

ORIGINAL RESEARCH ARTICLE



The social and organisational factors shaping acceptability of a self-management education and exercise intervention for people with hip or knee osteoarthritis in Greenland

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ABSTRACT

This study aimed to explore the experiences and perspectives of people with osteoarthritis attending the “Osteoarthritis School” (OA School) in Nuuk, Greenland to generate insights and lessons that can inform the development of self-management education and exercise interventions for people with other lifestyle conditions in a Greenland context. We conducted a qualitative interpretive description (ID) study based on ten semi-structured interviews with people with hip or knee osteoarthritis. Interviews were audio-recorded, transcribed, and coded. Using ID, we identified three themes: 1) perceptions and experiences of how the OA School intervention was organised (time and place); 2) perspectives and experiences of the education and exercise components (social factors, motivation, and education); and 3) significant change stories (physical and mental improvements and increased knowledge of OA). Social and organisational factors, such as working out with peers and the time and place of the intervention, influenced the participants' acceptance of the OA School intervention. Knowledge from this study will help us gain insight into what to address when developing future self-management education and exercise interventions in the Greenlandic healthcare system.

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Introduction



Hip and knee osteoarthritis (OA) is a globally widespread impairment, and the prevalence is estimated to increase with rising life expectancy and obesity [1]. In Greenland, the most common cause of long-term sickness is muscle and joint pain [2], and the prevalence of OA is estimated to be 4.1% among the adult population [3].

Treatment guidelines for people with hip and knee OA consistently recommend incorporating a treatment plan, exercise, and patient education [4–6] adjusted to individual needs [6]. Living with a chronic illness, such as OA, requires self-management on a day-to-day basis. Self-management refers to how individuals relate to and engage with their illness [7]. One prerequisite for chronic disease self-management is health literacy, which refers to an individual's ability to understand and use health-related information and to take actions that impact their health [8]. Low health literacy is more common among individuals of low socioeconomic status and lower levels of education [9]. Health literacy skills are often achieved

through patient educative activities or the distribution of written materials [7,10]. Social and cultural elements, including language, beliefs, and practices, can influence individuals' health literacy [11]. In contrast to the typical Western health mind set, Indigenous people have a more holistic view of health that includes community, environment, and spirituality [12]. Likewise in Greenland, health is about several aspects of life since “Peqqinneq”, the Greenlandic word for health, constitutes a holistic understanding of health based on values, nature, relationships, and Greenlandic food [13].

Patient education has evolved from knowledge being delivered by the healthcare professional (e.g. through a “talking to” or distribution of pamphlets) to more participatory educational activities that involve patients learning about their bodies and conditions [14], which will be the focus of this paper.

Patient education can be individual or group-based and consist of education, exercise, or a combination. There has been an increase in patient education

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interventions for people with chronic illnesses [15]. A review, including both individual and group-based interventions and a mix of education and exercise interventions, found that these interventions can help improve disease management and lead to better outcomes for people living with diabetes, arthritis, and asthma [15]. For both diabetes and osteoarthritis, a combination of education and exercise has proven particularly effective [16–18]. Therefore, the focus of this study will be the subgroup of patient education concerning self-management education in combination with group-based exercise, known as self-management education and exercise interventions (SMEELs). SMEELs are characterised by activities that support self-management through education and exercise. Howell et al. present eight core elements that SMEELs should target, namely, an individualised approach, improvements in participants' self-efficacy, supporting the participants in developing skills to communicate with healthcare professionals, ensuring that the intervention is delivered by trained healthcare professionals, and ensuring facilitating of uptake by setting goals for the future [19].

Several SMEELs have been designed for people living with OA and have proven to be effective in reducing pain and increasing physical function [20]. One example is a randomised controlled trial (RCT) that found improvements in the group-based intervention Osteoarthritis of the Knee Self-Management Program in patients' pain assessment and physical function [21] by providing guided exercise and education. A meta-analysis including RCTs comparing education and exercise interventions showed that SMEELs might help improve knee function, pain, and stiffness in people with knee OA [16]. Another example of a SMEEL targeting people with hip or knee OA is the Good Life with osteoarthritis in Denmark (GLA:D™) [22]. GLA:D™ consists of an assessment with a physiotherapist, baseline measurements of function (using the Knee injury and Osteoarthritis Outcome Score (KOOS), or the Hip disability and Osteoarthritis Outcome Score (HOOS)), eight weeks of group-based supervised exercise, three sessions of education on OA, and two follow-up visits at the physiotherapist [23]. The goal of GLA:D™ is to improve self-management among people living with OA. The intervention has been adapted and successfully implemented in contexts outside Denmark, including Canada and Australia, where both countries have populations that include Indigenous peoples [22,24]. When adapting elements from an existing intervention to another context, which in this case is Greenland, culture and ethnicity must be considered with great care and respect [25] why the term cultural adaptation is

essential. This is more important when an intervention is developed in a ruling country and adapted to an autonomous territory where the ethnic group and culture differ significantly. In Canada, all patient education materials were translated from Danish to English and cross-culturally adapted for the Canadian context in 2015, including revising the materials to Canadian English terminology and the recommended language level for patient education materials [26,27].

In Australia, patients from all states and territories participated in the intervention, which trained physiotherapists delivered from the target community [24]. To our knowledge, the adaptation process in Australia has not been described in detail. The intervention has improved participants' assessment of pain and physical function in all three contexts [22–24].

The self-management education and exercise intervention - osteoarthritis school

In 2021, a SMEEL for people with OA in Greenland was implemented in Nuuk, the capital of Greenland, inspired by elements from GLA:D™ and other similar interventions. The SMEEL intervention, also called the Osteoarthritis School (OA School), involved 12 weeks of supervised group-based exercise and one group-based patient education session. The elements of the OA School are shown in Figure 1. Enrolment is ongoing, and 134 participants signed up for the intervention by the end of 2022 [3].

