










BMJ Open Quality Patient perceptions and experiences with medication-related activities in the emergency department: a qualitative study

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ABSTRACT

Background Emergency department (ED) pharmacists reduce medication errors and improve quality of medication use. Patient perceptions and experiences with ED pharmacists have not been studied. The aim of this study was to explore patients' perceptions of and experiences with medication-related activities in the ED, with and without an ED pharmacist present.

Methods We conducted 24 semistructured individual interviews with patients admitted to one ED in Norway, 12 before and 12 during an intervention, where pharmacists performed medication-related tasks close to patients and in collaboration with ED staff. Interviews were transcribed and analysed applying thematic analysis.

Results From our five developed themes, we identified that: (1) Our informants had low awareness and few expectations of the ED pharmacist, both with and without the pharmacist present. However, they were positive to the ED pharmacist. (2) Our informants expressed a variation of trust in the healthcare system, healthcare professionals and electronic systems, though the majority expressed a high level of trust. They believed that their medication list was automatically updated and assumed to get the correct medication. (3) Some informants felt responsible to have an overview of their medication use, while others expressed low interest in taking responsibility regarding their medication. (4) Some informants did not want involvement from healthcare professionals in medication administration, while others expressed no problems with giving up control. (5) Medication information was important for all informants to feel confident in medication use, but the need for information differed.

Conclusion Despite being positive to pharmacists, it did not seem important to our informants who performed the medication-related tasks, as long as they received the help they needed. The degree of trust, responsibility, control and information varied among ED patients. These dimensions can be applied by healthcare professionals to tailor medication-related activities to patients' individual needs.

INTRODUCTION

Medication errors (MEs) and adverse drug events (ADEs) are common among medication users^{1,2} and may lead to hospitalisations, patient harm and increased costs.^{3–5} Care transitions are particularly vulnerable to MEs,⁶ hence the emergency department (ED) is an

WHAT IS ALREADY KNOWN ON THIS TOPIC

⇒ Emergency department (ED) pharmacists reduce medication errors and improve quality of medication use. However, patient perceptions and experiences with the ED pharmacist have not been studied.

WHAT THIS STUDY ADDS

⇒ The patients were positive to the ED pharmacist, but had low awareness and few expectations of the pharmacist's role. We found that the four dimensions trust, feeling of responsibility, need for control and information need varied among ED patients. These dimensions can be applied by healthcare professionals to tailor medication-related activities to the patient's individual needs.

HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE OR POLICY

⇒ Future studies should focus on developing standard questions for the assessment of the four dimensions, as well as identifying how the healthcare professionals in practice can tailor medication-related activities in a busy ED in the everyday life.

important place to detect MEs and ADEs. It is crucial to identify and resolve medication discrepancies as well as suboptimal and inappropriate medication use to reduce MEs and ADEs. This can be done through medication reconciliation and medication review. Studies show that employing clinical pharmacists in the ED can reduce MEs and improve quality of medication use.⁷

Although the ED pharmacist is an integrated team member in countries such as USA and Australia,^{8,9} this is not the case worldwide. In Norway, only a few hospitals have ED pharmacists employed, and research on this field is scarce. Consequently, the ED physician has the responsibility to perform medication-related tasks such as medication reconciliation, prescribing/deprescribing and patient counselling, in collaboration with other team members. An intervention study was conducted in Norway to examine the

impact of introducing clinical pharmacists as part of the ED interdisciplinary team on various outcomes.¹⁰

When planning new interventions, it is crucial to involve stakeholders affected by the intervention to maximise the potential of it.¹¹ Patients are often key stakeholders¹¹ and their unique insight, knowledge and experiences can be used to improve a service.¹² It is also important to identify how different stakeholders experience the intervention and collect advices for amelioration of the intervention.¹³ Involving stakeholders can optimise the intervention before, during and after implementation and also contribute to successful implementation.^{11 13 14}

Research on patients' experiences and perceptions of the ED visit in general, reveals that good communication, sufficient information, having one's emotional needs met, and feeling respected are important aspects for the patients.^{15–19} Patients are mostly satisfied with their ED visits; appreciating the physicians and nurses and having trust in them to provide care.^{16 18–20} When it comes to clinical pharmacist services, studies show high patient satisfaction in both primary and secondary care settings.^{21–24} Although some studies show that the role of the pharmacist in clinical care is unclear to patients, patients feel safer and more involved in their own treatment, as pharmacists provide necessary information about their medications.^{25–27} However, patient experiences and perceptions with meeting a clinical pharmacist in the ED have not yet been studied.

The aim of this study was to explore patients' perceptions of and experiences with medication-related activities in the ED before and during an ED pharmacist intervention.

