ORIGINAL RESEARCH

Overcoming Barriers in Nurse-Pharmacist Collaborations on Wards – Qualitative Expert Interviews with Nurses and Pharmacists

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Purpose: Interprofessional collaboration in healthcare is an essential element in promoting patient safety. However, little research is available on the collaboration between nurses and pharmacists. To optimize processes, mutual understanding is needed, which can be gained by examining the perspectives of those collaborating professional groups. We aimed to identify barriers to the interprofessional collaboration of nurses and pharmacists as well as preconditions and solution strategies to devise approaches for optimizing teamwork in inpatient settings.

Methods: We recruited pairs of collaborating nurses and pharmacists from different hospitals in German-speaking countries and conducted qualitative expert interviews by phone with each of them individually. Transcribed interviews were assessed using qualitative content analysis.

Results: We conducted 12 interviews each with the collaborating nurses and pharmacists. The most frequently mentioned barriers to optimal collaboration were "skepticism due to perception as controller" (reported mainly by pharmacists), "organizational implementation", and "limited (possibilities of) presence" (reported by both professional groups). A solution strategy proposed to overcome such barriers was "explaining added value". This added value was found in "clinical-pharmaceutical activities as complement by additional perspective" and "reducing workload in tasks distant from the patient".

Conclusion: Nurses, pharmacists and hospital management should recognize the added value of intensifying their collaboration regarding patient-related services. A combination of logistical and clinical-pharmaceutical activities should be established at the level of drug application since interviewees endorsed collaboration. A stepwise process must be anticipated to address existing barriers, including some redefinition of professional roles.

Keywords: interprofessional collaboration, interprofessional health teams, pharmacist, nurses, qualitative research

Introduction

Strengthening the professional dialogue between healthcare professionals has resulted in measurable patient benefits by optimizing their pharmacotherapy and avoiding potential adverse drug reactions.[1,2] Collaboration between physicians and nurses forms an essential element in this regard. Apart from this, qualitative methodology has been used to investigate collaborations between physicians and pharmacists in the outpatient sector.[3]

In contrast, inpatient care can be assumed to involve an exceptionally high degree of collaboration not only between pharmacists and physicians but especially between pharmacists and nurses. The involvement of pharmacists on wards is now required by law in a federal state in Germany.[4] This will increase the number of pharmacists on the wards, and collaboration with nurses will become even more significant. Internationally, the involvement of pharmacists on the therapeutic team, also collaborating with nurses, has already been established and analyzed in diverse settings.[5–10] To derive optimal benefit to the patient from the collaboration, it is necessary to investigate attitudes, barriers and opportunities for the interprofessional collaboration of both nurses and pharmacists. Scant data about the mutual attitudes

and expectations of this collaboration have been published so far, especially in the German-speaking countries with comparatively few pharmacists already employed on wards compared to the Anglo-American countries. For this reason, this qualitative study was carried out to identify barriers to collaboration between nurses and pharmacists and possible solution strategies to devise approaches for improving synergetic joint work under the routine conditions of healthcare systems.

Materials and Methods

Study Design

Individual qualitative expert interviews were conducted by phone from April to September 2019. Interviewed experts were a pharmacist and a directly collaborating nurse on the ward in each hospital.

Data Collection

According to the legal regulations, an ethics vote was not required since we did not collect patient-related data or examine existing patient-related data. All data protection regulations were adhered to. Data were collected anonymously after matching the pharmacist-nurse pair. Nurses and pharmacists were invited to take part voluntarily. Informed consent was obtained for participation, recording and transcription of the interviews and publication of anonymized responses. We asked for socio-demographic data, followed by the interview´s main part consisting of open questions. All interviews were conducted by the same person (IW). We developed interview guides containing leading questions for each group (nurses and pharmacists) based on the current status of literature on pharmaceutical activities on wards.[6–8,11] The leading questions of the interview guide included topics concerning framework conditions, barriers, solution strategies and future potential for optimization (Table 1). The interviewer trained on handling the interview guides in advance. The results obtained in this context were not included in the evaluation of the main study.

Recruitment

Collaborating pairs of nurses and pharmacists in hospitals from German-speaking countries were invited to participate. Recruitment was carried out by phone or email. We aimed to include participants from different regions and a wide range of settings according to the number of beds, from about 300 to more than 1000, representing different levels of hospital

Table 1 Interview Guide. Respective Questions to Nurses and Pharmacists Were Mostly Equivalent. Deviations are Shown in the Table. Further (Ad Hoc) Questions Were Possible According to the Qualitative Approach

