BMJ Open

To prescribe or not to prescribe in the elderly: a qualitative exploration of prescribing dilemmas among Pakistani healthcare providers

Halima Sadia ,[1] Safila Naveed,[1,2] Hina Rehman,[3] Shazia Jamshed[4]

To cite: Sadia H, Naveed S, Rehman H, *et al*. To prescribe or not to prescribe in the elderly: a qualitative exploration of prescribing dilemmas among Pakistani healthcare providers. *BMJ Open* 2025;**15**:e094545. doi:10.1136/bmjopen-2024-094545

► Prepublication history and additional supplemental material for this paper are available online. To view these files, please visit the journal online (https://doi.org/10.1136/bmjopen-2024-094545).

Received 02 October 2024
Accepted 17 April 2025

Check for updates

© Author(s) (or their employer(s)) 2025. Re-use permitted under CC BY-NC. No commercial re-use. See rights and permissions. Published by BMJ Group.

[1]Department of Pharmacy Practice, Faculty of Pharmacy, Jinnah University for Women, Karachi, Pakistan
[2]Faculty of Pharmacy and Pharmaceutical Sciences, University of Karachi, Karachi, Pakistan
[3]Department of Pharmacy Practice, Institute of Pharmaceutical Sciences, Jinnah Sindh Medical University, Karachi, Pakistan
[4]Department of Pharmacy Practice, School of Pharmacy, IMU International Medical University, Kuala Lumpur, Malaysia

Correspondence to
Halima Sadia;
halimasadia093@gmail.com

ABSTRACT

Objective Potentially inappropriate prescribing is a global health issue with catastrophic consequences in the elderly population. Healthcare providers play a critical role in medication optimisation in elderly patients. The present study aims to explore the perceptions of healthcare professionals (prescribers) regarding the complexities of inappropriate prescribing practices in the elderly population.

Design A qualitative study using semistructured interviews was conducted. All the data were transcribed verbatim and analysed via Braun and Clarke's thematic analysis approach.

Setting Prescribers working in a tertiary care hospital in Karachi, Pakistan.

Participants Prescribers having more than 5 years of experience in elderly prescribing. Participants were selected using purposive sampling, and recruitment continued until the point of data saturation, meaning no new major themes emerged.

Results 13 prescribers, five females and eight males with an average experience of 15.3 years, were interviewed. The interviews lasted for an average of 15 min. The analysis revealed three primary themes: (1) inappropriate prescribing, characterised by knowledge and awareness of inappropriate prescribing and its assessment tools; (2) complexities in elderly prescribing, highlighting patient factors such as comorbidities, polypharmacy, psychological issues and socioeconomic challenges, as well as prescriber factors; and (3) interventions to improve prescribing, emphasising the role of pharmacists in enhancing medication safety, the importance of effective patient–prescriber relationships through counselling and the need for regulatory measures to monitor prescribing behaviours. Inadequate knowledge of standardised assessment tools such as the Screening Tool to Alert to Right Treatment/Screening Tool of Older Persons' Prescriptions criteria, time constraints faced by prescribers and fragmented healthcare systems were some of the barriers identified by the respondents in medication optimisation for elderly individuals.

Conclusion The findings highlight the need for enhanced education on standardised assessment tools and the implementation of targeted interventions. A key recommendation is the integration of clinical pharmacists into care teams to optimise prescribing practices.

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ The semistructured interviews provided rich, in-depth responses that provided important insights into the challenges of prescribing to the elderly population, especially in the Pakistani context.
⇒ The diversity of the respondents, which included highly experienced general practitioners and consultants, provided a variety of viewpoints.
⇒ The views presented may not fully represent the perspectives of all healthcare providers, including nurses, pharmacists and other allied health professionals who play essential roles in medication management for elderly patients.

INTRODUCTION

Ageing is a natural process and globally, there has been exponential growth in the elderly population. The WHO has reported that there is one elderly person out of every nine people.[1] The paradigm shift in demographic trends significantly contributed to the growth of the elderly population. This growth is more pronounced in developing countries, and these countries are witnessing rapid escalation.[2] Pakistan is the sixth most populated country according to the global population ranking. Presently, the number of older adults is more than 8 million and by 2050, this number is expected to increase more than three times.[3]

The health-related consequences of ageing are multifaceted. As individuals age, they are more likely to develop various diseases, significantly impacting their quality of life. The development of multiple diseases is often accompanied by polypharmacy. The former and latter are important factors that subsequently lead to potentially inappropriate prescribing (PIP) in this vulnerable population. PIP is associated with pharmacotherapy failure and also imposes an increased risk of adverse drug reactions.[4 5] The PIP comprises prescribing medications with risks

BMJ Open: first published as 10.1136/bmjopen-2024-094545 on 29 April 2025. Downloaded from http://bmjopen.bmj.com/ on May 20, 2025 at Department GEZ-LTA Erasmushogeschool . Protected by copyright, including for uses related to text and data mining, AI training, and similar technologies.

outweighing the benefits despite the availability of a safer alternative. Moreover, medications that are not clinically indicated and/or not cost-effective also contribute to PIP.[5 6] Compared with younger individuals, prescribing in older adults is complex. Owing to age-related organ pathophysiology and the decreased function of regulatory processes, older adults are at increased risk of inappropriate prescribing outcomes.[7] Numerous tools have been developed to detect inappropriate prescribing. The most commonly cited tools are the Screening Tool to Alert to Right Treatment/Screening Tool of Older Persons' Prescriptions (START/STOPP), Medication Appropriateness Index and the Beer's Criteria. A concise explanation regarding why the prescribing practice is potentially inappropriate is associated with each criterion.[8]

A number of quantitative studies have reported the prevalence of PIP (25–75%).[9–11] However, little has been done to explore why it occurs and how it can be managed. Qualitative research plays a pivotal role in medical research. Inductive analysis helps explore human experiences which in turn enables a deep understanding of behaviour, context and social phenomena.[12] The findings from the qualitative study identify the key areas for targeting of interventions, which in this proposed scenario is prescribing improvement interventions. There are very few qualitative investigations that provide insight into the PIP phenomenon until date. The increase in the number of chronic conditions in the ageing population has significantly pressurised the healthcare system. Optimised pharmacotherapy requires multidisciplinary effort. Healthcare providers play a critical role in medication optimisation and medication pharmacotherapy. There is a great paucity of data on the magnitude of PIP in Pakistan. Although some studies have reported the prevalence of PIP in older adults (64%), very few have qualitatively explored this genre.[13] The present study aims to understand the experiences, views and perspectives of prescribers regarding prescribing and PIP in older adults. Furthermore, this study aims to identify key barriers to appropriate prescribing in elderly patients in Pakistan and propose targeted interventions, such as prescriber training and pharmacist integration.