METHODS

Study design, setting, data collection and recruitment

The intervention was carried out in three EDs, where the pharmacists were present in the EDs during the busiest hours of the day. The intervention was pragmatic, meaning that the ED pharmacists performed medication-related tasks close to and in contact with the patient based on the patient's individual need.¹⁰ These types of activities included medication reconciliation, medication review and medication information. In addition, the pharmacists collaborated closely with other healthcare professionals (HCPs) in the EDs as needed, for example, by engaging in discussions about patients, providing medication therapy recommendations or answering questions regarding medication management.

We conducted semistructured individual interviews with patients acutely admitted to the ED in one intervention study site. At this ED about 12 000 patients pass through annually. Interviews were conducted both before the ED pharmacists were introduced (January–September 2020) and during the period with ED pharmacists present (November 2021–January 2022). We completed 24 interviews, 12 in each period.

We developed two interview guides, one for each period, which were reviewed by the research group, including a layperson (see online supplemental file 1). The interview guide for the first period concentrated on how patients experienced the medication focus in the ED including medication-related activities, and how they perceived the role of a future pharmacist. In the second period, the interview guide still focused on what happened with medications during their ED visit, but also on the pharmacist's role in medication-related activities in the ED. The interview guides were dynamic and adjusted consecutively during both periods.

We recruited patients who used prescription medications regularly. During the first period, patients were recruited at the observation ward connected to the ED, where patients are admitted when their condition must be assessed and observed more closely before discharge or transfer to another ward. Admission to the observation ward demands cognitively adequate patients who are able to take care of themselves. During the second period, we recruited patients who the ED pharmacist had been involved with. Patients were asked to participate in the study the day after admission while their ED experience was still fresh. Before approaching the patient, we consulted the ward nurse to ensure the patient was cognitively adequate and able to participate in an interview. We recruited patients until we had gained sufficient information power²⁸ and richness in our data material.²⁹

The interviews took place in a quiet and private room in the hospital. The interviewer (BZ-H) was a female clinical pharmacist with 7 years of experience from a hospital setting. The interviews were audiorecorded and transcribed non-verbatim.

Data analysis

The data were analysed applying thematic analysis inspired by the principles of Braun and Clarke^{29–31} and carried out in three phases (see figure 1). Interviews in the first period

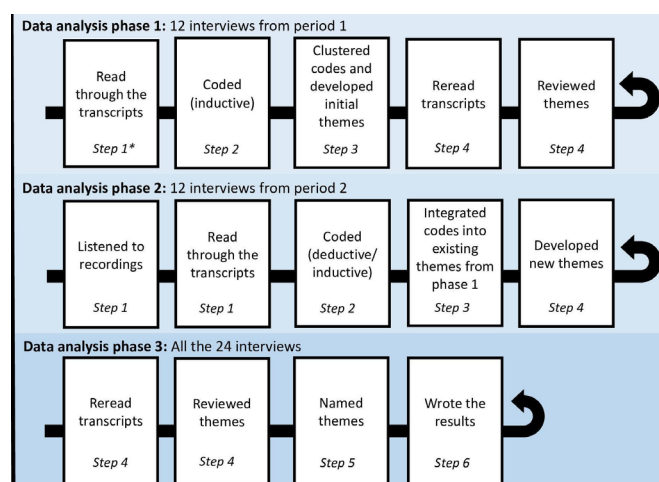


Figure 1 The data analysis was carried out in three phases and was an iterative process. This figure shows the different phases and steps of the data analysis process. *Steps of thematic analysis, as described by Braun and Clarke.^{30 31}

were preliminary analysed before the interviews in the second period were conducted (data analysis phase 1). After the interviews in the second period were conducted, the data analysis started with listening to the audio recordings thoroughly before transcription (data analysis phase 2). As there were clearly similarities in the data material in the two periods, the 12 interviews from the second period were incorporated in the original tentative analysis. Finally, the data analysis was completed with all the 24 interviews included (data analysis phase 3). The data analysis was an iterative process. Online supplemental file 2 provides an example of codes and subthemes in a theme.

The main researcher (BZ-H) coded the data and developed the themes (steps 1–3), while the research group participated in reading, discussing, reviewing, naming

and writing the themes (steps 1, 4–6). NVivo V.12 and MindManager 2020 were used in the analysis process, in addition to pen and paper.

Patient and public involvement

A patient representative is part of the project group for the main research project.¹⁰ This layperson contributed to the development of the interview guides and the consent form for the patients, thus improving readability and comprehensibility. The layperson participated in analysing the data by reading some of the transcribed interviews and engaging in discussions about the findings. Due to COVID-19 restrictions, it was not possible to include the layperson in the data collection.

