

Who Does What in Hand Osteoarthritis Care? A Qualitative Study of Boundary Work Between Rheumatologists and Occupational Therapists in Norway

Silje Zink ^{1,2}, Ingvild Kjekken ^{1,2}, Marte Feiring ^{1,2}

¹Diakonhjemmet Hospital, REMEDY Center for Treatment of Rheumatic and Musculoskeletal Diseases, Health Service Research and Innovation Unit, Oslo, Norway; ²Faculty of Health Sciences, Department of Rehabilitation Science and Health Technology, Oslo Metropolitan University, Oslo, Norway

Correspondence: Silje Zink, Diakonhjemmet Hospital, REMEDY Center for Treatment of Rheumatic and Musculoskeletal Diseases, Health Service Research and Innovation Unit, Postboks 23 Vinderen, Oslo, 0319, Norway, Email silje.zink@diakonsyk.no

Purpose: The pressure on professionals within the healthcare workforce is increasing due to staffing shortages, economic demands and changing care models. Through boundary work theories, our study explores how task-shifting in hand osteoarthritis (OA) care impacts the professional boundaries and division of labor between rheumatologists and occupational therapists (OTs) in Norwegian specialist healthcare.

Methodology: Seventeen semi-structured qualitative interviews were conducted at two hospitals in Norway. Participants included ten rheumatologists and five OTs. Data were analyzed using reflexive thematic analysis.

Results: The analysis resulted in three themes (1) Forms of responsibility and task transfers, (2) Circumventing the rules to ensure efficient practices and appropriate patient care, (3) Broadening and specializing; movement of professional demarcations. Overall, we found that medical tasks in hand OA care are increasingly delegated to, and adopted by, OTs, blurring the rheumatologist-OT boundary. Some of the task delegations skirted Norwegian legal boundaries, in efforts to streamline clinic operations. OTs expanded their scope of practice by adopting new tasks, whereas rheumatologist increased their specialist status by shedding unwanted tasks.

Conclusion: Task shifting between rheumatologists and OTs in hand OA care was characterized by boundary blurring activities. The results support a shift in hand OA management from rheumatologists to OTs.

Keywords: professional boundaries, boundary work, interprofessional collaboration, hand osteoarthritis

Introduction

Professional boundaries within the healthcare workforce face escalating pressures due to staffing shortages, economic demands and changing care models.¹⁻⁴ Additionally, the pressure on existing healthcare systems is rising due to increased life expectancy, and an ageing population living with chronic conditions.⁵ To address these challenges, global trends emphasize a shift towards allied health professional-led care, involving the formal or informal delegation of tasks and responsibilities traditionally held by medical doctors (MDs) to other health professionals.⁶⁻¹⁰ This process is implemented at various levels within healthcare models, and is often referred to as *task shifting*.¹¹

Task shifting involves the redistribution of tasks and responsibilities from one occupation to another and may be defined as the process of matching skills to changing needs and opportunities.¹¹ (p1379)

It is a strategy used to address health personnel shortages, optimize available resources and ensure that the most appropriate healthcare professional delivers the best and timeliest patient care.^{4,12} It additionally serves as a tool to create and improve workflow in everyday work.¹³

Allied health professions have gradually expanded their scope of practice, often through task delegation and substitution from higher-ranking professionals such as MDs.^{8,14–16} Within rheumatology, task shifting between MDs and allied health professionals has been implemented and evaluated for various rheumatic conditions. One study explored physiotherapist-led care for patients with knee osteoarthritis (OA) entering specialist healthcare, where findings revealed no discernible differences in health-related quality of life between patients assessed by physiotherapists versus MDs.¹⁷ Nurse-led care has been implemented for patients with rheumatoid arthritis and the results from a systematic review suggested that nurse-led care surpassed traditional physician-led care in accessibility and appropriateness.¹⁸ A systematic review and meta-analysis found that physical therapy delivered by either an occupational therapist (OT) or physiotherapist resulted in improvements of pain and functionality in patients with thumb base OA.¹⁹ Additionally, a review of rheumatologists' role in hand OA management concluded that the quality of the care could be improved if rheumatologists referred patients with hand OA to OTs or physiotherapists more frequently.²⁰ Thus, emerging evidence supports a shift in rheumatic care from MDs to allied health professionals.

The Current Study

The current study is nested within a larger project investigating task shifting between rheumatologists and OTs in hand OA care, where OTs conduct initial patient consultations.²¹ It complements the findings of a previous study,²² by exploring (1) how the division of tasks and responsibilities change between rheumatologists and OTs in Norway and (2) how task shifting influences the professional demarcations between rheumatologists and OTs.

Hand OA is a highly prevalent, chronic rheumatic joint disease²³ common in people aged ≥ 50 years, and more frequently affecting women than men.²⁴ It is considered a heterogeneous disease with multiple risk factors, but the exact cause and pathogenesis is currently unknown.²⁵ Hand OA can cause substantial pain and physical disability, and there are currently no disease-modifying drugs available for the condition.²⁶

The growing number of people living with hand OA places a significant socioeconomic burden on healthcare systems.²⁷ Simultaneously, the rheumatology workforce faces a shortage of rheumatologists, exacerbating existing challenges,^{28,29} resulting in prolonged wait times, delayed surgeries and sub-optimal patient care. In Norwegian healthcare, patients with hand OA are typically referred from general practitioners (GPs) to rheumatologists, who further refer them to OTs in specialist healthcare. OTs play a crucial role in hand OA care as they provide recommended first-line conservative treatment, consisting of non-pharmacological interventions such as information, hand exercises, and the provision of assistive devices outlined in international guidelines of hand OA management.³⁰

The Norwegian Health Personnel Act oversees the work of health professionals, without delineating responsibility for particular tasks and services among different professionals.³¹ An exception exists for “Matters concerning medicine” (section 4), where the primacy of MDs in making diagnosis and treatment decisions is made explicit, aligning with studies of medical dominance.³² Thus, the main task of rheumatologists is to confirm a diagnosis in ambiguous clinical cases and provide pharmacological therapy in limited instances.²⁰ Besides this, they have little to offer compared to OTs. Nevertheless, many patients with already confirmed hand OA are referred to rheumatologists, contributing to bottlenecks and long wait times.^{33,34} Simultaneously, they may receive more appropriate care from OTs.³⁰ A possible solution is task shifting from rheumatologists to OTs, where OTs are the primary assessors during the initial consultation in specialist healthcare.

Theoretical Framework

Significant literature exists that explores professional boundaries and boundary work in the social organization of healthcare.^{1,2,14,35–37} Boundaries are markers of difference which make for separation and exclusion.³⁸ They establish order and classification systems for groups and individuals and can be structural, physical, social, mental, cognitive or symbolic³⁹ and may vary in terms of flexibility and permeability.⁴⁰ Professions are continuously subjected to external and internal forces that affect their demarcations. Such forces may be aimed at creating, maintaining, blurring or shifting boundaries, often called boundary work.³⁵

The concept of boundary work was coined by Gieryn (1983) to describe how scholars used language to distinguish the demarcation between science and non-science.⁴¹ In healthcare, boundary work gained attention as a framework for

understanding how tasks and authority are upheld, contested and changed within healthcare systems.³⁶ Thus, interprofessional collaborations in healthcare may prompt professionals to engage in behaviors aimed at changing the boundaries between or within them.

