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Interprofessional Collaboration in Health Care: Clinical Pharmacists' Brokering Activities in Medication Reviews

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Abstract

In hospitals, several professions collaborate on patients' medication treatment. We explore clinical pharmacists' work and ask *what opportunities and challenges arise when clinical pharmacists participate in interprofessional medication reviews*. Findings from observations and interviews in two hospitals reveal that medications were discussed in greater depth in pre-rounds where clinical pharmacists were present as they negotiated medication treatment, leading to collaboration with physicians and boosting nurses' engagement. Clinical pharmacists' brokering activities created knowledge-sharing opportunities and aligned perspectives across professional boundaries. However, clinical pharmacists also experienced challenges being heard by physicians, highlighting professional conflicts regarding jurisdictional claims to medication decisions. This challenge was accentuated by a lack of adaptation for clinical pharmacists' occupational role on a structural level. We argue for consistent adaptation for clinical pharmacists' occupational roles to support their professional jurisdiction and utilise comprehensive work practices in medication treatment.

Keywords

Interprofessional collaboration, professional boundaries, boundary object, broker, jurisdiction, medication review

Interprofessional collaboration and clinical pharmacists

Interprofessional collaboration in healthcare can be defined as processes in which multiple healthcare professionals from different disciplinary backgrounds participate to achieve better or optimal patient care (Green & Johnson, 2015; Lakin et al., 2019). Processes of interprofessional collaboration are social in nature and, amongst other things, consist of negotiating work tasks (Edwards & Kinti, 2010), where building and using common knowledge are important features of the relational expertise required for working on complex tasks across practice boundaries (Edwards, 2011). Interprofessional collaboration enhances the potential for knowledge sharing and learning between professions, focusing on how learning enactments are framed by existing "practice architectures" (Thörne et al., 2014), how knowledge emerges and is shared between professionals in health care (Falk et al., 2017) and that collaboration augments and develops health workers professional repertoires (Christiansen et al., 2017). These studies illustrate how professional work supports existing practices and utilises the potential of existing interprofessional collaboration. Here, we expand on this knowledge by exploring how a profession develops strategies to break established patterns for interprofessional collaboration.

In this article, we present an ethnographic case study exploring interprofessional collaboration in medication reviews among clinical pharmacists, physicians and nurses as they engage in collective evaluation of patients' medication treatment. We ask *what opportunities and challenges arise when clinical pharmacists participate in interprofessional medication reviews*. Hereby, we reveal how clinical pharmacists open new possibilities for interprofessional knowledge sharing while they simultaneously experience challenges related to both interprofessional collaboration and their professional role.

In health care, interdisciplinarity is expected to contribute to comprehensive patient treatment (Norwegian Ministry of Health and Care Services, 2009). Accordingly, clinical pharmacists have been included in clinical settings to provide advice and guidance for physicians and nurses in medication-related questions (Norwegian Ministry of Health and Care Services, 2020) since the mid-1990s (Blix, 2017). Clinical pharmacists aim to contribute to quality-assured medication use by drawing upon their pharmacological expertise to identify, prevent, and solve medication-related problems (Viktil, 2017a). Within hospitals, clinical pharmacists' work tasks include medication reconciliation, communication with patients, ensuring the transfer of correct and updated medication information to relevant levels of care, and performing medication reviews (Viktil, 2017a). A medication review is a structured method

whereby health professionals—traditionally physicians—critically evaluate a patient's medication treatment (Frandsen et al., 2022). In this study, clinical pharmacists participate in these medication reviews in collaboration with physicians and nurses.

Studies of clinical pharmacists in medication reviews largely focus on their effects on costs (Robinson et al., 2023) and medication-related problems (Halvorsen et al., 2019; Johansen et al., 2022). Researchers have found that pharmacist interventions in hospitals can reduce the number of hospital readmissions and visits to emergency departments (Ravn-Nielsen et al., 2018); that patients who received pharmacist-led interventions are more satisfied with received medication information during their hospital stay (Garcia & Aag, 2023); and that pharmacist-led interprofessional medication reviews improved pharmacotherapy for patients (Granås et al., 2019). Focusing on perceptions of clinical pharmacists, health professionals are satisfied with collaboration (Gillespie et al., 2012), and see them as valuable, competent, and supportive in interprofessional medication reviews, specifically (Lee et al., 2023). Others reveal challenges in interprofessional collaboration in medication reviews, such as a lack of knowledge of other professions' competencies and roles (Halvorsrud et al., 2017), where a lack of role clarity might challenge interprofessional collaboration between clinical pharmacists, physicians, and nurses (Halvorsen et al., 2011; Makowsky et al., 2009).