Leading Questions
Can you describe which tasks the pharmacist/you undertake/s on your/the ward?
Which other professional groups does the pharmacist/do you work with?
In your experience, what are the preconditions required to carry out the pharmacist's tasks?
Did you have different ideas about working with the pharmacist/nursing staff previously?
What was your impression of possible ideas the pharmacist/members of the nursing staff initially had about you?
Did you experience (any other) difficulties at the beginning of the collaboration with the pharmacist/members of the nursing staff?
To what extent did the work of the pharmacist on the ward change your work as a nurse?/ To what extent did integration of your work into the ward procedures change the work of the nursing staff?
Which tasks do you see less in the role of the (clinical) pharmacist but more in the nursing field?
To what extent do you perceive differences in establishing collaboration between nurses and pharmacists compared to establishing collaboration between physicians and pharmacists?
In your opinion, how could the work of (clinical) pharmacists on wards be further optimized concerning collaboration between pharmacists and nursing staff?
In your opinion, does the work of the pharmacists on the ward increase drug therapy safety?/ Do you think that the aim of your work – to increase drug therapy safety – is tangible for the nursing staff you work with?
Is your (nursing) work sufficiently appreciated by the pharmacist/nursing staff?
In conclusion, what would be the most important recommendations you would make to a pharmacist starting work on a hospital ward/planning to establish clinical-pharmaceutical activities on a ward?

care and the progress of interprofessional collaborations. Recruitment was performed in pairs, while each participant was interviewed separately. Pairs of pharmacists and nurses were invited to participate according to our knowledge of their clinical-pharmaceutical activities on wards by personal contacts or visiting respective homepages. The first contact was made with the pharmacist, who then suggested which nurse to recruit.

Data Analysis

Transcripts of each interview were prepared via "f4transkript" (Dr. Dresing & Pehl GmbH, Marburg, Germany). Qualitative content analysis following Kuckartz[12] was applied to analyze the transcripts. Categories were developed in a deductive-inductive procedure, and the definitions of the eight main categories are listed in Appendix 1. Subcategories were created inductively based on assigned text passages. The analysis and structured evaluation were supported by "f4analyse". A comparison of similarities and differences in attitudes and perspectives of each professional group was carried out by comparing the frequency of responses in subcategories.

Results
Sample

We conducted 24 interviews with 12 pairs of nurses and pharmacists in different clinical facilities. Five other hospital pharmacists did not respond to a participation request, and one refused to participate. For data describing the study sample, see Table 2.

Table 2 Study Sample

Data Collection Period	April – September 2019
Duration of interview (minutes; referring to the qualitative part of the interview) [median (Q25/Q75); min-max]	28 (22/32); 17–51
Setting	$n_{total} = 12$
Federal State	
Saxony	2
Hesse	2
Hamburg	1
Thuringia	1
Bavaria	1
Austria	1
Baden-Wuerttemberg	1
North Rhine-Westphalia	1
Switzerland	1
Lower Saxony	1
Size of hospital	
> 0–300 beds	2
> 300–600 beds	4
> 600–900 beds	0
> 900–1200 beds	1
> 1200–1500 beds	3
> 1500–1800 beds	1
> 1800–2100 beds	1

(*Continued*)

Table 2 (Continued).

Data Collection Period	April – September 2019
Pharmacy supply	
Inhouse Pharmacy	9
Outsourced Pharmacy	2
Outsourced Pharmacy; Clinical Pharmacist not employed in pharmacy	1
Specialization of wards	
Surgery	1
Gastroenterology	2
Psychiatry	1
Intensive care	1
Palliative care	1
Cardiac surgery	2
Internal medicine	1
Geriatrics	2
Neurology	1
Nurses	n_{total} = 12
Gender	
Female	10
Male	2
Age in years [median (Q25/Q75); min-max]	44 (36/48); 30–63
Professional experience in years [median (Q25/Q75); min-max]	24 (16/26); 5–45
Pharmacists	n_{total} = 12
Gender	
Female	8
Male	4
Age in years [median (Q25/Q75); min-max]	35 (31/43); 28–62
Professional experience in years [median (Q25/Q75); min-max]	10 (5/17); 3–36
Estimated duration of clinical-pharmaceutical activities in hours per week [median (Q25/Q75); min-max]	13 (6/22); 3–35

Current Fields of Activity and Cooperation Partners

Nurses and pharmacists reported especially medication reviews and the pharmacits´ function as consultants and contact persons of nurses and physicians in the current fields of activity of the pharmacist. In addition, the accompaniment on ward rounds was mentioned 14 times. The pharmacist´s participation in interprofessional morning meetings or nursing handovers was reported 3 times (exclusively by nurses). Integration of pharmacists into the admission or discharge management and direct information and counseling for patients were mentioned fewer times than medication reviews or accompaniment on ward rounds. Furthermore, information and counseling represented a field of activity for nursing staff while the pharmacist was assigned to

> Train the trainers. (P09)

Regarding side effect management, the subcategory "observation of side effects by nursing staff (proximity to patient)" was emphasized by both nursing staff and pharmacists.

Beyond fields of activity in collaboration with nursing staff, physicians particularly were named as cooperation partners during the on-ward participation of pharmacists in the units.

Differences in Collaboration with Various Cooperation Partners

Pharmacists, as well as nurses, consider the pharmacist to be both a "controller" and a "supporter". The pharmacist´s collaboration with various healthcare professionals was considered to be different:

> The first thing coming to mind when I think about the development of collaboration with nursing staff is rather to show them that we are on the same level and I am not above them. And for physicians, it´s the other way around, to demonstrate to the physicians that I am not below them but that I am indeed on the same level as they are. (P06)

"Level of collaboration", mentioned especially by pharmacists and "willingness to cooperate" were other topics. Levels of collaboration distinguished were a technical content-related "prescription level" with physicians and an executive "process and application level" with nurses. In addition, the "gap" resulting from the delegation of certain activities from physicians to nurses was thematized as a field of activity for a clinical pharmacist.