Boundary work has its own motivations and implications, and can be grouped into categories; the most common being competitive and collaborative boundary work.⁴² Competitive professional boundary work is characterized by defending, contesting and creating boundaries, where the aim is to distinguish themselves from others. At its core, it is a mechanism for acquiring resources, power, social position and status.⁴² Collaborative boundary work, however, is characterized by blurring or realigning boundaries to foster collaboration and facilitate effective accomplishment of everyday work. Here, boundary work tactics focus on connection and boundary realignment between groups.

Nancarrow and Borthwick (2005) developed 4 analytical terms to describe ways in which professional role boundaries may change; diversification, specialization, vertical and horizontal substitution. *Diversification* refers to the expansion of existing professional roles by adding new tasks or finding new ways to perform existing tasks. When novel therapies or medications are introduced, it requires healthcare professionals to adapt and integrate these advancements into their practice. Similarly, the implementation of innovative approaches and technologies in healthcare can catalyze the diversification of professional roles. For instance, the ownership and use of antibiotics by doctors expanded their professional roles and allowed them to claim additional responsibilities, thereby enhancing their autonomy and strengthening their profession.^{1,43} Conversely, *specialization* involves the:

adoption of an increasing level of expertise in a specific disciplinary area that is adopted by a select group of the profession and legitimized through the use of a specific title, membership or closed sub-group of the profession, and generally requires training.¹ (p907)

Specialization is embedded within the medical profession and is associated with higher levels of expertise. Examples include specialized doctors, such as rheumatologists and orthopedic surgeons.

Interdisciplinary changes may be analyzed as *vertical* and *horizontal* substitution. *Vertical substitution* refers to the delegation or adoption of tasks across disciplinary boundaries where the levels of training or expertise are not equivalent between workers.¹ This can occur when tasks typically performed by one profession are delegated to other healthcare staff with lower levels of training. For example, nurses in some countries have gained prescribing rights, and thus perform a task traditionally owned by MDs. This often leads to higher status, and may even form a sub-specialty within their profession, yet often without increased formal reward and status.¹ *Horizontal substitution* occurs

when providers with a similar level of training and expertise, but from different disciplinary backgrounds undertake roles that are normally the domain of another discipline

,¹ (p911) for example substitutions between OTs and physiotherapists. These theoretical underpinnings are used to inform our analysis of how task shifting may impact the professional boundaries between rheumatologists and OTs.

Methodology

Study Design and Setting

This qualitative study took place at two Norwegian hospitals in health regions with different care pathways for patients with hand OA. Hospital A had a traditional rheumatologist-led care pathway where patients referred for hand OA were seen by a rheumatologist. However, as part of a study trial,²¹ Hospital A also implemented a pilot OT-led care pathway in parallel to the rheumatologist-led care pathway. Hospital B had an OT-led care pathway, which was implemented in 2012. All hand OA referrals that indicate a clear case of hand OA were sent directly to an OT, making OTs the primary assessors responsible for the initial consultation.

Research Team

The first author, SZ, is currently a PhD student with a health psychology background, and previous experience working within the field of behavior change and public health research. The co-authors are both professors with OT backgrounds. MF is also a sociologist. An international advisory board was consulted intermittently, comprised by researchers with

diverse professional backgrounds and experience working within the field of hand OA. Additionally, we included two patient research partners, who helped develop the interview guide, assessed the questions and topics for relevance, and provided feedback for improvements.

Participants and Recruitment

Fifteen participants were recruited through purposive sampling,⁴⁴ facilitated by study coordinators at both hospital sites. After agreeing to participate, SZ contacted the participants with further study information and made interview arrangements. See [Table 1](#) for the distribution of participants per hospital. The majority of participants were female (n= 13), between 30 and 65 years of age and had over 20 years of experience working within the field of rheumatology. See [Table 2](#) for relevant participant characteristics. Interviews lasted 90 minutes on average (range: 45–120 minutes).

Data Generation

Data were generated through individual semi-structured interviews, following a topic guide consisting of six broad topics to guide the conversations. Follow-up questions and prompts were included to ensure conversational flow, encourage reflections and provide thick descriptions. One master topic guide was developed with questions relevant to each professional group at each hospital site. The guide was tailored to include questions pertaining specifically to each profession's practice to capture profession-specific knowledge. Context-specific questions were also included. The semi-structured interview guide was piloted with a rheumatologist and an OT; feedback was incorporated and used to amend the guide, enhancing relevance and clarity.

All interviews were conducted by the first author and originally planned as in-person interviews. Due to COVID-19 restrictions, 11 interviews were conducted in person, one over the telephone and five via Zoom (2021). To ensure safe data handling, we used a recording app developed by the University of Oslo, which immediately encrypts audio files and transfers them to secure platforms for sensitive data storage in compliance with Norwegian privacy regulations. We used the concept of information power to guide our decisions about sample size and information adequacy.⁴⁵ Information power is based on the study aim, participant specificity, use of established theory, dialogue quality and analysis strategy.⁴⁵ During the data analysis, the research team deemed that the information power criteria were not fully met in certain areas

Table 1 Distribution of Participants per Hospital. Numbers in Brackets Refer to Follow-Up Interviews

| | Hospital A | Hospital B | Total |
|-------------------------|------------|------------|-------|
| Rheumatologists | 6 | 4 | 10 |
| Occupational Therapists | 3(1) | 2(1) | 5 |
| Total | 9 | 6 | 15 |

Table 2 Relevant Participant Characteristics

| | Rheumatologists | Occupational Therapists |
|-----------------------------------------------|-----------------|-------------------------|
| Gender | | |
| Male | 2 | – |
| Female | 8 | 5 |
| Age | | |
| Under 40 | – | 1 |
| 40–60 | 7 | 3 |
| Over 60 | 3 | 1 |
| Years of professional experience with hand OA | | |
| Under 5 | – | 1 |
| 5–20 | 3 | 2 |
| 20–40 | 7 | 2 |

of the empirical material. To enhance information power and ensure adequate data for analysis, we included one additional rheumatologist from Hospital A and scheduled two follow-up interviews with one OT at each hospital. Following the inclusion of additional interviews, the information power was considered satisfactory, and informed our decision to stop at 17 interviews.