All health interventions need to be adapted to the specific context, especially in places with Indigenous people (in this case, Inuit), acknowledging their unique cultural needs. Culture consists of norms, values, traditions, behaviour patterns, languages, and symbols shared by a particular society [28]. Cultural safety is an important concept in a healthcare system with many non-Indigenous healthcare professionals. Cultural safety aims to achieve equity and reduce bias in the healthcare system [29]. To ensure cultural safety, it is essential to involve local stakeholders in the design and planning of the intervention (in this case, physiotherapists in Greenland) [30–32]. Another essential part to consider when culturally adapting elements from an intervention is the needs of the group for whom the intervention is developed or adapted (in this case, people with OA) [25]. Likewise, it is important to adapt written material (in this case, translating language and cultural reference points from the original language of the intervention to Greenlandic (Kalaallisut)) and consider who will plan, deliver, and evaluate the intervention [30]. Furthermore, it is important to investigate whether the intervention is working as intended, which may,

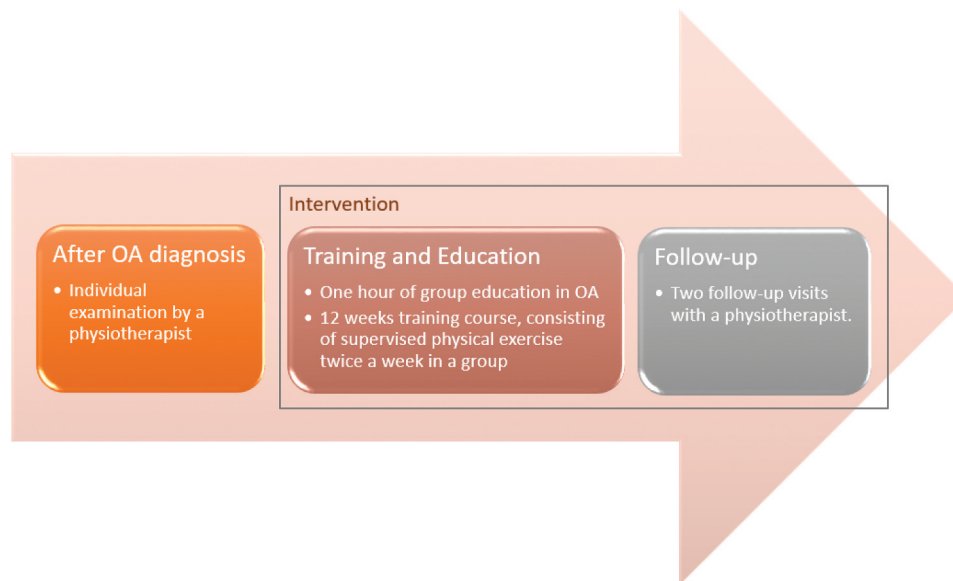


Figure 1. Structure of OA School.

with the context, change over time [32]. A cross-sectional study of the OA School intervention in Greenland found, like other SMEELs for people living with OA, indications of experienced improvements in KOOS and HOOS following participation in OA School [3,22]. However, the same study showed that 40% of the participants did not complete the 12-week intervention. This could indicate that factors in the adaptation process did not proceed as intended, highlighting the need to learn from Greenlandic patients with OA.

SMEELs are often evaluated quantitatively to measure effectiveness. Still qualitatively driven evaluations of participants' experiences and perspectives provide another valuable insight regarding adaptation or trying out interventions in new contexts [30]. For these reasons, a qualitative study of the OA School investigating challenges with retention, what worked (or not) for whom, and under which circumstances is needed. This knowledge can help us gain insight into what to address when developing future SMEELs in the Greenlandic healthcare system. It will further contribute to knowledge on how to implement SMEELs in a Greenlandic context. Therefore, this study aims to conduct a qualitative evaluation focusing on the experiences and perspectives of people with OA who participated in the OA School intervention.

Methods

Study design

The study is qualitative and uses an interpretive description (ID) approach [33]. ID is an inductive and

iterative methodology influenced by phenomenology, grounded theory, and anthropology, and it was developed to use qualitative findings to evaluate and develop clinical practices and guidelines [33]. ID consists of a twofold guiding methodology, which seeks to 1) understand participants' experiences and perspectives in order to 2) go beyond their lived experiences and translate this into recommendations and guidelines for changes or improvements in clinical practices [33]. To gain insight into people with OA's experiences of OA School and ideas for developing new SMEELs, we carried out semi-structured interviews.

The research team

The research team is a part of clinical practice in the Greenlandic healthcare system, where the first and the second authors were based during data collection. Keen to improve clinical practice, all authors work within a pragmatist tradition [34], which has inevitably shaped this study. Three out of four of the authors have previous experience with qualitative methods. One author is Inuit and Greenlandic, while the rest of the research team is Caucasian and from Denmark. The first author participated in several training sessions to gain insight into the training intervention.

Setting

Greenland is the world's largest island and home to approximately 56,000 people [35] who live along the west, east, and south coast. Around 90% of the

population is Inuit [36]. The capital, Nuuk, is home to 19.000 people. Greenland is divided into five healthcare regions [37], each with a hospital in the largest city, healthcare centres, and healthcare units in smaller towns and settlements. Queen Ingrid's Hospital is the national hospital and is located in Nuuk. Here, all specialised treatments in Greenland take place [37]. Greenland has its own government as an autonomous territory of Denmark. It has a tax-financed welfare system, and as such, health care, including medication and the OA school intervention, is provided to permanent residents at no extra cost. The department where the physiotherapists are attached and the healthcare system generally comprise staff from other countries than Greenland (primarily Denmark). This is problematic and often causes communication difficulties since the staff are unfamiliar with the language and culture in Greenland [38]. One-fourth of the physiotherapists employed at Queen Ingrid's Hospital are Inuit.

