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An exploratory investigation into how community pharmacists deal with drug shortages: interview study

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Abstract

Objectives: This study aims to explore the experiences of community pharmacists when dealing with medicines shortages.

Methods: Semi-structured interviews were conducted with practising community pharmacists in the UK. Purposive sampling and snowball sampling were used to recruit participants. The interviews were conducted online, recorded, and transcribed. Interview transcripts were analysed employing thematic analysis.

Key findings: A total of 12 participants took part in the interview study. Three themes emerged from the interviews, which included power and resource, engagement and process, and scope of impact. The power and resource included a lack of pharmacist authority, lack of access to suppliers and General Practitioners (GPs) and lack of information for patients and pharmacists. The engagement and process theme included having varied pharmacist experience, a proactive and motivated pharmacist, a good relationship with GPs and an efficient process. Medicines shortages impact workloads, timely access to medicines, and the relationship of the pharmacists with the patients and GPs.

Conclusions: Medicines shortages continue to be an issue for community pharmacists in the UK. There are factors such as the lack of authority and information as well as restrictive access to GPs, making it challenging for pharmacists to deal with medicines shortages. However, pharmacists can navigate this by being proactive and motivated in engaging with suppliers and local GPs and having a robust process in place to manage medicines shortages effectively. These findings can be implemented in practice to support pharmacists deal with medicines shortages in the UK and worldwide.

Keywords   medicines shortages, community pharmacy, community pharmacist, theory of planned behaviour, patients, GPs

Introduction

A medicines shortage is defined when the supply of a medicinal product is insufficient to meet current patient demand at the patient level [1]. Medicine shortages can occur at both the national and local levels. A national shortage occurs when a medicine is unavailable across the country due to factors such as manufacturing problems, regulatory issues or global supply chain disruptions. For instance, the UK exit from the European Union has been identified as a significant factor contributing to national medicines shortages, affecting the availability of medications [2]. Conversely, a local shortage occurs when a specific region or pharmacy experiences a supply disruption, even if the medicine is available nationally. This can be due to local distribution issues, stock management problems or regional demand surges [3]. Understanding the supply and demand dynamics is crucial in addressing medicine shortages. On the supply side, shortages can result from manufacturing delays, raw material shortages or quality control issues.

On the demand side, factors such as seasonal illness outbreaks, increased prescribing rates or changes in clinical guidelines can lead to higher demand for specific medicine, exacerbating existing supply issues [4].

Several studies have reported the negative impact of medicines shortages on patient care such as delayed treatment, worsening of symptoms and increased mortality [4]. Pharmacists have also seen an increase in their workload as a result of trying to resolve the issue of medicines shortages for their patients, which has led to mental fatigue, stress, and anxiety for the pharmacists [5–7]. In addition, pharmacists have reported inappropriate behaviour such as anger and aggression from patients as a result of medicines shortages [5, 8], which makes it difficult for pharmacists to cope emotionally at work.

Community pharmacists have a professional and contractual duty to ensure that patients receive their prescription medications in a timely manner. In the UK, this responsibility is mandated under the Community Pharmacy Contractual Framework, which

outlines standards for safe and efficient dispensing [9] and reinforced by the General Pharmaceutical Council Standards for Pharmacy Professionals, which require pharmacists to act in patients' best interests and provide care effectively [10]. This is made difficult when the medicines are not available due to shortages. In the event of pharmacists not being able to source the medicines, they would be expected to provide appropriate solutions to the patients. However, current pharmacy regulations in the UK limit the flexibility for pharmacists to deviate from what has been ordered by the prescribers, which makes it difficult for them resolve the issue of medicines shortages immediately [11].

While pharmacists play an important role in mitigating shortages, a range of system-level strategies also exist. These include proactive measures aimed at preventing shortages, such as robust supply chain management, advance ordering, stock monitoring, and national-level coordination by manufacturers, wholesalers, and regulatory bodies. In contrast, reactive strategies are employed once a shortage has occurred and include sourcing alternative suppliers, recommending alternative medicines or prioritizing patients at higher clinical risk [12].