When health professionals begin performing work tasks that previously belonged to other health professions, they may experience challenges when defining their occupational roles within the existing work practices (Folkman et al., 2017; Folkman et al., 2020), for example, related to hierarchy. The health care system has a hierarchical structure where physicians hold the overall responsibility for patient treatment. Power distance is a value that differentiates individuals, groups and organisations, based on the degree to which inequalities are accepted as either unavoidable or functional (Daniels & Greguras, 2014). In contrast with other studies, we investigate how professionals break down hierarchical boundaries, which is defined as an underdeveloped topic (Daniel & Greguras, 2014). Hereby, we contribute to the research on professions and professionalism.

Boundary crossings and jurisdiction

When exploring clinical pharmacists' participation in interprofessional medication reviews, we use the theoretical concepts of boundaries, boundary crossings, -brokers, and -objects to investigate social situations in medication reviews. A practice can be defined as "doing in a historical and social context that gives structure and meaning to what we do" and includes, amongst other things, language, tools, documents, roles, underlying assumptions and world views (Wenger, 1998, p. 47). Professions' different backgrounds and practices constitute their boundaries (Wenger, 1998), defined as "sociocultural difference(es), leading to discontinuity in action and interaction" (Akkerman & Bakker, 2011, p. 133). In healthcare, boundaries often crystallise through medical specialisation (Kerosuo, 2008). Physicians, nurses, and clinical pharmacists have different disciplinary backgrounds that shape their knowledge, work goals,

and hence their work practice. While clinical pharmacists seek to ensure optimal medication treatment, nurses might focus on patient care, and physicians might focus more on the specific condition for which a patient was admitted.

Professional boundaries meet at boundary crossings (Akkerman, 2011; Wenger, 1998), which are the "movement across or a co-location of" practices (Akkerman, 2011, p. 22). We identify work in medication reviews as a boundary-crossing activity where physicians, nurses, and clinical pharmacists collectively engage in the evaluation of medication treatment. In boundary crossings, *brokers* and *boundary objects* are crucial to ensure collaboration (Wenger, 1998). Brokers are individuals with membership in several practices who connect these practices by facilitating the transfer of elements of one practice into another and, by doing so, "open(ing) new possibilities for meaning" (Wenger, 1998, p. 109). Brokering is a complex process of translating, coordinating, and aligning different perspectives across boundaries (Wenger, 1998). Clinical pharmacists might engage in brokering activities when they bring their pharmacological knowledge into the somatic sphere of hospital wards.

Boundary objects are artefacts that cross boundaries and, like brokers, enable the bridging of separate practices through mediation (Star, 1989; Star & Griesemer, 1989) and coordination of different perspectives (Akkerman & Bakker, 2011). Boundary objects are structured in a way that satisfies all the social worlds to which they belong: they hold different meanings in different contexts, but their structure is common enough for them to be useful in several contexts (Star & Griesemer, 1989). In this study, medication charts—physical or electronic documents providing information about patients' medications—are analysed as the boundary objects that mediate collaboration between physicians, nurses, and clinical pharmacists.

While the boundary approach focuses on opportunities to enable collaboration, professional conflicts may arise. Abbott (1988) claims that professions hold control over different work tasks due to various kinds of jurisdictions, which can give a single profession full or partial control of a work task. Professions develop when responsibility over a work task changes, for example, if another profession loses jurisdiction over an area of work (Abbott, 1988). The introduction of clinical pharmacists into interprofessional medication reviews, previously the sole preserve of physicians, can be interpreted as physicians losing jurisdiction over this activity. As jurisdictions are scarce goods, interprofessional relations are characterised by competition, with each profession trying to win control of various work tasks by drawing upon professional power, namely, "the ability to retain jurisdiction when system forces imply that a profession ought to have lost it" (Abbott, 1988, p. 151). "Joint participation in common worksites" (Abbott, 1988, p. 145), or boundary crossings between professions, both connect different professions and create a foundation for interprofessional conflict.

In boundary crossings, the division of labour is established through workplace negotiation, potentially resulting in conflicts where a hierarchically lower group must defend its profes-

sional status to the professional group which is exercising power over it (Abbott, 1988). Bringing the concept of humility to this approach, we focus on how individuals in work contexts support involvement, appreciate the strengths of others and acknowledge their own personal limitations (Chandler et al., 2023; Owens et al., 2013), breaking down hierarchical structures and hereby affecting collaboration.