METHODOLOGY

Study design

A qualitative research design was adopted using semistructured interviews to gather insights from the prescribers regarding inappropriate prescribing in the elderly. Qualitative research has the ability to explain the process and patterns of human behaviour that are otherwise difficult to quantify.[14] Semistructured interviews are widely employed in healthcare research.[15] Semistructured interviews were used in the current study as they allow the research to evolve and new unforeseen themes may arise. It provides a flexible framework where participants can be asked for in-depth information and evidence and hence is the preferred method for qualitative research.[16]

Setting

The study was conducted in a tertiary care hospital in Karachi, Pakistan. The hospital environment was conducive to assessing a diverse range of prescribers who regularly interact with elderly patients.

Study participants and inclusion and exclusion criteria

Prescribers working in tertiary care hospital having experience of dealing with elderly patients were recruited between May and July 2024. A list of prescribers was provided by the hospital administration. The sampling frame was then identified by purposive sampling to ensure a diverse range of perspectives. Those with at least 5 years of experience irrespective of gender were included in the study. Prescribers were excluded if they did not have the required experience. Prescribers fulfilling the inclusion criteria were contacted and verbally briefed about the study. They were then invited to participate in the study. Prescribers who agreed to participate were contacted for interviews. Initially, 20 prescribers were approached, of whom five declined to participate, and two participants refused to have their interviews recorded. Interviews were conducted until the point of saturation was achieved and no new theme arose. The point of saturation was defined as the comprehensiveness, depth and replicability of data in the absence of new information.[17] After the 11th interview, the point of saturation was obtained; however, interviews were carried out until the 13th interview to ensure that no new information was obtained.

Patient and public involvement

None.

Data collection

One-to-one semistructured interviews were conducted to collect the data. All the interviews were conducted either in person (at the prescriber practice setting) or via telephone at a time that was convenient and acceptable to the participants. All the interviews were audio recorded. Those conducted via telephone were recorded via loudspeakers. The recordings were stored securely in a password-protected file to maintain confidentiality. The interviews were conducted by the principal researcher (HS PhD student) in English. The researcher kept a self-reflective journal/diary throughout the research to maximise rigour and reliability.

The interviews were conducted in light of the topic guide that was developed after a preliminary review of the literature.[18] To ensure the instrument's content validity, two researchers with experience in interviewing techniques examined the interview guide. The interview topic guide (online supplemental fileonline supplemental files 1; 1) comprises the following broad sections relevant to the study: reflections on prescribing practices in the elderly population; factors contributing to inappropriate prescribing in the elderly population; the use of prescribing tools in the elderly population such as the START/STOPP criteria; and prescribers' attitudes

BMJ Open: first published as 10.1136/bmjopen-2024-094545 on 29 April 2025. Downloaded from http://bmjopen.bmj.com/ on May 20, 2025 at Department GEZ-LTA Erasmushogeschool . Protected by copyright, including for uses related to text and data mining, AI training, and similar technologies.

towards the relevance of PIP and improvisations to optimise prescribing in the elderly population.

The topic guide included prompts and probes inside each major area to extract more information pertinent to the goals and objectives of the study. Following every interview, the interviewer conducted a debriefing to review the relevant background information. The feedback from the participants was welcomed to maintain the authenticity of their answers. Peer debriefing, in which colleagues examined the interview techniques, further reinforced the process. All the recorded interviews were then subsequently transcribed verbatim for analysis.

Data analysis

Study participant demographics were analysed using IBM SPSS (Statistical Package for Social Sciences) V.21. Descriptive statistics were employed to represent patient demographics.

Qualitative data analysis was performed in light of Braun and Clarke's six-phase approach to thematic analysis.[17 19] Braun and Clarke's thematic analysis framework provides a systematic approach to identify, analyse and report themes within qualitative data. This framework analysis allows themes to emerge from the data itself without being constrained by pre-existing theories or frameworks. The transcript summaries were sent to the respondents for acknowledgement and accuracy. All the respondents acknowledged the accuracy of the transcript summaries, and no changes were suggested. The interview transcripts were systematically examined by HS and SJ as part of the procedure to identify important themes and trends pertaining to inappropriate prescribing in elderly patients. For the purpose of familiarising themselves with the data, the transcripts were thoroughly read to gain a comprehensive understanding of the content and identify potential themes. The initial codes were generated from the data, capturing key features relevant to the research question. The codes were then grouped into potential themes that reflected significant patterns in the data. The identified themes were refined to ensure that they accurately represented the data and were coherent. Some themes were merged or broken down into subthemes during this phase. Eventually, the final themes were clearly defined and named to capture their essence. The thematic mapping is summarised in figure 1.

Ethical considerations

Informed written consent was obtained from each participant, and all the participants were assured that they had complete autonomy in their participation and that they could withdraw themselves anytime during the study. No personal data were collected, and any personal identifying information was removed from verbatim transcripts before analysis. All the data were anonymised during the process of analysis. The recordings were stored securely in a password-protected file with access to only three researchers to maintain confidentiality. No honorarium was given to the participants.

RESULTS

Respondent characteristics

A total of 13 semistructured interviews were conducted. The majority of the doctors were male (n=8, 61.5%) and more than 80% of the respondents had more than 10 years of experience (n=11). 84.6% (n=11) of interviews were conducted in person and the average length of the interviews was 15 min (range 7.05–43.85) (table 1).

