ORIGINAL ARTICLE

Minimizing prescribing errors: A phenomenological exploration of the views and experiences of independent prescribing pharmacists

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Aims: This study aims to explore the views and experiences of independent prescribing (IP) pharmacists regarding prescribing errors and strategies to mitigate errors in practice.

Methods: One-to-one online semi-structured interviews were conducted with IP pharmacists across the United Kingdom. Verbatim transcripts of the interview were generated and coded using NVivo® 12 software for thematic analysis. A mixed inductive and deductive approach was used to generate themes and sub-themes which were then mapped onto the framework of factors that influence clinical practice proposed by Vincent et al.

Results: A total of 14 interviews were conducted. Participants linked the risk-averse nature of a pharmacist, self-perception of their roles as medicines experts, and previous experience of keeping checks on doctors' prescriptions as a dispenser often made them feel confident in prescribing. However, lacking adequate diagnostic skills, inadequate prescribing training programmes, and dealing with complex patients often made them feel vulnerable to committing errors. Organizational and system-related factors such as work interruptions and increased workload were identified as other factors linked to prescribing errors.

Conclusions: Independent prescribing pharmacists use a variety of strategies to reduce the risk of prescribing errors. Promoting diagnostic competency in their area of practice, strengthening undergraduate and prescribing curricula, and addressing known organizational and system-related factors linked to prescribing errors can minimize errors and promote patient safety.

KEYWORDS
independent prescribing, medication errors, patient safety, pharmacy, qualitative research

1 | INTRODUCTION

The World Health Organization (WHO) reported that the unsafe use of medications is the leading cause of avoidable harm in healthcare institutions with an estimated burden of over $US40 billion annually.[1,2] As a consequence, the WHO identified "Medications without harm" as the theme for the 2017 Global Patient Safety Challenge to reducing avoidable medication-related harm by 50% by 2022.[1] To support this initiative the WHO produced several tools and reports to support healthcare institutions in avoiding, recognizing and reporting medication errors.[2] Clinically serious or life-threatening consequences occur in about one in four cases of preventable medication errors.[3]

The most common medication errors are the ones reported under the "prescribing error" category.[4,5] There is no clear consensus on the definition of prescribing error in the literature;[6,7] nonetheless, in the context of this study the definition used is the one proposed by Dean et al. through a Delphi process among experts in the United Kingdom: "A clinically meaningful prescribing error occurs when, as a result of a prescribing decision or prescription writing process, there is an unintentional significant (1) reduction in the probability of treatment being timely and effective or (2) increase in the risk of harm when compared with generally accepted practice."[8] Studies on prescribing physicians reported that reasons for prescribing errors include the working environment (e.g. amount of interruptions), individual factors (e.g. ability to cope with stress), team working (e.g. sharing of tasks between colleagues) and patient/task-specific factors (e.g. number of comorbidities).[4,9]

Prescribing errors are common in the United Kingdom, with a reported prescribing error rate of 2.4% to 24.2% of medication orders.[7] Prescribing errors cost the UK National Health Services up to £2.5 billion a year.[6,10] Consequences of prescribing errors include increased hospital stays, causing harm to the patients, and even increased mortality rates.[11–16] This burden necessitates serious actions to reduce patient harm and improve medication safety.

Most published research about perspectives on prescribing errors has focused on prescribing physicians only. However, in addition to physicians, a number of healthcare professionals have the authority to prescribe in some parts of the world. Since 1992, non-medical prescribers (NMP) have been given the authority to prescribe in the United Kingdom.[17] This group includes healthcare professionals such as nurses, physiotherapists, podiatrists, therapeutic radiographers, optometrists and paramedics.[18] Pharmacists joined the NMP group in 2003.[19] By 2006, pharmacists in the United Kingdom were also given the opportunity to take part in a 6-month independent prescribing (IP) course accredited by the General Pharmaceutical Council (GPhC) after being registered as a pharmacist for at least 2 years.[20] Similarly, countries such as New Zealand and Canada require pharmacists to undergo postgraduate qualification or training to become a prescribing pharmacist,[21–23] whilst in the US different states have different prescribing policies and protocols, and different requirements for pharmacists to prescribe independently.[24]

