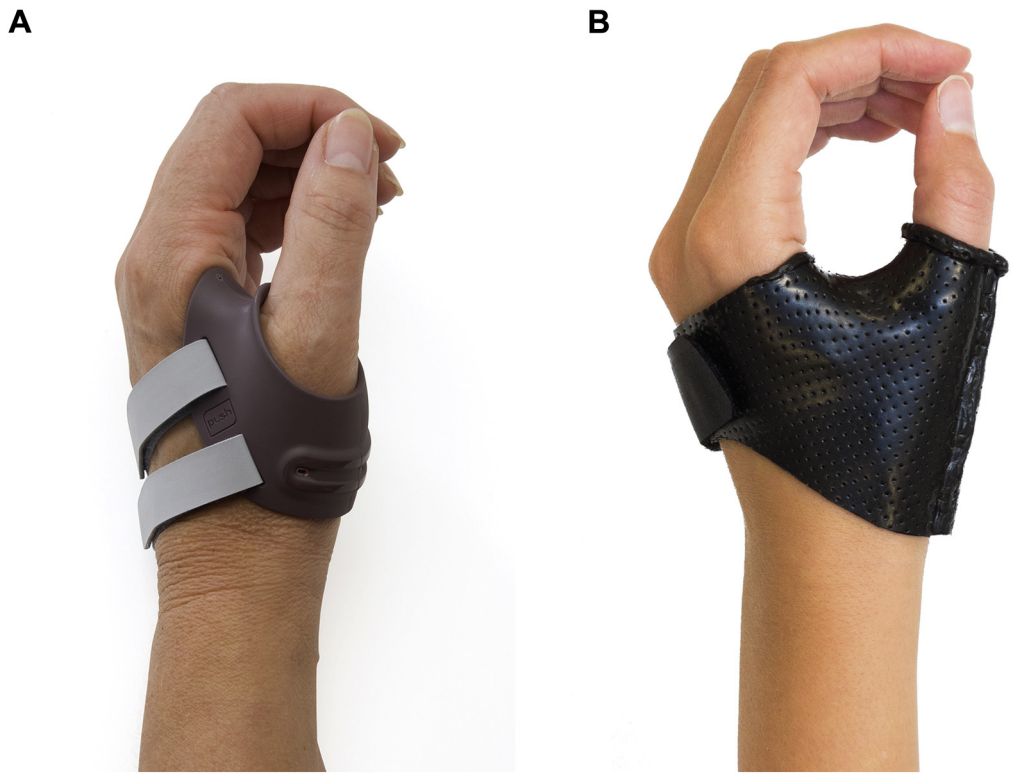

Fig. 1. (**A**) Push-Ortho-Thumb-Brace CMC (PB). (**B**) Custom-made orthosis (CM).

are used despite standard instructions given by therapists.[6] A study on user perspectives on CMCOA orthoses might give a better understanding of these discrepancies and variations. Such knowledge may enable the providers to improve the quality of care in terms of patient satisfaction, effectiveness, and adherence to orthosis therapy. The main aim of this study was to identify user perspectives on 2 CMCOA orthoses, represented by central phenomena reflecting the patient's relation to both orthoses. Subsequent aims were to evaluate the importance of the orthosis to the user, wearing patterns, the reasons for wearing or not wearing the orthoses, and to compare advantages and disadvantages of both types of orthoses.

Study design

Participants

Participants were recruited from an ongoing RCT investigating the effectiveness of 2 different orthoses for CMCOA. The RCT applied a crossover design in which patients used both orthoses in random order for 2 weeks separated by a 2-week washout period. The eligibility criteria for the RCT were as follows: diagnosis of primary CMCOA, confirmed by clinical history, examination, and a radiograph of the hand. Excluded from the study were patients with a previous history of surgery for CMCOA, corticosteroid injection in the CMC-I joint in the preceding 6 months, and other local medical conditions that might interfere with the study results, such as rheumatoid arthritis, carpal tunnel syndrome, radiocarpal osteoarthritis, and primary osteoarthritis of the scaphoid-trapezium-trapezoid joint. Also excluded were patients with insufficient knowledge of the Dutch language, severe cognitive disorders, and previous use of either orthosis. The severity of the CMCOA was classified according to the Eaton and Glickel[8] radiographic classification.