Themes identified

The inductive thematic analysis of the transcripts of the interviews with healthcare professionals using Braun and

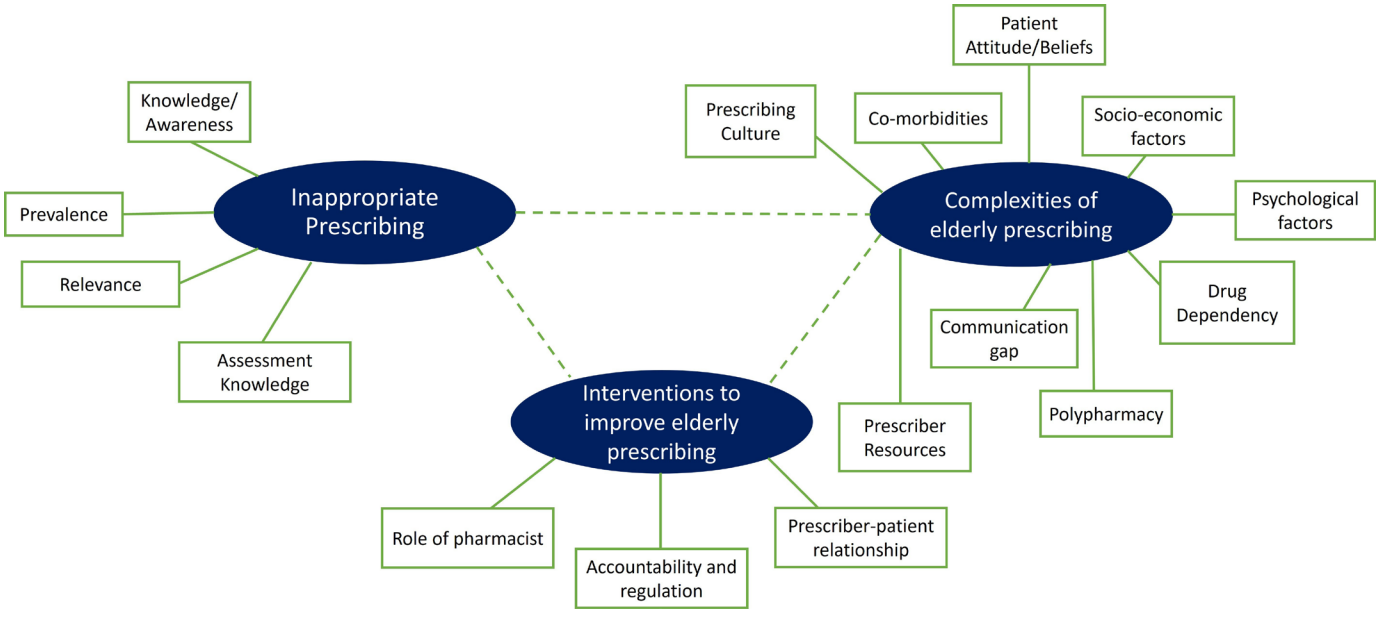

Figure 1 Thematic mapping.

BMJ Open: first published as 10.1136/bmjopen-2024-094545 on 29 April 2025. Downloaded from http://bmjopen.bmj.com/ on May 20, 2025 at Department GEZ-LTA Erasmushogeschool . Protected by copyright, including for uses related to text and data mining, AI training, and similar technologies.

Table 1 Respondent characteristics

Characteristic	n (%)
Number interviewed	13
Male (%)	8 (61.5)
Average experience (in years)	15.3
>10 years in practice	11 (84.6)
Designation	
Consultant	10 (76.9)
General physician	3 (23.1)
Interview method	
In person (%)	11 (84.6)
Telephone (%)	2 (15.4)
Average interview length (min)	15.11 (range: 7.05–43.85)

Clarke's methodology revealed critical insights into the complexities of inappropriate prescribing practices in the elderly population. The following themes were identified (figure 2):

1. Inappropriate prescribing.
2. Complexities in elderly prescribing.
3. Interventions to improve prescribing in the elderly.

Theme 1: inappropriate prescribing

Inappropriate prescribing is very frequent in the elderly population and is characterised by a lack of complete medical history, incorrect dosing and symptomatic management without addressing underlying causes. Elderly patients often present with polypharmacy and multiple comorbidities, making their management complex. It was also evident that respondents had limited knowledge about the specific tools used for assessing inappropriate prescribing, particularly in the elderly population.

Understanding and awareness of the concept

The respondents generally understood the concept of inappropriate prescribing and recognised its prevalence among elderly patients. They demonstrated a clear awareness of inappropriate prescribing as a concept, particularly in the context of elderly patients.

> Inappropriate means not receiving proper treatment. There is no basic information. Patients come from multiple prescribers with multiple morbidities. There is missing information from the patient. (Respondent 1)

> Inappropriate prescribing is something that is not beneficial for the patient. Like for e.g. there is a diabetic patient and you are giving medicine that increases serum blood glucose or a patient is having impaired kidney function and you are giving medicine that further deteriorates kidney function. (Respondent 7)

> Inappropriate means that the patient does not have the requirement and you are prescribing it. So whatever prescription is prescribed, the patient does not need it. (Respondent 4)

Some of the respondents even termed inappropriate prescribing as an unethical practice.