The role of pharmacists in reducing medication errors is well documented. Reports suggested that there is at least a 25% reduction in medication error rates following pharmacist interventions.[7,25–29] Evidence is promising with regard to the impact of IP pharmacist on medication errors.[9,17,30] One study reported that IP pharmacists had a 0.7% error rate as compared to physicians who had a 9.8% error rate.[31] Whilst pharmacists have historically been a safety net to lessen physicians' prescribing errors, their experiences and the strategies they use to reduce errors when playing the role of a prescriber have not been explored. Thus, the aim of this research is to understand the views and experiences of IP pharmacists concerning prescribing errors and to explore any strategies they use for their prevention.

What is already known about this subject

- Medication errors are one of the leading causes of morbidity and mortality globally.
- Pharmacists can prescribe independently within the scope of their practice.

What this study adds

- Pharmacists' self-perception as drug experts contribute to their confidence in prescribing.
- Pharmacists require more professional development to upskill their diagnostic skills in order to minimize prescribing errors.

1.1 | Ethics approval

This research was ethically approved by the University of Birmingham School of Pharmacy Ethics and Safety Committee (UoB/SoP/2020-65).

2 | METHOD

The methods of this study have been reported in accordance with COREQ guidelines to transparently illustrate how this research was conducted and to demonstrate methodological rigour.[32]

2.1 | Theoretical framework

This study is rooted in understanding the thoughts and feelings of IP pharmacists' realities, so the methodology was designed to yield qualitative phenomenological data whilst utilizing an essentialist philosophical assumption.[33,34] Phenomenological research offers a powerful approach when comprehending subjective perceptions of participants' life experiences is desired. By challenging presumptions, it offers insights into people's behaviours, intentions and experiences within their realities. Based on this, new theories, policies and solutions can be created.[33,35]

A theoretical framework of error-provoking factors known to affect clinical practice identified by Vincent et al. was utilized.[36] These were listed as institutional context, organizational and management factors, the working environment, task factors, team factors, individual (pharmacist) factors and patient factors.[36] This model was a development of Reason's Accident Causation Model, which views error-provoking conditions as something that can be mitigated by barriers of prevention.[37]

2.2 | Participant selection

Participants were recruited for this study using a combination of convenience and snowball sampling.[38] Professional networks of two authors (J.R., M.A.H.) were utilized for recruitment in addition to a post on a social networking site inviting IP pharmacists to participate in the study. Pharmacists with an IP qualification who were working in the community, secondary care or primary care settings were eligible to participate. Student IP pharmacists were excluded from the study. Participants were invited to an online interview via email including an information sheet explaining the study (including its aims) and how they could take part. Participants were rewarded for their time with a £20 online shopping gift voucher.

2.3 | Data collection

An interview guide including questions and prompts was generated before recruitment began. The guide was written following a review of the current literature surrounding prescribing errors (i.e. types, causes and how they occur) and IP pharmacists. This guide was reviewed by the research team and re-drafted before a final copy was produced (Supporting information S1). The guide was used to carry out interviews with participants over the video conference platform Zoom®, with the questions and prompts used changing over time to tailor the interview to each participant. Written participant consent was gained before the interview to allow audio-recording and to document their understanding of how their data would be used. Semi-structured interviews were selected to match the methodological rigour of structured interviews with the ability to divert from a script using the tailored questioning techniques from unstructured interviews. The interviewer also exercised member checking by paraphrasing the participants' answers back to them to ensure a clear understanding of the participants' views. Interview length ranged from 20 to 60 min with a mean of 32 min. This variable length allowed participants to think through their answers at their own pace.