Table 1 Characteristics of informants during interview period 1 (January–September 2020) and interview period 2 (November 2021–January 2022)

| Interview period | Fictive name | Gender | Age | Previous ED visits | Profession with relation to healthcare | Duration of interview |
|------------------|--------------|--------|--------|--------------------|--|-----------------------|
| 1 | Margot | ♀ | 40–50* | + | – | 45 min |
| 1 | Betty | ♀ | 50–60* | + | + | 47 min |
| 1 | Anne | ♀ | 45 | – | + | 30 min† |
| 1 | Tina | ♀ | 34 | + | + | 28 min |
| 1 | Eric | ♂ | 40 | – | – | 29 min |
| 1 | Mary | ♀ | 85 | – | – | 34 min |
| 1 | Edwin | ♂ | 71 | + | – | 72 min |
| 1 | Irene | ♀ | 74 | + | – | 83 min |
| 1 | Sarah | ♀ | 72 | ? | + | 39 min |
| 1 | Freddy | ♂ | 74 | + | – | 29 min |
| 1 | Steven | ♂ | 69 | + | – | 27 min |
| 1 | Robert | ♂ | 57 | – | – | 33 min |
| 2 | Kevin | ♂ | 62 | ? | – | 25 min |
| 2 | Christine | ♀ | 60 | + | + | 42 min |
| 2 | Heidi | ♀ | 50 | + | + | 17 min |
| 2 | David | ♂ | 59 | + | ? | 14 min |
| 2 | Lisa | ♀ | 58 | + | + | 60 min |
| 2 | Matt | ♂ | 84 | ? | – | 7 min |
| 2 | Rachel | ♀ | 23 | + | + | 30 min |
| 2 | Jim | ♂ | 62 | + | – | 24 min |
| 2 | George | ♂ | 78 | + | – | 25 min |
| 2 | Kurt | ♂ | 76 | + | – | 37 min |
| 2 | Brenda | ♀ | 71 | ? | – | 8 min |
| 2 | Marvin | ♂ | 85 | ? | – | 29 min |

+ Yes, – No, ? did not ask.

*Approximately; did not ask.

†Approximately; did not record the whole interview due to technical issues.

ED, emergency department.

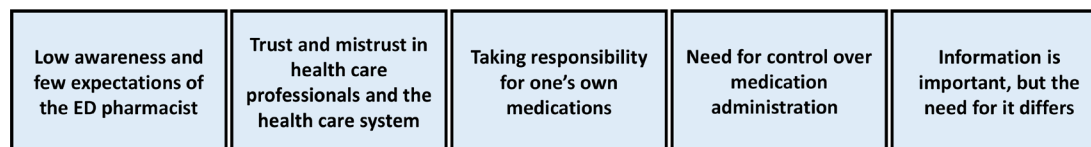


Figure 2 The five themes identified from thematic analysis of interviews with patients about medication-related activities in the ED with and without an ED pharmacist present. ED, emergency department.

RESULTS

The age of informants ranged from 23 to 85 years old and half of them were females (see [table 1](#)). For some informants, this was their first visit to the ED while other informants had visited several times. Eight of the 24 informants had some sort of professional affiliation with the health-care system, for example, by being a nurse or a medical secretary. The length of the interviews ranged from 7 to 83 min, with an average of 34 min.

We developed five themes representing our informants' experiences and perceptions regarding medication-related activities in the ED (see [figure 2](#)). The themes are presented with illustrative quotes. We identified few differences between the first and second period, and these differences were only detected in the first theme 'Low awareness and few expectations of the ED pharmacist'. Consequently, we do not differentiate between the two periods in the presentation of the remaining four themes.

Low awareness and few expectations of the ED pharmacist

When asked about medication focus and medication-related activities in the ED, informants had few expectations of pharmacists in the first period and little to say about pharmacists in the second period.

In the first period, the informants were positive towards the intervention with an ED pharmacist when it was explained to them, but had few ideas on how the pharmacist could contribute in the ED. Most of them were familiar with the profession and knew that pharmacists have knowledge about medications, but it was difficult to suggest possible work tasks in the ED.

I have heard about pharmacists, but I know little about them. **Irene**

No, I don't know [which other tasks the pharmacist can contribute with]. But I do know that pharmacists have a lot of knowledge about medications. **Steven**

Other informants did not know what a pharmacist was and consequently did not have any input. Anne stated that pharmacists '*do a heck of a good job—they are good at drawing blood*', so it seems like she thought about a phlebotomist when she was asked about the pharmacist.

In the second period, the informants who remembered having met a pharmacist found talking to them okay. Some experienced that the pharmacist was more thorough than the physicians when they talked about the medications, and that they received some medication information.

I thought it was nice. Because there is a different focus on medications. It was not just the physician asking "have there been any changes [since last time]?". [...] [The pharmacist] was more thorough and focused on getting it [the medication list] correct. **Lisa**

Some informants expressed surprise about meeting a pharmacist in the ED and a few of them were not even aware of meeting one.