Previous research [5] has highlighted challenges community pharmacists face such as lack of knowledge about medicines shortages and inconsistency in managing them. Pharmacists described a number of ways they responded to medicines shortages, which included contacting the prescriber and asking for or suggesting alternatives, referring the patient back to the prescriber and contacting other pharmacies. However, it was unclear why there was a variation in how the pharmacists dealt with medicines shortages. Currently, there are no published qualitative studies that explain the reasoning behind the choices pharmacists make (and thus their behaviour) when presented with a medicines shortage issue.

The aim of this study, therefore, is to explore the experiences of community pharmacists when dealing with medicines shortages.

Materials and methods

Design and setting

This qualitative study involved conducting semi-structured interviews with community pharmacists in the UK via Microsoft Teams, which is an online meeting platform. In order to ensure comprehensive reporting, the consolidated criteria for reporting qualitative research guidelines were followed [13]. This study received a favourable opinion for conduct by the University of Reading Research Ethics Committee (study number—19/2023). Informed consent was obtained from all participants prior to data collection. Participants were not remunerated for taking part in the study.

Study population

The study population consisted of practising community pharmacists in the UK with 2 years of experience or more. Pharmacists with less than 2 years of practice and or those that were retired were excluded from the study. Purposive sampling and snowball sampling were used to recruit participants. The purposive sampling approach was used to ensure inclusion of pharmacists with a range of relevant professional characteristics, rather than recruiting solely on a first-come, first-served basis. Participants from a previous questionnaire study were asked if they wished to take part in a future study about drug shortages. Participants who agreed were asked to complete an online consent form if they still wanted to take part in the interview study. Community pharmacists were also recruited using social media A recruitment post was initially shared on LinkedIn and X, inviting interested pharmacists to take part in the study. The post was reposted and retweeted 2 weeks later as a reminder. Potential participants were provided with a Participant Information Sheet outlining the study purpose and procedures. Those who wished to participate were then asked to complete an informed consent form prior to taking part.

The study aimed to recruit ~10 to 15 participants to ensure the data was rich and able to answer the research question. Data collection continued until no new codes were identified during analysis, suggesting adequate data coverage for the research aims and data saturation. Saturation was operationalized as the point at which successive interviews yielded no additional codes or concepts relevant to the research aims during iterative analysis.

Interviews

The theory of planned behaviour (TPB) was used as a theoretical framework to structure the interview questions. The TPB is adapted from the theory of reasoned action [13] and explains that human behaviour is based on cognitive (thoughts and beliefs), affective (feelings and emotions), and behavioural (actions and responses) components that influence intentions, which in turn influence actions. The main tenet of TPB is that behavioural intentions are the most important predictors of actual behaviour, which are influenced by attitudes towards the behaviour, subjective norms, and perceived behavioural control. Therefore, this study will explore the intentions and behaviours of participants when dealing with medicines shortages. The TPB has been used extensively in pharmacy over the years to examine the behaviours of pharmacists in various aspects of the profession [14–17]. The interviews were undertaken online using Microsoft Teams and were audio and video recorded. The consent of participants was again verified verbally at the start of the interview. The interview questions were based on the three TPB constructs (attitude, subjective norm, and perceived behavioural control) and included general and demographic questions (see Supplementary Material 1). The interview questions were validated by asking four practising pharmacists to provide feedback on their understanding of the questions and whether the questions were relevant. No changes were made based on the feedback provided.

The interviews were conducted between June 2023 and October 2023 by M.O. who had undertaken training courses in qualitative research methods [18]. Transcripts were produced using the automative transcribed function on Microsoft Teams. M.O. then undertook a detailed manual review of the audio recordings to ensure accuracy and completeness. Quality assurance was conducted by M.O. prior to analysis.

Data analysis

The interview transcripts were analysed employing thematic analysis which involved six steps; data familiarization, coding, generating themes, reviewing themes, defining and naming themes and writing up [19, 20]. Each transcript was de-identified by removing any personal information and then assigned a unique number for

Table 1 Demographics of the participants.