The concept of boundaries helps analyse the social situation in pre-rounds on a micro-level with a focus on opportunities and challenges when sharing knowledge in work practices. However, Abbott's theory can be used to lift the analysis by explaining how societal and organisational change might create conflicts and power struggles when clinical pharmacists take on a work task that previously belonged to physicians alone. The concept of leadership humility sheds light on how professionals navigate workplace activities by employing various interpersonal characteristics in interprofessional collaboration to protect their professional jurisdiction.

Research setting

We investigated medication reviews in pre-rounds in two Norwegian hospitals. Pre-rounds are interprofessional meetings without patients present that are held before physicians' ward rounds, where physicians, nurses, and other relevant health professionals, for example, junior doctors, discuss patients' conditions and clinical issues (Kleiven et al., 2022), such as medication treatment. Nurses inform physicians of their patient observations, clinical pharmacists address medication-related problems and possible solutions, and the physician makes medication decisions accordingly (Viktil, 2017b). One of the studied hospitals had implemented electronic medication charts as a collaborative tool, while the other still used paper-based ones.

The first permanent position in clinical pharmacy in Norway was established in 1996 (Blix, 2017). Compared to physicians and nurses, clinical pharmacists are newcomers to hospital wards. Both of the hospitals that were studied introduced clinical pharmacy services less than ten years ago. There is no official overview of how many clinical pharmacists exist in Norway, but only five clinical pharmacists in total worked in the two studied hospitals: in one, two part-time clinical pharmacists, both of whom participated, split one and a half full-time equivalents among three hospital departments; in the other, three clinical pharmacists worked in three hospital wards with approximately one half-time position each. Two of these three clinical pharmacists participated in this study, while the third was unable to.

When the clinical pharmacists were not working in hospital wards, they worked in the hospital pharmacies on work tasks such as educating health professionals, assisting in clinical drug trials, conducting inspections, and offering information and counselling in medication-related problems (Nordal et al., 2006). Thus, the studied clinical pharmacists had multi-memberships in two different work practices and moved between hospital pharmacies and hospital wards.

Data collection

Between May and December 2023, the first author observed a total of 50 hours of medication-related work in hospital wards over two weeks to gain an understanding of collaboration in medication reviews. Observations were scheduled based on informants' preferences, with some lasting full workdays and others half. Only work during the daytime was observed, as the clinical pharmacists did not work night shifts. The first author began by observing medication-related work more generally before looking specifically at medication reviews in pre-rounds. When the researcher coincidentally observed the first pre-round in which a clinical pharmacist participated, the difference between the two settings (nurses and physicians vs. nurses, physicians and clinical pharmacists) made the unique input of clinical pharmacists evident. Focusing on clinical pharmacists' roles in hospital wards, we have selected observational and interview data gathered from following four clinical pharmacists, with an employment tenure of 3 years on average, in their participation in interprofessional medication reviews at two Norwegian hospitals.

Observations provide insight into "interactions, processes and behaviours that go beyond the understanding conveyed in verbal accounts" and are fitting when complex interactions are investigated (Nicholls et al., 2014, p. 245). In total, 10 pre-rounds were observed: four without and six with a clinical pharmacist. To gain a contextual overview of clinical pharmacists' work, their individual work before and after the six pre-rounds was also observed, during which the first author asked questions. The observations were recorded as detailed field notes (Nicholls et al., 2014). During observations, the first author jotted down locations, times, professions present and what she saw and heard. The jottings were mostly descriptive but also contained sporadic analytic thoughts (recorded in a separate column to ensure reliability) and were later processed into full field notes in Word.

Semi-structured interviews lasting 45-110 minutes were conducted with the four clinical pharmacists to supplement and validate the observational data. Qualitative interviews offer rich data on individuals' accounts of their everyday lives (Silverman, 2020). The participants were questioned about their work practices before, in, and after pre-rounds—what they did, how they did it, which tools they used, and which challenges and opportunities they experienced, especially as regards interprofessional collaboration. Observed situations in pre-rounds were also discussed. The interviews were anonymised and transcribed verbatim before analysis.