Data Analysis

The analysis was underpinned by critical realism,⁴⁶ which combines a realist ontology – assuming there is something “real” to discover – with a relativistic epistemology,⁴⁷ which reflects the belief that reality is unattainable in its purest form because our perception of it is inevitably shaped by social context, social positioning and language.⁴⁸ The analyses were conducted using reflexive thematic analysis (RTA), outlined by Braun and Clarke,⁴⁹ to report patterns of shared meaning within the data. They were primarily conducted independently by SZ, as RTA encourages a single-coder approach, but discussions with the research team regarding the results were held intermittently. The majority of interviews were transcribed manually and verbatim by SZ (one interview was transcribed by a research assistant, and follow-up interviews were transcribed automatically using Whisper software), allowing for a deep level of familiarization and immersion in the data from the outset.⁵⁰ Following transcription, the data were read and re-read before the initial coding took place. The first round of coding was done inductively, where SZ developed a series of codes at both the semantic and latent levels. Last and first authors then discussed codes and interpretations and introduced relevant theories to enhance the analytical process, resulting in a second round of coding. Codes were grouped together, and initial themes consisting of patterns of shared meaning were generated. Finally, the themes were refined until they were considered adequate and representative of the data. Data structuring was completed in NVivo R1, 2020.

Ethical Considerations

The project was granted ethical approval by The Regional Committee for Medical and Health Research Ethics (case numbers 2017/742, 2020/8450), and the Norwegian Centre for Research Data (reference number 197320). We conducted the study in accordance with the Declaration of Helsinki. Participants were informed of the study objectives, and that they could withdraw at any point. Participants provided written consent, which included approval for the publication of their anonymized responses, and were assured of the confidentiality of their data. Throughout interactions with participants, SZ, as a PhD student, emphasized her background in health psychology and minimal experience with clinical work and hand OA. This clarification was aimed at ensuring participants understood that the research did not intend to evaluate their professional knowledge or abilities, but rather viewed them as experts in their professional fields.

Results

The qualitative analysis resulted in 3 themes: (1) *forms of responsibility and task transfers* – how interprofessional task shifting occurs between rheumatologists and OTs in hand OA care; (2) *Circumventing the rules to ensure efficient practices and appropriate patient care* – how task shifting sometimes leads to workarounds that contradict lawful practices within healthcare systems; (3) *Broadening and specializing: movement of professional demarcations* – how task shifting impacts the boundaries of the two professions.

Forms of Responsibility and Task Transfers

We found that OTs conducted several new, medically-related tasks previously outside their scope of practice, due to vertical delegation¹ from rheumatologists. For example, our participants expressed how OTs have increased engagement with differential diagnostics, where OTs are more involved in identifying potential alternative conditions that might share similar symptoms with hand OA, especially when they are the primary assessors for this patient group:

It is my responsibility to filter out the ones that maybe have something else than hand osteoarthritis. I have uncovered people with psoriatic arthritis. It is pretty similar and not so easy to distinguish. (OT1B)

Given that hand OA symptoms can overlap with several other diagnoses,⁵¹ our respondents highlight the importance for OTs to recognize and differentiate these conditions. OTs describe that they experience more complex hand OA

consultations, with an increased influx of patients with diffuse symptoms. As a response to this shift, OTs state that they changed the way they work; they are more meticulous and attentive in their patient consultations, to ensure differential diagnoses are not missed:

Things have actually become quite different. I don't know if it has to do with the kinds of patients we see, or generally that we see more of not just osteoarthritis, but osteoarthritis plus other things. You think a bit more about what else it could be and examine them more thoroughly in a way. (OT3A)

To do this, OTs highlight the importance of experiential knowledge:

It requires that you are versed in spotting differential diagnoses and able to set them apart from hand osteoarthritis if there is something different. (OT1B)

This notion was echoed by rheumatologists:

They must have seen a lot of hands and a lot of hand osteoarthritis to pick out what's not hand osteoarthritis, so it's useful to have seen a lot of this for them to manage differential diagnostics. (RT4A)

Despite informally delegating diagnostic work to OTs, rheumatologists were clear about their role as diagnosticians:

The occupational therapists have to be able to sniff out if there is something more or something else than osteoarthritis, but they can't sniff out *what*. So that no, they cannot diagnose, but they can filter out the ones who need to come for a differential diagnostic assessment by a doctor. (RT4A)

The rheumatologists viewed OTs as

sifters' rather than diagnosticians, and considered diagnosing a key task within their own jurisdiction: 'Our responsibility is first and foremost to make a diagnosis' (RT2B). By clearly distinguishing themselves and positioning themselves above OTs in diagnostic work, they protect their position within the medical hierarchy,³² while acknowledging OTs

ability to engage in some level of differential diagnostics.

OTs also discussed how they, through agreement with rheumatologists, had begun to inform patients about pharmacological therapies, particularly analgesics:

We give some information to patients about medicines now, and we haven't really done that before. Previously, we asked them what they take, and said "this is something you have to discuss with your doctor", but now, we have together with the rheumatologists agreed on what we can recommend. (OT1A)

Moreover, one OT discussed how she even made drug recommendations to GPs in the patient case summaries she sent:

I allow myself to write to the GP that we have discussed pharmacological treatment and that Vimovo is considered the first choice in relation to hand osteoarthritis. I allow myself to write that so it's kind of a request to the GP. I might move outside my area but at the same time it follows international guidelines, so I refer to them. (OT1B)

Information about medical pain management was previously not within OTs' scope of practice. The OT recognized that she crossed a disciplinary boundary, which made her particularly careful about supporting her recommendations with evidence-based practice.

At the time of interviewing, both hospitals ran injection clinics where patients with hand OA and joint inflammation could be referred. Traditionally, these referrals were exclusively done by MDs, as they require diagnostic evaluations and decision-making about medical treatment. Now, however, OTs were able to refer patients directly for corticosteroid injections without consulting a rheumatologist:

We are more free - the rheumatologists have said that we can refer patients to the injection clinic if we see the need for it, without discussing it with them. (OT2A)

OTs simultaneously experienced high levels of trust from the rheumatologists, with one OT stating:

They trust our assessments a lot. I think it has only happened once actually that my referral was stopped by a rheumatologist. (OT2B)

These results indicate vertical substitution of several medical tasks and responsibilities from rheumatologists to OTs at both hospitals, where OTs now conduct tasks that traditionally belong within the rheumatologists' jurisdiction.

Circumventing the Rules to Ensure Efficient Practices and Appropriate Patient Care

Some of the delegated tasks occasionally skirted Norwegian legal boundaries. This primarily occurred at Hospital A. In interviews, OTs at Hospital A expressed that they had permission to refer patients for diagnostic imaging without consulting a rheumatologist. Moreover, to authorize referrals, OTs made them in a rheumatologist's name by using their credentials:

Yeah, with X-rays and things like that. We are allowed to just use the doctor's name and ID; we just go in and get it. We have in a way gained authority from the doctor to do this...so we don't need their signature. (OT2A)

Traditionally, rheumatologists were responsible for authorizing diagnostic imaging because diagnostic judgment and risk assessment were needed regarding X-ray exposure. However, responsibility for these assessments was vertically delegated to OTs. In interviews, OTs discussed how it seemed counterintuitive that a rheumatologist who was uninvolved in the patient and their care, should make the referral:

We have a close collaboration, which makes them go 'yeah but just refer in my name' as opposed to a rheumatologist having to go in and refer without having seen the patient. (OT1A)

This transfer of signature and approval was based on verbal agreement, as confirmed by a rheumatologist in discussions with SZ:

RT6A: The OTs often order X-rays on me, if they feel a need for it (...). We have an agreement on this.