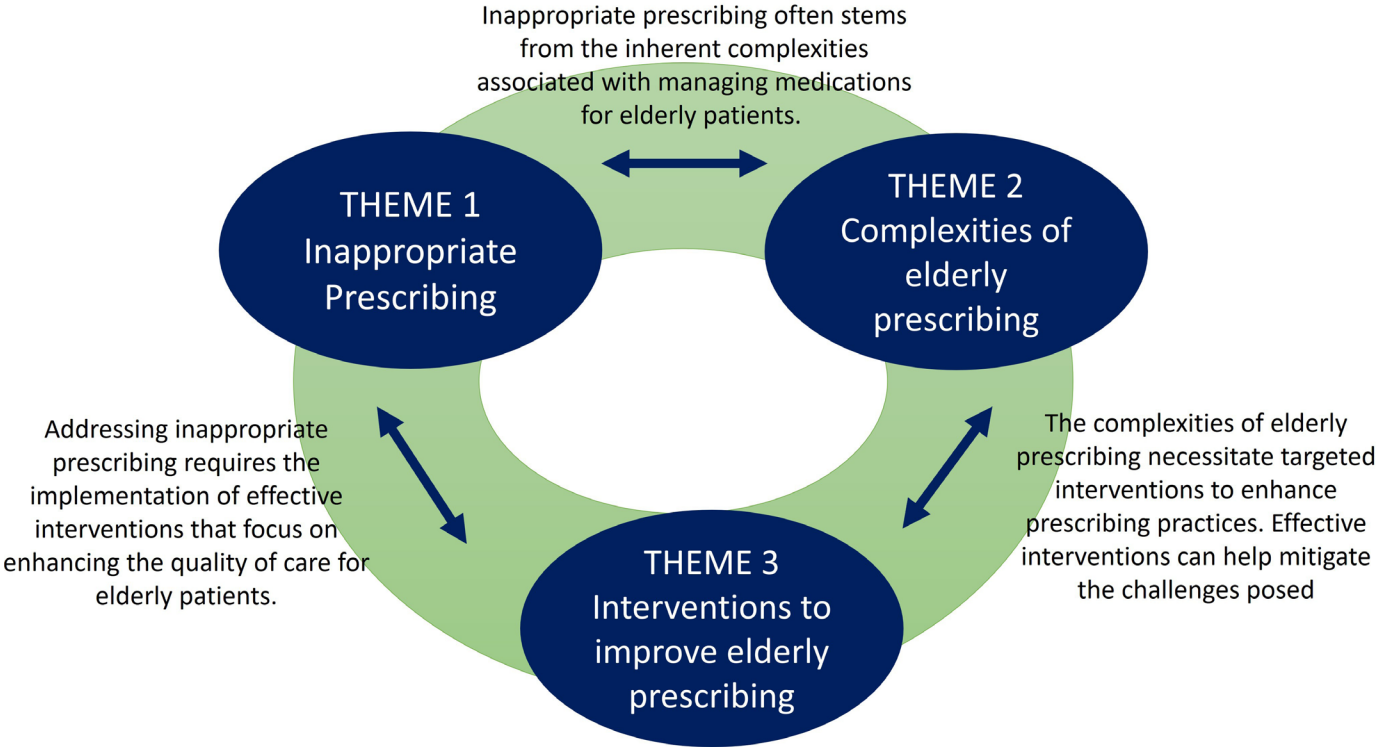

Figure 2 Overview of the themes identified.

BMJ Open: first published as 10.1136/bmjopen-2024-094545 on 29 April 2025. Downloaded from http://bmjopen.bmj.com/ on May 20, 2025 at Department GEZ-LTA Erasmushogeschool . Protected by copyright, including for uses related to text and data mining, AI training, and similar technologies.

We also get such prescriptions that have 3–4 unethical drugs written in the prescription. Unethical in the sense that for a single indication more than 3 drugs have been prescribed. (Respondent 12)

Prevalence of inappropriate prescribing in the elderly

All the respondents acknowledged that inappropriate prescribing is an issue in the elderly population. However, the term 'prevalence among elderly individuals' evoked mixed reactions among the respondents, with three reporting that although it is an issue in elderly individuals, it is not just restricted to these older patients; its prevalence is equal to that of other age groups.

You just can't be specific with the elderly. This is happening in all our population, in all our communities. (Respondent 2)

It doesn't depend on age. Its frequent in every age group. (Respondent 6)

Notably, the other respondents highlighted that inappropriate prescribing is very prevalent and a frequent problem of the elderly.

No… definitely it's a very frequent problem of the elderly. Very common. (Respondent 1)

Yeah, is a very common problem in this population. (Respondent 3)

Assessment of inappropriate prescribing in the elderly

The respondents exhibited limited awareness of specific criteria such as the START and the STOPP for assessing inappropriate prescribing. While they recognised the concept of inappropriate prescribing and its implications for elderly patients, there was no explicit mention of these specific assessment tools.

Specifically, not, but we do make sure that medicine is given as per the condition of the patient. The dose is adjusted according to their renal function. Proper precautions are being taken and contraindications are considered. (Respondent 6)

There may be criteria's but I have never experienced this. (Respondent 9)

Instead, they expressed a reliance on experience-based practices rather than standardised assessment tools.

Basically, it depends on your experience. As such I have no idea about these criteria. I have not read it yet. (Respondent 7)

No, I have not. They are not into our practice. Books are there, Google is a very good medium, we check it, otherwise we ask our seniors. (Respondent 13)

Relevance of inappropriate prescribing in the elderly

The respondents demonstrated a significant awareness of the relevance of inappropriate prescribing, particularly in the context of elderly patients. They recognised the implications of inappropriate prescribing practices for patient health and the complexities involved in managing medications for this population.

Absolutely! And if it doesn't minimize this would lead to a BIG DISASTER! (Respondent 3)

Yes, this is very relevant. (Respondent 8)

Theme 2: complexities in elderly prescribing

Complex prescribing emerged as a major theme. It comprises patient and prescriber factors. Elderly patients often present with significant challenges due to factors such as comorbidities, polypharmacy and communication gaps. The respondents highlighted the complexities involved in managing elderly patients, particularly those with multiple comorbidities and polypharmacy.

Patient factors

Inappropriate prescribing in elderly patients is a complex issue influenced by various patient factors. Several key patient-related factors contribute to the challenges of prescribing for this population.

Comorbidities

Elderly patients often present with multiple comorbidities, making their management complex. Multiple health conditions require careful consideration when prescribing medications. The presence of comorbidities increases the risk of drug interactions and complicates treatment plans.

It may be because of their comorbidities, their laboratory vitals, age… this all collectively makes it difficult to prescribe in this population compared with young individuals. (Respondent 6)

The reason is that older patients already have many comorbidities, diabetes, hypertension, they have thousands of problems. They consult 10 doctors and every doctor gives their treatment. I just gave you an example, that the patient is suffering from peptic ulcer and NSAIDs [non-steroidal anti-inflammatory drugs] are prescribed. For every body part ailment, they'll show up to a different doctor and this all collectively burdenized them with loads of medicine. (Respondent 7)

When you have a patient especially an adult patient who is 60 plus, he has multiple problems, multiple symptoms. (Respondent 3)

Polypharmacy

Polypharmacy, or the concurrent use of multiple medications, is a significant issue among elderly patients. The more medications a patient takes, the higher the likelihood of inappropriate prescribing due to potential drug interactions and cumulative side effects.

This is a very big thing. One doctor is prescribing four medicines, and the next doctor will add four more in the next step. (Respondent 11)

BMJ Open: first published as 10.1136/bmjopen-2024-094545 on 29 April 2025. Downloaded from http://bmjopen.bmj.com/ on May 20, 2025 at Department GEZ-LTA Erasmushogeschool . Protected by copyright, including for uses related to text and data mining, AI training, and similar technologies.