Data analysis

Thematic Analysis, a method for "systematically identifying, organising, and offering insights into patterns of meanings (themes) across a data set" (Braun & Clarke, 2012, p. 57) was used for data analysis. Both interviews and observations were analysed in text form in NVivo 14. The first author coded inductively but was interested in workplace interactions between professions. See Table 1 for an example of the coding process. Through coding and thematisation,

we found three main themes: (1) *interprofessional knowledge sharing*, (2) *hierarchy in interprofessional collaboration,* and (3) *lack of adaptation for clinical pharmacists' occupational roles*. The themes address how the clinical pharmacists created opportunities for knowledge sharing in pre-rounds, experienced relational challenges in interprofessional collaboration, and experienced structural challenges, such as lack of continuity, uniforms, and access to updated medication information. Relevant theories were discussed with the second author during the analysis. Hence, interprofessional collaboration and relevant theoretical constructs, such as boundaries, negotiation, hierarchy and power, influenced the coding process in the later stages. However, the specific theoretical analysis was empirically driven and mainly conducted during the reporting stage of the thematic analysis.

Table 1

Example of the Coding Process

Text excerpt	Code	Theme
The clinical pharmacist points out that a patient's cholesterol levels have increased in recent months and that the medication for this issue has not been collected. The physician seems interested.	The clinical pharmacist alerts the physician to medication-related problems	Interprofessional knowledge sharing

Findings

Our findings provide insights into the challenges and opportunities faced by clinical pharmacists when collaborating in medication reviews.

Interprofessional knowledge sharing

The clinical pharmacists facilitated knowledge sharing across professional boundaries by negotiating patients' medication treatment. To highlight the contrast, we explore pre-rounds without clinical pharmacists and those where clinical pharmacists were present.

In pre-rounds where only nurses and physicians were present, chief physicians and junior doctors discussed patients' medication treatment with little involvement from the nurses, for example, what types of antibiotics to use, whether dosages were too high, if the patient used too many medications, and whether certain medications should be discontinued. The nurses assisted physicians by locating and providing patient information, for example, alerting them to discrepancies in the medication charts. Nurses served as information sources for physicians' decision-making, sometimes asking questions to confirm physicians' medication decisions but not participating actively in discussions of medication treatment. In a few instances, nurses suggested changes in patients' medication treatment that physicians did not agree with:

> A physician, a junior doctor, and a nurse are present in the pre-round […] The nurse asks why the patient should use the medications the chief physician recommends. The chief physician responds with a question: "Do you remember that patient we had, and what happened?". He does not explain further but concludes: "It did not go well." The nurse responds that he was just wondering why. The chief physician does not respond and continues the review of patients. (Field notes, pre-round 4)

Physicians and nurses met in the observed pre-rounds, but physicians rejected nurses' suggestions and thus excluded them from decisions regarding medication treatment. In theoretical terms, the physicians protected their jurisdiction over the evaluation of patients' medication treatment by drawing upon professional power.

The task at hand, evaluating patients' treatment, was the same when clinical pharmacists were present. However, discussions of patients' medications involved not only physicians but also clinical pharmacists and nurses; indeed, the clinical pharmacists were the main initiative takers. Issues such as impeded absorption of medications due to interactions and the forms in which medications should be taken were raised by the clinical pharmacists and discussed in plenum. All three professions actively participated in discussions, addressing issues and asking questions to clarify the situation:

> A chief physician, a junior doctor, two nurses, and a medicine student are present in the pre-round, in addition to the clinical pharmacist. The chief physician and the junior doctor discuss an elderly patient's pain relief medications. The clinical pharmacist says: "We should review the patient's medications and see if they can discontinue some of them, so the patient does not have to swallow so many pills." The chief physician agrees. The clinical pharmacist suggests three medications that may be removed. The chief physician says that she completely agrees and discontinues them by crossing them off the medication chart […]. The nurse asks if a patient will experience symptoms if they discontinue certain medications. The chief physician explains that the patient already has these challenges anyway and that the medications are not helping. (Field notes, pre-round 10)

Clinical pharmacists brought up important pharmacological issues with physicians and nurses and suggested appropriate changes in medication treatment. Physicians seemed more open to input, and nurses appeared more engaged. In other words, clinical pharmacists enabled interprofessional collaboration through brokering by coordinating and aligning perspectives across professional boundaries. In the example of brokering below, clinical pharmacists shared their knowledge with physicians, and a new, common meaning was established:

> A junior doctor, a chief physician, a nurse, and a clinical pharmacist are present in the pre-round. […] The clinical pharmacist […] says that two medications must be given a few hours apart because of inhibition of absorption. The chief physician asks a few

> questions about this and how much it can inhibit absorption […]. The clinical pharmacist investigates for the chief physician, "Approximately 30 %." "Oh, okay, alright," says the chief physician. She turns back to the junior doctor and continues working on the medication chart. (Field notes, pre-round 9)