The OA School intervention was placed at Queen Ingrid's Hospital and was initiated in January 2021. Three physiotherapists (one Inuit) from Queen Ingrid's Hospital were involved in the planning of the OA School. Only a few recommendations were made to make the OA School fit into the socio-cultural context of Greenland since it was not discussed among the physiotherapists. Compared to other treatment teams in the physiotherapy, the intervention lasted 12 weeks, making it practically the best fit.

When a patient contacts the healthcare system with pain in the knee/hip, it is assessed by the regional doctor, who considers how prominent the OA is in the individual. For very prominent OA, the doctor will refer the patient for surgical assessment for arthroplasty. For less prominent OA, the doctor will refer to the OA School. An intervention training team comprised 8–10 participants with two supervising physiotherapists. Four physiotherapists (one Inuit) and three Danish-born take turns training a team. The physiotherapists did not receive any specific training in the management of OA before the intervention was initiated.

Sampling and recruitment

All participants were recruited in Nuuk, and all interviews occurred at Queen Ingrid's Hospital. We decided to include participants at three stages of the intervention: completed, dropped out, and currently participating. We wondered why participants completed the intervention and why some dropped out. For some participants, it was some time since they had participated. To ensure we had up-to-date experiences, we also chose to take participants in the intervention at the time of data collection. Participants who

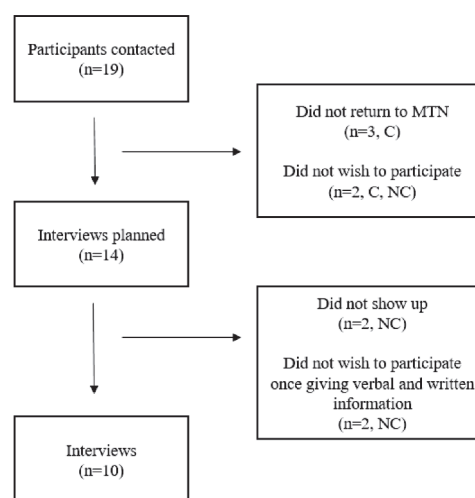
had completed ($n=3$) or had dropped out ($n=4$) of OA school were recruited by the first author (MTN) by telephone. In contrast, MTN recruited three participants who were currently participating in the OA school face-to-face. Participants were selected purposefully [39] to allow variation in age, gender, experiences with the OA School intervention, and types of osteoarthritis (e.g. knee or hip). Inclusion criteria were: aged 18 years or above, currently living in Nuuk, and signed up for OA School between 1 January 2021 and 31 December 2022.

We invited 19 participants to participate. Three did not respond to our invitation, and two did not wish to participate. MTN made appointments with the remaining 14 possible participants. Two participants changed their minds after being given verbal and written information about the project, and two did not attend the scheduled interview. MTN was not able to reach them afterwards (see Figure 2). We enrolled participants until we reached data saturation, which resulted in 10 interviews.

Characteristics of participants

Characteristics of participants are provided in Tables 1 and 2. In summary, ten participants (males = 4, females = 6) aged between 46 and 79 years participated. Three participants currently participated in the OA School, three completed it, and four did not. At the time of the interview, seven participants had participated in the one-hour lecture on OA.

Eight participants were Inuit and were born in Greenland; two were of Caucasian origin and were born



C= completed OA School, NC= did not complete OA School

Figure 2. Flow chart of enrolment of participants.

C= completed OA School, NC= did not complete OA School

Table 1. Background characteristics of the participants.

Age, mean (range)		58,2 (46–79)
Sex, n		
	<i>Male</i>	4
	<i>Female</i>	6
Birth place		
	<i>Denmark</i>	2
	<i>Greenland</i>	8
Ethnicity		
	<i>Inuit</i>	8
	<i>Caucasian</i>	2
Primary language		
	<i>Danish</i>	4
	<i>Greenlandic</i>	4
	<i>Danish/Greenlandic</i>	2
Education		
	<i>High school</i>	1
	<i>Vocational education</i>	3
	<i>Bachelor</i>	5
	<i>Master</i>	1
Hip or knee OA		
	<i>Hip</i>	6
	<i>Knee</i>	4
OA school status		
	<i>In progress</i>	3
	<i>Completed</i>	3
	<i>Not completed</i>	4
Completed lecture		
	<i>Yes</i>	7
	<i>No</i>	3

Table 2. Exercise and lecture status of participants.

Pseudonyms	Status	Completed lecture?
Nina	In progress	no
Malik	Completed	yes
Anna	Not completed	yes
Miki	Completed	yes
Ivalu	Not completed	no
Kaali	Not completed	yes
Inuk	In progress	yes
Naduk	In progress	yes
Aviaaja	Not completed	no
Nivi	Completed	yes

in Denmark. Four participants had Greenlandic as their primary language, two had both Danish and Greenlandic, and four indicated that Danish was their primary language. All participants could speak Danish, and all ten interviews were held in Danish. Four participants worked at the hospital; of these, three did not complete OA School. One participant had high school as the highest level of education, while the main part of the participants ($n = 8$) had a bachelor's degree or vocational education, and one had a master's degree. Participants have been given pseudonyms in the article (see Table 2).