The study was performed in 3 medical centers in The Netherlands: The Isala Hospital, Zwolle, the University Medical Center Groningen and Rehabilitation Center "Revalidatie Friesland", Leeuwarden.[6] Participants were included from these 3 centers after completion of all measurements for the RCT. The participants were recruited on the basis of their availability at the time of study. All invited participants agreed to take part in the study. Recruitment continued until information saturation was reached. Transport and parking costs for participating in the research were refunded. Patients were allowed to keep both orthoses after completion of the study.

Interviews

A qualitative research design was applied using semistructured interviews. Before the start of the research, 3 pilot interviews were conducted. The process and results of these interviews were analyzed and discussed by 2 of the authors (CKvdS and JSG). Accordingly, the interview protocol was adjusted and finalized. The interviews were conducted face to face by the first author (JSG) in a room at the outpatient department of the respective hospitals. Each interview lasted about 40 minutes. The interviews were audio recorded, and notes were taken during the interviews. Subsequently, ad verbatim transcriptions of the interviews were made. The transcriptions were sent to the interviewees for comments and corrections. No follow-up interviews were carried out. The interviewer used an iterative interviewing technique after the phenomenological approach focusing on the essence of the relation of the participant to the orthosis.[9] This was defined as the central phenomenon. Each interview started with an open question. "Please, tell me about your experience using the orthosis?" Whenever the conversation would come to a halt, the researcher would summarize the answers given and encourage the participant

to elaborate. The interviewer tried to systematically unpack the phenomenon, peeling away the symbolic meanings in a process called bracketing.[9] Bracketing was practiced by the interviewer expressing preliminary analyses during the interview itself. The participant was asked to confirm or reject these analyses. The process of bracketing was facilitated by additional questions that subsequently placed the participant in different relations to the orthosis and people around (Table 1).

To support the data gathered from the phenomenological approach, a set of questions was asked containing specific themes, using the framework approach.[10] Reasons for wearing and not wearing the orthosis were discussed, and the orthoses were mutually compared with regard to pain reduction, comfort, functionality, and looks. At regular intervals during the interviewing process, meetings were held by 2 of the 3 data coders (JSG and CKvdS) to monitor the unity of the interviewing process, discuss preliminary analyses, and whether saturation of data was reached.

The methods and results were reported according to the Consolidated Criteria for Reporting Qualitative Research criteria.[11]

Ethics statement and informed consent

This study was approved by the local Medical Ethics Committee (METc 2013.55). Written informed consent was received from all participants.

Interviewer and data coders

The interviewer (JSG) worked as a resident at the Department of Rehabilitation Medicine of the University Medical Center Groningen. Although the interviewer had no specific experience in qualitative interviewing, he had experience in patient care and quantitative research on CMCOA orthoses. Participants were informed that the interviewer performed the research as part of his residency requirements and that he had no additional interest. The remaining 2 data coders (CKvdS and HAR-M) had extensive experience in qualitative research.

Data analysis

The data analysis took place in 5 steps in which data were screened, condensed, and mapped into a thematic framework.[4] Simultaneously, identification, analyses, and interpretation of central phenomena took place.

1. Familiarization
   After the interviews were conducted, the 3 data coders (JSG, HAR-M, and CKvdS) read the ad verbatim transcribed interviews and listened to audio recordings to familiarize themselves with the raw data. Key ideas on central phenomena and themes in relation to the orthoses were listed.
2. Identifying a thematic framework
   During a meeting, the 3 data coders (JSG, HAR-M, and CKvdS) discussed the process of the preliminary analyses and bracketing that preceded the identification of central phenomena. Agreement was reached on the process of description and further exploration of the central phenomena. Depending on their relevance in the interviews, themes that were previously chosen were either rejected or accepted for further analysis, and additional themes were identified.
3. Indexing and assessing
   Two interviews were randomly chosen for independent analysis by 2 of the data coders (JSG and HAR-M). Each of them separately identified the central phenomena, themes, and a list of subthemes related to these themes. Quotes were added to highlight themes, subthemes, and central phenomena. Subsequently, a meeting was held to discuss the results of the independent analysis and assess the inter-rater agreement of this analysis. After discussing minor differences, consensus was reached on further exploration and description of the central phenomena and the coding tree for the framework approach.
4. Charting
   Subsequently, all interviews were analyzed by the first author (JSG). Data were charted using Microsoft Access (Microsoft Corporation, Redmond, Washington) database.
5. Interpretation
   The resulting analysis of the interviews was verified by 2 of the authors (HAR-M and CKvdS) at a final meeting, and similarities and differences that occurred were discussed. Consensus was reached on the final interpretation. Inter-rater reliability was not formally calculated but warranted by reanalyzing and discussing the interviews multiple times by all 3 raters at the same time. The participants were not asked to provide feedback on the findings.