2.4 | Data analysis

All interviews were transcribed verbatim and checked for accuracy by the research team. Transcripts were systematically coded by J.R. using NVivo® 12 software, paying equal attention to all transcripts. The six-step process of thematic analysis proposed by Braun and Clarke were used in this study. The six steps included: (1) becoming familiar with the data; (2) generating initial codes; (3) searching for themes; (4) reviewing themes; (5) defining themes; and (6) writing up.[34] The first step focused on becoming familiar with the data by revisiting the interview notes, reading full interview transcripts, and listening to the audio recordings. The second step focused on generating the initial codes. Both inductive and deductive coding approaches were used. Transcripts were read line by line

and were assigned codes generated from the data itself (inductive approach). Coding was undertaken in between interviews (inductive) so codes generated would inform future interview questions and structure. The framework of factors known to influence clinical practice produced by Vincent et al. was also used for deductive coding. Codes were examined to find shared semantic themes and sub-themes relating to the study aim (strategies pharmacists used to prevent prescribing errors).[34] Themes were reviewed and renamed by J.R. and M.A.H. in a cyclical process with the addition of each new transcript to represent all interview data. The interview process continued until inductive thematic saturation, defined as "where no new data appeared" and "where all concepts ... are well developed",[39] was achieved. This was believed to be achieved with 12 participants and was confirmed with two more interviews. The themes generated were reviewed several times by the research team. Final themes generated were then mapped onto Vincent's framework, lining up with how each strategy was perceived as limiting the negative impact of that factor (shown in Figure 1).[36]

3 | RESULTS

A total of 14 participants were interviewed leading to data saturation. Pharmacists were interviewed from a range of practice settings, locations within the United Kingdom and years of prescribing experience. Participants were between 30 and 39 years old except for four pharmacists (Table 1). From these interviews, three key themes based on their strategies to prevent prescribing errors were derived including clinical competence, organizational structure, and support network and professional traits. Each theme was further classified into sub-themes (Figure 2).

3.1 | Theme 1: clinical competence

Pharmacists, being conscious of the potential consequences of prescribing errors on patient safety, recognized the importance of rational clinical decision-making and clinical competence. The IP pharmacists employed various risk avoidance and minimization strategies to limit prescribing errors. These strategies have been categorized into three sub-themes, as described below.

3.1.1 | Prescribing within the specialized scope of practice

The participants believed that practising outside one's core speciality area can increase the chances of IP pharmacists making prescribing errors and emphasized the importance of adherence to prescribing guidelines within their core speciality.