SZ: Is it a formalized agreement?

RT6A: No, we have only talked about it.

Although rheumatologists transfer the task of making diagnostic imaging referrals to OTs, they still hold medical responsibility because their credentials are necessary for task completion. Referrals cannot proceed without their sign-off, leading to OTs utilizing medical professional's IDs. These workarounds contribute to the maintenance of a hierarchical structure within the healthcare system and highlight medical authority and dominance.

A similar example is the application for hand orthoses by OTs in a rheumatologist's name. While OTs historically conducted this task, the attached administrative responsibility was vertically delegated. OTs at Hospital A report being permitted to prescribe these devices themselves, using doctors' signatures:

They facilitate for us, so that we can complete the referral forms for orthopedic assistive devices because it's just easier if we do it. (OT3A)

Responsibility for the task shifted from rheumatologists to OTs, yet task completion still hinges on a rheumatologist's credentials. OTs cannot finalize the task using their own signatures. Rheumatologists consider this practice inefficient, advocating for OTs to file the applications themselves using their own credentials:

Occupational therapists must also have the opportunity to prescribe orthopedic assistive devices, so that they don't need to go via a doctor. We have sorted it here and allowed them to do it in some doctor's name. It is ridiculous that they have to go back and we sign it. So that there is no delay. If they need a thumb orthosis or wrist orthosis or something, they are allowed to prescribe them. (RT1A)

Thus, rheumatologists facilitate and employ workarounds that bypass official regulations to enhance patient care, streamline clinic operations and save time.

At Hospital B, the practices differed, and workarounds were not employed. One OT described these practices with dismay:

I have to physically go to a doctor or send the application form with the internal post at the hospital. When I send it, I take the application form and put it in the doctor's postal shelf. Then, they sign it. Then, they put it back in the shelf. Then, we pick it up and send it. It takes a lot of time. (OT2B)

She highlighted that these patients are solely assessed by OTs, raising ethical questions about the requirement for a rheumatologist's signature:

It requires a doctor's signature. And that doctor has had nothing to do with the evaluation of the patient, had nothing to do with the evaluation of treatment and so on. (OT2B)

She found it odd that tasks they are legally authorized to perform cannot be fully executed by them because the task's administrative component disallows them to authorize applications for the necessary orthopedic device:

We are authorized by statutory legislation that we, occupational therapists, can fit orthoses. But we are not allowed to apply for them. So we have made progress now that it is a statutory regulation...but I think absolutely we should be able to apply for it. (OT2B)

Furthermore, she described how such referral practices undermine their competence and autonomy, expressing a desire to use their own names to complete the task:

It would acknowledge our competence if we had the opportunity to sign these forms ourselves. (OT2B)

The existing system governing referrals compels healthcare professionals to find workarounds for formal rules. These circumventions prioritize time management and optimal patient care. Allowing OTs to use rheumatologists' signatures and IDs expedites procedures, unlike the standardized, more time-consuming process at Hospital B. The workarounds showcase a high level of trust in OTs' competencies, fostering collaborative practices. However, this practice still showcases the status and power of rheumatologists, given that their credentials remain pivotal for task completion.

Broadening and Specializing: Movement of Professional Demarcations

The analysis indicates that task and responsibility shifts affected the professional boundaries of rheumatologists and OTs. Delegations from rheumatologists to OTs expanded OT's scope of practice and widened their professional boundaries:

I think maybe we have in a way become broader and better at seeing...not just walking around with our hand osteoarthritis glasses on but that we think about what else it can be. (OT3A)

OTs at both hospitals consistently viewed the broadening of their role favorably. An OT at Hospital B described the shift as: "a very exciting challenge" (OT1B). Another OT described a sense of accomplishment when they managed to successfully identify differential diagnoses as part of their expanded role:

And it's kind of weird to say, but I was satisfied when I managed to catch that 'there is something else here' and then it turned out that the patient actually had something else. There was one that had hemochromatosis and one that had rheumatoid arthritis that had not been discovered. (OT1A)

OTs described how working outside their traditional scope of practice using different methods to piece together the clinical picture as professionally stimulating, especially when they adopted more investigative tasks:

It's kind of cool when you find stuff out. If there are things that aren't quite clear, like what causes the symptoms, that you assess both with x-rays and that you manage to unravel what the problems actually are. (OT3A)

Being able to master the responsibility that came with extended roles increased OTs' confidence in themselves, which was viewed as imperative when conducting the first consultation.

It is reassuring that you actually manage ... not that you manage to diagnose, but that you are able to catch if there is something else because that's kind of what we have to be confident that we manage to do. (OT1A)

Although the extended professional role was positively viewed, one OT expressed feelings of anxiousness, which accompanied the added responsibility of being the first point of contact for this patient group. In addition to being responsible for primary hand OA management, they also acted as “gatekeepers” to further treatment:

It was scary for me when I started taking over the patients who were originally referred to a rheumatologist ... it's a responsibility you receive when you have to sit there and actually assess whether or not the patient needs to see a doctor, and what you advise them to do. (OT2B)

To further extend their professional roles, OTs reported a wish to enhance their competence by incorporating technology such as ultrasound into their scope of practice:

I think it would be an advantage if we could use ultrasound to almost screen if you have a patient and you're wondering 'hmm, is there any inflammation here?' (OT1A)

With their increase in diagnostic and evaluative work, OTs consider ultrasound to be an important tool. They consider rheumatologists to be privileged in their consultations compared to them, due to their ability to use ultrasound:

When doing an assessment, rheumatologists have an advantage because they use ultrasound, so they have the opportunity to look inside the joints. (OT1A)

However, they were very clear about the distinction of usage, as they emphasized that they were not using ultrasound the same way as doctors:

The rheumatologists use it for diagnosing. I shall not diagnose, but I have to be able to screen the patients and then call on a rheumatologist. (OT1A)

OTs assert that diagnostic work remains the domain of medical doctors. Despite the broadening of their professional boundaries, they are cautious about encroaching excessively on MDs task area: “It is still the doctor who. yeah, they are doctors and we are occupational therapists” (OT1A).

An important aspect of the extended OT role was clarification of professional roles to the patient. With OTs as primary assessors, they expressed that they intentionally spent time with patients explaining the referral: “We have to start the consultation a bit differently, and explain to them why they are seen by an OT and not a doctor” (OT2B). OTs stressed the importance of providing clarification at the beginning of the consultation because it set the tone for the interaction. Some incidents were reported where patients had expressed confusion or frustration about being seen by an OT when they were initially expecting to see a rheumatologist:

Because we can't deny that there are quite a few patients when they are referred to a rheumatologist, and then they come to us, that they can be a bit dissatisfied with that. And it's pretty obvious when they come in and say, 'I expect to see a doctor when I am referred to a doctor, so I don't understand what I am doing here.' That's a pretty common sentence that we hear pretty often. (OT2B)

This was described as an important aspect of reconfigured role boundaries. Transparency of the referral process, and managing patient expectations starting at the GP level, was considered pivotal.