I thought it was very... I was surprised. I am not used to meeting someone who focuses solely on medications. **Jim**

Yes, she asked me what [medication] I was using. [...] I think she was a nurse. [...] No, I did not [talk to a pharmacist]. **Brenda**

Despite that the informants did not have many thoughts about the pharmacist's role in the ED, they had no objections or negative opinions about the service the pharmacists provided.

Trust and mistrust in HCPs and the healthcare system

In general, most informants expressed a high level of trust in the healthcare system and HCPs. They relied on HCPs at the hospital knowing which medication(s) they used at home and they expected to get correct medication(s) during hospitalisation.

I've been in such a bad shape, that I haven't been able to talk to anyone in a few days. In these situations, you just take whatever [medications] they give you and assume that they are doing the right thing and know what [medications] you are supposed to have. **Margot**

The informants also had a high level of trust in electronic systems and medical records. They thought that the hospital and its employees knew about every medication they used and had ever used. They had the impression that all information from primary care to secondary care was updated digitally and that their medication list would automatically be up to date.

They get the information they need through their systems. And they showed me a list, a medication list, but I don't use all of them [the medications]. So, I felt that they had good control. **Anne**

However, some informants said things that indicated that they did not have full confidence in HCPs and the healthcare system. Sarah feared she would not be taken seriously if she asked questions about her medications

and potential side effects, while Tina did not feel that the HCPs trusted her. Both Edwin and Christine lost their trust in the healthcare system due to earlier mistakes; Edwin's wife was misdiagnosed and Christine experienced a ME.

It was the hospital's fault that the medication list was wrong in the first place. [...] According to the list, I got 75 µg levothyroxine every day for four weeks. It was supposed to be 25 µg levothyroxine two days a week. [...] So, I guess that was the reason I hallucinated and thought that I was going to die. I think it's the most terrifying experience I've ever had. **Christine**

Other informants had also experienced unfortunate episodes, but despite that, they still had confidence in the HCPs and the healthcare system.

I was given ibuprofen. [...] I called the nurse and asked if it was a good idea to use ibuprofen as a painkiller. [...] With the symptoms I had, stomach pain and stomach bleeding. [...] But they had taken my haemoglobin, right, and it was ok. So maybe they just did not think about it [my other symptoms]. **Betty**

The trust and mistrust the informants have, may influence their ability to give up responsibility and control during their hospitalisation.

Taking responsibility for one's own medications

When it came to taking responsibility for one's own medications, there were various views among the informants on how important that was. Some of the informants expressed a feeling of obligation to know what medications to take, why and how.

I think patients owe it to themselves to know what [medications] they are putting in their mouth. **Irene**

Others took quite the opposite approach, by presenting a lack of responsibility and taking things easy.

I don't use any critical medication, so if I skip a dose one day, it is not the end of the world. I don't know much about side effects and such, but that's my own fault. I throw out the consumer medicine information leaflet. **Robert**

Matt showed an absence of responsibility regarding his medications when he didn't know what or why he took it, and asked the interviewer if he actually needed the medications.

Some informants refrained responsibility regarding medicines during the hospitalisation by being obedient and did what the physician told them or took whatever the nurse gave them. Some expressed the opinion that you show that you are responsible by taking the medications as the physician has prescribed.

I think it's really important that you take the medication as prescribed. Anything else is sloppiness. You should do as your physician says. **Edwin**

Need for control over medication administration

The informants had different need for control when it came to medication administration. When admitted to the hospital, patients are forced to hand over control for medication administration to HCPs which can lead to patients feeling submissive or disempowered.

It's the feeling of losing control over your routines, because this is their [HCPs'] dominion. I haven't been given any wrong medications, it's just their arrogance. "We're in charge here, boy." **George**

It can be a challenge for someone to give up control. Some of the informants wanted to remain partly in control by taking the medications they had brought with them to the hospital, and not have nurses involved in the administration process.

Because my INR was 2, she [the nurse] asked, "how many tablets of warfarin should you have then?" I said "give me two", but she wanted to ask another nurse. But they must not interfere with my regimen, I know this myself. I've been doing this for three years. I was so annoyed. **Jim**

Some informants had a strong need to double-check that the medication or information they were given were correct. Sarah had experienced getting the wrong dose from the nurse but had luckily caught the error before she took the dose. She had felt very uncomfortable to correct the nurse.

Others expressed no problems with giving up control and just took the medication they were given, even though they thought it could be wrong.