Participant	Gender	Experience (years)	Type of employment
P1	Male	4	Locum
P2	Male	5	Locum
P3	Male	18	Locum
P4	Male	7	Locum
P5	Female	7	Employed
P6	Male	4	Employed
P7	Female	5	Locum
P8	Male	4	Locum
P9	Male	3	Locum
P10	Female	6	Pharmacy owner
P11	Male	2	Locum
P12	Male	8	Employed

reporting (P1, P2, P3 etc). Any personal data about the participants were kept separately and confidentially. Initial codes were manually devised by M.O. in discussion with the other researchers (N.P. and A.H.) to finalize the codes and agree the final themes. M.O. is a postgraduate researcher and a practising pharmacist with a limited experience in qualitative research. N.P. is an experienced qualitative researcher and a Reader in Clinical Pharmacy. A.H. is an experienced qualitative researcher and Associate Professor in Health Services Research.

This study is underpinned by a constructivist ontology and an interpretivist epistemology. From a constructivist ontological perspective, reality is understood as multiple and socially constructed, shaped by individuals' experiences, contexts, and interactions. Epistemologically, the research adopts an interpretivist stance, which holds that knowledge is created through interaction between the researcher and participants. The study is concerned with understanding the meanings that pharmacists assign to their experiences and decision-making processes in situations of medicines shortage. This approach acknowledges the influence of social, professional, and organizational contexts on practice, and views participants as active agents in the construction of knowledge.

Results

Data saturation was achieved. A total of 12 participants took part in the interview study. The sample included nine males (75%) and three females (25%) with a range of 2 years to 18 years (average of 6 years) experience in pharmacy practice. The majority of participants (*n* = 8) were employed as a locum (self-employed) with two being employed and one being a pharmacy owner (see Table 1).

Three themes emerged from the thematic analysis; power and resource, engagement and process, and scope of impact (see Fig. 1).

Theme 1: power and resource

Participants mentioned a number of factors that prevented them from dealing with medicines shortages (see Table 2). Some participants felt that the lack of authority in allowing pharmacists

to make prescription changes meant that at times they couldn't deal with medicines shortages successfully. Some participants did not have the flexibility to order from some suppliers as they were restricted by their employers to only use a specific list of suppliers. Some participants mentioned limited access to the General Practitioners (GPs), which made it difficult to resolve the issue of medicines shortages directly. A few participants explained that patients were not always aware of the shortages, and they visit the pharmacy expecting to collect their medicines during that time, which makes it difficult for the pharmacists to manage the issue. Several participants said that there was sometimes a lack of information that made it difficult to deal with shortages, such as access to patient records, knowing the exact causes of the shortages and knowing where to source the medicines that are out of stock.

Theme 2: engagement and process

Participants revealed a number of factors, which were pharmacist specific as well as operation specific that enabled them to deal with medicines shortages (see Table 3). Some participants stated that having sufficient work experience within community pharmacy helped manage medicines shortages. In addition, some participants indicated that being proactive, as well as motivated, as a pharmacist is important in tackling medicines shortages. A good relationship with the local GPs made dealing with medicines shortages better according to some participants. Some of the participants explained having an efficient pharmacy process was an important way of dealing with medicines shortages.