Interviews

We conducted individual face-to-face semi-structured interviews at Queen Ingrid's Hospital with ten participants between February and March 2023. Interviews conducted with a semi-structured interview guide allow the study participants to talk about their individual experiences

while being guided by the research questions and the interviewer in the direction of the topic of interest [39]. The research team developed the interview guide (see Table 3) based on existing knowledge on patient education in OA. The first interview was a pilot test of the interview guide, and since it was a valuable and insightful interview, the pilot interview was included in the study. At the beginning of each interview, the participant filled out a short questionnaire with background information on demographics and other health-related questions. An interpreter was available but not used as everyone could conduct and complete the interview in Danish. The interviews were audio-recorded and transcribed verbatim by MTN in Danish and lasted an average of 26 minutes (ranging from 15 to 33 minutes). After each interview, MTN wrote down immediate reflections, and the interview guide was revisited.

Data analysis

ID shaped the analysis process. The four-stepp analysis process was iterative, and each step was revisited to ensure that any new insights were encapsulated [39]. The data analysis was initiated after we conducted the first couple of interviews, and subsequently, interviews and data analysis were performed concurrently, as recommended in ID [33]. The inductive approach allowed themes and patterns to form from the transcribed interviews [33]. First, the interviews were transcribed by MTN and transferred to NVivo, where MTN conducted the initial coding. To secure the quality in the initial coding, MHN coded two interviews, with participants with different perspectives and OA School status. In this process, notes written after the interviews were revisited to ensure that all important reflections from this time in the data collection were incorporated into the analysis. Second, the initial codes were explored, and general patterns began to form, reflecting our interest in contextual factors shaping intervention experiences. Transcribed interviews were revisited continuously throughout the process. Third, patterns were categorised into organising themes. The rest of the research team (MTN, MHN, and MS) carried out further discussions and condensation of the data material. Fourth, organising themes were reviewed, and the participants' insights were clustered into three main themes.

Results

After analysing the data material, three themes were established: 1) Experiences and perspectives of how the OA School intervention was organised, 2) Experiences and perspectives of the education and exercise

Table 3. Semi-structured interview guide.

How did people with OA become acquainted with the "Osteoarthritis School"?	How did you find out you were going to go to Osteoarthritis School? What were your thoughts on starting in OA School? What did you think about exercising if you felt pain? What did you think about working out with others, in a group?
Which experiences do people with osteoarthritis have with Osteoarthritis School?	Can you tell me about the Osteoarthritis School? How was your overall experience with OA School? What do you think of the education in osteoarthritis there was? • Did you understand what was said (DK/GL) and was it clear how you can translate it into something useful in your everyday life? How did you experience the exercise you participated in? Did you feel progress for every time you exercised? <i>What caused you to drop out of Osteoarthritis School?</i>
Which benefits do patients experience from the course?	Have the course meant anything to your everyday life? Do you feel that you know your disease better after attending OA School? Have you learned anything new?
Which experiences do people with osteoarthritis have of pain in connection with Osteoarthritis School?	Have your participation in osteoarthritis school allowed you to do more/less in your free time? Which expectations did you have of the pain before, during and after the intervention? Have you experienced insecurity about any of the things you felt during and after exercise in relation to pain? Did you get help with the insecurity/uncertainty?
What can we learn from Osteoarthritis School that can be used for future interventions?	Is there anything you missed in Osteoarthritis School? Could you imagine that some of the course had been online? How was the balance between theory and practice? Would you recommend OA School to others? If you were to give me advice on making other offers such as "Osteoarthritis School" for other patient groups, what would it be? <i>Can you point out some things that would have made you stay in Osteoarthritis School?</i>

components, and 3) Significant change stories. These themes will be elaborated in the following sections.

Experiences and perspectives of how the OA School intervention was organised

Participants generally valued the OA School intervention. Overall, they knew what the intervention should help them with and would recommend OA School to other people with OA. However, some had perceived barriers regarding the structure of the intervention. Experiences of this are described in the following sections.

Acceptability of the hospital as the setting

Participants were satisfied with the location of the intervention, which was the hospital. They expressed how convenient the location was for them, since their jobs were near the hospital, where four of the participants worked. Miki, who had completed the OA School intervention, shared:

For me, it is really good that it is here at the hospital, because it is more committing for me. –Miki

Here, Miki expressed how the hospital was perceived as a place of authority and how that affected his acceptability of the setting, being the hospital. The participants were not interested in the sessions being held elsewhere. This provided insight into the organisational dimensions of the intervention and suggested that the hospital as the physical frame seemed well chosen.

Acceptability of intervention timings

Supervised exercise sessions were held at either 8:00 AM or 4:00 PM and one-hour group education was held on the first Wednesday every month at 4:00 PM. Some described the time of day as an issue regarding their participation, since they were working late or had shift work. Anna, who did not complete the OA School, described how she was still at work by the time the OA School started, which hindered her from participating in the intervention.

(...) And I am (job title), so I do not always finish work at four o'clock. I can't just say, "Now it's four o'clock, I'm leaving". And that's what I had to do, so there were many days when I simply could not make it down there. So it probably started a little after four. I think I would be able to attend if it started at five, for example. –Anna

Here, she stated that a different timing of the OA School could have resulted in her participation. Ivalu, who did not complete the OA School, described having shift work and expressed how it influenced her chances of participating.

It's when you work night shifts regularly, you sleep from around 8 in the morning until about 3 in the afternoon. So it's difficult to fit in such exercises. (...) Because it didn't really match with having to exercise right after waking up. – Ivalu

The above showed an individual preference regarding when to exercise. Due to shift work, the OA School was

not held at a suitable time for her, since exercising when she just woke up was not preferable. Another participant also described the timing in relation to personal factors, whereby he was committed to spending time with his family, which challenged his participation.