Concerning the subcategory "patient orientation", pharmacists were assigned a "theoretical, specific view of the patient and his therapy", and physicians and nurses were assigned a "practical, comprehensive, more patient-individual view". This subcategory was mainly made a subject of discussion by nurses. (For more differences in frequency of statements see Appendix 2.)

Preconditions for Exercising Clinical-Pharmaceutical Activities on a Ward

Participants of both professional groups mentioned preconditions regarding the "support of hospital management" and "resources":

> The recognition of the need. Because I don´t think that […] management levels of many hospitals do even see the need. And the need definitely exists. (N09)

> Yes, so you should [...] be given the posts. So just full-time equivalents, they're important. You can't just do it alongside, on top of your normal job; it's difficult, depending on what department you're in. (P12)

Furthermore, "organization" and "interprofessionality" were mentioned as preconditions:

> Start from scratch, in a way that you don´t want too much right away, but instead begin at one ward. (P01)

> Most important is that […] social interaction is a major concern to [the pharmacist]. That he integrates himself […] into the team. (N06)

Preconditions concerning the pharmacist himself were "pharmacist´s experience" as well as "pharmacist´s soft skills" and "pharmacist´s hard skills":
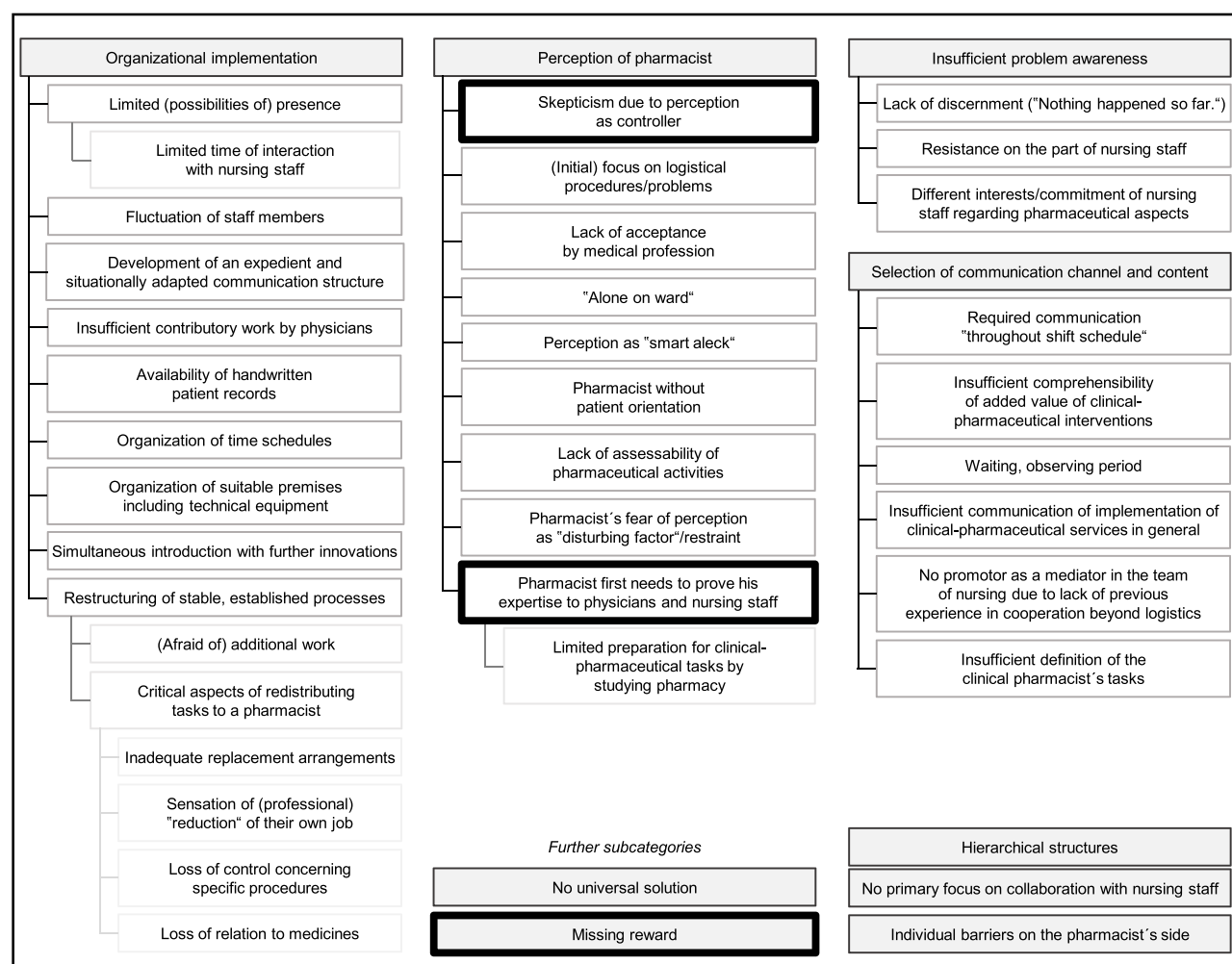
> That, if necessary, one also sits in again before starting somewhere, preferably in the department he will work in afterward. (P10)