> "Prescribing within your area of competence does reduce your risk of an error as well" (IPP 2).
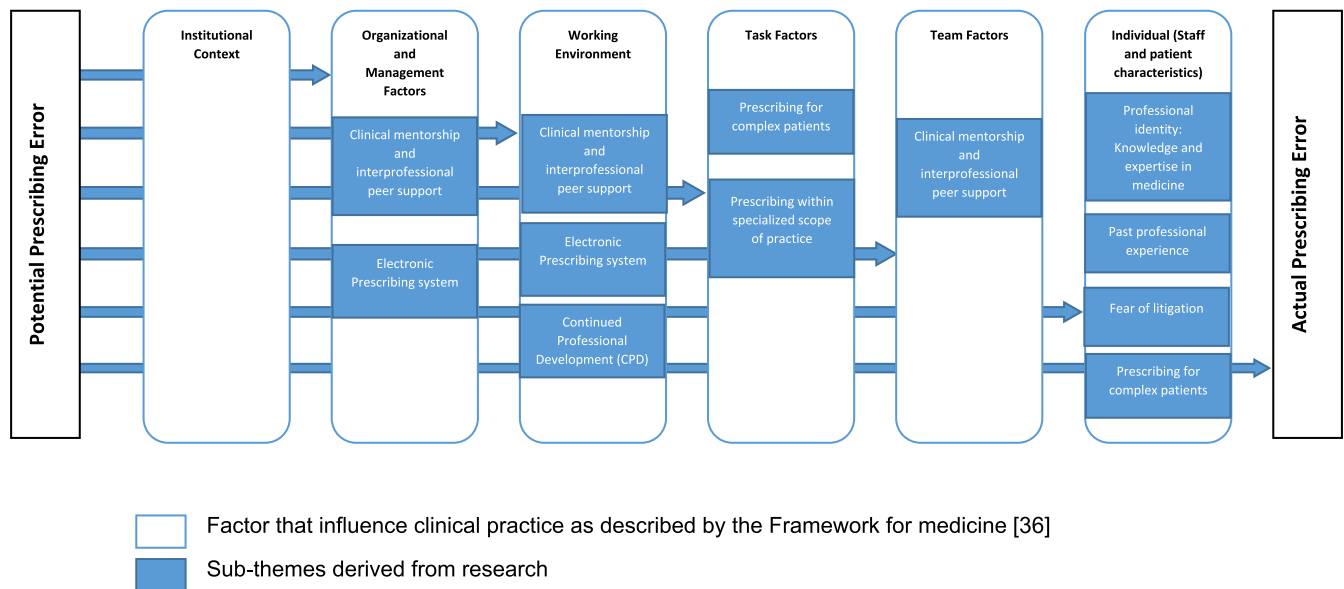
FIGURE 1 Integration of the inductive themes generated with the framework for medicine[36] using the Swiss cheese model.

TABLE 1 Demographic data of the respondents.

ID	Gender	Age (range in years)	Setting of practice	Years of experience as IP	Region/country
IPP 1	Female	30–39	GP	>5	Midlands
IPP 2	Female	30–39	Hospital	3–5	Midlands
IPP 3	Male	40–49	Community	<1	Midlands
IPP 4	Female	30–39	GP	1–2	Midlands
IPP 5	Female	50–59	GP	<1	Midlands
IPP 6	Male	40–49	GP	>5	Midlands
IPP 7	Male	20–29	Hospital	1–2	South East
IPP 8	Male	30–39	GP	1–2	Midlands
IPP 9	Female	30–39	Hospital	<1	South East
IPP 10	Female	30–39	Hospital	3–5	Midlands
IPP 11	Male	30–39	GP	<1	North
IPP 12	Male	30–39	Hospital	1–2	Midlands
IPP 13	Female	30–39	Hospital	3–5	Wales
IPP 14	Male	30–39	Hospice	3–5	Midlands