During the 12-week intervention, the participants had to visit the hospital twice weekly for supervised exercise sessions. Kaali, who did not complete the OA School, described how a physically demanding job was as a barrier to his exercise:

If I want to prioritize exercise more in my daily life, I would prefer to have an easier job, not such a physically demanding one. That way, I would have more energy and time to dedicate to exercising at home. – Kaali

In the above, Kaali described how he was tired after a day's work and did not have enough energy to exercise. For him, this was a barrier to his participation in the OA School. Participants who were no longer working due to retirement or had shorter workdays or more flexible hours mentioned no challenges with the timing. Altogether, work hours and personal factors contributed to the acceptability of the timing and placement of the OA School.

Experiences and perspectives of the education and exercise components

Exercise and education were two components of OA School, which the participants evaluated favourably. In particular, the help and individualised focus from the physiotherapists were highlighted as meaningful and motivating. However, some participants experienced insufficient access to help and group-based exercise as issues for their participation. This will be unfolded in the following sections.

Working out with (the right) peers

Working out together as a group was something participants reflected on. Some found it enriching to work out with others, as Nina, who was currently in OA School at the time of the interview, described:

It is better when we are several people, and we can encourage each other. I also know some people who have joined the same team as me. So we encouraged each other. Therefore, I think it's good that it's a group rather than individual. – Nina

Working out together and the fact that she knew other participants added value to the session by creating a positive environment in which peers encouraged each other during the exercise. While some perceived exercising with others as positive, others found it more challenging. For several participants, not having peers

of their own age influenced their experience of exercising in a group. Aviaaja, who did not complete OA School, provides a clear example of this:

I let it fade out because being part of a team was not really my thing. (...) Looking back, I think I would have continued if the group consisted mostly of people my age. (...) I think what was challenging for me was feeling old and disabled. (...) I missed having people on the same level. – Aviaaja

She felt uncomfortable in the setting and missed peers who faced the same challenges as she did. Her preference for working out with peers with the same challenges impacted her participation in the OA School. Likewise, Anna described her perception of working out with people who were older than her and how that affected her participation.

When I walked in I thought, "Is this for me?" Because there were only older people, and while some might consider me older in their terminology, I do not see myself as that old yet. There were definitely people on the team who were 20 years older than me. And I thought, "This is not for me". I would rather go to the gym instead. – Anna

This indicated that her self-view was challenged when exercising with people older than herself, which led to her not participating.

Some, however, paid little attention to the other participants, indicating that exercise together as a group was something participants perceived differently.

Acceptability of the physiotherapists

The participants described how the individual approach of the physiotherapists made them feel safe and seen. Several participants described how the exercise sessions were adjusted to their specific needs and positively affected their exercise. Naduk, who was in OA School at the time of the interview, said:

(...) I mentioned it to the physiotherapists, and they said, "Well, try doing it this way". They are really good at coming up with alternatives if something doesn't work for you. – Naduk

The above quote showed an example of how the participants experienced good communication with the physiotherapists. Naduk mentioned a challenge in the exercise session, and her need for alternative exercises. Getting help with that led to a positive experience. Nivi, who had completed OA School, had a similar experience:

(...) It was together with the physiotherapist, so we constantly agreed on what felt good and what didn't, and then we had to adjust a bit based on how MY knee was feeling. – Nivi

The above quotes underlined the significant role of professionals in facilitating and personalising exercise session, and how this positively influenced participant experiences. Despite many positive experiences of the physiotherapists' role in the exercise sessions, others spoke of an unmet need for help during exercise. Anna described how many new people attended the exercise sessions and how that reduced the likelihood of her getting the help she needed.

(...) We received some guidance, but one person had to guide many of us. So I felt like we were left on our own. (...) It could also be that there were many newcomers, and there were definitely many people who needed guidance on what they were supposed to do. And I was new to it, so I think I needed more introduction or instruction for the exercises than I received. I felt as if I was left to my own. I was assigned to a stationary bike and such, where I may have had some questions... and I did not manage to ask them myself. I could have really used more guidance, I think. – Anna

Anna indicated that getting help can be challenging when many people attend the exercise sessions and request assistance. This was perceived as a barrier to her exercise session outcome. She felt left on her own when she needed help from physiotherapists. While many participants felt that their need for help was being met, some struggled to get the attention of the physiotherapists due to the turnaround and increase in the number of participants in the OA School at the time. No participants mentioned it as problematic that Danish physiotherapists most often held the training sessions.

Maintaining motivation (over time)

Some participants reported decreased motivation to participate because of a lack of variation in the exercise content. This was described by Malik, who had completed OA School:

As a pensioner, one could easily go there three times a week without any major issues, right? But every now and then, you can get a bit stuck in that routine. And in the end, it becomes more like, "Oh, now I have to go there again, right?" It's like that, in a way. – Malik

Here, Malik expressed decreased motivation, which was attributed to repeated exercise sessions with no or limited variation. Time was not an issue. He considered whether or not to exercise three times a week but decided against that. Furthermore, Ivalu said:

(...) I felt that it was too monotonous. There were no variations in terms of the exercise. – Ivalu

This quote indicated that the content of the exercise created an unmotivating atmosphere, causing a decrease in motivation. Others reported increased motivation due to the way physiotherapists engaged with the participants. Miki describes how he found it motivating to participate in the supervised sessions at the hospital, where there was staff to ensure that the proper exercise was carried out.

It is that someone is there to guide you and make sure you do the right things. They ensure that you get it done. Because I know myself well enough to know that I won't do it at home. – Miki

This indicated that Miki found it motivating that physiotherapists were present to ensure that the right exercises were carried out. It acted as a motivating figure in his perception and positively affected his participation in the OA School. Several participants indicated that they did not continue to work out after participating in the OA School, even though they had a written exercise programme and access to an exercise elastic at home. This emphasised the motivational determinants of attending facilitated, supervised exercise sessions.