> Communication is also quite important because simply identifying drug-related problems is not sufficient to be able to solve them in a sustainable way for the patient. (P03)

> The ´specialist pharmacist for clinical pharmacy´ is not necessarily [required] because you indeed have to provide clinical-pharmaceutical services for the practical tasks, and the workshops are partly also quite good, but depending on the specialty, or depending on the discipline, you need much more in-depth knowledge than the specialist pharmacist can impart. So, I think a specialization in one discipline or in various disciplines makes sense. (P10)

Barriers

Most prominent barriers were "skepticism due to perception as controller" (especially among pharmacists) as well as "organizational implementation" with "restructuring of stable, established processes" (mentioned by five pharmacists and nurses each) and "limited (possibilities of) presence" (mentioned by six pharmacists and three nurses). Subcategories are presented in Figure 1. Illustrative quotations for the different subcategories are given in Table 3.

Organizational implementation
- Limited (possibilities of) presence
  - Limited time of interaction with nursing staff
- Fluctuation of staff members
- Development of an expedient and situationally adapted communication structure
- Insufficient contributory work by physicians
- Availability of handwritten patient records
- Organization of time schedules
- Organization of suitable premises including technical equipment
- Simultaneous introduction with further innovations
- Restructuring of stable, established processes
  - (Afraid of) additional work
  - Critical aspects of redistributing tasks to a pharmacist
    - Inadequate replacement arrangements
    - Sensation of (professional) "reduction" of their own job
    - Loss of control concerning specific procedures
    - Loss of relation to medicines

Perception of pharmacist
- **Skepticism due to perception as controller**
- (Initial) focus on logistical procedures/problems
- Lack of acceptance by medical profession
- "Alone on ward"
- Perception as "smart aleck"
- Pharmacist without patient orientation
- Lack of assessability of pharmaceutical activities
- Pharmacist´s fear of perception as "disturbing factor"/restraint
- **Pharmacist first needs to prove his expertise to physicians and nursing staff**
  - Limited preparation for clinical-pharmaceutical tasks by studying pharmacy

Further subcategories
- No universal solution
- **Missing reward**

Insufficient problem awareness
- Lack of discernment ("Nothing happened so far.")
- Resistance on the part of nursing staff
- Different interests/commitment of nursing staff regarding pharmaceutical aspects

Selection of communication channel and content
- Required communication "throughout shift schedule"
- Insufficient comprehensibility of added value of clinical-pharmaceutical interventions
- Waiting, observing period
- Insufficient communication of implementation of clinical-pharmaceutical services in general
- No promotor as a mediator in the team of nursing due to lack of previous experience in cooperation beyond logistics
- Insufficient definition of the clinical pharmacist´s tasks

Hierarchical structures
- No primary focus on collaboration with nursing staff
- Individual barriers on the pharmacist´s side

Figure 1 Barriers. The hierarchical subcategory system is presented as a concept map for the main category "barriers"; decreasing intensity of grey levels = decreasing hierarchy levels. Thematic subcategories with apparent professional group-specific differences in the frequency of interviewees with mentions are presented in bold bordered. ("Skepticism due to perception as controller" was mentioned by 3 nurses versus 10 pharmacists; "Pharmacist first needs to prove his expertise to physicians and nursing staff" was not mentioned by any nurse, but 4 pharmacists; 1 nurse and 7 pharmacists mentioned "missing reward").

Solution Strategies

Solution strategies most frequently mentioned (by at least one-third of all participants) were "explaining added value", "patience", "clarification of the main focus on support/completion", "availability as contact person", and "communication methods". Subcategories are presented in Figure 2. Illustrative quotations for the different subcategories are given in Table 4.

Added Value

The added value was considered in two domains: Clinical-pharmaceutical activities as "complement by additional perspective" and in "reducing workload in tasks distant from the patient" (Figure 3).

Potential for Optimization

The subcategories defined as optimization potential are "focusing on collaboration with nursing staff in general", "more service-offering by pharmacy", "supply of clinical-pharmaceutical activities at patient level", "development of techno-logical conditions", "support of basic conditions promoting interprofessionality", "enhanced pharmaceutical-technical dialogue with nursing staff" and "organization of dialogue with nursing staff" itself:

Table 3 Sample Quotations for Subcategories of Main Category "Barriers"