The professional demarcation of the rheumatologists changed differently. While the OTs expanded and broadened their scope of practice, rheumatologists increasingly specialized due to vertical delegation of certain tasks. They narrowed down their scope of practice, but retained tasks considered to be of higher status. These tasks were profession-specific and required the use of medicine and medical interventions to treat medical problems, such as administering corticosteroid injections and using ultrasound to diagnose patients. By retaining tasks only they could perform based on their training and expertise, they enhanced their specialist status. Because they lacked a medical solution or treatment for hand OA, they felt limited in what they could offer this patient group:

If you see it from our point of view, there is very little to do about hand osteoarthritis. We may give a corticosteroid injection if it is inflamed. (RT2A)

Making a diagnosis was reported to be their main responsibility:

I think my biggest contribution is diagnosing, and then I, as a rheumatologist, don't have anything further to contribute with in terms of treatment. (RT3A)

In cases where the diagnosis was unclear, rheumatologists perceived it as their responsibility to clarify this and arrive at the correct diagnosis:

My biggest task is differential diagnosis, confirm the diagnosis and give advice and information. (RT4A)

Rheumatologists explained that the lack of pharmacological treatment for osteoarthritis supported their wish to vertically delegate tasks related to hand OA to other health professionals and utilize their time elsewhere, preferably on conditions that could be medically managed: "Because there is no solution and we can't solve osteoarthritis the same way we can solve rheumatoid arthritis" (RT1A). Due to lack of medical treatment for hand OA, tasks related to this diagnosis were described as boring and unattractive:

Nothing works for hand OA. And it's extremely uninspiring to evaluate whether NSAIDs or paracetamol gives the same bad effect. (RT1A)

They explained that, until pharmacological treatment potentially becomes available for hand OA, they fail to see the benefit of their involvement with these patients. If, however, new pharmacological treatment becomes available, they wish to reinstate themselves in hand OA care:

But like I said, things can change if we suddenly get a medicine that works, because then us doctors have to join ... But as long as we don't have that, it's okay the way it is. (RT2B)

Rheumatologists felt that they were the incorrect professionals to care for patients with hand OA. They discussed that treatment recommendations in international guidelines match the expertise of OTs, who they claimed were better suited to care for this patient group:

They know a lot better than us what exists of assistive devices and what can help the patients in their daily life to achieve good physical functioning. They don't need to come to a medical specialist, they don't need it. They don't need to be referred to us. (RT1A)

Rheumatologists at hospital B reported that their capacity had increased following the implementation of the OT-led care pathway, contributing to reduced wait times. They also had more time to spend on other patient groups, who needed their expertise more:

We've stopped seeing the least ill patients. And then we can concentrate more on seeing the sickest patients, which is sensible. (RT3B)

By delegating the tasks and responsibilities associated with this patient group to OTs, they increase their specialist status by retaining tasks only they can perform. They advocated for more time to be spent treating patients who they believe fit into their scope of medical practice. Thus, the tasks that remain within rheumatologists' jurisdiction became more specialized as their non-pharmacological tasks decreased. By vertically delegating these tasks, they enhanced their position as specialists.

Discussion

This study aimed to explore how the division of tasks change between Norwegian rheumatologists and OTs in hand OA care and how task shifting influences professional boundaries between the two occupational groups. We employed the concept of boundary work to guide our analysis. Our results showed changes in professional boundaries. Interprofessional changes occurred through vertical substitution, where certain tasks traditionally performed by rheumatologists were delegated to OTs, blurring the rheumatologist–OT boundary. Intraprofessional changes occurred as a consequence of these delegations, where the demarcations of the professional boundaries moved. OTs' professional

roles expanded and became diversified when adopting medical tasks. Rheumatologists' boundaries became narrower but more *specialized* by relinquishing unwanted tasks.

Blurred Boundaries and Collaborative Boundary Work

Our results indicate that task shifting in this particular context facilitates interprofessional collaborative boundary work.³⁵ According to Langley et al, collaborative boundary work is characterized by people realigning the boundaries separating them to facilitate collaboration.⁴² In our study, rheumatologists delegated several tasks traditionally within their jurisdiction – including work related to differential diagnostics, referrals to injection clinics, diagnostic imaging referrals and orthopedic assistive device prescriptions – to OTs to ensure appropriate and timely patient care and streamline clinic operations.¹ The boundaries between OTs and rheumatologists were downplayed by renegotiating the borders surrounding these tasks.²²

Although there is a clear shift in tasks between rheumatologists and OTs, symbolic boundaries remain, which uphold rheumatologists position within the healthcare hierarchy.³⁸ According to Lamont et al, symbolic boundaries have a key role in the creation of inequality and power.⁵² In our study, this was showcased by OTs inability to perform certain tasks in their own names. Rheumatologists credentials operated as the “activating agents” for certain tasks, specifically referrals, which emphasizes rheumatologists' higher status and authority. The referral process initiated by a medical doctor's identification is crucial for OTs to perform tasks within their expanded roles, highlighting the continued perception of MDs as the primary authority figures, despite the delegation of medical tasks. These symbolic boundaries may have implications for the autonomy of OTs. Our results suggest that OTs experience discrediting of their competence when they are unable to complete task such as orthotics prescriptions in their own names. This aligns with findings from a review of professional autonomy among physiotherapists, who reported restrictions on decision-making and practice due to medical interference and dominance.⁵³ Awareness of the symbolic boundaries and power differentials is important to promote collaborative work in patient-centered care. By acknowledging symbolic boundaries, healthcare systems can work towards a more integrated and cohesive approach.

Our analysis indicates that rheumatologists delegate tasks and responsibilities related to hand OA for several reasons. First, they reported that patients could receive better care from OTs who possess specialized knowledge within this field. Second, rheumatologists acknowledged that they lacked a therapeutic solution for hand OA. Additionally, they mentioned that hand OA was an uninspiring condition to work with. This aligns with Hughes' (1958) concept of “dirty work” where high-status professionals, such as rheumatologists, retain the most desirable work, delegating the less desirable work to other professionals of a lower status.⁵⁴ In this case, the tasks related to hand OA management were considered low-status and superfluous to their professional role.

The perception of hand OA as a low-status condition may also contribute to the willingness of rheumatologists to secede much of their responsibility with this patient group. Chronic conditions without available pharmacological therapies often fail to reach a high enough status to be of sufficient interest to specialized doctors. Album and Westin's (2008) study on prestige hierarchies of diseases, found that chronic conditions without visible or available treatment options, along with elderly patients, ranked lowest in terms of status among physicians and medical students.⁵⁵ In our data one rheumatologist discussed how they would be reinstating their involvement if pharmacological treatment modalities became available. This suggests that the hand OA patients regain their attractiveness when pharmacological modalities exist, and thus the tasks surrounding their care are redefined.

Despite the absence of manifest competition, the results show that doctors retain tasks associated with higher status. According to Currie et al, the professional elite retain their power and status by delegating routine tasks to other health professionals. It was argued by the rheumatologists that the tasks surrounding hand OA care are low-skilled and require little expertise. Although rheumatologists are already considered specialist medical doctors, they adopted an increasing level of expertise by delegating tasks within their jurisdiction that were solvable by another professional group.