Abbreviations: GP, general practitioner; IP, independent prescribing; IPP, independent prescribing pharmacist.
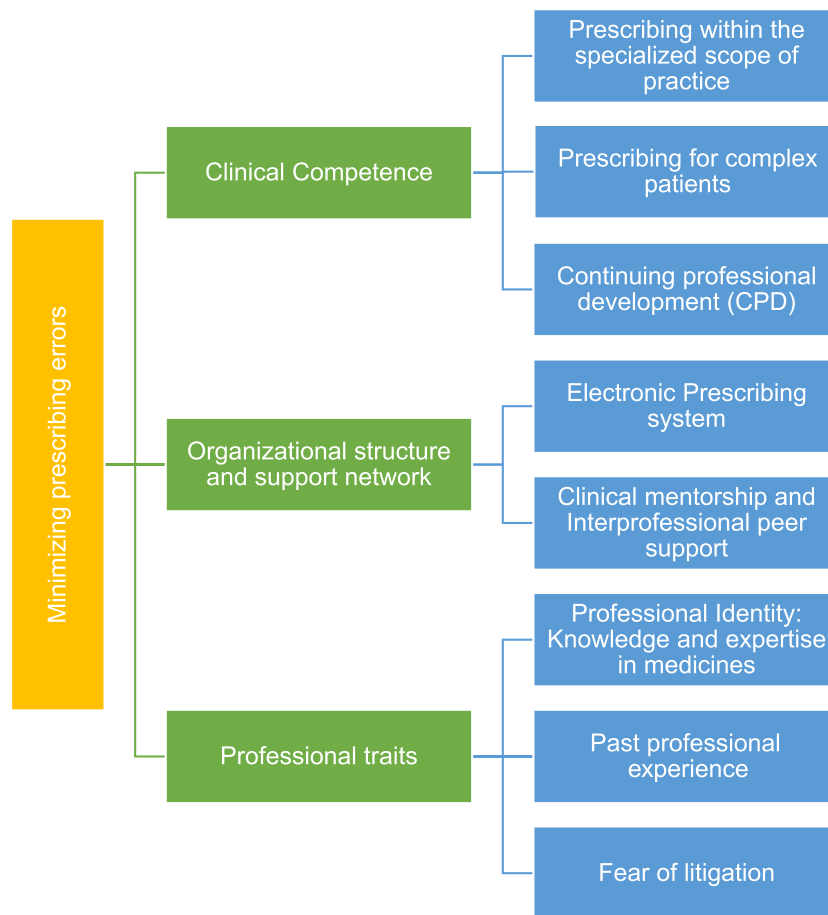
However, a few pharmacists, especially those working in general practice, raised concerns about the occasional clinical need to prescribe outside their scope of practice due to workload-related pressures, inability to find another prescriber at times, and misunderstanding of the "concept of the scope of practice" by other healthcare professionals. This could lead to prescribing errors.

> "Yeah, so I mean … my experience of working in GP surgeries, is that they [other healthcare professionals] do not fully understand what you can and cannot do; what you have learned and have not learned" (IPP 7).

Pharmacists also felt the coursework required to qualify as an IP was sometimes "too general". Many of the skills that they were required to learn had little to do with their area of competence and those that were relevant were not examined thoroughly enough.

> "So there's me revising all of my respiratory examinations, but that did not come up because everything was very broad in the OSCE [Objective Structured Clinical Examination]. They wanted to make everyone very similar and same across the board, if that makes sense" (IPP 2).

FIGURE 2   Key themes and sub-themes.

3.1.2 | Prescribing for complex patients

Participants, especially the newly qualified IPs, considered prescribing for patients with multiple comorbidities particularly, challenging. This was attributed to the likelihood of them having polypharmacy and drug–drug interactions. They believed that prescribing for such "complex" patients increases the likelihood of making a prescribing error but seeking professional advice from senior prescribers/colleagues helped in making safer prescribing decisions.

> "Because it's not just about prescribing for your condition it's about the knock-on effect they may have on their other conditions" (IPP 7).

Similarly, participants exercised extreme caution when making prescribing decisions for paediatric patients and considered these patients at "high risk" due to their physiological differences compared to adults

> "… be very careful because their systems, their bodies, and the organs are not as developed as adults" (IPP 3).

IP pharmacists emphasized the importance of shared decision-making to minimize medication errors, especially for complex patients. Talking to the patients about side effects, reading the prescription together and checking patients' understanding of medicines helped pharmacists minimize prescribing errors.

> "When I've written the prescription, I then present it to the patient and we read it together. So it's almost like I got the patient to safety net it" (IPP 13).

3.1.3 | Continuing professional development (CPD)

Pharmacists highlighted the importance of CPD in maintaining their prescribing competency, promoting patient safety and minimizing errors. Having a specific area of practice meant it was easier for them to focus their CPD to improve their prescribing. The IP pharmacists regularly reviewed clinical practice guidelines and participated in interdisciplinary team meetings to enhance their knowledge and skills.

> "I always seek opportunities for CPD, where possible. I really do think that'll help influence your prescribing decisions in the future" (IPP 10).

Additionally, participants also used CPD as a tool to expand their scope of practice, which enabled them to prescribe beyond their originally qualified scope of practice and apply those skills to a wider group of patients.