Subcategories to Main Category "Barriers"
No universal solution
It really depends a lot on the ward, how problems are perceived, where problems exist. I don´t think that there is a general solution. (P03)
Missing reward
So it´s not that the health insurance says, yes, hire pharmacists without a limit. Yes, that is problematic. And it has been the same for thirty years. (P09)
Hierarchical structures
I couldn´t really imagine anything at all. Above all, I couldn´t imagine that we would be included therein or that we then would be heard […] by the pharmacy as sort of equal partner […]. (N08)
No primary focus on collaboration with nursing staff
I hadn´t thought about the fact that you actually have to deal with the nursing staff. (P12)
Insufficient problem awareness
That´s why I think, […] the nursing staff still remains a lot in the mode, well, 'but we´ve always done that, and nothing really happened. (P06)
Perception of pharmacist
If you came to a ward, you weren´t known on so well, then you were more likely to be perceived as a control, or someone checking something that might not be working properly or that was actually done wrong on the ward. So there was some skepticism there. (P02)
Selection of communication channel and content
First of all, it has to be communicated throughout the shift schedule, everyone has to accept it, someone has to initiate it, it has to be controlled. And of course, that doesn´t always work one hundred per cent. (N01)
Organizational implementation
Of course, if you somehow want […] to change established processes, […] we still have problems, for example, that it doesn´t […] work just like that. Of course it´s also difficult, that they have to get used to innovations, so to speak. (P01)
The less […] time you spend there, the more difficult it is to gain this acceptance. (P02)
So it is the argument about the paper record at the moment. There is either someone dispensing drugs, or someone is writing a doctor´s letter, or the records are simply gone, or they are just necessary for ward rounds. (P12)
Individual barriers on the pharmacist´s side
In his opinion, it didn´t work out quick enough. (N01)

> I would imagine making flying visits as a pharmacist in the morning. It would be that way every morning, one or two hours, each of us is assigned to one ward, goes there and discusses problems. That, at least in principle. (P04)

Such an "increasing the pharmacist´s presence on the ward/in the charge office" was requested by nursing staff and pharmacists with similar frequency, although concerns were expressed twice:

> One should not lose touch with the pharmacy. To be on the ward exclusively means you lose the basis or roots a little bit. Then you might no longer incorporate recommendations of your colleagues in the pharmacy, but you are working only with physicians, and you possibly also adopt their opinion, which is actually not supposed to be the intention, but you should approach the situation from a different point of view. (P10)

> I think if […] the pharmacist was always sitting here for eight hours, people would feel controlled. […] Well, they know he´s available, they know, he´s always available for us, and that´s quite good enough. (N10)

Presence is also linked to the subcategory "fixed person" within the main category "added value for/from the point of view of nursing staff by the clinical pharmacist on the ward", which has been mentioned by nurses and pharmacists with equal frequency.

Concerning the development of technological conditions, pharmacists particularly wish for the electronic patient file to be established. Nevertheless, they remark on the risk of a decreasing presence on the ward.

Occasionally, pharmacists identified the potential for optimization in "strengthened accompaniment of the individual patient´s process by the pharmacist".
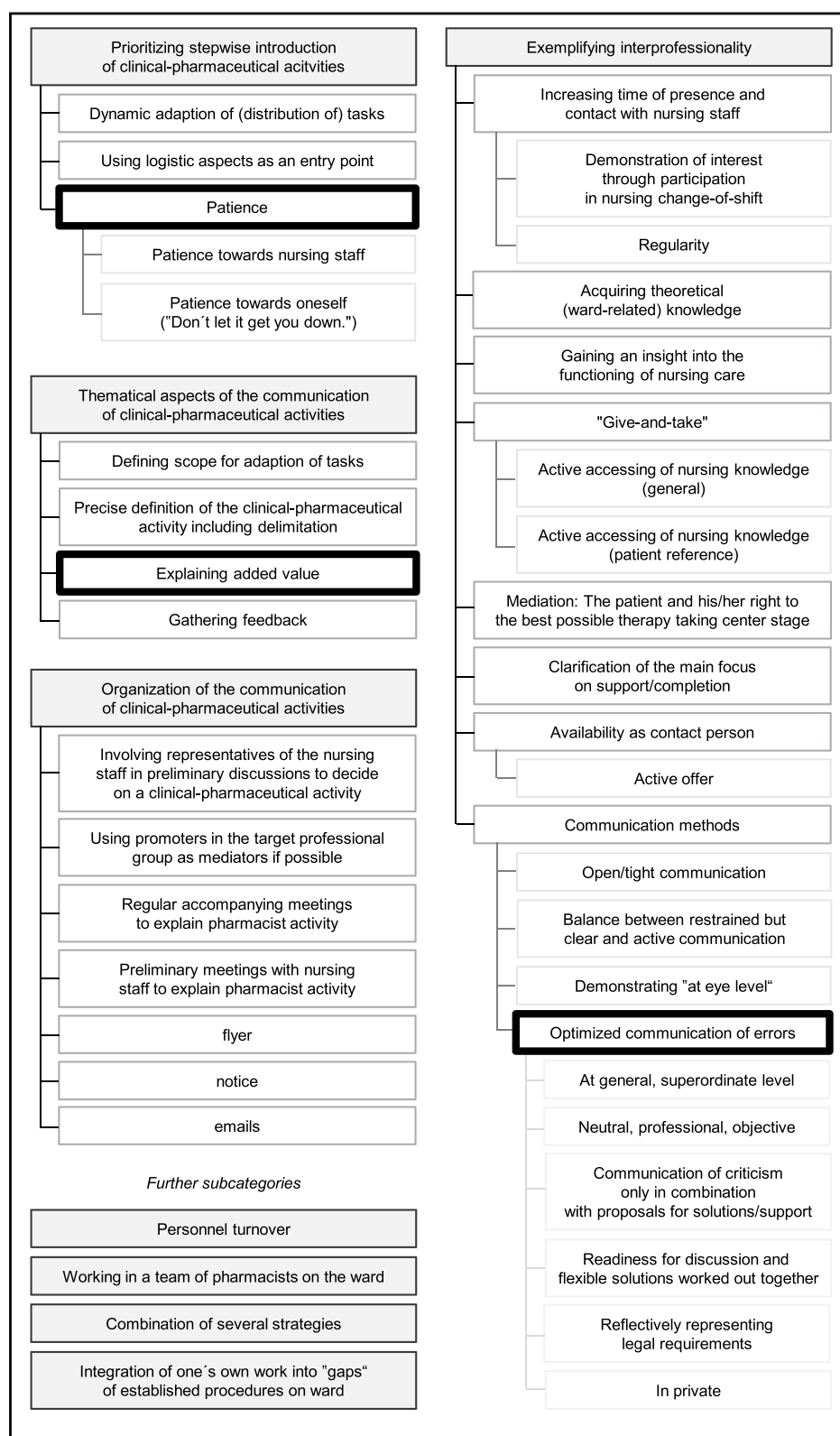
Figure 2 Solution strategies to barriers. The hierarchical subcategory system is presented as a concept map for the main category "tested solutions in dealing with barriers"; decreasing intensity of grey levels = decreasing hierarchy levels. Thematic subcategories with conspicuous professional group-specific differences in the frequency of interviewees with mentions are presented in bold bordered. ("Patience" was mentioned by 2 nurses and 8 pharmacists; "Explaining added value" was mentioned by 2 nurses and 6 pharmacists; and "Optimized communication of errors" was mentioned by 3 nurses and 8 pharmacists).