Clinical pharmacists utilised their pharmacological expertise to share knowledge with physicians, facilitated transactions across professional boundaries and aligned perspectives between themselves and physicians. This boundary-crossing knowledge exchange was two-way: the clinical pharmacists explained that they could also gain insights into physicians' knowledge and reasonings if there were disagreements:

> It might happen from time to time that you bring up suggestions which are not considered [by physicians]. When you speak with the physicians, then[…] they explain […] that the patient is not like that, or[…] there are other conditions of the patient which leads to [physicians] not wanting to change the medication. (Interview, clinical pharmacist 2)

The potential of interprofessional collaboration is not only that clinical pharmacists can aid physicians in medication reviews but also that the two professions may exchange expert knowledge of medications' properties and somatic considerations.

Hierarchy in interprofessional collaboration

Even though clinical pharmacists changed interactions in pre-rounds by brokering—whether of physicians who played a central role in the activity with little involvement from nurses or of knowledge sharing across all three professions—they still faced some challenges when collaborating with physicians, mainly in being heard:

> Sometimes, one can straight-up disagree. […] There have been instances where I have interjected with, for example, "there's an interaction which leads to the patient not benefiting from this medication because the effect is nullified by the other medication […]." But then, the physician, "Yeah, but they can just use that medication because they have been using it for a while, and it looks like it's okay." […] So, in certain instances, I have experienced not gaining acceptance for a suggestion which I think is obvious. (Interview, clinical pharmacist 4)

In medication reviews, physicians have the responsibility and authority to make changes in medication treatment. This formal hierarchy ensures a clear division of labour. While hierarchy holds a function, it also creates barriers to interprofessional collaboration when physicians do not properly consider clinical pharmacists' advice. Clinical pharmacists' negotiations are not always enough to align the different professions' perspectives, possibly due to physicians protecting their jurisdiction by drawing upon their professional power and formal claim to authority in medication-related decisions, thus limiting clinical pharmacists' latitude in pre-rounds.

Several of the clinical pharmacists had developed strategies for being heard in negotiations with physicians. Observations of pre-rounds showed clinical pharmacists bringing up the same medication-related issue multiple times before changes in medication treatments were eventually made. In one instance, the clinical pharmacist asked if a patient needed the prescribed vitamin supplements, as she had seen that the blood tests showed elevated levels of this supplement. The chief physician agreed that the calcium levels were too high but did not necessarily see it as an issue and wanted to monitor it instead of making changes immediately. The clinical pharmacist did not oppose this but decided to bring up the same issue the next day:

> A chief physician, a junior doctor, a nurse and a medicine student are present in pre-round, in addition to a clinical pharmacist […] Today, everyone agrees with the clinical pharmacist regarding discontinuing vitamin supplements. The chief physician removes the supplements from the medication chart […]. "Well observed! We should have seen that. I have been puzzled all along by the elevated values," says a junior doctor. (Field notes, pre-round 8)

After the pre-round, the clinical pharmacist elaborated on this situation:

> […] it happens that the clinical pharmacist must address issues several times before [the physicians] change the medication list. […]. Sometimes, she must find the junior doctors after the pre-rounds and explain why a change in the medication list should be made. Then they might understand better. Sometimes the clinical pharmacist feels as though they have not listened […]. (Field notes, after pre-round 8)

This excerpt illustrates what Abbott (1988) refers to as a conflict between clinical pharmacists and physicians regarding the division of labour. Clinical pharmacists defended their jurisdiction to participate in medication reviews to physicians either—as seen above, by bringing up issues several times or by developing strategies to negotiate medication-related problems:

> I don't always speak up because one must feel the dynamic, and when it's appropriate to say these things in relation to, yes, that the collaboration should be good […]. That you are a bit humble […]. I think that is the key […]. That you are a bit humble and curious and ask instead of saying, "I'm right." (Interview, clinical pharmacist 3)

Clinical pharmacists adapted how they addressed medication-related problems by consciously downplaying their expertise or utilising humility to appeal to physicians, thus enabling knowledge sharing and negotiating the division of labour. In turn, doing so might have strengthened their jurisdiction to participate in medication decisions. Approaching humility, the clinical pharmacists break down the power structure in interprofessional pre-rounds by acknowledging their limitations while appreciating and supporting physicians' involvement in medication reviews as a strategy to ensure approval from physicians regarding their suggestions to solve medication-related problems.