Table 1
Questions facilitating the process of bracketing

Role	Question
Patient in society	What do you tell your friends and family about your orthosis?
Expert by experience in relation to other patients	What would you advice a patient with similar complaints?
Expert by experience in relation to the provider	What would an ideal orthosis be like?
Patient without an orthosis	What would a world without an orthosis be like for you?
A parent, a teacher	How would you explain the working mechanism of the orthosis to a child or a person of a different civilization or an alien?
A fellow patient	Do you know people who wear similar orthoses? What do you discuss with them?

Results

All patients who were requested to participate in the study agreed to do so. Saturation of data was reached after 13 interviews. The final 3 interviews did not provide additional information, after which inclusion of participants was terminated. Details of included participants are shown in Table 2. The 16 interviews were conducted between March 2014 and June 2015.

Central phenomena

Five central phenomena, explaining the essence of the relation of the participant to the orthosis, were identified: the orthosis as a stabilizer, a tool, a healer, a preventer, and a nuisance (Table 3).

In most interviews, the central phenomenon of the stabilizer was identified. Most participants expressed a combination of 2 or more of the 5 phenomena. The central phenomena were related to the way users understand their illness, mainly as something that is reversible or irreversible.

These phenomena were also related to the participants' thoughts about the possible working mechanisms of the orthoses: to stabilize the joint to diminish pain (stabilizer), an assistive device to enable performance of heavy tasks (tool), an instrument to cure the osteoarthritis (healer), or a device to protect deterioration of the cartilage damage (preventer). Some participants regarded the orthosis to be a nuisance and did not find the orthosis to be helpful in treating their CMCOA complaints.

The wearing pattern of the orthosis appeared to be connected to the main central phenomenon distinguished by the users. A wide variety in wearing patterns was seen, despite the therapists'

Table 2
General characteristics

Participants, *n*	16
Female gender, *n* (%)	12 (75)
Mean age (y) (standard deviation)	57 (7)
Eaton & Glickel classification, I, II, III, IV; *n* (%)	1 (6), 6 (38), 4 (25), 5 (31)
Orthosis on dominant hand, *n* (%)	10 (63)
Work, *n* (%)	
Paid employment	9 (56)
Unpaid employment	2 (13)
Unemployed/retired	5 (31)
Education, *n* (%)	
University of Applied Sciences	4 (25)
Senior secondary vocational education	4 (25)
Lower secondary vocational education	5 (31)
Preparatory secondary vocational education	1 (6)
Unknown	2 (13)

n = absolute number.

instructions that the orthosis should be worn during performance of activities and not during rest. For example, participants with the belief that the orthosis is a healer wore their orthoses mainly during rest, whereas participants with the belief that the orthosis is a tool wore their orthoses only when performing heavy tasks (Table 3). Some participants had irregular patterns of wearing the orthosis, which could not be related to a specific central phenomenon. A few participants alternated the use of the 2 types of orthosis depending on their hand activity.

Importance of the orthosis for the users

Discussing the orthosis with other users, family, and friends

Comfort, pain reduction, movement restriction, looks and size of the orthosis, and general satisfaction with the orthosis were common themes in the evaluation of the orthosis with other users.

> Yesterday, I talked to my sister. She has one [orthosis], but one that is much bigger (than mine). Her whole thumb is in it. So I advised her to try and get another orthosis. Because the one she owns, she never wears because it is horribly uncomfortable. (F, 62 y)

Some participants mentioned that friends and family, while seeing them wearing an orthosis, expressed concern about their condition, the course of the disease, and the degree of pain experienced. However, participants were not asked by friends and family about the characteristics of the orthosis itself.