This morning there was a tablet I didn't recognize. And I don't know what it was. [...] But I didn't ask. I just took the tablets from the medicine cup. **Mary**

Information is important, but the need for it differs

There was a big difference in how much information the different informants wanted and needed. Some thought that there was an information deficiency in the ED and described that they got almost no information, while others said they got enough information. No one expressed that they received too much information.

I want to know everything. Yes. I am a curious person. [...] It has to do with me, so I want to know what they [the medications] do to my body, what they [health care professionals] fill my body with and how they [the medications] affect me. **Eric**

Simply put, I don't need to know a lot about my medications. [...] If they work, and I can go outside and chop wood or mow my lawn without experiencing discomfort afterwards, then everything is fine. Then I don't need to know anything else. **Freddy**

Despite the differences in information needs, most of the informants agreed that there was minimal information provided about medication during the whole

hospitalisation, both in the ED but also at the wards. The informants thought it was important to get information to feel confident in their medication use. They wanted information about how the medication works, why it is important for them to take it, what side effects they can expect, and how to deal with side effects. Most of the informants wanted a combination of oral and written information. That was because they could be too sick to comprehend and remember information provided, thus they needed the written information to refer to later.

DISCUSSION

This is, to our knowledge, the first study that explores patients' perceptions of and experiences with medication-related activities in the ED with and without a pharmacist present. We have identified low awareness and few expectations of the ED pharmacist among patients admitted to the ED. Our results show that trust, responsibility, control and information are important aspects to our informants when it comes to medication-related activities.

When we asked the informants about their perceptions of and experiences with meeting a pharmacist in the ED, they did not have much to say. However, the informants were positive towards the pharmacist, which is also supported by other studies.^{26 27} The fact that they had no particular opinions about the pharmacist's contribution in the ED or which tasks the pharmacist should perform, can have several explanations. First, it is difficult for patients to differentiate between the different HCPs involved in care and their roles,^{25 32} consequently, it is challenging to have an opinion about the pharmacist in particular. It seems that for the informants it was not important who performed the different tasks in the ED, as long as they felt taken care of. When admitted to the ED, they were seriously and acutely ill, and were just grateful to get help. Second, there was little knowledge among our informants about what a clinical pharmacist is, and which tasks a clinical pharmacist can perform in the ED. This may be true for most patients, as studies report that patients are often surprised when meeting a pharmacist in a hospital setting, compared with in a community pharmacy, and do not know what to ask or expect from pharmacists in hospitals.^{25 26} The informants that had the most to say about the pharmacist's contribution, were in fact HCPs themselves. This strengthens the assumption that you need to have knowledge about the different types of HCPs and what they do, in addition to the healthcare system, to have opinions and perceptions. Third, the informants may not be aware of what the different medication-related tasks in the ED are. As a consequence, they do not recognise the importance of tasks such as medication reconciliation, choosing the correct antibiotic and identifying non-adherence in the ED. In that way, they are not able to have opinions and perceptions about the value or need of an ED pharmacist. Taking these points into consideration, the questions are; 'Do patients need to know which medication-related

activities that are performed in the ED?', and 'Do patients need to know whether it is a physician, a nurse or a pharmacist who does them?' From our results, it seems that the most important for patients is to feel safe and cared for. Consequently, we need to make sure that there is a high level of medication safety in the ED so that patients receive the correct medication and high standard care.

Our results suggest that medication-related activities in the ED must be tailored to meet the patient's individual needs, as four out of five themes concerned dimensions important for our informants regarding medication-related activities. These four dimensions; trust, responsibility, control and information can also be looked upon as different dimensions of patient characteristics. Most of our informants expressed a high level of trust in the HCPs, even though some had experienced errors in the past. This may seem like a paradox, but maybe they do not have a choice. They are in a vulnerable situation with an acute health problem and need help. In addition, they do not know the system that well and may have different degrees of health literacy, which may influence their understanding of consequences regarding unfortunate incidents. The level of trust may also be linked to the degree of responsibility and need for control the informants felt. To give up control to HCPs, they must have some trust, and this is in line with a study that found that level of engagement in medication administration are influenced by patient's trust in the system.³³ This may explain why some of our informants were controlling or double-checking medication given by the nurse—they just could not let go of the control. Knowledge is essential for involvement¹⁸ and it makes patients empowered in decision making.³⁴ For patients visiting the ED, studies have shown that sufficient information is important^{15 17 18 26} and patients' need for it regarding medication is not met during their hospital stay.^{33–35} Our study confirms these findings, in addition to emphasising the importance of giving patients tailored information based on their individual needs and condition.^{33–35}