The timing and form of the education session

During the one-hour group lecture, the participants were informed that exercise sessions may be painful at first and that it might take some time before they started to feel any improvement. Participants who had not attended the lecture at the interview were more vocal about the pain at the onset of exercise because they had not yet been reassured that this was normal to experience. As a result, the participants vocalised the need for the lecture to be held before they started exercising and as an introduction to the OA School.

It might have been more understandable or better if we had done it (the lecture) at the beginning - so that we knew more about what we were doing. – Malik

Above, Malik described the need for education before exercising in order to learn more about OA and how exercising would affect him. He and other participants also expressed a wish to add a lecture at the end of the 12 weeks to evaluate and provide a space to ask questions about further progress and exercise in relation to their OA.

When asked if the lecture could be held online, participants made it very clear that there needed to be a space – either online or face-to-face with physical

appearance – where they could address questions that might occur during or after the lecture. Nina explains:

(...) Maybe one could have the instruction online at home BEFORE starting. And then have some questions afterwards. –Nina

She could imagine the education being online if there was a forum where she could ask questions online or at the first exercise session.

Participants indicated that they had the written exercise programme, and the exercise elastic, but haven't worked out at home after the end of the supervised sessions.

Concrete proposals from participants regarding the organisation of the exercise and education in the OA School suggested that further adjustments and adaptations of the components of the OA School could benefit for participants' experiences with the intervention.

Significant change stories

Due to participation in the OAS School intervention, participants reported physical improvement in their OA, improvements in their mental health, and increased knowledge about. Here, significant change stories are explored.

Physical improvements

Participants articulated physical improvements in their health by describing less pain and awareness of the challenges connected to their condition. Here, Nina explained how she experienced physical improvements:

(...) I found it difficult to walk to work because, after walking halfway, my knee would hurt so much that I could barely walk. But now, I can walk to work and even more. The exercise sessions have definitely helped with that. –Nina

After participating in the supervised exercise sessions, she experienced physical improvements by being able to walk longer distances than before. Experiencing improvements increased her understanding of the effects of the intervention. Furthermore, improvements were described as less awareness of the condition, as seen in the following quote:

I can feel the difference by not feeling any discomfort. –Malik

Regarding OA as a chronic disease or impairment, not noticing symptoms in his everyday life was positive and added to his quality of life. In general, the participants experienced physical improvement after being a part of the OA School, which was prominent among participants who were in or who had completed OA School. As

described above, the effect of the exercise sessions led to improvements in participants' physical conditions.

Improvements in mental health

Several participants described how participation in OA School helped them to think more positively. Here, Malik described his improved state of mind:

(...) it changes for the better, and it has made my whole life easier. And of course, when your whole life becomes easier, it also becomes brighter overall, right? It has been really good for me. –Malik

It became clear that participation in OA School affected his quality of life, indicating that OA School played a role in offering people OA education and exercise to increase their joy. Naduk commented:

One becomes sad because it limits one's quality of life, but when one receives such help with exercise, one becomes a bit more positive again. I am naturally positive-minded, so I try to see the good in things and make the best of it. –Naduk

She described how supervised exercise helped her to think more positively.

This is an example of how participation in OA School helped them think more about their situation with OA, and it also showed how the intervention helped participants through increased self-management.

Increased knowledge of OA

Participants described how being a part of OA School has increased their knowledge and changed their views on OA. One described concrete knowledge she got from participation in the lecture.

I thought it was a wear and tear of the bones, right? But it wasn't actually. One is less afraid of having it, you know? –Naduk

The knowledge she gained from the intervention positively influenced Naduk's life. She was now much less concerned about having OA. This is an example and justification of how a SMEEI can impact people's lives. Malik described how he found participating in the OA lecture informative.

I think it opened my eyes to a lot of things because it addressed aspects that I had not really thought about in my daily life, but that sometimes arise and I could not find answers to them all of a sudden. And then there's someone there with the answers. –Malik

He expressed an earlier concern that his lack of knowledge appeared in his everyday life, and after participation in the OA School, he got answers to his questions. Miki described how he learned new things during OA School and how he could use it afterwards:

As a layperson, one does not know much about those things unless they have delved into them for other reasons, so there was a lot of new information for me during the exercise. (...) Yes, the idea of moving more to prevent problems was something I could definitely apply. –Miki

Here, he provided an example of his new learning from participating in OA School. This showed improved health literacy following the session of education in OA School, as he understood the importance of exercise in managing OA.

Several participants demonstrated positive self-management and improved health literacy by describing their awareness of weight gain, as they learned that this could worsen their OA symptoms. Naduk shared her new knowledge with her co-workers and was aware of and capable of forwarding the knowledge she learned in OA School.

Yes, I am really happy with it (the new knowledge). I even tell my colleagues, when you go down the stairs or up the stairs, you should do it like this to exercise your knees so that they stay strong as you get older. (...) But I am really happy with it. (...) Even when I just go up the stairs, I do it very slowly because I feel that they (my knees) need to become stronger. I wasn't aware of that before. –Naduk

The above indicated a high level of health literacy, and the above-mentioned insights from the participants validate how this SMEEI gave them new knowledge about their own health condition and likewise made them aware of certain behavioural things to be aware of, such as not gaining weight or the importance of exercise.

Two participants (who did not complete the OA School) found alternative ways to exercise and described how that also helped to relieve their pain. Being in the OA School intervention was said to raise their awareness of the importance of exercise and encouraged them to exercise more. Participants who did not complete the full 12 weeks of supervised exercise sessions reported that their health literacy improved.