Table 4 Sample Quotations for Subcategories of Main Category "Tested Solution Strategies in Dealing with Barriers"

Subcategories to Main Category "Tested Solution Strategies in Dealing with Barriers"
Combination of several strategies
If it is difficult verbally, then try to write it down so that it is accessible to everyone and also simply available as a document. This also supports immensely to achieve that, over time […] these recommendations you make are actually implemented. (P02)
Integration of one´s own work into ¨gaps¨ of established procedures on ward
Sure, you have to be aware of […] the way the processes are, but […] he works in between and checks how he can integrate his work into our process. (N02)
Organization of the communication of clinical-pharmaceutical activities
[I already knew] the system beforehand and that was advantageous. […] I knew, how I had to communicate it to the team, how we could implement it. And in this respect […] I was able to prepare everyone. (N01)
Thematical aspects of the communication of clinical-pharmaceutical activities
It´s then important, […] to also demonstrate the benefit, to state clearly, what are the tasks […] of the pharmacist on the ward […], to state that clearly at the beginning. (P03)
But if it´s professionally explained- I can convince everybody. […] I think further education is the most important thing, you should offer people. […] So always like this, why do I do that. I believe you must not underestimate that nurses want to know these facts. (N07)
Prioritizing stepwise introduction of clinical-pharmaceutical activities
Then, [if] more or less each professional group wants to see the patient in the first forty-eight hours- so that we said, ok, since we disassemble the complete medication very critically anyway, it is not really necessary for me as a pharmacist to also asses the medication on admission. (P06)
Don't let it get you down, don't get discouraged from your plan and keep reaching out to physicians, reaching out to nurses and keep communicating and asking questions too. (P12)
Exemplifying interprofessionality
Nevertheless, I think that, at least once a day, you have to stop by and […] actively ask for problems. (P03)
Our pharmacists are also present in the morning meetings and this shows an interest. And that´s where connecting factors get better, meaning she was aware of the handover […] I think that´s very good, that the pharmacy is present. (N06)
[…] the key to everything. This communication. […] And that´s where I see this tight interaction at lunchtime, at the lunchtime handover at thirteen o´clock for ten minutes, that the pharmacists just stand by. (N07)
Working in a team of pharmacists on the ward
I think it´s difficult especially at the beginnig to be alone on a ward, meaning it´s easier in a team, then you can talk it over again, like: What do you think? (P12)
Personnel turnover
There was a turnover then. I had talked […] to him and to the head pharmacist about the problems that arose. (N03)

Discussion

Studies on the interprofessional collaboration of pharmacists currently focus mainly on pharmacists' relationships with physicians rather than nurses. However, close collaboration between nurses and pharmacists is essential since nurses are usually involved at the end of the medication process for administration. We, therefore, explored a wide range of clinical facilities and performed a qualitative approach. By this, we identified various experiences concerning collaboration to identify preconditions, current fields of activities, barriers and solution strategies to overcome them, as well as added value and optimization potential.

Our findings support the optimization of interprofessional collaboration between nurses and pharmacists.