One approach to tailoring medication-related activities in the ED could be to identify the patient's level in each of the four identified dimensions. These dimensions can be applied by HCPs by assessing the ED patients' views with regard to medications and medication management on arrival. In this way, medication-related activities can be individualised based on the patient's preference. This is illustrated in figure 3, showing how four fictive patients may have different views on the four dimensions and contains two examples on how HCPs can customise the medication-related activities. One important thing to keep in mind is that the patient's condition may affect the preferred level of involvement in medication management^{18 32 33} and the same patient may have different needs during various hospital visits. Consequently, the patient's condition, views and needs must be identified at each ED visit. When the HCPs take the patients' preferences into account tailoring the medication-related activities, the patient will feel that they are being heard and taken seriously. This will in turn make them feel empowered and become more involved in their own health. As the ED is a busy environment where time is scarce, figure 3 can also illustrate

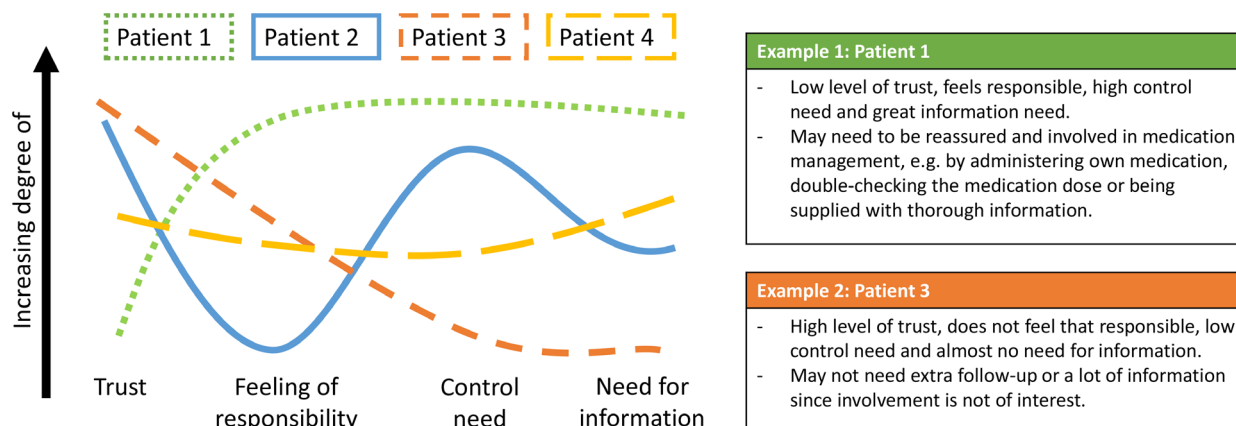


Figure 3 Illustration of how four fictive patients may have various views on the four dimensions “trust in the health care professionals and health care system”, “feeling of responsibility regarding their own medication”, “need for control over medication administration” and “information need”. Two patient examples are elaborated on the right side on how health care professionals can tailor the medication-related activities to specific patients.

how to prioritise patients for involvement and medication information. Using resources on involving patients with no feeling of responsibility, no need for control, or with no information need is probably not an appropriate use of time, at least not during the ED stay. This time could rather be spent on patients who are sceptical, who want to take responsibility, maintain control or have a great information need.

Future studies should investigate whether there is a relationship between the four dimensions trust, responsibility, control and information in order to tailor patient care more specifically. In addition, developing standard questions for the assessment of the four dimensions will be crucial, as well as identifying how the HCPs in practice can customise medication-related activities in a busy ED in the everyday life.

Strengths and limitations

The main strength of this study is the inclusion of patients both before and during the ED intervention. This enabled us to study the experience and perceptions with the ED pharmacist, both in patients who had experienced the pharmacist and those who had not. The main limitation is that we included patients visiting only one ED, which limits the generalisability of our results. However, we do not believe that this ED and its patients are very different from other EDs in Norway. Nor the study population, as our informants had a wide age and gender distribution with varied work background and different ED experiences. Consequently, our results may also be valuable for other EDs. Another limitation is the background of the interviewer and researcher (BZ-H) who is a pharmacist and also introduced herself as a pharmacist. This may have influenced thoughts and statements by our informants, as well as the analyses.

CONCLUSION

This study shows that patients in one ED in Norway are positive to including the pharmacist in the ED team, but seem to have low awareness and few expectations of the ED pharmacist regarding medication-related activities. It did not seem important for our informants which HCP that performed

the medication-related tasks, as long as they got the help they needed. We also found that the degree of trust, feeling of responsibility, need for control and need for information vary among patients. This highlights the importance for HCPs to assess these four dimensions on arrival to the ED. Medication-related activities should be tailored to the patient's preferences and needs, and also adapted to a busy ED setting. More research is needed to further develop this into standardised practice and patient care.