Discussion

This study explored the experiences and perceptions of the OA school intervention, an SMEEI involving group-based supervised exercise, and education in OA. We did this to understand the challenges with retention experienced by the OA school intervention [3] and to develop insights that can inform future SMEEIs in Greenland. We found that participants were positive towards the OA School intervention overall, and we observed that irrespective of whether they completed the intervention, they had increased health literacy and confidence in

their self-management skills. However, social and organisational factors, such as who they work out with, perceptions of the physiotherapists, and the timing and location of intervention activities, appeared to play central roles in determining the acceptability and completion of the intervention. We now discuss these social and organisational factors.

The 'social factor' in self-management education and exercise interventions

We expected that the participants in our study would have experienced communication issues with the physiotherapists since most physiotherapists could not speak Greenlandic. The absence of this could be explained by the fact that all participants could speak Danish. On the other hand, if we had talked to people who were exclusively Greenlandic speakers, we expected the language of the physiotherapists to have played a more significant role.

Our finding that the level of relationship between people with OA was able to establish with a physiotherapist has an impact on the outcome of the exercise session was also noted by Shields et al. in an exercise-based intervention for people with Prader-Willi Syndrome (PWS). They found that components of developing a positive relationship between a physiotherapist and a person with PWS included clear communication, adaptability in approach, fostering independence and confidence in the person with PWS, and cementing their motivation to stay involved [40]. A systematic review investigating the contents and parameters of SMEEIs in older adults with knee osteoarthritis (KOA) found that improved communication skills with healthcare professionals may lead to enhanced relationship building with the KOA population, thereby enabling greater involvement in self-management [41]. This was in line with the findings from our study, suggesting that communication with physiotherapists was a motivating social factor. Furthermore, a qualitative study from Norway that explored elders' experiences of motivation and adherence to group-based exercises found that the supportive environment created by instructors/therapists had a positive and motivating effect on participants [42]. This underlines therapists' significant role in a group-based exercise session, as found in our study, and highlights the importance of providing adequate support and addressing individual needs to ensure participant satisfaction and engagement in similar interventions, as recommended in guidelines [4].

In addition, we found that participants perceived working out with peers differently according to their

specific situation. In a qualitative ID study, Dnes et al. found that participation in exercises with people with similar capabilities impacted participants' likelihood of participating in community-based exercise opportunities [43]. Underlining the importance of recognisability, a qualitative study by Slade et al. found that group dynamics in physical activity programmes for people with chronic low back pain were most effective when individuals with similar fitness, strength, and technical skills were grouped [44]. Dunlop et al. suggested that perceptions of similarity between peers may have noteworthy implications for involvement within group-based exercise programmes [45], which further supported our findings. They indicated that group-based exercises must be organised so that participants share similarities regarding capabilities and recognition among each other. If these points are taken into consideration, the group-based sessions seemed well chosen, even though it is essential to consider the participants' individual preferences. As a result, adaptations must be made to ensure that everyone feels motivated in group-based exercise sessions. In the OA School intervention, this could be done by splitting the group-based exercise based on age, gender, or capabilities to make peers more comfortable in an exercise situation, as seen in an intervention for people with type 2 diabetes in Denmark [46].

The 'organisational factor' in self-management education and exercise interventions

Organisational factors accounted for the structure of the OA School, and an important finding from our study was that the acceptability among participants varied. Shift work and long hours were structural barriers for participants in our study, as also seen in a qualitative study of the GLA:D™ intervention [47]. If obtaining participants to complete the full 12 weeks of supervised exercise is the goal, there is a need for the intervention to be held at different times, for example, later in the afternoon or evening. A systematic review by Demou et al. found that flexible delivery times and locations near the workplace were important when targeting shift workers [48]. Likewise, Dnes et al. described the need for a more flexible approach to interventions [43], which we also recommend for the OA School intervention, since several participants experienced barriers in the intervention's organisation. One solution could be to go into dialogue with the relevant workplaces where the individuals with OA were associated regarding the possibility of going to treatment during working hours. The following section will unfold other concrete suggestions to improve the OA School intervention based on the findings of this study.

We advised participants to continue training at home after finishing the OA School intervention, but none had done that. Therefore, it could be beneficial for people with OA to be instructed in ways to keep exercising after the end of the course. An "open exercise" was suggested since some participants found it motivating to attend at the hospital. This could give participants who thrive in group exercise [45] increased motivation to maintain their new exercise habit.

In continuation of the organisational factors, participants expressed a need for the education sessions to be restructured, so they were held before the onset of exercises. This could be an online alternative if participants still have opportunities to ask questions. In a Greenlandic context, online options are warranted to broaden the intervention's target area to great distances [49,50]. If choosing this option, our findings suggest the involvement of the people who will be using the option and make sure they know where to address any questions regarding the online session.

To improve participants' chances of continuing their exercise habits, a second education session should be added at the end of the 12 weeks of exercising. This lecture should focus on educating the participants on how to continue exercising at home, as most of the participants expressed that they stopped working out after the end of the supervised exercise sessions. In a qualitative systematic review and meta-synthesis, Devan et al. suggested adding a "booster session" at the end of SMEELs to increase the output of the intervention for participants [51], which could be beneficial in the OA School interventions as well. Another suggestion could be a maintenance exercise team in cooperation with the municipalities.

Motivation was affected by the lack of variation in the content of the exercise sessions, which could also be an implication for keeping up the spirit of the 12-week exercise programme. Variety in an exercise intervention is essential for adherence [52]. To ensure that physiotherapists have time for all participants in OA School, a maximum number of participants should attend each supervised exercise session, according to space and trained personnel. The inability to receive the necessary assistance had significant implications for the participants, impacting their motivation and willingness to engage in supervised exercises. The acceptability of an unfulfilled need for help was particularly evident among individuals who had completed the OA School intervention. In contrast, it did not appear to be as much of an issue in the current sessions because of the smaller number of participants in each session.