Other challenges of being heard were revealed through observations. In a pre-round, the clinical pharmacist gave physicians possible explanations for a patient's symptoms and suggested medication changes but was not heard until a physician suggested the same:

> The clinical pharmacist addresses an issue, […] that [the medication] might be causing a lot of the symptoms that the patient experiences. A junior doctor says that the patient also has a fever. "Oh, okay, I did not see that," said the clinical pharmacist. They do not discuss this further. […] [Another chief physician] enters the room after visiting [the same patient]. He says that he thinks the patient should not use [the medication] as the symptoms may be masked side effects—he has seen this before. In addition, he wants to start a cure to deal with the fever in case there is an infection. Everyone agrees, and the medication chart is edited. (Field notes, pre-round 8)

This example shows that it matters not only how something is said but also who says it. The clinical pharmacist essentially suggested the same medication changes as the chief physician who entered the room but was dismissed by the physicians, who, by contrast, instantly trusted the chief physician. This situation highlights additional barriers that clinical pharmacists encounter in interprofessional collaboration, but physicians do not and is another example of physicians protecting their jurisdiction to make medication-related decisions. A clinical pharmacist challenges physicians' jurisdiction by intervening, while a physician does not. Physicians protecting their jurisdiction has further implications for clinical pharmacists' professional role in interprofessional medication reviews:

> A chief physician, a junior doctor, a nurse and a clinical pharmacist are present in the pre-round […] The clinical pharmacist tells the physicians of the side effects of a medication. The chief physician briefly responds, "Yes, I'm aware of that". The clinical pharmacist continues to explain the side effects. The chief physician and the junior doctor start speaking to each other before the clinical pharmacist has finished her sentence. […] The clinical pharmacist asks if a patient should take preventive medications for [a condition]. The junior doctor starts speaking to the chief physician, interrupting the clinical pharmacist. […] She does not get a response. […] The clinical pharmacist addresses a concern regarding the medications of a patient. The junior doctor interrupts her again. The chief physician turns around and looks at her but does not give her a clear response […]. The clinical pharmacist adds that it's not that important right now. (Field notes, pre-round 9)

When clinical pharmacists are not heard by physicians in negotiations, they might adapt to physicians' work practices. This might be explained by physicians negotiating the division of labour in pre-rounds by exercising power over clinical pharmacists, excluding them from the activity. In this process, clinical pharmacists devalue what they deem important as physicians might disagree:

> The physicians have busy days, so you must kind of think about "what should I spend their time on?" That I bring up relevant issues. (Interview, clinical pharmacist 4)

Challenges experienced by clinical pharmacists in terms of not being heard might make them adapt to physicians' preferred division of labour and established work practices, both in terms of how and when clinical pharmacists address medication-related problems and what kinds of issues they bring up. In these situations, physicians are successful in protecting their jurisdiction at the expense of clinical pharmacists' jurisdiction to actively participate in pre-rounds.

Lack of adaptation for clinical pharmacists' occupational role

Our findings revealed both the experience of having undefined roles among clinical pharmacists and potential reasons for their undefined roles on a structural level. A recurring topic in the interviews was how the informants struggled to navigate their occupational roles within existing work practices in the hospital wards. Most of the clinical pharmacists had the feeling of being forgotten or, as stated above, having to deploy various negotiation strategies to be acknowledged by physicians, which was experienced as challenging:

> That [my role as a clinical pharmacist] was a bit more defined, that is perhaps what I would wish for the most. And that it was a bit clearer that I existed, in a way. (Interview, clinical pharmacist 3)

The analysis revealed several potential reasons for clinical pharmacists' struggles to be heard and acknowledged. One was the lack of continuity in clinical pharmacy services. None of the studied hospital wards had a clinical pharmacist present in pre-rounds every day. Some wards had counselling from clinical pharmacists every other week or so, while others had counselling two days a week. The informants found this lack of continuity challenging:

> They are used to having a pharmacist [in pre-rounds], but because it's only two days a week, then it's kind of […] you are maybe a bit forgotten from time to time. (Interview, clinical pharmacist 1)

The lack of continuity made it difficult for clinical pharmacists to find their place in pre-rounds: they had jurisdiction to participate but still faced challenges when trying to do so. One of the clinical pharmacists elaborated on why this lack of continuity was perceived as challenging:

> If it's someone I have never met before, then I have to kind of work my way in, […], because then it is often a bit like, "Yeah, who are you?" […]. Sometimes they have not really placed me and might think I am a nurse who is just very preoccupied with medications. […] while other times, they have worked with clinical pharmacists before and are kind of used to it […]. It varies a lot with the suggestions I bring up, how it is received, and if they see it as relevant or if I am just someone who is a bit bothersome with these medications. (Interview, clinical pharmacist 4)