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Contributors BZ-H (the study guarantor), RE, BHG, ECL and EHO were involved in study design. Data collection was performed by BZ-H, with support from BHG and EHO. Data analysis was performed by BZ-H, in collaboration with RE, BHG, ECL, EHO and T.J. BZ-H drafted the initial manuscript, while all of the authors contributed in further writing and editing of the manuscript. All authors read and approved the final manuscript. The patient representative, ALB, contributed in the development of the interview guides and consent forms, in addition to participation in data analysis.

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REFERENCES

- Brunetti L, Suh D-C. Medication errors: scope and prevention strategies. *JHA* 2012;1:54.
- Laatikainen O, Miettinen J, Sneek S, et al. The prevalence of medication-related adverse events in inpatients—a systematic review and meta-analysis. *Eur J Clin Pharmacol* 2017;73:1539–49.
- El Morabet N, Uitvlugt EB, van den Bemt BJF, et al. Prevalence and preventability of drug-related hospital readmissions: a systematic review. *J Am Geriatr Soc* 2018;66:602–8.
- Patel TK, Patel PB. Mortality among patients due to adverse drug reactions that lead to hospitalization: a meta-analysis. *Eur J Clin Pharmacol* 2018;74:819–32.
- Batel Marques F, Penadones A, Mendes D, et al. A systematic review of observational studies evaluating costs of adverse drug reactions. *Clinicoecon Outcomes Res* 2016;8:413–26.
- Midlöv P, Bergkvist A, Bondesson Å, et al. Medication errors when transferring elderly patients between primary health care and hospital care. *Pharm World Sci* 2005;27:116–20.
- Atey TM, Peterson GM, Salahudeen MS, et al. Impact of pharmacist interventions provided in the emergency department on quality use of medicines: a systematic review and meta-analysis. *Emerg Med J* 2023;40:120–7.
- Board of Pharmacy Specialties. Emergency medicine pharmacy. 2022. Available: <https://www.bpsweb.org/bps-specialties/emergency-medicine-pharmacy/#1626448229544-9f0c0684-f7c2>
- Roman CP, Dooley MJ, Mitra B. Emergency medicine pharmacy practice in Australia: a national survey. *J Pharm Pract Res* 2019;49:439–46.
- Vesela R, Elenjord R, Lehnbohm EC, et al. Integrating the clinical pharmacist into the emergency department interdisciplinary team: a study protocol for a multicentre trial applying a non-randomised stepped-wedge study design. *BMJ Open* 2021;11:e049645.
- Skivington K, Matthews L, Simpson SA, et al. A new framework for developing and evaluating complex interventions: update of Medical Research Council guidance. *BMJ* 2021;374:n2061.
- Bate P, Robert G. Experience-based design: from redesigning the system around the patient to co-designing services with the patient. *Qual Saf Health Care* 2006;15:307–10.
- Moore GF, Audrey S, Barker M, et al. Process evaluation of complex interventions: Medical Research Council guidance. *BMJ* 2015;350:h1258.
- Craig P, Dieppe P, Macintyre S, et al. Developing and evaluating complex interventions: the new Medical Research Council guidance. *BMJ* 2008;337:a1655.
- Graham B, Endacott R, Smith JE, et al. "They do not care how much you know until they know how much you care": a qualitative meta-synthesis of patient experience in the emergency department. *Emerg Med J* 2019;36:355–63.
- Gordon J, Sheppard LA, Anaf S. The patient experience in the emergency department: a systematic synthesis of qualitative research. *Int Emerg Nurs* 2010;18:80–8.
- Bull C, Latimer S, Crilly J, et al. A systematic mixed studies review of patient experiences in the ED. *Emerg Med J* 2021;38:643–9.
- Eriksson-Liebom M, Roos S, Hellström I. Patients' expectations and experiences of being involved in their own care in the emergency department: a qualitative interview study. *J Clin Nurs* 2021;30:1942–52.
- Nairn S, Whotton E, Marshal C, et al. The patient experience in emergency departments: a review of the literature. *Accid Emerg Nurs* 2004;12:159–65.
- Shankar KN, Bhatia BK, Schuur JD. Toward patient-centered care: a systematic review of older adults' views of quality emergency care. *Ann Emerg Med* 2014;63:529–50.
- Shin J, Moczygemba LR, Barner JC, et al. Patient experience with clinical pharmacist services in Travis county federally qualified health centers. *Pharm Pract (Granada)* 2020;18:1751.
- Cawthon C, Walia S, Osborn CY, et al. Improving care transitions: the patient perspective. *J Health Commun* 2012;17 Suppl 3:312–24.
- Martin MT, Faber DM. Patient satisfaction with the clinical pharmacist and prescribers during hepatitis C virus management. *J Clin Pharm Ther* 2016;41:645–9.
- Ruiz-Millo O, Climente-Martí M, Navarro-Sanz JR. Patient and health professional satisfaction with an interdisciplinary patient safety program. *Int J Clin Pharm* 2018;40:635–41.
- Morecroft CW, Thornton D, Caldwell NA. Inpatients' expectations and experiences of hospital pharmacy services: qualitative study. *Health Expect* 2015;18:1009–17.
- Kempen TGH, Källemark A, Gillespie U, et al. Comprehensive medication reviews by ward-based pharmacists in Swedish hospitals: what does the patient have to say? *J Eval Clin Pract* 2020;26:149–57.
- Garcia BH, Storli SL, Småbrekke L. A pharmacist-led follow-up program for patients with coronary heart disease in North Norway—a qualitative study exploring patient experiences. *BMC Res Notes* 2014;7:197.
- Malterud K, Siersma VD, Guassora AD. Sample size in qualitative interview studies: guided by information power. *Qual Health Res* 2016;26:1753–60.
- Braun V, Clarke V. *Thematic analysis: a practical guide*. Los Angeles, California: SAGE, 2022.
- Braun V, Clarke V. Reflecting on reflexive thematic analysis. *Qual Res Sport Exerc Health* 2019;11:589–97.
- Braun V, Clarke V. Using thematic analysis in psychology. *Qual Res Psychol* 2006;3:77–101.
- Garfield S, Jheeta S, Husson F, et al. The role of hospital inpatients in supporting medication safety: a qualitative study. *PLoS One* 2016;11:e0153721.
- Bucknall T, Digby R, Fossum M, et al. Exploring patient preferences for involvement in medication management in hospitals. *J Adv Nurs* 2019;75:2189–99.
- Chan AHY, Aspden T, Brackley K, et al. What information do patients want about their medicines? An exploration of the perspectives of general medicine inpatients. *BMC Health Serv Res* 2020;20:1131.
- Bekker CL, Mohsenian Naghani S, Natsch S, et al. Information needs and patient perceptions of the quality of medication information available in hospitals: a mixed method study. *Int J Clin Pharm* 2020;42:1396–404.