By educating people about their illness, participants will feel empowered and less scared, because their

knowledge is expanding [19]. This pattern was recognisable in the experiences that have become known in our study and points to a discussion of further patient educational interventions in the Greenland healthcare system, and in other parts of the world.

Implications for future self-management education and exercise interventions

When developing other types of SMEELs for people with other kinds of chronic illnesses in Greenland, several factors must be considered. There is no such thing as a “one size fits all”, and the findings of this study only support this belief. As learned from this study, it is important to think that the intervention is more flexible regarding the organisation of the exercise and education sessions. Furthermore, it is essential to understand the local context to which the intervention is adapted and make the necessary changes beyond translating written material. From an organisational viewpoint, the timing of the intervention should be flexible, and participants’ needs must be considered when planning sessions. Timing refers not only to the time of the day but also to the frequency and length of the intervention. Flexibility and adaptation to each participant’s needs and timeframe are essential to ensure successful participation in a SMEEL. Furthermore, it is important that the environment is a safe place where you feel comfortable. Turnovers by professionals and peers must be kept to a minimum to ensure continuity.

Social factors, such as participants feeling comfortable, are essential to consider when developing SMEELs. Recognising themselves in peers greatly impacted participants’ overall experiences and chances of completing the OA School. Who is it a barrier for? And for whom is it motivational and a contributing factor to working out in groups? How can this be incorporated to develop interventions in which participants not only want to participate but will also complete them?

When implementing interventions, whether adapting existing interventions to new contexts or developing new ones, it is essential to examine contextual factors in the implementation context [32]. In our study, there seemed to be an issue with attendance since physiotherapists expressed that participants often did not attend the exercise sessions. This further indicated the importance of examining the context and culture in which the intervention is adapted or developed and involving people who are expected to participate before implementation. Before the implementation of the OA School, no people with OA were involved in the planning of the intervention, and there were only minimal discussions of cultural adaptation in the healthcare system. Meeting the needs and preferences

of those living in the context concerned is essential to achieving cultural safety [29]. Cultural safety and cultural adaptation must be considered when developing or adapting future interventions in the Greenlandic healthcare system. Interviewing people who were only Greenlandic speakers could probably have given us some answers to the attendance issue since they may have had other experiences with the OA School.

Strengths and limitations

All informants could speak Danish, and our study does not include experiences of people who are exclusively Greenlandic speakers. The intervention was implemented in Nuuk, where most of the population resides, and most of the Inuit can speak Danish. We expected our results to differ if some informants had only been Greenlandic speakers.

The variation in informants (OA School status, gender OA in hip or knee, etc.) gave a broad perspective on the OA School, especially from participants with different OA School statuses (in progress, completed, and not completed), strengthening the study’s credibility. We expect the findings of this study to be transferable to other interventions in Greenland and that they can be used when developing future SMEELs in Greenland.

All interviews were conducted at Queen Ingrid’s Hospital in Nuuk, where the SMEEL also took place. For those who did not attend the interviews, we could not acknowledge whether this was because going to the hospital was perceived as a barrier in general.

Conclusion

Based on this qualitative ID study, which aimed to explore people with osteoarthritis’ experiences with the OA School intervention in order to construct SMEELs for people with other lifestyle conditions, we conclude that social and organisational factors influenced participants’ acceptability of the OA School intervention. Social factors such as working out with peers and the relationship between physiotherapists and participants impacted participants’ experiences with the OA School intervention. Organisational factors, such as the time and place of the intervention, influenced whether participants were able to participate in the intervention. Overall, the participants valued the OA School intervention. Knowledge from this study will help us gain insight into what to address when developing future SMEELs in the Greenlandic healthcare system.

Implications for clinical practice

When developing future SMEELs for people with other lifestyle conditions, it is essential to adapt other interventions, including the contextual factors in which the intervention is rooted and its more flexible structure. The importance of involving people with OA can also be emphasised. Not all populated places in Greenland have an attached physiotherapist, and very few physiotherapists in Greenland are Inuit. Telemedicine can help spread the few Indigenous resources in the healthcare system more widely to the remaining part of the population and make the intervention available to more people.

Abbreviations

GLA:D™	Good Life with osteoarthritis in Denmark
HOOS	Hip disability and Osteoarthritis Outcome Score
ID	Interpretive Description
KOOS	Knee injury and Osteoarthritis Outcome Score
RCT	Randomized controlled trial
OA	Osteoarthritis
OA School	Osteoarthritis School
SMEIL	Self-management education and exercise intervention

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Authors' contributions

MHN conducted the study idea in collaboration with MTN. MTN developed the interview guide with input from SS and MHN. MTN conducted the interviews and was responsible for transcribing and initial coding. MTN analysed the data supervised by MHN and MS. MTN drafted the first version of the manuscript. All authors contributed to and approved the final draft of the manuscript.

Availability of data and materials

The qualitative data used in this research are not available to the public to protect the anonymity of all participants. Data in Danish may be made available upon reasonable request from the corresponding author.

Consent for publication

Written informed consent for publication of the personal data was obtained from all the participants.

Disclosure statement

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Ethical approval and consent to participate

The Health Research Ethics Committee in Greenland (reference no. 2022–28) and by the Agency for Health and Prevention in Greenland approved the study, which was conducted according to the Helsinki declaration. All participants received verbal and written information about the study and signed a consent form before the interview. Written information and consent forms were accessible in both Danish and Greenlandic.

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