Theme 3: scope of impact

Participants explained how medicines shortages were affecting them and their patients (see Table 4). Medicines shortages had an emotional impact by causing inconvenience for the patients and GPs. A number of participants expressed that medicines shortages were causing frustration for their patients. One of the participants explained that medicines shortages were potentially causing frustration for the GPs because they were constantly being asked to make prescription changes. In addition, other participants said
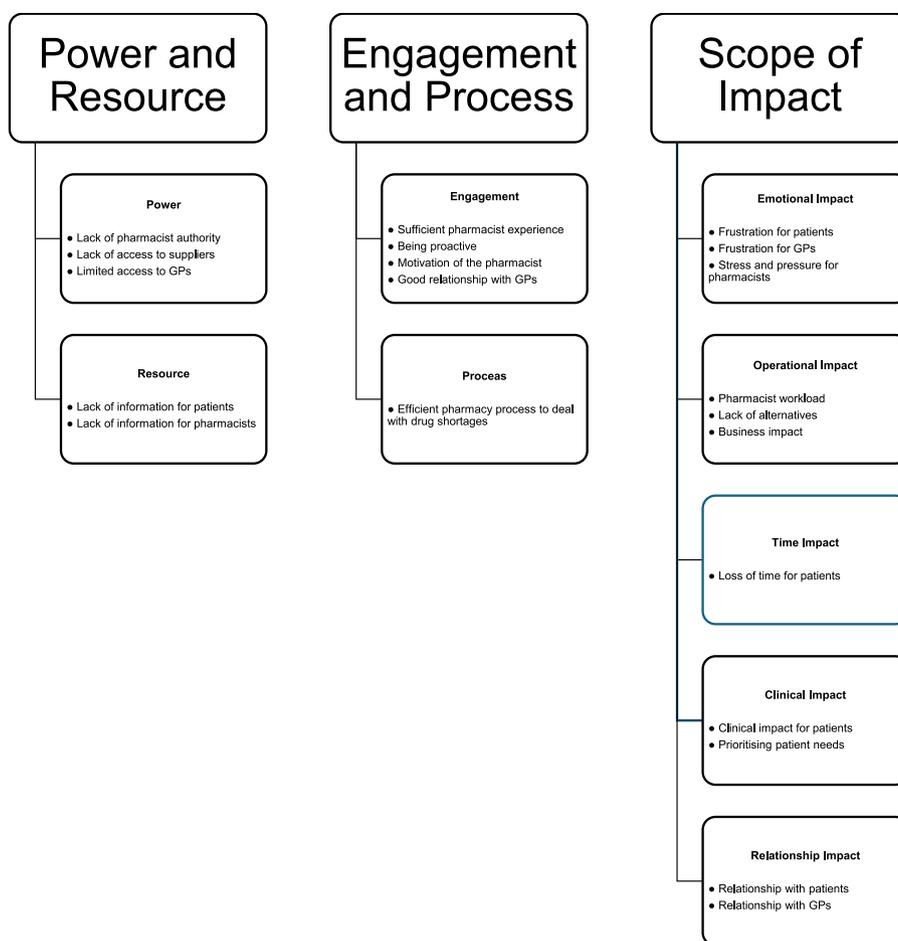
Figure 1 Themes, subthemes and codes developed through thematic analysis of interview data.

Table 2 Power and resource with quotes.

Subtheme	Quote
Lack of pharmacist authority	'As a pharmacist I don't have the ability to change prescriptions to help the patients get their medications'—P6
Lack of access to suppliers	'Where I work, I can't just order from any supplier as I am restricted to a list of suppliers to use, which makes it more difficult for the patients to have access to the medications that are out of stock'—P11
Lack of access to GPs	'Where I work the communication with local GPs is very difficult. You sometimes are left without a call back or email reply for days, which makes it difficult to manage'—P10
Lack of information from patients	'So quite a few patients don't have the understanding of the process. So they think if the doctor prescribes it, it is available'—P4
Lack of information from pharmacists	'We haven't got full access to the patient records either so we can't fully inform on a medical perspective either'—P2

that they themselves had experienced stress and pressure as a result of medicines shortages. Some participants expressed the operational impact medicines shortages were having on them, which included effect on workloads resulting in spending time trying to resolve the shortages. In addition, the lack of alternatives was a challenge some of the participants faced when trying to tackle the issue of medicines shortages. Another participant shared that medicines shortages had an impact on the business, particularly, when they couldn't dispense the medications and returned the prescriptions to the patients.

Some participants felt that medicines shortages impacted the time spent by patients in getting their medicine, particularly,

when patients needed to visit a number of pharmacies or go back to their prescriber for a change of prescription. According to one participant, medicines shortages could have a clinical impact on patients due to treatment interruption and the risk of non-compliance. Also, some participants based their approach to tackling medicines shortages on the type and the urgency of medications. For example, when dealing with critical medications such as anti-epileptics they would put in an extra effort to help resolve the issue of medicines shortages. One of the participants explained that the relationship between them and the GPs had been strained due to the frequent requests for changing a prescribed medicine. Another participant reported that their

Table 3 Engagement and process with quotes.