Circumventions and Workarounds

A significant finding in our study is that vertical substitution of tasks sometimes leads to workarounds that circumvent formal rules and regulations. To ensure effective operations and resource use, health professionals apply workarounds, which involves improvising within the existing work system to overcome obstacles or achieve desired goals.⁵⁶ According to

Abbott (1988), professionals who work together within organizations often adapt to the specific demands of their specific workplace, in order to ensure worksite flow.¹³ This means that professional boundaries often dissipate, especially in overworked worksites, such as the hospital. Thus, sub-ordinate professionals learn a “craft version” of a given profession’s knowledge system, via knowledge transfers on the job.¹³ This is also referred to as workplace assimilation. In this study, OTs used a doctor’s signature to authorize referrals for diagnostic imaging to support their work in differential diagnostics and disease monitoring. However, in Norway, medical radiation is strictly regulated by the Health Personnel Act and the Norwegian Radiation and Nuclear Safety Authority, and only a few professional groups are legally allowed to refer patients for diagnostic imaging; OTs are not one of them. This raises concerns about OTs making medical judgments without proper training and formal qualifications, as well as the potential risks of overuse of diagnostic imaging. Recent studies have documented an exponential growth rate for X-ray examinations, causing concern about the potential harm caused by exposure to X-ray irradiation.⁵⁷ Moreover, one study found a medical overuse of diagnostic imaging in rheumatology practices⁵⁸ specifically, further highlighting the need for discussions about this type of task shifting.

A Swedish study aimed to formalize such practices by evaluating an extended physiotherapist role, where physiotherapists in primary care referred patients with musculoskeletal disorders for plain X-rays.⁵⁹ They found that all the referrals were of good quality according to basic quality criteria and concluded that physiotherapists’ extended role was safe and feasible. Importantly, as part of formalizing and implementing this procedure, the researchers provided a one-day training program to physiotherapists within the study, ensuring the acquisition of required knowledge before allowing them to make x-ray referrals. The program consisted of education about radiation physics, the x-ray examination, and how to write referrals. In our context, however, such formalized procedures and training practices were absent, making it difficult to judge the safety and appropriateness of X-ray referrals. Moreover, the referrals were conducted using a rheumatologist’s credentials in their absence. Credential sharing however, is not uncommon, with one study documenting high prevalence of credential access-sharing in healthcare, especially when accessing electronic medical records.⁶⁰ OTs are expected to provide relevant and efficient patient care, which may create conflict between their duty towards high-quality, timely patient care and their obligation to meet security regulations. This conflict creates a need for them to be granted privileges currently ungranted to them, leading to rule circumventions.

Shifting boundaries and enhancing the OTs roles made it easier and less time-consuming to complete certain tasks, such as ordering X-rays and applying for orthopedic assistive devices, enabling collaborations to increase efficiency.¹⁴ The health professionals were clear about this being a time-saving strategy. In this instance, boundary blurring facilitated workarounds, as informal agreements circumventing the rules were made by rheumatologists and OTs. Circumventions, however, may lead to security breaches and misuse of sensitive patient data. Policy changes may be needed to better regulate credential sharing and afford access to a broader group of health professionals to ensure the security of electronic medical records.

Increasing awareness of how and what processes are worked around in this context permits the reconfiguration of these processes to resolve gaps.⁶¹ For the authorities, task shifting is a tool to enhance efficiency in line with new public management strategies¹⁴ and as task shifting continues to gain prominence and become increasingly implemented within healthcare systems, it is crucial that policy makers are aware of potential pitfalls. The blurring of professional boundaries and the informal agreements that lead to rule circumvention need to be addressed in policy design. With task shifting becoming increasingly common in healthcare systems, policies could aim to resolve breaches, ensure safety and appropriateness of care, and maintain regulatory compliance.

Clinical Implications

The study’s findings have several implications for clinical practice in hand OA care. With OTs adopting an expanded role, there is a clear need for adequate training and support to equip them with the skills and technologies required for tasks traditionally performed by rheumatologists. The study also brings attention to ethical and legal considerations arising from workarounds, such as the use of rheumatologists’ credentials by OTs, raising concerns around legal liability, and patient safety. While task shifting can enhance clinical efficiency, robust systems and clear guidelines must be in place to manage task delegation, promoting professional integrity and patient care without compromising regulatory adherence.

Strengths & Limitations

Our study design and theoretical stance allowed us to gain a deep and comprehensive understanding of the task shifting practices of rheumatologists and OTs in hand OA management. We strived to provide a detailed analysis and thick descriptions of our data to enhance transferability of the results.⁶² However, there are some limitations. The data obtained in this study stems from individual interviews at the workplace level. Focus group interviews might have offered interesting interactional insights into boundary work dynamics within interprofessional teams. However, we chose individual interviews, primarily due to possible power disparities between rheumatologists and OTs, which could hamper conversational flow within possible focus groups.⁶³ We also believe that interviewing representatives of the professional association might have offered important supplementary information. In addition, observational data might have strengthened our holistic understanding of the boundary work that occurred between rheumatologists and OTs.

Future Directions

Future research may address the limitations presented above by including focus group interviews, observation and key informants such as professional representatives.

We also need future studies that explore how the political and organizational contexts of referral systems uphold task shifting barriers and how professional hierarchies create demarcations and hindrances for safe and effective care. As the study showed that OTs welcomed the expansion of their professional roles, further research may also explore how such role expansions impact job satisfaction and retention among OTs across different hospitals or regions. In addition, a comparative study across different healthcare systems could provide valuable insights into how task shifting and boundary-blurring activities are managed in different cultural and regulatory contexts. In this particular study, the professionals involved in the task-shifting in care of hand OA patients were rheumatologists and OTs. We do however recognize that task-shifting to other health professionals, such as physiotherapists may be relevant in other countries. Lastly, future research may investigate how policy changes can effectively regulate and support task shifting without compromising the quality of healthcare or creating undue burdens on health professionals.

Conclusion

In this article, we have shown how task shifting takes the form of collaborative boundary work between OTs and rheumatologists in hand OA care at the workplace level in two Norwegian hospitals, supporting a shift in hand OA care from rheumatologists to OTs. Collaborative boundary work was characterized by boundary-blurring activities,⁴² denoted by vertical substitution of tasks within the rheumatologist's jurisdiction to OTs, in turn affecting their professional boundaries. OTs adopting tasks that belong within rheumatologists' jurisdiction expanded their professional role, and was positively viewed by both OTs and rheumatologists. Rheumatologists relinquished tasks related to hand OA care, as they viewed them as uninteresting and beneath their level of expertise. However, some of the delegated tasks still required their credentials for task completion, which prompted professionals to engage in rule-circumventing workarounds. This upholds the authority and power of medical elites, whilst simultaneously streamlining clinic operations.

This study offers insight into the processes that occur when the healthcare workforce is reconfigured. Importantly, it demonstrates how task shifting may force health professionals to engage in workarounds that circumvent rules and regulations at the workplace level. We need future studies that explore how the political and organizational contexts of referral systems uphold task shifting barriers and how professional hierarchies create demarcations and hindrances for safe and effective care.