Supplement 1 Semi-structured interview guides

The original interview guides were developed in Norwegian. The interview guides below contains the main questions translated into English.

Period 1: Before the ED pharmacist intervention

- Why not start by telling me what happened in the emergency department?
- Can you describe your experience, with regards to medications, during your ED visit?
- What focus did the health care professionals have on medication?
- What information did you get about what was happening in the ED?
- Did you have any questions about your medications and, if so, who did you ask?
- In general, what do you think the hospital needs to know about your medication use?
- If you think about your medication use, do you have any particular needs? What information do you need?
- How did you experience your stay at the emergency department when it comes to medication? What worked or what did not?
- Do you have any experiences with meeting a pharmacist? Do you have knowledge about what a pharmacist does?
- What do you think a pharmacist can contribute with in the emergency department?
- What would you think about a pharmacist asking you about your medications during your next ED visit?

Period 2: During the ED pharmacist intervention

- Why not start by telling me what happened in the emergency department?
- Can you describe your experience, with regards to medications, during your ED visit?
- How was the pharmacist involved in your care during your ED visit?
- How did you experience the collaboration between the pharmacist and the other health care professionals?
- Did you have any questions about your medications and, if so, who did you ask?
- In general, what do you think the hospital needs to know about your medication use?
- What was your experience in terms of medications during your ED visit? What worked well/not well?
- What are your thoughts about the pharmacist being the health professional to ask about your medications? How do you think that may have influenced your ED visit?
- When you think about your medications and how they were managed in the ED, is there anything you discovered or experienced that made you feel reassured or worried?
- How would you describe your overall condition during the ED visit and how do you think that affected your experience of the ED visit?

Supplement 2 Example of codes and subthemes in a theme

This example shows how data material is coded and sorted into subthemes in the theme “Information is important, but the need for it differs”. The table contains a selection of the codes and subthemes of the main theme.

| Data | Code | Subthemes | Theme |
|---|---|-------------------------------------|---|
| Simply put, I don't need to know a lot about my medications. | Limited information need | Different information needs | Information is important, but the need for it differs |
| I'm not like «Oh, I need to know". And I'm neither like «Whatever, as long as it works". I want to know what I put in my mouth. | Moderate information need | | |
| I want to know everything [about my medication] | Large information need | | |
| I have a problem with remembering oral information, so I want information about my medication in written form. | Want written information | Type of information desired and how | |
| I think you first need to get the information orally. | Wants oral information | | |
| Like... What is it [the medication] called, that's important. And why I need to take it. | Wants information about indication | | |
| ...about how much [medication] do I need to take and for how long... | Wants information about dosing and duration | Information is important | |
| Like... Are there any side effects I need to consider? | Wants information about side effects | | |
| You feel more confident yourself [with information]. | Information gives confidence | | |