> "Your competency is constantly evolving based on your experience, based on your updating knowledge, training, which is again evolving" (IPP6).

"So learning about wider subject areas will enable you to get more knowledge and apply that to your patients better" (IPP 10).

3.2 | Theme 2: organizational structure and support network

Pharmacists described several external factors related to organizational structure and support networks within the organization that influenced the potential for prescribing error. These factors have been categorized into three sub-themes as described below.

3.2.1 | Electronic prescribing system

IP pharmacists believed that electronic prescribing systems make prescribing decisions easier and reduce the chances of making prescribing errors. However, they highlighted the risk of making selection errors when using electronic prescribing systems. Interruptions from the environment were associated with an increased risk of error.

"It's easy to like pick something on the computer and click … and, you know, just prescribe it" (IPP 1).

"GP practices have 'EMIS' or a similar prescribing support system in place and that has pre-loaded information per prescription line that you want to prescribe. So say for example you want to prescribe simvastatin it would come up automatically with 40 milligrams making it easier to make a prescribing recommendation" (IPP 12).

The participants identified increased workload and interruptions during work as potential risk factors for making selection errors when using electronic prescribing systems. The IP pharmacists highlighted the importance of doing a "self-check" before issuing a prescription to minimize prescribing errors.

"So if it's a particularly high-risk medication what I will do, particularly on the computer systems that we use in a moment. I'll prescribe it and then give myself like a mental break so be it 10 seconds, 30 seconds away from the patient's record" (IPP 11).

3.2.2 | Clinical mentorship and interprofessional peer support

The participants emphasized the importance of clinical mentorship and interprofessional peer support in becoming competent and confident IPs. The participants believed that it is the responsibility of the organizations to offer continuous clinical mentorship to upskill junior prescribers and create a working environment that encourages collaborative working. Working as part of a team was generally seen as a good way to prevent prescribing errors as it allowed pharmacists to draw support from senior clinicians.

"If the senior member of the team or other healthcare professional comes in and says, look, I think this is the best option—will be okay for this patient. So I will prescribe for the patient" (IPP 3).

"Yeah. So it all comes back to that mentorship and that, you know, sort of support, and that's critical in whether you make a good prescriber or a poor prescriber" (IPP 1).

3.3 | Theme 3: professional traits

Several pharmacists attributed their ability to make safe prescribing decisions to professional traits that are typically associated with pharmacists, including specialized knowledge about drugs and medicines optimization. The participants also discussed how their prior experiences of working as non-IP pharmacists had influenced their prescribing accuracy. The following three sub-themes emerged within this theme.

3.3.1 | Professional identity: knowledge and expertise in medicines

The participants deeply believed in their identity as experts in medicines because of their specialized knowledge and skills in pharmacology, dosage calculations and medicines optimization. Pharmacists assumed that their knowledge of medicines is better than any other healthcare professional as they received rigorous training during their undergraduate and postgraduate degrees. Having a thorough knowledge of medicines and awareness about prescribing errors reduced the potential of making a prescribing error.

"Also at university, they [physicians] probably do not get as much training in terms of like pharmacology, about medicines reconciliation and optimization, they [physicians] probably do not get as much training as pharmacists do" (IPP 10).

"I think I'm more hyper-aware of making a prescribing error. I think that's just our background in terms of pharmacists, where we are very focused on medicines as a whole" (IPP 11).

However, a few pharmacists felt that their clinical diagnostic skills were not as strong as other healthcare professionals, which made them more vulnerable to making diagnostic errors leading to prescribing errors. This was linked to limited training in clinical diagnosis in their undergraduate curriculum and lack of exposure to making diagnostic decisions in routine practice roles.

"So it might be that they [pharmacists] have got the wrong indication and that again comes down to some of our experiences because we are not trained as being 'diagnosers', you know, we are not trained in the diagnosis and sometimes you can misdiagnose because you have not had that exposure" (IPP 1).