Subtheme	Quote
Sufficient pharmacist experience	*'I'd say it does sometimes come down to the pharmacist experience as well. If you know the area and you're experienced in ordering medicines you would be able to get supplies from different suppliers'—P1*
Being proactive	*'Also be proactive, if you see something that is out of stock or short in supply we need to find an alternative'—P9*
Motivation of the pharmacist	*'It boosts my morale when I go out of my way to resolve a drug shortage issue for the patient and get appreciated for. Recently, a patient got me a box of chocolates because I helped her with sourcing her medication which she was desperate for'—P9*
Good relationship with GPs	*'I think having a good relationship with your local GPs helps a lot in resolving issues for the patients quicker and always try to involve them in the decision making by giving them all the facts'—P7*
Efficient pharmacy process to deal with medicines shortages	*'Having a process in the pharmacy is key and not only that but everybody should be following the same process of identifying when something is out of stock and alerting the patient and prescriber as soon as possible'—P2*
	'There is an SOP in place where I work which is a step by step check. I would say, I follow that maybe I'm not linear in how I apply what the SOP is suggesting but I more or less use it, which helps'—P5

Table 4 Scope of impact with quotes.

Subtheme	Quote
Frustration for patients	*'Patients feel frustrated when their medications are out of stock because that is another trip to the GP to get their prescriptions changed'—P7*
Frustration for GPs	*'GPs get frustrated as well I guess because they haven't got access to the supply sort of facilities or the same kind of portals we have'—P2*
Stress and pressure for pharmacists	*'I feel that drug shortages are causing many pharmacists including myself a lot of stress on a daily basis on top of the pressure we are under at work'—P9*
Pharmacist workload	*'It really affects our workload because we need to locate where we can get them from. If we can't get them from anywhere, then we have to speak to the GP to get alternative'—P10*
Lack of alternatives	*'So I mean with most things it isn't really an issue as they're alternatives, but with something as unique like Semaglutide there's nothing you can convert it to. But then you need to review the whole therapy, which is a headache for the prescriber'—P3*
Business	*'In community pharmacy, if you're able to obtain that medicine for your patient then they're likely to come back to you again. However, if you are having trouble with that, then they're not likely to do that, and you'll lose business and that patient at the same time' P1*
Time	*'For the patient, it could take them hours to get through to their surgery to change their prescription'—P1*
	'When the patient finally gets through to the GP to change a prescription, the GP then has to find out what suitable alternative is available and change the prescription which is a loss to their valuable time'—P3
Clinical impact for patients	*'I think it's also not clinically safe for patients because sometimes they'll start something and stop for a while, then start something else, and this can affect their compliance and condition'—P7*
Prioritizing patient needs	*'It depends what medication it is but with the urgent medication and also like elderly patients I would try a bit more to resolve the issue of drug shortage for them'—P1*
	'So you know, someone's running out of their epilepsy medication and they need it today, then that's definitely more urgent'—P2
Relationship with GP	*'It is stressful, like it is affecting our relationship with the surgeries as well, because we will be constantly asking for alternatives and sometimes the alternatives go out of stock as well'—P4*
Relationship with patient	*'The increasing issue of drug shortages has impacted my relationship with the patients as I can't always meet their prescription needs'—P6*

relationship with their patients has been affected because they couldn't help patients get their medicine.

Discussion

Medicines shortages were found to have a substantial impact on pharmacists' day-to-day working lives, increasing pressure and stress for pharmacists and contributing to frustration among patients and GPs. Participants also described challenges related to limited autonomy, restricted access to suppliers, poor information flow, and difficulties communicating with prescribers. Together, these findings highlight how medicines shortages disrupt workflows, decision-making, and patient care across community pharmacy settings.

This study is the first published research to explore how pharmacists deal with medicines shortages and the factors influencing their decision-making. The use of interview methods allowed for in-depth data collection and provided participants with the opportunity to share rich accounts of how shortages are managed in practice. Participants had varied levels of pharmacy experience,

allowing for a wide range of perspectives to be captured. Many participants were self-employed (locum) pharmacists, which enabled insights from multiple pharmacy settings; however, this may also represent a limitation, as locums may not remain in one workplace long enough to fully understand the wider organizational impact of shortages. Recruitment through snowball sampling may have introduced selection bias. Finally, it is important to note that the Royal Pharmaceutical Society (RPS) issued updated guidance on managing medicines shortages in November 2024 [16], and it is possible that conducting the study after this update may have yielded different findings.