> Yes, people just ask: what is the matter with your hand? Well, there is nothing wrong with my hand. It is not broken or any such thing. It is just wear and tear. Nothing can be done about this. I have to try and live with it. But whenever I wear this thing everybody just asks what is the matter with your hand. (F, 49 y)

The ideal orthosis

Most participants mentioned that an ideal orthosis would provide an optimal balance between rigidity and suppleness. The CM

Table 3
Identified central phenomena

Label	Description of phenomenon	Presumption about the disease process	Terms of evaluation of efficacy	Timing of usage	Goal at participation level	Quotes
Stabilizer	The orthosis stabilizes thumb joint during hand activity, increasing the functionality by decreasing pain	Irreversible	Functionality of the hand and comfort of the orthosis	During hand activities	Autonomy and independence	"… my thumb joint hurts because of wear and tear of the cartilage. And with this orthosis I am able to spare the thumb joint from exertion a bit. It keeps the joint at its place resulting in less pain."
Tool	The orthosis facilitates strenuous labor by giving support and stability	Irreversible	Stability and durability of the orthosis	During heavy tasks mainly	Continuation of strenuous paid labor and provision of sufficient income until retirement	"For my purposes it has to be sturdy only, for others it might be fine in terms of functionality, but I use my hand in a way that it just has to be a "tool" and during the weekend I don't need it unless I am busy doing some odd jobs around the house."
Healer	Recovery from pain by providing rest to the hand	Reversible by providing rest	Comfort, stability of the orthosis	During rest	General activities and work	"… While I am watching television or reading a book, it is very comfortable. " "Your hand can't move and this gives the hand rest."
Preventor	Prevention of deterioration of osteoarthritis by stabilizing the joint	Delay of wear and tear possible by sparing the joint	The orthosis being comfortable and inconspicuous	Day and night	Preference is given to an orthosis that interferes the least with daily functioning and is least noticeable	"Well, I think that if you could use the joint less, you would be able to delay the process of wearing out of the joint."
Nuisance	The discomfort or interference with functioning and participation is more than the experienced benefits	Irreversible	Comfort	Discontinuation	Variable	"It is a bloody thing. It is a nuisance. It is in the way. It presses too hard. The movements are restricted. I couldn't do anything with it."

was often described as providing better support, with the disadvantage of it being rigid and obtrusive, whereas the PB was described as more flexible and better looking.

> Well the best would be a combination of the two. But yes, that is a bit difficult, I think. The best would be the flexibility of this one [PB] and the rigidity of that one [CM]. Because the rigidity gives rest. But, that plastic one [CM] doesn't give way so easily. (F, 47 y)

Others mentioned sustainability, the absence of sharp edges, proper functioning of the Velcro, good hygiene, the absence of perspiration, and better looks, including color, to be important aspects of an ideal orthosis. In terms of functioning, participants mentioned comfort, pain reduction, and stabilization as important criteria. Being able to do more things and improvement of fine motor activities were mentioned, sporadically.

Alternatives for orthosis treatment

When asked about possible alternatives for the orthosis, hypothesizing a situation without the existence of an orthosis, participants mentioned the following: using alternative ways to conduct the same hand activities, asking other people's help, reducing the amount of activities, doing alternative activities, or undergo an operative procedure.

> … I look for a way to manage. I let the boys get a crate of beer. They are more than willing to do so. And they have offered me several times in the past. So, now I just accept it. I haven't done that till recently. (F, 54 y)

> Well, I would probably muddle along with this, I guess. But if it would get even worse I'd go in for an operation. (M, 59 y)

> Cleaning the house with a wet cloth would not be possible anymore [without orthosis]. No, I would need to be even more careful with my hand. Because now I am able to mop the bathroom. But then [without orthosis] I would need to leave it all to my husband. Because you would have a lot of pain and afterwards you would not be able to take rest. That will definitely restrict me in certain ways. (F, 47 y)

Reasons to wear or not to wear the orthosis

The main reasons to wear the orthosis were pain reduction and the ability to do certain activities, like household activities, cycling, writing, and heavy tasks. Activities for which the orthoses were taken off included opening bottles, peeling potatoes, and activities that would cause the orthosis to get wet. Discomfort, looks of the orthosis, and forgetting to put on the orthosis were mentioned often as reasons for not to wear the orthosis. The absence of activity was also a reason not to wear an orthosis. Some participants removed their orthosis during work hours because the orthosis hampered them during their work activities. One participant took off the orthosis to avoid others seeing him wearing the orthosis.