There is polypharmacy, many medicines are given which are not needed like multi vitamins etc. (Respondent 13)

Attitudes and beliefs

The attitudes and beliefs of elderly patients can complicate prescribing practices. Some elderly patients may have unrealistic expectations regarding their treatment, which can lead to dissatisfaction and potentially inappropriate requests for medications. Their desire for attention and validation may lead them to present symptoms in a way that complicates diagnosis and treatment.

They are socially isolated… they want someone to listen to them. They have that personality… they are non-satisfactory kind of people. (Respondent 2)

Psychological factors

Psychological factors, such as anxiety and depression, are prevalent among elderly patients and can complicate prescribing decisions.

Usually, in this age group apart from their symptoms they are also accompanied by anxiety and depression which is usually followed by insomnia. (Respondent 3)

Yes, there is ignorance. Then there is depression, anxiety and it leads to complications. (Respondent 8)

Communication gap

The communication gaps between patients and healthcare providers significantly contribute to the complexity of prescribing for elderly patients. A lack of effective communication can result in incomplete medical histories, making it difficult for providers to make informed prescribing decisions.

The patient doesn't provide a complete history and then they are given short-term medicine. Even they are not properly counselled. (Respondent 4)

Yes, we have a lot of patients. They came to us after they had seen a number of doctors and they also don't tell us the complete history. When we prescribe the medicine, they are like we are already taking this medicine. (Respondent 9)

Inertia

Some elderly patients may be resistant to changing their medication regimens or may not fully understand the implications of their treatment, leading to continued use of inappropriate medications.

See there comes a time when the drug doesn't exert its effect. The drug needs to be changed. (Respondent 13)

Yeah. somehow the patient becomes so much addicted to a particular medicine they fear of changing the drug and they are hardly willing to accept the change in their therapy. (Respondent 3)

You see it's the patient mindset. These patients have a very typical mind set which is very hard to change. Then there is also very increase demand. Their rigid behavior often acts a barrier. (Respondent 6)

Socioeconomic factors

Elderly patients face significant socioeconomic challenges, including financial constraints, social isolation and lack of family support, which limit their access to healthcare and adherence to treatment. These factors contribute to loss to follow-up and poor treatment outcomes in the elderly population.

The thing is when you have a patient especially an adult patient who is 60 plus, he has multiple problems, multiple symptoms. First of all, he is a person who supports his family but after 60 plus, when he loses his job, though some people do get pension, some people have private jobs, some don't. Then suddenly the patient economically collapses. And when they collapse, they have no power or money. Eventually when these conditions start developing, his authority in the house is lost. The house is a place of discussion. But in this age group people, they are usually ignored, it would be better to say they are socially isolated. (Respondent 3)

I tell you socio-economic issue is the major issue. They don't have money to buy medicine. They are not earning so they don't have money. (Respondent 10)

Prescriber factors

Several prescriber factors contribute to the complexities and challenges faced by healthcare providers. The prescriber factors involved in elderly prescribing include a paternalistic approach, time constraints and a culture of symptomatic management.

Paternalistic approach

The respondents recognised the authority they held as prescribers; they also expressed a commitment to acting in the best interest of their elderly patients. Their emphasis on counselling, patient safety and the need for a systematic approach reflects a positive paternalistic attitude that prioritises the well-being and understanding of patients.

Exactly it develops trusts and improves patient physician communication. Patient believes that if they start taking a medicine for chronic disorder they'll have to take or it will become a habit. Doctor prescribes a medicine not for habit but for the need. The patient needs to be properly educated and counselled. (Respondent 4)

The respondents believed that they had to adopt this approach as a consequence of the patient's attitude.

They say, a 60-year-old is just like a kid. They want special attention. They are like 'doctor you haven't checked me properly'. (Respondent 2)

BMJ Open: first published as 10.1136/bmjopen-2024-094545 on 29 April 2025. Downloaded from http://bmjopen.bmj.com/ on May 20, 2025 at Department GEZ-LTA Erasmushogeschool . Protected by copyright, including for uses related to text and data mining, AI training, and similar technologies.

Time constraint

Time resource constraints significantly impact the quality of care that healthcare providers can offer to elderly patients. The complexity of managing medications for this population, combined with limited consultation time, often leads to suboptimal prescribing practices. Limited consultation time leads to inadequate patient history taking, a focus on symptomatic management, increased risk of polypharmacy, communication gaps and challenges in follow-up care. These factors ultimately contribute to inappropriate prescribing practices and negatively impact patient outcomes.

> Even due to shortage of time patients aren't even properly counselled. (Respondent 3)
>
> Our practitioners are very busy. They deal with 2–3 patients in a minute. Do they have time to counsel the patients? They rarely bother counseling. (Respondent 4)

The respondents also reported that many of the times, it is the patient's hurry that leads to such outcomes.

> Actually, many of the times it's the time that restricts us. The patients are in a hurry. (Respondent 5)

Prescribing culture

The culture of prescribing in certain healthcare settings often emphasises symptomatic management rather than addressing underlying causes. The majority of the respondents agreed that a culture of symptomatic management exists in society.

> Along with being complicated, these patients are being managed symptomatically. They are not being treated rationally. They are managed for the symptoms. (Respondent 1)

However, it was also noted that symptomatic management is being done as a consequence of demand from the patient.

> These patients only want symptomatic relief. They don't want proper treatment that eradicates the root cause of the disease. (Respondent 6)
>
> See the patient mindset is simple. They'll always prefer the medicine by which they got relief irrespective of whether the drug is harmful to them or not. Once he has got the relief, he'll always take the same medicine without even referring to the doctor. Why is that so? Because they want to get symptomatic relief only. But this is of no benefit in the long run. (Respondent 7)

Theme 3: interventions to improve prescribing in the elderly

Improving prescribing practices for elderly patients is essential to enhance their health outcomes and minimise the risks associated with inappropriate medication use.

Pharmacists' role in the healthcare system

Pharmacists involved in patient care can help improve medication safety and adherence, particularly for elderly patients who often have complex medication regimens. The majority of the respondents acknowledged the role of pharmacists in the healthcare system and the importance of their presence/availability in the society.