3.3.2 | Diversity in professional experience

A few IP pharmacists highlighted that diversity in professional experience in terms of settings (i.e. primary care, community pharmacy and secondary care) is important not only in facilitating patient journey but also to minimize medication errors related to transfer-of-care issues. Pharmacists felt that, unlike many other healthcare professionals, they have unique opportunities to work across different sectors of the healthcare system and gain valuable experience.

"I'm quite lucky because I've worked in secondary care. I normally know the consultant or the secretary and I'll phone and I say 'Ah it's [IPP 1] … can you sort this out for me?' [slight pause] that broad experience really helps minimize those interface issues" (IPP 1).

Furthermore, pharmacists felt that their experience of minimizing dispensing errors had enabled them to minimize prescribing errors, as many factors that influence prescribing errors are similar to factors that stimulate dispensing error. They believed their "second nature" of double-checking everything and following set processes made them safe prescribers.

"So I think as a pharmacist … our training very much pushes us into that process of following those set steps to make sure we are doing things correctly" (IPP 4).

3.3.3 | Fear of litigation

Pharmacists believed that they generally have a "risk-averse" nature. They attributed risk aversion to their professional training and fear of causing harm to the patient due to misjudgements. The IP pharmacists were deeply concerned about the fear of litigation associated with patient harm. Although pharmacists recognized that risk aversion is a good professional trait to have as a prescriber, they also considered fear of litigation as a major barrier for pharmacists to take up prescribing roles despite having the relevant qualifications.

"I think a lot of pharmacists are risk-averse like I know so many pharmacists that have done the prescribing course and they do not prescribe" (IPP 1).

"You know, we will get incriminated as a consequence of doing something like that [patient harm] as a pharmacist" (IPP 9).

4 | DISCUSSION

To the best of our knowledge, this is the first study to explore independent prescribing pharmacists' views and experiences of prescribing errors and strategies used to minimize prescribing errors in clinical practice. Understanding these strategies and identifying barriers and facilitators to their implementation is not only important in improving institutional safety culture but also in informing the design of training courses for non-medical prescribers. Subsequently, incorporating these strategies in clinical practice will minimize prescribing errors and improve patient outcomes. The findings of our study demonstrated that pharmacists were confident in the accuracy of their prescribing skills. They attributed their confidence in prescribing to specialized knowledge of drug pharmacology, their undergraduate pharmacist training, as well as their scope of practice in different clinical settings including primary, secondary and tertiary.

A study comparing prescribing errors made by doctors and independent prescribing pharmacists in a hospital setting also found that pharmacists made significantly fewer prescribing errors compared with doctors.[31] Furthermore, the vast majority (85%) of prescribing errors made by pharmacists were minor in significance with regard to patient harm.[31] However, lack of expertise in physical assessment of patients and diagnosis often made them feel vulnerable to making prescribing errors resulting from missed or wrong diagnoses.

The literature on the prescribing accuracy of IP pharmacists is limited. However, one study concurs with the results above in suggesting pharmacists have a lower diagnostic competency than other prescribing professions when using a quantitative methodology.[17] This gives credibility to the notion that the clinical assessment skills of IP pharmacists are not as developed as those of other prescribing colleagues. Nonetheless, it emphasizes the need for collaborative working with other experienced healthcare providers to provide holistic care for the patient. Prescribing pharmacists confirmed that collaborative work and mentorship from practising clinicians and experienced prescribers reduced prescribing errors. However, role clarification is often needed to ensure successful and efficient collaboration. Additionally, similar to this study, pharmacists continue to show interest and desire for more training when it comes to diagnosis and physical examination.[40]

As mentioned previously, the literature on prescribing error in general is vast, with many studies being conducted to try and classify different types of error and their prevalence.[1,4,7,9–16,31,41] Viewing the results through the lens of previous works, our study illustrates that pharmacists have described influences similar to their medical counterparts.[4,9] Prescribing pharmacists attributed prescribing errors to workload, work interruptions and working with complex patients

including polypharmacy and the paediatric population. This highlights the need for institutional strategies to overcome these barriers by increasing the workforce and providing relevant training when necessary. Several studies highlighted that training and education can significantly reduce prescribing errors among healthcare professionals.[42,43]