Lack of continuity in clinical pharmacy services is challenging as one is sometimes not recognised as a clinical pharmacist by other professionals, particularly in the hospital where clinical pharmacists wear nursing uniforms rather than designated uniforms. Furthermore, the pre-rounds had no designated seating for physicians, nurses, or clinical pharmacists. In several instances, the chief physicians sat at a desk in front of a computer and the medication charts with the junior doctor(s) on one side and the nurse on the other, while the clinical pharmacist sat behind them. The clinical pharmacists expressed challenges in addressing issues in patients' medication charts:

> When should I say this, kind of? When in the communication does it fit in? Because it's often the nurse and the physician who are talking with each other. Where I am not a natural piece of what is being talked about […]. So, then I [say]: "Hello!" […] Sometimes I do that. (Interview, clinical pharmacist 3)

While physicians and nurses had an established overlap in their work practice where roles were clearly defined, clinical pharmacists struggled to find their place in this overlap, particularly because of the lack of adaptation for clinical pharmacists' work practices. Although they had a formal, jurisdictional claim to participate in medication reviews, they were not fully integrated into the work practice. In contrast, nurses and physicians were present every day in pre-rounds and wore designated uniforms that symbolised their occupational roles in the activity, underlining their jurisdiction to participate in pre-rounds.

The lack of adaptation for clinical pharmacists was further accentuated when it came to difficulties accessing updated medication information. In one of the hospitals, there was no digital version of the medication chart. Upon admission, physicians added relevant medication information to the admission report in the local electronic health record system; thereafter, medication information was mainly updated on paper charts, of which there was only one version. Every morning, nurses used these paper charts when they handed out medications to patients. Hence, when clinical pharmacists performed the medication reviews, the only source of updated medication information was unavailable, and they had to use the dated medication list in the admission report instead. During pre-rounds and ward rounds, the paper charts were designated to the physician. The clinical pharmacist was last in line and could only obtain the updated paper charts around lunchtime, leading to problems in pre-rounds:

> The clinical pharmacist addresses issues in a patient's medication list and says that this issue might explain why the patient is feeling ill. […]. The chief physician says that he has already discontinued a few of these medications. (Field notes, pre-round 9)

The clinical pharmacist suggested changes to medications that had already been discontinued without the clinical pharmacist's knowledge because updated medication information was not available. This observation was validated in a later interview with the same clinical pharmacist:

> I probably quite often suggest things that have already been considered or tried out […]. The more you know, the better foundation you have to give advice. (Interview, clinical pharmacist 4)

The medication chart, as a mediating boundary object whose function is to bridge professional boundaries and enable collaboration by mediating medication information, was unavailable to clinical pharmacists for most of the workday, posing challenges to interprofessional collaboration in pre-rounds. Moreover, clinical pharmacists had to redo medication reviews when they obtained the updated medication chart. In contrast, challenges regarding access to medication information were not raised in the other hospital, where medication charts are digitalised. Updated, available medication information might enable better use of clinical pharmacists' work and expertise.

Discussion

We investigated opportunities and challenges when clinical pharmacists participated in interprofessional medication reviews with physicians and nurses. The clinical pharmacists functioned as boundary brokers in pre-rounds, addressing medication-related issues and suggesting solutions to these. Clinical pharmacists facilitated knowledge sharing by translating (i.e. explaining their reasonings), coordinating (i.e. drawing upon negotiation strategies), and hereby aligning perspectives and opening new possibilities for common meaning across professional boundaries.

Physicians' jurisdiction over medication evaluations was challenged by the introduction of clinical pharmacists into medication reviews, which created power struggles between physicians and clinical pharmacists. Physicians might experience it as challenging for their self-esteem when pharmacists question their medication decisions (Halvorsen et al., 2011), and the uncertainty of clinical pharmacists' roles could create barriers to interprofessional collaboration (Makowsky et al., 2009). Clearly defined roles in interprofessional medication reviews might ease clinical pharmacists' challenges of being heard by physicians.

The clinical pharmacists only worked part-time in hospital wards, which they experienced as challenging. Garcia and Aag (2023) found similar tendencies regarding continuity, where a clinical pharmacist working in several teams did not feel included in the work practice. The solution to this problem was to reduce the number of teams the clinical pharmacist participated in. Continuity of staff promotes possibilities for interprofessional learning among health professionals (Kleiven et al., 2022), underlining the need for continuity of clinical pharmacy services in hospital wards. Additionally, clinical pharmacists used nursing uniforms as they did not have designated uniforms that symbolised their profession. Nursing uniforms symbolise professional identity, status and power (Pearson et al., 2001), and a lack of such symbolism specifically for clinical pharmacists might have played a part in their struggles to be heard by physicians.