> Presence of a pharmacist is utmost needed. The presence of the pharmacist can tackle a lot of this problem. (Respondent 3)
>
> Presence of a pharmacist would lead to the optimization of pharmacotherapy and better outcomes. (Respondent 4)
>
> Yes, pharmacists should be given a lot of importance. There is a very limited number of our pharmacists in our society although in the West their role is very well developed. (Respondent 5)

In tandem, the respondents also highlighted the medical store mafias and how the availability of community pharmacists can tackle up this mafia.

> It's again the chemist that plays the mischief. Because of the unavailability of the pharmacist, they do their own will regarding patients' prescription medicine. You must have witnessed that these chemist stores work like a well-formed "franchise network" here in Pakistan. And it's the reason the patient is not benefitted nor provided any relief. (Respondent 3)
>
> Obviously pharmacist is a trained person. Over here somebody who spends some time at the medical store considers himself 'very qualified' and they then try to give medicines to the patient as if they are the doctors. (Respondent 4)

Prescriber–patient relationship

Improving the relationship between patients and prescribers is vital for effective prescribing. By fostering a collaborative environment where patients feel heard and understood, prescribers can better tailor treatment plans to meet the specific needs of elderly patients. All the respondents agreed with the value of counselling.

> When a patient gets a doctor who listens to him, he is satisfied. Basically, the structure of satisfaction is very important here. The patient should be satisfied, plus the attendant should be satisfied with the doctor. The doctor should understand his point of view and then do counselling. The other thing is that counselling is very important. (Respondent 5)
>
> The first thing that comes here is counselling. Counselling can sort a lot of issues. (Respondent 7)
>
> You see a good patient-doctor relation only develops when the doctor effectively counsels the patient. With counselling, the doctor or the prescriber can counsel the patient. They can tell them that their mind is going somewhere and that is not beneficial for them. (Respondent 8)

BMJ Open: first published as 10.1136/bmjopen-2024-094545 on 29 April 2025. Downloaded from http://bmjopen.bmj.com/ on May 20, 2025 at Department GEZ-LTA Erasmushogeschool . Protected by copyright, including for uses related to text and data mining, AI training, and similar technologies.

In addition to tailoring treatment plans, effective counselling also improves medication adherence and compliance in this population.

> First thing is patient counselling. Patient should be counselled well so that he is compliant to the treatment regime. Compliance is a big issue in this population. The doctor through proper counselling can do a lot to achieve patient compliance. (Respondent 10)

Regulatory issues

Regulatory issues play a crucial role in shaping prescribing practices for elderly patients, particularly in addressing the challenges of inappropriate prescribing and ensuring patient safety.

Regulatory oversight can help mitigate the risks associated with inappropriate prescribing practices, ensuring that healthcare providers adhere to best practices when treating elderly patients.

> The rule of law needs to be implemented than only we can deal with inappropriate prescribing. (Respondent 1)

The respondents clearly stated the need for check and balance. They emphasised that regulatory frameworks should be in place to monitor prescribing behaviours.

> If there is proper check and balance a lot of things can be improved. (Respondent 11)
>
> Check and balance is very important. With out this nothing can happen. We have a very bad experience that whatever we prescribe to the patient, they get completely different medicine of it from these medical stores. (Respondent 9)

Moreover, the marketing strategies employed by pharmaceutical companies can significantly impact the medications prescribed to elderly patients, who are particularly vulnerable to the effects of inappropriate prescribing. Pharmaceutical companies often engage in aggressive marketing tactics aimed at healthcare providers, which can lead to biased prescribing practices. Marketing efforts can overshadow the need for informed prescribing on the basis of clinical evidence and patient needs. The marketing strategies employed by pharmaceutical companies can create a perception among prescribers that certain medications are more effective or necessary than they may be, leading to increased prescriptions that may not align with best practices for elderly patients.

> I tell you another factor that contributes to inappropriate prescribing is exaggerated marketing strategies by the pharmaceutical companies. Companies are of the interest that the doctor must prescribe 'a selected number' of prescription of their respective medicine irrespective whether a patient needs it or not. They just need to complete their numbers. It's the liaison of the pharmaceutical company and the physician that is positively benefitting them but negatively benefitting the patient. (Respondent 4)

The respondent believed that regulatory measures should be in place to monitor pharmaceutical marketing practices and ensure that they do not compromise patient safety. The respondents further highlighted that ethical marketing practices that prioritise patient safety and education should be promoted by the pharmaceutical companies.

> Yes, there is involvement of the pharmaceutical companies, but to be precise there should be patient education. the companies should educate patient. For e.g. Augmentin, patients are taking this medicine for months… they don't know the duration, they don't know anything about it. (Respondent 1)

To improve patient safety and health outcomes, minimising inappropriate prescribing is crucial. The three major themes identified—inappropriate prescribing, complexities in elderly prescribing and interventions to improve elderly prescribing—highlight various barriers and enablers that influence this process. Compared with barriers, few enablers were found. Figure 3 illustrates the barriers and enablers associated with each theme.

DISCUSSION

The present study aims to analyse the findings from qualitative interviews with healthcare professionals regarding their perceptions of inappropriate prescribing practices in elderly patients.

Healthcare professionals play a critical role in medication optimisation and medication pharmacotherapy. The inductive thematic analysis in the present study allowed for a rich and detailed exploration of the complexities surrounding inappropriate prescribing in the elderly population from the perspective of healthcare professionals. The emerged inter-related themes, namely inappropriate prescribing, complexities in elderly prescribing and interventions to improve prescribing in the elderly, provide valuable insights into the challenges faced by prescribers, as well as potential interventions to improve prescribing practices in this vulnerable population.

The participants of the present study provided a clear understanding of the concept of inappropriate prescribing and its prevalence among the geriatric population. A number of studies have also reported comparable findings regarding the high prevalence of inappropriate prescribing in the elderly.[20–22] However, some of the participants stated that inappropriate prescribing is not limited to the elderly population and is prevalent across all age groups. Khatter *et al* have also supported that inappropriate prescribing is common in both older and middle-aged adults. However, due to multimorbidities and polypharmacy, the consequences of inappropriate prescribing can be devastating.[6] Despite acknowledging the recognition of inappropriate prescribing, the

BMJ Open: first published as 10.1136/bmjopen-2024-094545 on 29 April 2025. Downloaded from http://bmjopen.bmj.com/ on May 20, 2025 at Department GEZ-LTA Erasmushogeschool . Protected by copyright, including for uses related to text and data mining, AI training, and similar technologies.