Both professional groups endorse collaboration. However, it may only work out after a period of time. So the need for patience during implementation towards nursing staff and pharmacists was mentioned. On the one hand, it is necessary to change the routine procedures of nursing staff over a more extended time and overcome resistance from the nursing staff. On the other hand, pharmacists also have to plan time to adjust to working with nursing staff and recognize and address their needs. Overall, therefore, implementation will take time to take place and should be carried out step by step in small stages. Our study indicates the need to define the pharmacist's role on the ward and combine the different perspectives. Beyond the role of the logistician and "controller", in which pharmacists predominantly perceive themselves, the challenges in the pharmacist's current patient-centered professional practice necessitate specifying their position as a health care professional increasingly providing
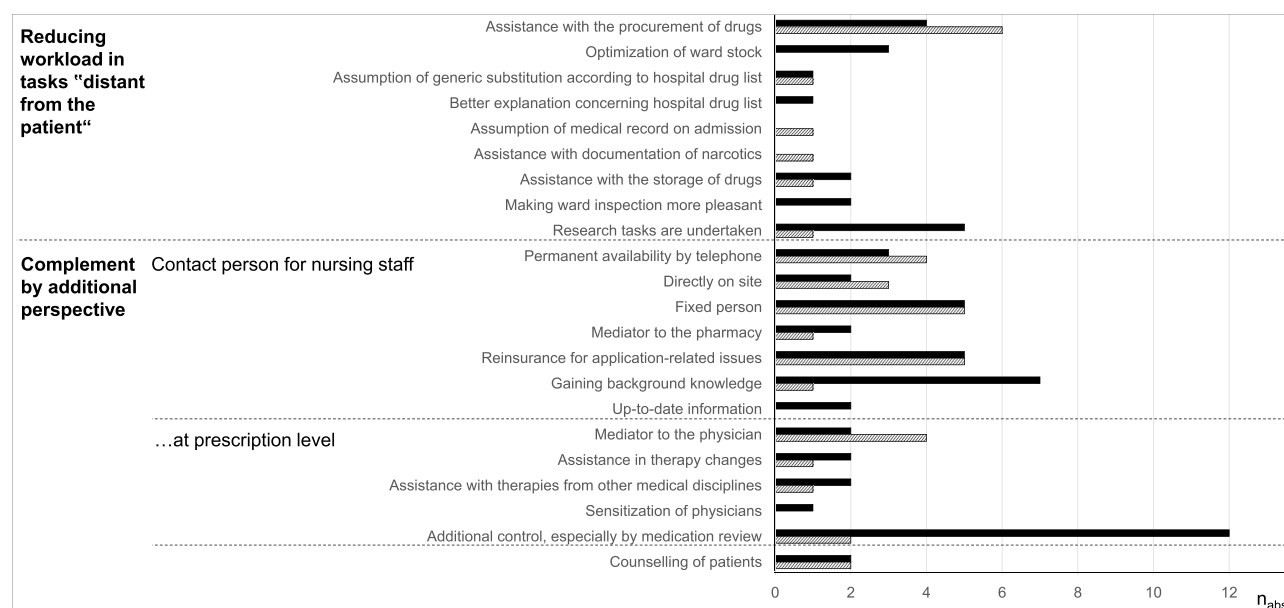
Figure 3 Added value. Subcategories of category "Added values for/from the point of view of nursing staff by the clinical pharmacist on the ward"; black: number of nurses with mentions; shaded: number of pharmacists with mentions.

pharmaceutical services. Both professional groups see added value in "reducing workload in tasks distant from the patient", as was identified in our interviews.

Furthermore, an additional perspective was reported as a result of this study to be a great advantage of the extended collaboration. Therefore, it is reasonable that respondents requested pharmacists' hard skills, such as specialist knowledge acquired from pure factual knowledge. But in addition, when implementing these services on the ward, soft skills and the integration of pharmaceutical expertise with the proximity of the nursing staff to the patient are mentioned as valuable. They are crucial to devising recommendations for increasing individual patients´ pharmacotherapy safety.

To exploit these potential benefits, interviewees stated that the enhancement of time and technical resources is a primary requirement for implementing enduring, beneficial collaboration of nurses and pharmacists on wards.

Different and Shared Perspectives of Pharmacists and Nurses on Collaboration

We identified that pharmacists perceived a barrier in "skepticism due to perception as controller", such as legally required inspections of wards and demands for certain drugs, which are often linked to economic aspects.[13]

This barrier existing in the perception of the pharmacist as a controller was less frequently mentioned by nursing staff, and it is rather conspicuous that they even appreciated additional control. Furthermore, only pharmacists noted that the pharmacist first must prove his expertise to physicians and nursing staff. This contrasts with nurses, who favored having research tasks taken off their hands and reported that gaining background knowledge themselves on a drug-information-based level was an added value. The pharmacists seem less aware of this view of nursing staff because it was hardly mentioned. They might need to take advantage of the opportunity to use this potential way to build cooperation and strengthen their role as a healthcare professional.

The fact that pharmacists consider their role of controller to be such a barrier may also explain why they emphasized the following approaches to overcoming barriers more often than the interviewed nurses: "optimized communication of errors", "explaining added value", and "patience". Differences (person-related) in readiness for collaboration must be expected.[14] So, more general strategies were referred to, such as the need for patience, among others involving acceptance by nurses. This is generally known from change management processes in various organizations,[15] even concretely in the introduction of clinical pharmacists on wards.[16] Individual components might be expressed by rejection as the stable, established processes of the daily routine of the ward and time schedules of the nursing staff are

restructured when a pharmacist is integrated into the team, which initially seems uncomfortable This prevents the added value from being immediately grasped.