Other research has shown how other professionals, such as doctors, also experience knowledge-based errors.[4,13] Pharmacists suggested that keeping their knowledge of their scope of practice up to date was a strategy they utilized to prevent prescribing error, specifically knowledge-based error.[9,13] Knowledge-based errors could be reduced through the good use of CPD to stay up to date with current guidance (such as online SCRIPT modules), regardless of the profession.[44]

However, pharmacists also outlined how there were circumstances where they felt they needed to prescribe outside their area of competence, something that medical prescribers like general practitioners are less likely to experience, as their scope of practice is much broader. This could be prevented by ensuring IP pharmacists in secondary care have enough access to medical prescribers to prescribe in areas outside their area of competence, and that primary care organizations that employ IP pharmacists are aware of the latter's specific area of competence to prevent inadvertently generating a scenario where the pharmacists feel they must prescribe outside of it.

There was a clear risk aversion experienced by pharmacists whilst prescribing, with pharmacists describing both its beneficial and detrimental aspects. One Canadian study argued that the risk-averse nature of pharmacists was also expressed as a reluctance to conduct their practice differently from how they usually would.[45] Another study found around one third of pharmacists are not prescribing despite having the qualifications to prescribe.[46] Our study suggests that pharmacist training and experience in prescribing error have contributed to some pharmacists being too risk averse to prescribe, despite the benefit pharmacist prescribing has had on patient care.[9,17,30,47] Additionally, pharmacists highlighted that IP qualifying exams are too general, which may have contributed to a lack of pharmacist confidence in their competence to prescribe without errors, hence choosing to avoid prescribing despite receiving prescribing qualifications. Pharmacists should be required to continually demonstrate their clinical competency when prescribing to continue to have the ability to prescribe. This would be to maintain patient safety and prevent a scenario where pharmacists are not aware of their loss in competency as per the Dunning-Kruger cognitive bias.[48]

4.1 | Further research

The literature surrounding IP pharmacists, particularly their experience of error, is extremely underdeveloped. Further research should be conducted to assess the impact of the factors discussed above on patient safety. There also exists a need for large quantitative studies of a national scope to assess the prescribing accuracy of IP pharmacists.

4.2 | Strengths and limitations

Our study identified themes that are tied to Vincent's framework for factors influencing clinical practice which adds to the validity and transferability of the results.[36] Peer debriefing, self-description, thick description of the method and member checking were all used to demonstrate the credibility of this study. Additionally, the software NVivo® 12 was used to assist with the thematic analysis, allowing the automatic generation of an audit trail whilst coding and grouping the data (Supporting information S1). Theoretical saturation was also achieved, demonstrating dependability. Even though data saturation was attained, the participants' similar age groups and life experiences may not have been representative of all IP pharmacists across the country, necessitating further studies to confirm the results.

5 | CONCLUSION

Independent prescribing (IP) pharmacists understand the serious patient safety implications of prescribing errors and employ a range of strategies to minimize errors. IP pharmacists need to practise within their scope of practice and continuously engage with CPD programmes to further develop their diagnostic skills. Higher education institutions should carefully consider enhancing clinical and diagnostic skills teaching within their curriculum to overcome perceived deficiencies to improve prescribing accuracy and safety. Larger quantitative studies are needed to evaluate the extent and implications of errors linked to pharmacist Ips, thereby allowing development, implementation and evaluation of interventions to prevent and mitigate such errors.

CONFLICT OF INTEREST STATEMENT

There are no other conflicts of interests to declare.

DATA AVAILABILITY STATEMENT

The datasets generated during and/or analysed during the current study are available from the corresponding author on reasonable request.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.