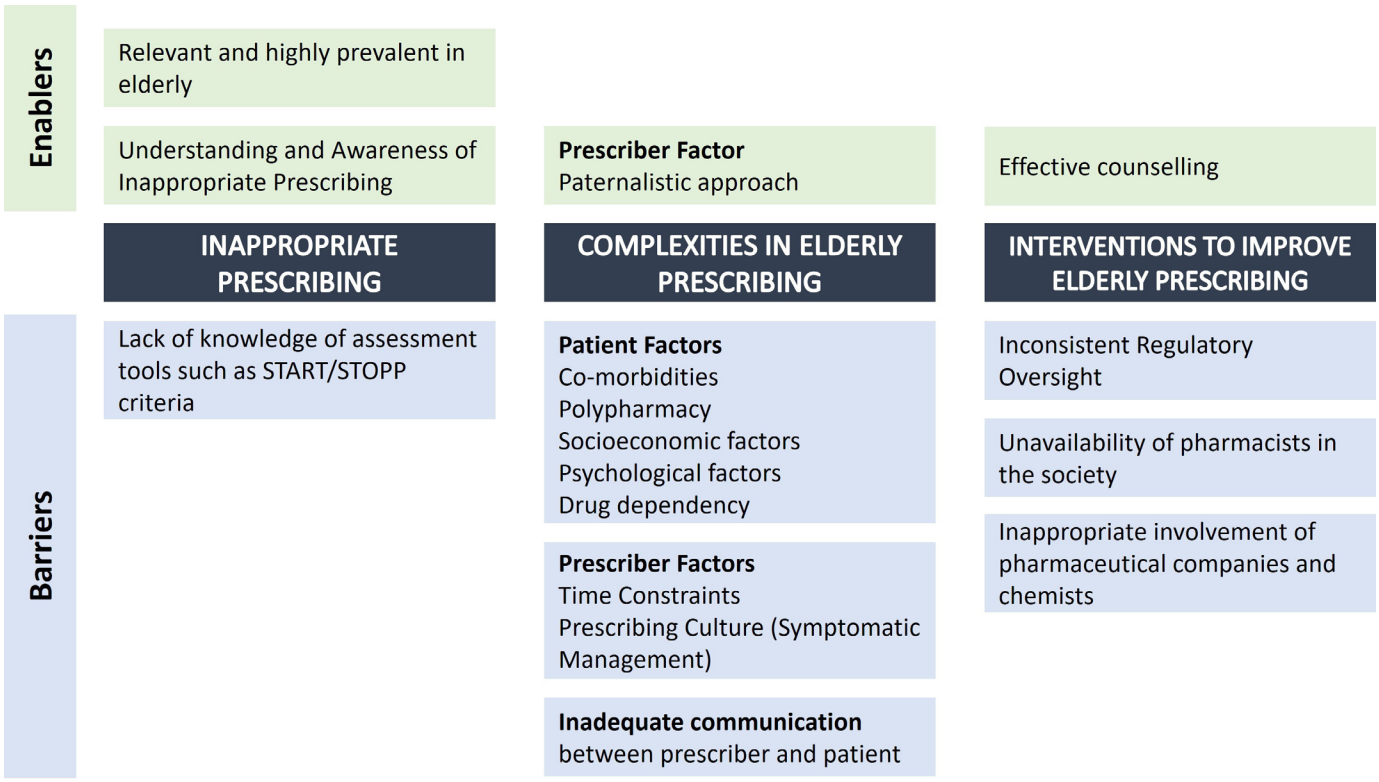

Figure 3 Schematic representation of the barriers and enablers associated with each theme. START/STOPP, Screening Tool to Alert to Right Treatment/Screening Tool of Older Persons' Prescriptions.

prescribers exhibited limited knowledge and usability of assessment tools such as the START/STOPP. Instead, they relied and focused more on experience-based practices to identify and address inappropriate prescribing. This lack of familiarity is concerning, as these tools have been shown to effectively reduce inappropriate prescribing when implemented in clinical practice, as they improve the quality of care in this population.[23] Studies by Mohd Roslan *et al* and Voigt *et al* reported similar findings from Malaysia and Germany, where prescribers were unaware of the existence of any such criteria to assess inappropriate prescribing in elderly individuals.[24 25] Moreover, a cross-sectional study conducted by Akkawi and Nik Mohamed in Malaysia reported that of the 82 physicians enrolled in the study, only 7.3% of the physicians had ever employed the START/STOPP criteria, whereas more than 50% of the physicians had never heard about any such criteria.[26] The findings of the present study are also consistent with the qualitative studies reported by Dalleur *et al* and Clyne *et al,* where prescribers were sceptical of the applicability of these criteria in the clinical setting. Some prescribers even question the usefulness, comprehensiveness and relevance of the criteria in clinical scenarios.[27 28] In a similar study conducted in India, medical interns and postgraduate residents reported average knowledge about the screening tools.[29] This lack of awareness and understanding of assessment tools can be attributed to inadequate emphasis on geriatric pharmacotherapy and assessment tools such as the START/STOPP criteria in curricula during medical studies. The result is directly related to the fact that there is limited knowledge regarding geriatric pharmacotherapy among prescribers and that there is a dire need to educate and train health-care professionals in the geriatric care domain, especially in resource-poor developing countries such as Pakistan, where the health burden among this population is significantly increasing.[30 31] These systemic issues hinder the optimisation of medication management and contribute to the persistence of inappropriate prescribing practices in the elderly population in Pakistan.