To facilitate, our results indicate the need for a precise definition of the activities of the clinical pharmacist, which is in line with other studies.[5,16] Our interviewees reported mediators from the nursing team to support establishing clinical-pharmaceutical activities. In addition, they mentioned the benefit of regular meetings. The literature emphasizes their necessity as concepts should be constantly re-evaluated and revised in an iterative improvement process – the plan-do-check-act model.[17]

Duration of the implementation process is also determined by the pharmacist´s soft skills, which were referred to, and according to the time of pharmacists' presence on site. This was desired to be increased by both professional groups. International studies confirm the presence of the pharmacist on the ward as beneficial.[16] Therefore, the collaboration between nurses and pharmacists should be strengthened by regular appointments explicitly between these professional groups and by one pharmacist being a fixed contact person. Omitting a fixed assignment of the pharmacist to the ward may complicate proceedings.[18] On the other hand, rotation principles can offer better sustainability through substitution arrangements, which can also ensure consistency and thus facilitate change management. This is a multifactorial decision and, therefore, can be different for each specific hospital.

Role of the Pharmacist as a Healthcare Professional on the Ward

According to our results, logistical activities can open doors to initiating collaboration with nursing staff on the ward and thus pave the way for future clinical-pharmaceutical activities. Initial expectations towards the pharmacist are predominantly linked to logistical aspects.[6] We found that assistance with tasks such as these, which are distant from the patient, was cited as an additional value. Therefore, a total separation of logistical and clinical-pharmaceutical activities is not appropriate. Pharmacists also emphasized that they should keep in touch with the pharmacy in the drug supply sector.

The focus of current clinical-pharmaceutical activities identified by the interviewees of our study is the establishment of medication reviews. Involvement in crucial admission and discharge procedures, for example, is less likely to be implemented, which is in line with the results of other studies.[19,20] This may be due to the comparatively time saving implementation because medication reviews can be performed independently of ward workflows at more flexible times by the pharmacist – especially with the implementation of digital patient records. This way, the initial objective is to address the prescription level in collaboration with the physician, similar to pharmacists accompanying physicians' ward rounds, which was also mentioned quite often. On the other hand, counseling and training of nursing staff are reported as general tasks. Still, data collected suggest this is more likely to be an activity often carried out on the side in everyday life. More detailed concepts of pharmaceutical-nursing collaboration are desirable, including the drug-information-based and patient-individual levels. In this context, management of adverse drug events might offer opportunities due to the frequently emphasized proximity of nursing staff to the patient in our interviews.

The pharmacist assessing the patient case on a theoretical level, as reported by the interviewees, and thus adding the pharmaceutical perspective as an additional one, ought to be the aim. Nonetheless, the pharmacists´ lack of patient orientation in everyday clinical practice mentioned by both professional groups in our study is not negligible. In this regard, the pharmacist should recognize nursing staff as partners and utilize increased collaboration to assess better his pharmaceutical activity's clinical relevance in the individual patient case.

However, to implement such interprofessional projects of nurses and pharmacists, support by hospital managements and resources were emphasized as preconditions in our study. Furthermore, missing rewards and limited possibilities for the presence on wards were cited as barriers.

Limitations in resources are a barrier to clinical-pharmaceutical activity.[20,21] Despite some international studies, the problem of recording cost reductions by a clinical pharmacist still needs to be solved.[22,23] Therefore, resources for implementing clinical-pharmaceutical activities on wards will remain restricted, especially without specific legal requirements.

Outlook

Concerning the clinical-pharmaceutical activities of pharmacists in hospitals, the benefits for patient safety in practice and clinical trials are increasingly recognized.[24–27]

It should be further explored how pharmacotherapy on a patient-individual level might be improved by structuring collaboration between professional groups of pharmacists and nurses exceeding logistics. Furthermore, it has to be evaluated how the adaption of concepts to the needs and resources of individual settings can be managed.

Limitations

Since the nurse-pharmacist pairs interviewed had already implemented collaborations, it can be assumed that they were particularly motivated to collaborate. Furthermore, pharmacists suggested nurses to recruit and likely named cooperative nurses. They may already have overcome potential barriers, which may limit the general applicability of the results to other settings. However, this was not an aim of the qualitative approach. But due to recall bias, certain barriers may be underrepresented.

Interviews were conducted by a pharmacist, as specific prior knowledge of the work situation on the ward was required to perform the interviews. To counteract potential uncertainty among the nursing staff, it was emphasized in the introduction of each interview that answers are analyzed anonymously and not judged.

Interviews were carried out by phone, making it impossible to capture gestures and facial expressions. However, it was the most practical way to conduct the interviews widely across the German-speaking regions. We do not assume any substantial restriction of data quality for our purpose since carrying out the interviews worked out easily in this way.

Disclosure

The authors report no conflict of interest in this work.

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