Acknowledgment

The abstract of this paper was presented at the EULAR 2024 Conference as an Oral Abstract Presentation with interim findings. The presentation abstract was published in 'Scientific Abstracts' in *Annals of the Rheumatic Diseases* 2024;83:210–211: DOI:10.1136/annrhumdis-2024-eular.1785

Disclosure

Professor Marte Feiring reports grants from The Research Council of Norway, during the conduct of the study. The authors report no other conflicts of interest in this work.

References

1. Nancarrow SA, Borthwick AM. Dynamic professional boundaries in the healthcare workforce. *Sociol Health Illn.* 2005;27(7):897–919. doi:10.1111/j.1467-9566.2005.00463.x
2. King O, Nancarrow SA, Borthwick AM, Grace S. Contested professional role boundaries in health care: a systematic review of the literature. *J Foot Ankle Res.* 2015;8(1):1–9. doi:10.1186/s13047-015-0061-1
3. De Maeseneer J, Bourek A, McKee M, Brouwer W. *Task Shifting and Health System Design: Report of the Expert Panel on Effective Ways of Investing in Health (EXPH)*; 2019. doi:10.2875/74370
4. McKee M, Dubois C-A, Sibbald B. Changing professional boundaries. In: Dubois C-A, McKee M, Nolte E, editors. *Human Resources for Health in Europe*. 2006:63–78.
5. Yeganeh H. An analysis of emerging trends and transformations in global healthcare. *Int J Health Gov.* 2019;24(2):169–180.
6. Joshi R, Thrift AG, Smith C, et al. Task-shifting for cardiovascular risk factor management: lessons from the Global Alliance for Chronic Diseases. *BMJ Glob Health.* 2018;3(Suppl 3):e001092. doi:10.1136/bmjgh-2018-001092
7. McPherson K, Kersten P, George S, et al. A systematic review of evidence about extended roles for allied health professionals. *J Health Serv Res Policy.* 2006;11(4):240–247. doi:10.1258/135581906778476544
8. Saxon RL, Gray MA, Oprescu FI. Extended roles for allied health professionals: an updated systematic review of the evidence. *J Multidiscip Healthc.* 2014;7:479–488. doi:10.2147/JMDH.S66746
9. Skinner EH, Haines KJ, Hayes K, et al. Future of specialised roles in allied health practice: who is responsible? *Aust Health Rev.* 2015;39(3):255–259. doi:10.1071/AH14213
10. Algeo N, Aitken LM. The evolving role of occupational therapists in adult critical care in England: a mixed methods design using role theory. *Ir J Occup Ther.* 2019;47(2):74–94. doi:10.1108/IJOT-04-2019-0005
11. van Schalkwyk MC, Bourek A, Kringos DS, et al. The best person (or machine) for the job: rethinking task shifting in healthcare. *Health Policy.* 2020;124(12):1379–1386. doi:10.1016/j.healthpol.2020.08.008
12. Orkin AM, Rao S, Venugopal J, et al. Conceptual framework for task shifting and task sharing: an international Delphi study. *Hum Resour Health.* 2021;19(1):1–8. doi:10.1186/s12960-021-00605-z
13. Abbott A. *The System of Professions: An Essay on the Division of Expert Labor*. University of Chicago Press; 1988.
14. Nancarrow S, Borthwick A. *The Allied Health Professions: A Sociological Perspective*. 1st ed. Policy Press; 2021.
15. Sheer B, Wong FKY. The development of advanced nursing practice globally. *J Nurs Scholarsh.* 2008;40(3):204–211. doi:10.1111/j.1547-5069.2008.00242.x
16. Burley S, Cox R, Di Tommaso A, Molineux M. Primary Contact Occupational Therapy Hand Clinics: the pull of an occupational perspective. *Aust Occup Ther J.* 2018;65(6):533–543. doi:10.1111/1440-1630.12507
17. C-m H, Thorstensson CA, Nordeman L. Physiotherapist as primary assessor for patients with suspected knee osteoarthritis in primary care—a randomised controlled pragmatic study. *BMC Musculoskelet Disord.* 2019;20(1):1–12. doi:10.1186/s12891-018-2378-y
18. Garner S, Lopatina E, Rankin JA, Marshall DA. Nurse-led Care for Patients with Rheumatoid Arthritis: a Systematic Review of the Effect on Quality of Care. *J Rheumatol.* 2017;44(6):757–765. doi:10.3899/jrheum.160535
19. Ahern M, Skyllas J, Wajon A, Hush J. The effectiveness of physical therapies for patients with base of thumb osteoarthritis: systematic review and meta-analysis. *Musculoskelet Sci Pract.* 2018;35:46–54. doi:10.1016/j.msksp.2018.02.005
20. Terpstra SE, van de Stadt LA, Kloppenburg M. The management of hand osteoarthritis: the rheumatologist's perspective. *J Hand Ther.* 2022;35(3):322–331. doi:10.1016/j.jht.2022.08.001
21. Kjekken I, Bergsmark K, Haugen IK, et al. Task shifting in the care for patients with hand osteoarthritis. Protocol for a randomized controlled non-inferiority trial. *BMC Musculoskelet Disord.* 2021;22(1):1–11. doi:10.1186/s12891-021-04019-9
22. Magnussen HJ, Kjekken I, Pinxterhuis I, Sjøvold TA, Feiring M. Negotiating Professional Tasks in a Hospital: a Qualitative Study of Rheumatologists and Occupational Therapists in the Management of Hand Osteoarthritis. *J Multidiscip Healthc.* 2023;Volume 16:3057–3074. doi:10.2147/JMDH.S425640
23. Qin J, Barbour KE, Murphy LB, et al. Lifetime Risk of Symptomatic Hand Osteoarthritis: the Johnston County Osteoarthritis Project. *Arthritis Rheumatol.* 2017;69(6):1204–1212. doi:10.1002/art.40097
24. Kalichman L, Hernández-Molina G. Hand osteoarthritis: an Epidemiological perspective. *Semin Arthritis Rheum.* 2010;39(6):465–476. doi:10.1016/j.semarthrit.2009.03.001
25. Kloppenburg M, Kwok W-Y. Hand osteoarthritis—a heterogeneous disorder. *Nat Rev Rheumatol.* 2012;8(1):22–31. doi:10.1038/nrrheum.2011.170
26. Haugen I. Hand osteoarthritis: current knowledge and new ideas. *Scand J Rheumatol.* 2016;45(sup128):58–63. doi:10.1080/03009742.2016.1203021
27. Hitzl W, Stamm T, Kloppenburg M, Ritter M, Gaisberger M, van der Zee-Neuen A. Projected number of osteoarthritis patients in Austria for the next decades—quantifying the necessity of treatment and prevention strategies in Europe. *BMC Musculoskelet Disord.* 2022;23(1):1–9. doi:10.1186/s12891-022-05091-5
28. Miloslavsky EM, Marston B. The Challenge of Addressing the Rheumatology Workforce Shortage. *J Rheumatol.* 2022;49(6):555–557. doi:10.3899/jrheum.220300
29. Battafarano DF, Ditmyer M, Bolster MB, et al. 2015 American College of Rheumatology workforce study: supply and demand projections of adult rheumatology workforce, 2015–2030. *Arthritis Care Res.* 2018;70(4):617–626. doi:10.1002/acr.23518
30. Kloppenburg M, Kroon FP, Blanco FJ, et al. 2018 update of the EULAR recommendations for the management of hand osteoarthritis. *Ann Rheum Dis.* 2019;78(1):16–24. doi:10.1136/annrheumdis-2018-213826
31. Health Personnel Act [Lov om helsepersonell]. 1999. Available from: <https://lovdata.no/dokument/NL/lov/1999-07-02-64>. Accessed March 03, 2024.
32. Freidson E. *Professional Dominance: The Social Structure of Medical Care*. Transaction Publishers; 1970.