The impact of medicines shortages described by participants aligns with findings from previous research. Our earlier study reported similar experiences of increased workload, stress, and frustration among pharmacists, patients, and prescribers [5]. A recent RPS report similarly highlighted that the growing problem of medicines shortages places considerable pressure on healthcare professionals, particularly pharmacy teams, resulting in heavier workloads, strained working relationships, and increasing mental health concerns [21]. Evidence from Canada also supports these findings, with community pharmacists reporting increased stress due to workload pressures arising from medicines shortages [22].

Participants highlighted how current UK medicines legislation restricts community pharmacists from making minor prescription changes, such as adjustments to strength or formulation, requiring contact with prescribers or referral of patients back to GPs [23]. The RPS has urged the UK government to relax legislation to allow community pharmacists greater flexibility in managing shortages [24]. At present, pharmacists can only independently supply alternatives when a Serious Shortage Protocol (SSP) exists [25]. This contrasts with hospital pharmacy practice, where governance structures often allow greater flexibility through formulary substitutions or therapeutic equivalents. As a result, community pharmacists have fewer options to directly resolve shortages.

Limited access to suppliers and wholesalers was another key challenge identified, reducing opportunities to source medicines in short supply. While increased supplier access may help, manufacturing-level shortages limit availability across the supply chain. Experience was reported as an important facilitator, with more experienced pharmacists better able to source medicines and identify appropriate alternatives. Proactive preparation and established processes were also viewed positively, although some participants noted that Standard Operating Procedures (SOPs) and SSPs may restrict professional autonomy [26, 27]. Without increased autonomy and training to support professional judgement, pharmacists remain limited in their ability to support patients during shortages.

Participants also reported limited communication from manufacturers and wholesalers about the causes and duration of shortages, making it difficult to manage patient expectations. Poor patient awareness further exacerbated this issue. Evidence suggests that early communication and public awareness initiatives, such as health campaigns and posters, may help mitigate the impact of shortages [28–30].

Finally, difficulties contacting GPs were commonly reported and could delay resolution of shortages. Good relationships with local GPs were seen as facilitating timely solutions [24]. Ensuring prescribers are aware of shortages before issuing prescriptions may reduce the need for direct communication and warrants further investigation. Based on the variation in how pharmacists reported managing shortages, future work should map decision-making processes to support more effective and consistent management.

Conclusion

This study provides an in-depth exploration of how pharmacists experience and manage medicines shortages in routine practice, highlighting both the operational challenges they face and the strategies used to mitigate patient impact. Key findings demonstrate that limited prescribing autonomy, restricted access to prescribers, and insufficient information about the nature and duration of shortages significantly hinder effective management. Despite these constraints, pharmacists employ proactive behaviours, professional judgement, and collaborative relationships with local GPs to navigate shortages and maintain continuity of care.

The primary contribution of this study lies in its detailed characterization of pharmacists' real-world decision-making processes when responding to medicines shortages, an area that has been underexplored in existing literature. By identifying practical facilitators and barriers to effective shortage management, this research moves beyond describing the existence of shortages to explaining how pharmacists respond in practice. These insights provide an evidence base to inform policy development, workforce support, and system-level interventions aimed at strengthening medicines supply resilience. The findings are relevant not only to UK community pharmacy but also to international healthcare settings facing similar supply challenges.

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Author contributions

Mohamed Obiedalla (Conceptualization, Formal analysis, Methodology, Project administration, Software, Writing—original draft, Writing—review & editing), Amelia Hollywood (Conceptualization, Formal analysis, Methodology, Project Administration, Supervision, Writing—review & editing), and Nilesh Patel (Conceptualization, Formal analysis, Methodology, Supervision, Writing—review & editing).

Supplementary data

Supplementary data is available at *Journal of Pharmacy Practice* online.

Conflicts of interest

Funding

Data availability

The data presented in this study are available on request from the corresponding author.

Data access statement

Due to the sensitive and potentially identifiable nature of the qualitative interview data collected for this study, the full transcripts cannot be made publicly available in order to protect participant confidentiality. Ethical approval for this study was granted and participants provided informed consent with the understanding that their data would remain confidential and would not be shared beyond the research team. However, anonymized excerpts supporting the findings are included within the manuscript. Further details or de-identified data may be made available upon reasonable request to the corresponding author, subject to approval by the relevant ethics committee and in accordance with institutional and data protection guidelines.

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