> … let's just say, I don't enter the canteen wearing this orthosis. No, I don't do that because that is just asking for people to ask you questions … (M, 46 y)

> Driving a car was a reason to take off the orthosis

> Your hand slips because of the orthosis while you drive the car. Holding the steering wheel is hardly possible. (M, 59 y)

Comparison of both orthoses: Advantages and disadvantages

Several advantages, such as pain reduction, comfort, color, and ability to perform activities, were attributed by some to the CM and others to the PB (Table 4). Perspiration and irritation were mentioned by some as a disadvantage of the CM and by others as a disadvantage of the PB. A better appearance and the ability to do a wider variety of activities were among the advantages mentioned of the PB.

Table 4
Comparison of the 2 orthoses

Custom-made orthosis	Push-ortho-thumb orthosis
Positive aspects	
More pain reduction	More pain reduction
More comfort	More comfort
Easier to do activities	Easier to do activities
Better color	Better color
Better functioning during strenuous exercise	Easier to put on or take off
Reduction in movement	Better looks
Stability	Less sharp edges
Support	More freedom of movement
Rest	Easier to drive the car
	Better prevention of sudden pain
Negative aspects	
More perspiration	More perspiration
Skin irritation	Skin irritation
Obtrusive	Sharp edges
Stiffness	Causing more pain
Not fitting	Velcro not closing properly
Orthosis hurting others	
Too big	
Reduction fine hand movement	

> Oh absolutely! With the small brace [PB] I can do almost everything compared with that big brace [CM]. (F, 45 y)

Better support and the ability to do strenuous activities were often mentioned as a relative advantage of the CM over the PB.

> Making the beds goes better with that one [CM]. And I can hang the clothes, as well. You have some trouble with the pegs, though. But it gives better pain relief, because it fits tighter. (F, 62 y)

Obtrusiveness and the reduction of fine hand movement were seen as negative aspects of the CM, whereas sharp edges and the Velcro not closing properly were mentioned as negative aspects of the PB.

> … with that [CM] it was very difficult to hold the pen, or to hold something small, because you would get hampered. And then your hand would give some counterforce, wouldn't it? You would keep pushing, because you need to grasp it. And then you would actually get more pain, because you would be pushing against it. (F, 54 y)

> The Velcro of the closure of the orthosis [PB] gets stuck in my clothes … (F, 59 y)

Discussion

Five central phenomena were identified: the orthosis as a stabilizer, a tool, a healer, a preventer, or a nuisance. These central phenomena were related not only to users' experiences with the orthosis but also to preconceptions about the disease process of CMCOA and their understanding of the working mechanisms of their CMCOA orthoses.

Participants named a plenitude of qualities describing both the orthoses. There was great variation in the qualities attributed to either of the orthoses. The CM was described as

providing better support but having the disadvantage of being rigid and obtrusive. The PB was described as more flexible and better looking.

Central phenomena

The stabilizer: Stabilizing the joint during hand activity

The disease process was seen as irreversible, and usage was usually during hand activities. Stabilizing the joint was seen as a means of pain reduction. However, participants often formulated the ultimate goal of stabilization as the ability to do more and be more independent. For these participants, pain reduction was often not the main goal but rather the means of achieving satisfactory functional and participation levels. This phenomenon might explain why patients often keep wearing an orthosis even if they do not experience significant pain reduction.[6]

In a previous cross-sectional survey, around 40% of the therapists in the United States recommended wearing of orthoses most often for pain relief.[7] However, earlier studies comparing 2 orthoses showed limited or even less pain reduction in the preferred orthosis.[5,6] An explanation to this discrepancy might be that some patients regard pain reduction only as one of the steps to achieve their ultimate goal of independence and autonomy. According to this hypothesis, effectiveness of the orthosis cannot be assessed by measuring pain reduction alone but should also be assessed by measuring the improvement in the level of functioning and participation. While providing the CMCOA orthosis, it is therefore recommended that the health provider discusses not only pain reduction as a goal of treatment but also changes in functionality and participation as well.