The absence of shared electronic medication information is a challenge for health professionals (Manskow & Kristiansen, 2021). We analysed medication charts as a mediating boundary object that health professionals depended upon as a fundamental part of medication reviews. Medication charts as boundary objects should enable the coordination of perspectives and bridge practices and professions. We found that it was partially able to, but a lack of electronic access to the shared object created a break in collaboration in medication reviews. The planned digitalisation of medication charts (Norwegian Ministry of Health and Care Services, 2020) might solve some of the clinical pharmacists' issues in collaboration with physicians and enhance their jurisdiction to partake in medication reviews.

Clinical pharmacists' work task is, amongst other things, to provide advice and guidance for physicians and nurses (Norwegian Ministry of Health and Care Services, 2020), drawing upon their pharmacological expertise. Nonetheless, we found that clinical pharmacists must navigate relational conflicts regarding jurisdiction in medication reviews to successfully perform their work tasks. Other studies have found that health professionals must negotiate their professional roles when entering professional territory which previously belonged to another health profession (Folkman et al., 2020) and might conform to established work practices instead of utilising their profession-specific knowledge in interprofessional collaboration (Folkman et al., 2017). The clinical pharmacists in our study also adapted to physicians' work practices to some degree, for example in what kind of medication-related problems were considered important while at the same time deploying various negotiation strategies as part of their quest to claim their professional jurisdiction in medication reviews.

Our findings illustrate how clinical pharmacists' boundary work challenged established dynamics and power structures in work practices. Christiansen et al. (2017) exemplify the learning potential when boundaries between professions open in overlapping collaboration, augmenting and developing health workers' professional repertoire. We elaborate on this, challenging the traditional top-down structure and illuminating the clinical pharmacists' utilisation of humility strategies. The clinical pharmacists sought to take control of activities in interprofessional collaboration by drawing upon strategies for leadership and, by doing so, challenged established power structures in medication reviews. In other words, they did not fully accept the established hierarchy in the workplace and expressed lower levels of power distance (Daniels & Greguras, 2014). This is a new theoretical insight which applies not only to clinical pharmacists' work practices but might also apply to other professional contexts.

Interprofessional collaboration provides a potential for knowledge sharing between professions (Christiansen et al., 2017; Edwards, 2011; Falk et al., 2017; Thörne et al., 2014). Bringing interprofessional collaboration into medication reviews demands change at both individual and organisational levels (Halvorsrud et al., 2017). If health authorities and organisations are to reap the benefits of clinical pharmacy services, they must ensure that clinical pharmacists are fully integrated into established work practices with clearly defined occupational roles,

including continuity in clinical pharmacy services, pharmacist-specific uniforms and (electronic) access to updated medication information, to utilise comprehensive work practices in medication treatment.

Conclusion

Clinical pharmacists were analysed as boundary brokers in medication reviews in pre-rounds, who provided opportunities for knowledge sharing and the development of new, common meanings among clinical pharmacists, physicians, and nurses. However, clinical pharmacists also experienced challenges in interprofessional collaborative work. Relationally, they struggled to be heard by physicians and developed negotiation strategies to overcome this challenge. Structurally, there was a lack of adaptation for clinical pharmacists' occupational roles. Clinical pharmacists experienced challenges due to the lack of continuity in their work practice, uniforms, designated placement, and access to updated medication information.

By exploring clinical pharmacists' work and collaboration with physicians and nurses in medication reviews, we produced new knowledge of how professionals utilised their expertise and developed negotiation strategies, for example, that of humility, to break down hierarchical structures and enable knowledge sharing in interprofessional collaboration. Studies often investigate how interprofessional collaboration does or does not function. However, how professionals deploy negotiation strategies to claim professional jurisdiction is understudied. We found that clinical pharmacists, despite not being the leader of medication reviews, utilised humility as a strategy to ensure acceptance of their suggested solutions to medication-related problems. Hence, our finding of clinical pharmacists' utilisation of humility leadership is a theoretical contribution to the field of professions and professionalism.

A limitation of this study is the lack of physicians' and nurses' perspectives. While our study provided an in-depth exploration of clinical pharmacists' work, our sample was limited despite successfully recruiting four out of five possible informants across the two hospitals. Future research might benefit from investigating interprofessional collaboration in medication reviews by including several professions and hospitals.

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