33. Yelin EH, Such CL, Criswell LA, Epstein WV. Outcomes for persons with rheumatoid arthritis with a rheumatologist versus a non-rheumatologist as the main physician for this condition. *Med Care*. 1998;36(4):513–522. doi:10.1097/00005650-199804000-00007
34. Combe B. Early rheumatoid arthritis: strategies for prevention and management. *Best Pract Res Clin Rheumatol*. 2007;21(1):27–42. doi:10.1016/j.berh.2006.08.011
35. Comeau-Vallée M, Langley A. The interplay of inter-and intraprofessional boundary work in multidisciplinary teams. *Organ Stud*. 2020;41(12):1649–1672. doi:10.1177/0170840619848020
36. Meier N. Collaboration in healthcare through boundary work and boundary objects. *Qual Sociol Rev*. 2015;11(3):60–82. doi:10.18778/1733-8077.11.3.05
37. Nancarrow S. Dynamic role boundaries in intermediate care services. *J Interprof Care*. 2004;18(2):141–151. doi:10.1080/13561820410001686909
38. Lamont M, Molnár V. The study of boundaries in the social sciences. *Annu Rev Sociol*. 2002;28(1):167–195. doi:10.1146/annurev.soc.28.110601.141107
39. Hernes T. Studying composite boundaries: a Framework of Analysis. *Hum Relat*. 2004;57(1):9–29. doi:10.1177/0018726704042712
40. Ashforth BE, Kreiner GE, Fugate M. All in a day's work: boundaries and micro role transitions. *Acad Manage Rev*. 2000;25(3):472–491. doi:10.2307/259305
41. Gieryn TF. Boundary-work and the demarcation of science from non-science: strains and interests in professional ideologies of scientists. *Am Sociol Rev*. 1983;48(6):781–795. doi:10.2307/2095325
42. Langley A, Lindberg K, Mørk BE, Nicolini D, Raviola E, Walter L. Boundary work among groups, occupations, and organizations: from cartography to process. *Acad Manag Ann*. 2019;13(2):704–736. doi:10.5465/annals.2017.0089
43. Willis E. *Medical Dominance*. Routledge; 2020.
44. Etikan I, Musa SA, Alkassim RS. Comparison of convenience sampling and purposive sampling. *Am J Theor Appl Stat*. 2016;5(1):1–4. doi:10.11648/j.ajtas.20160501.11
45. Malterud K, Siersma VD, Guassora AD. Sample size in qualitative interview studies: guided by information power. *Qual Health Res*. 2016;26(13):1753–1760. doi:10.1177/1049732315617444
46. Bhaskar R, Collier A, Lawson T, Norrie A. *Critical Realism: Essential Readings*. 1st ed. Routledge; 1998.
47. Stutchbury K. Critical Realism: an Explanatory Framework For Small-Scale Qualitative Studies Or An 'Unhelpful Edifice'? *Int J Res Method Educ*. 2022;45(2):113–128. doi:10.1080/1743727X.2021.1966623
48. Danermark B, Ekström M, Karlsson JC. *Explaining Society: Critical Realism in the Social Sciences*. 2nd. Routledge; 2019. doi:10.4324/9781351017831
49. Braun V, Clarke V. *Thematic Analysis: A Practical Guide*. SAGE Publications; 2021.
50. Byrne D. A worked example of Braun and Clarke's approach to reflexive thematic analysis. *Qual Quant*. 2022;56(3):1391–1412. doi:10.1007/s11135-021-01182-y
51. Zhang W, Doherty M, Leeb B, et al. EULAR evidence-based recommendations for the diagnosis of hand osteoarthritis: report of a task force of ESCISIT. *Ann Rheum Dis*. 2009;68(1):8–17. doi:10.1136/ard.2007.084772
52. Lamont M, Pendergrass S, Pachucki M. Symbolic boundaries. *Int Ency Soc Behav Sci*. 2015;2:850–855.
53. Lim WS, Sharma S, Devan H. Physiotherapists' attitudes towards and challenges of working in a referral-based practice setting—a systematic scoping review. *Eur J Physiother*. 2021;23(6):332–343. doi:10.1080/21679169.2020.1739748
54. Hughes EC. *Men and Their Work*. The Free Press; 1958.
55. Album D, Westin S. Do diseases have a prestige hierarchy? A survey among physicians and medical students. *Soc Sci Med*. 2008;66(1):182–188. doi:10.1016/j.socscimed.2007.07.003
56. Alter S. Theory of workarounds. *Commun Assoc Inf Syst*. 2014;34(55):1041–1066.
57. Shi H-M, Sun Z-C, F-h J. Recommendations for reducing exposure to medical X-ray irradiation. *Med Int*. 2022;2(4):1–7. doi:10.3892/mi.2022.47
58. Khawaja MN, Alhassan E, Bilal J, et al. Medical overuse of therapies and diagnostics in rheumatology. *Clin Rheum*. 2021;40(5):2087–2094. doi:10.1007/s10067-021-05638-2
59. Peterson G, Portström M, Frick J. Extended roles in primary care when physiotherapist-initiated referral to X-ray can save time and reduce costs. *Int J Qual Health Care*. 2021;33(3):mzab122. doi:10.1093/intqhc/mzab122
60. Hassidim A, Korach T, Shreberk-Hassidim R, et al. Prevalence of sharing access credentials in electronic medical records. *Health Inform Res*. 2017;23(3):176–182. doi:10.4258/hir.2017.23.3.176
61. Cresswell KM C, Mozaffar H, Lee L, Williams R, Sheikh A. Workarounds to hospital electronic prescribing systems: a qualitative study in English hospitals. *BMJ Qual Saf*. 2017;26(7):542–551. doi:10.1136/bmjqs-2015-005149
62. Korstjens I, Moser A. Series: practical guidance to qualitative research. Part 4: trustworthiness and publishing. *Eur J Gen Pract*. 2018;24(1):120–124. doi:10.1080/13814788.2017.1375092
63. Kitzinger J. Qualitative research: introducing focus groups. *BMJ*. 1995;311(7000):299–302. doi:10.1136/bmj.311.7000.299