The tool: Facilitating execution of heavy tasks by giving support and stability

In this phenomenon, the goal of the orthosis was to enhance the participant's ability to do heavy and often paid tasks. In a previous survey, 28% of the US therapists recommended use of the orthosis for heavy tasks.[7] In the concept of the tool, the CMCOA is regarded as irreversible, and the main goal of treatment was often the ability to do heavy tasks to secure work and income until retirement. These financial and work-related issues should be recognized by the health provider to help the patient to achieve these goals.

The healer: Establishing recovery of the osteoarthritis through rest

The osteoarthritis was regarded as partially reversible. The orthosis was instrumental in providing rest and often worn during the absence of hand activity. In this phenomenon, the ability to provide comfort and stability was seen as important qualities of the orthosis. Colditz[12] recommended the CMC orthosis to be worn full time for the initial 2-3 weeks, followed by wearing the orthotic device during activities to prevent joint irritation or to reduce symptoms after such an irritation had occurred. Patients often present for medical intervention after an episode of overuse that has caused the CMC joint to become inflamed.[12] This tapering down of the wearing time suggests an element of recovery. The osteoarthritis in itself cannot be cured, but the inflammation can be treated using orthoses. Colditz[12] also mentioned the time patterns of wearing, being routinely at night for most patients and stated that she encourages the patients to do so. However, she stressed the importance of wearing the orthosis during activities that cause pain. Interestingly, in a previous survey, more than 80% of the US therapists stated that they instructed patients in a weaning program.[7] The concept of weaning implies reversibility of the hand condition.

The preventer: Preventing deterioration of the osteoarthritis by stabilizing the joint

The CMCOA was the result of overuse causing wear and tear of the cartilage of the CMC thumb joint. The orthosis prevented the wear and tear by stabilizing the CMC joint. Orthoses that were inconspicuous and comfortable were preferred to wear these as many hours a day as possible. In the literature, the orthosis treatment was described as a preventive measure only in the context of prevention of subluxation of the CMC joint. The effect on CMC joint stability was assessed in a small crossover design study comparing orthoses stabilizing only the first CMC joint or both the CMC and the metacarpophalangeal joints. Both orthoses reduced the amount of subluxation in mild CMC osteoarthritis, but no difference in stability was found in patients with severe osteoarthritis.[13] The Task Force of the European League Against Rheumatism Standing Committee of International Clinical Studies states that there is no support to the statement that orthoses could prevent or correct lateral angulation and flexion deformities and recommended further research on this subject.[14] It is recommended that preventive goals in orthosis treatment should be discussed by the health provider to overcome disappointments with patients.

The nuisance: Giving discomfort or interference with functioning and participation in a way that outweighs the possible benefits

Participants who regarded the orthosis to be a nuisance often completely discontinued the use of the orthosis. Interestingly, these participants did not discontinue participation in the quantitative study that was performed before the interviews, suggesting the existence of an initial motivation to wear orthoses. In a previous study on patient narratives, the importance of user input and iterative collaboration was stressed to make a difference in a person's life when using an orthosis.[15] There is a myriad of choices for prefabricated thumb orthoses using many different materials and looks.[7] The ability to respond to a patient's ideas, concerns, and expectations and to identify choices that the patient may have are regarded to be major competencies of the health professional for practicing informed shared decision making.[16] To improve the process of the informed shared decision making, it is recommended that the health professional discusses the variety in choices of CMCOA orthoses with the patient, including their pros and cons.

Importance of the orthosis for the users

Discussing the orthosis with other users, family, and friends

With fellow orthosis users, participants discussed primarily usage and characteristics of the orthosis. With family and friends, the focus of conversation remained the CMCOA and the disability related to it. Thus, discussing the orthosis with fellow users appears to be more constructive in evaluating the effect of the orthosis as compared with discussing the orthosis with family and friends. However, this could not be confirmed by the previous literature. Further research is required to assess the benefits of involvement of fellow users in orthosis evaluation.

The ideal orthosis

Most participants mentioned that an ideal orthosis would provide an optimal balance between rigidity and suppleness, next to many other detailed preferences. No literature was found on patients' perspectives on an ideal orthosis for CMCOA. In a previous crossover study, patients with rheumatoid arthritis were interviewed after having tried 3 different types of wrist orthoses. In that study, patients mentioned that an ideal orthosis would support rigorous activities. However, such an ideal orthosis needs to guarantee an optimum balance between the need for wrist support and the annoyance of wrist immobilization.[17]

Alternatives for orthosis treatment

When asked about possible alternatives for the orthosis in the hypothetic circumstance that an orthosis would not be available, participants did not mention hand exercises or treatment with heat wraps. There is moderate evidence supporting hand exercises for increased grip strength, improved function, improved range of motion, and pain reduction. There is also moderate evidence to support the use of low-level continuous heat wrap or steam treatments for pain reduction and increased grip strength.[18] In the context of providing informed shared decision making, it is recommended that the health provider informs the patient about the different alternatives to orthosis therapy before the starting orthosis treatment.

Reasons to wear or not to wear the orthoses and comparisons between both orthoses

The main reasons to wear the orthoses were pain reduction and the ability to do daily life activities. These results are comparable with the data of a previous crossover study in which patients with rheumatoid arthritis were interviewed, after having tried 3 different types of wrist orthoses.[17] This suggests that patients with rheumatoid arthritis and osteoarthritis have comparable reasons to wear the orthosis. Remarkably, although both orthoses differed on several aspects, such as materials, color, and size, the main reasons for wearing and not wearing them were applicable to both orthoses. This implies that general features of orthoses may be more important to the users than specific features. Furthermore, many of the advantages and disadvantages of the orthoses were attributed to the PB by some and to the CM by others, suggesting individual preferences rather than group preferences for either orthosis. The common denominator however was the description of the CM as providing better support, with the disadvantage of it being rigid and obtrusive and the PB as more flexible and better looking. A possible way to combine the benefits of both orthoses might be the production of an orthosis made of different materials, flexible and rigid.

Strengths and weaknesses of the study

This study is the first study that focuses on the user perspectives of the CMCOA thumb orthoses. One of the strengths of the study was the timing of the interviews, which were conducted just after completion of the RCT on orthoses use. The participants had focused for weeks on evaluating the orthoses, describing the advantages and disadvantages of the orthoses in their diaries. They had recently experienced the effect of the orthoses on functioning in daily life and through multiple tests. This information was shared during the interviews of this study. The interview techniques of preliminary analyses and bracketing provided a setting in which a variety of input could be obtained from the participants. The framework approach gave structure and unity to the process of data gathering and analysis. Thus, combining the phenomenological approach and the framework approach made it possible to investigate the complexities of the user perspectives of the orthoses in an extensive and structured way.

A weakness of the study may be the interviewer's limited experience in the phenomenological approach. This approach requires experience in the field being investigated and the mental skill to focus on and contemplate large amounts of data to form a meaningful interpretation. Phenomenology has a long and complex history of development and may be difficult for a researcher to apply.[19] Another weakness of the study might be the limited time that the participants tried the different orthoses (2 weeks for each orthosis). The participants might have needed more time to get used to the orthoses and form a relationship with them. The duration of thumb orthosis use in previous studies varies from 1 week to 7 months. There is no evidence as to the period an orthosis should be tried before proper evaluation can take place.[12,13,18] In this study, participants tried only 2 specific types of CMCOA orthoses. The results might have been different if patients had been able to pick and choose from the myriad of different orthoses that are available nowadays. Participants were not asked to give feedback on the analysis of the findings.[11] Such feedback might have strengthened the validity of the conclusions but was considered logistically not feasible.

Conclusions

Users described the CMCOA orthoses either as a joint stabilizer, a tool for heavy tasks, a healer of arthritis, a preventer of the deteriorating effects of osteoarthritis on their CMC joint, a nuisance, or a combination of 2 or more of these qualifications. A wide variety in usage of the CMCOA orthoses was revealed. User perspectives affected the patterns of usage and orthosis preference. These user perspectives on CMC orthoses were related to the users' understanding of the disease process and the working mechanism of the orthoses. For clinicians, it is important to inquire after the patient's knowledge on disease processes and on their knowledge about orthosis working mechanisms because this seems to influence therapy adherence and patient satisfaction.

Users mentioned better appearance and the ability to do a variety of activities as advantages of the Push-Ortho-Thumb-Brace-CMC and better support and the ability to do strenuous activities as advantages of the custom-made orthosis. However, numerous qualifications were attributed to the PB by some and to the CM by others.

While providing CMCOA orthoses, health professional should take into consideration these user perspectives to optimize treatment adherence and individual treatment outcome.

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