Geriatric prescribing is complex and is influenced by a number of factors. Factors from the patient side such as comorbidities, polypharmacy, drug dependency and socioeconomic and psychological issues complicate the prescribing for the prescribers. These highly interdependent factors shape prescribers' behaviours towards prescribing in the elderly. These factors are perceived as barriers by prescribers, and these findings are supported by numerous studies that have also identified these factors as barriers to appropriate prescribing in the elderly population.[28 32] Polypharmacy has been documented as an important predictor of inappropriate prescribing in the literature.[33–36] However, polypharmacy may be appropriate or inappropriate depending on the circumstances. Rankin *et al* reported that polypharmacy is the 'prescriber's dilemma' in the elderly population, complicating the prescribing process.[37 38] This is in line with our findings where the majority of the respondents labelled polypharmacy as the culprit behind inappropriate prescribing practices in the elderly. Additionally, socioeconomic status

BMJ Open: first published as 10.1136/bmjopen-2024-094545 on 29 April 2025. Downloaded from http://bmjopen.bmj.com/ on May 20, 2025 at Department GEZ-LTA Erasmushogeschool . Protected by copyright, including for uses related to text and data mining, AI training, and similar technologies.

significantly influences prescribing. It is evident from the literature that lower socioeconomic status has been associated with a decreased life expectancy and an increased prevalence of medical conditions.[39] Lack of family support, social isolation and financial limitations are some of the identified non-clinical patient factors for inappropriate prescribing in the present study. In the elderly population, these factors are responsible for poor treatment outcomes and loss to follow-up, hence a substantial barrier for appropriate prescribing. Studies have also reported that psychosocial and socioeconomic factors predispose elderly individuals to frailty, and hence complicate their prescribing.[40] Patients' attitudes and beliefs with respect to resistance to change, fear of negative consequences of discontinuation and poor acceptance of alternatives are some of the barriers identified in a review by Reeve *et al* that emphasised patient-centric deprescribing processes. These findings are comparable to our results.[41] Our findings also suggest that poor communication of up-to-date medical information to the prescribers is a significant barrier to appropriate prescribing. Fragmentation of multiple prescribers, difficulty accessing and/or absence of patient medical records and patients' unwillingness to tell prescribers about their entire medical history and prescription regimen are some of the reasons behind poor communication. These findings resonate with previously published qualitative investigations on elderly prescribing in Germany, Denmark and the UK.[18 42 43]

Prescriber factors also play a crucial role in the complexities of elderly prescribing. Paternalistic prescriber–patient relationship, time constraints and a culture of symptomatic management remarkably influence prescribing in the elderly. A number of studies have reported that paternalism in the prescriber–patient relationship leads to inappropriate use of medicines. A study conducted in Bangladesh highlighted the negative influence of paternalism in the prescriber–patient relationship.[44] Although it is relevant to a great extent, as it hampers patient empowerment, the findings of our study explored another side of it. The interviews of the majority of prescribers reflected a positive paternalistic attitude that prioritised the well-being and understanding of patients. The respondents highlighted that they prefer to focus more on patients' quality of life rather than the prescription appropriateness. These findings are consistent with a previous Irish qualitative study by Cullinan *et al*.[45]

Time constraint is another significant factor impacting prescribing practices. The majority of the respondents reported an inherent lack of time (the average consultation time is 10–20 min per patient in Pakistan[46]). This finding is consistent with other research studies that found that the lack of time is a substantial obstacle to appropriate prescribing. Additionally, it is also accountable for not implementing guidelines or criteria in daily practice.[47 48]

The culture of prescribing in certain healthcare settings often emphasises symptomatic management over comprehensive treatment. This is often influenced by the patient demand where they expect 'a pill for every ill'.[49] Our study also highlights the same. Such prescribing culture was referred to as a barrier for appropriate prescribing, especially in the elderly population, by the respondents. Hence, the existing prescribing culture needs to be modified to a more prudent prescribing culture.

The complexities in elderly prescribing discussed above have been associated with several negative outcomes in the elderly population, and attempts should be made to lower these complexities.[50] The inclusion of a pharmacist in the multidisciplinary team leads to the detection of more cases of PIP and hence improved treatment and patient outcomes. Studies have also reported that the assessment of older adults' prescriptions by pharmacists leads to improved appropriate prescribing. Moreover, patients and their physicians are provided timely feedback by the pharmacists.[51] The majority of the respondents acknowledged the role of pharmacists in the healthcare system and the importance of their presence/availability in the society. At the same time, they also pointed out the frail status of the pharmacist in Pakistani society. A pharmacist is a cornerstone in the healthcare infrastructure. Unfortunately, in Pakistan, their role has yet to be fully recognised.[52] A pharmacist has dual responsibilities. They are in charge of ensuring that medications are stored correctly and are delivered without error, but they also have to keep an eye out for drugs that are prescribed to patients that should not be taken together. The respondents pointed out that pharmacist availability in the healthcare system can improve patient outcomes, and they shed light on the overabundance of medical stores and their operations in Pakistan. The majority of the respondents emphasised that most of the medicine retailers are unqualified to be pharmacists and they dispense medicines and counsel patients on their use, hence further complicating medication management. It is also evident from the previously reported literature that in Pakistan, there is a shortage of qualified pharmacists in the retail sector and the dispensers working in the medical stores learn their trade from others like them over a period of time.[53 54] In addition to including and recognising the role of a pharmacist in the healthcare system, addressing the inappropriate influence of pharmaceutical companies that cause prescribers to favour certain medications over others, regardless of their appropriateness for elderly patients, is utmost needed to combat inappropriate prescribing in the elderly population. Studies have reported that such practices influence physicians' clinical decision-making and drug prescribing.[55] Few participants justified the relationship with the pharmaceutical industry. They referred to their influence as a source of funding for their professional growth, as other sources of funding are not available and the prescribers are not adequately facilitated in terms of reimbursement. As only a few respondents reported it, which was less than the required number for a theme to emerge, it

BMJ Open: first published as 10.1136/bmjopen-2024-094545 on 29 April 2025. Downloaded from http://bmjopen.bmj.com/ on May 20, 2025 at Department GEZ-LTA Erasmushogeschool . Protected by copyright, including for uses related to text and data mining, AI training, and similar technologies.

failed to emerge as a subtheme. However, these findings are comparable to a previous qualitative study in which general practitioners' (GPs) views and perceptions of the impact of interaction with the pharmaceutical industry in Ireland were reported.[56] Hence, regulatory oversight can help mitigate the risks associated with inappropriate prescribing practices.[57 58]

Last but not least, improving patient–prescriber relationships through effective counselling and shared decision-making is crucial for tailoring treatment plans to individual needs and improving geriatric prescribing. Elderly patients need effective and empathic communication which establishes therapeutic alliances and significantly enhances the therapeutic outcomes in this vulnerable population. Ageing is associated with a number of social, economic and health challenges, and as the elderly patients navigate through these challenges, relationships with their prescribers are an important source of support and encouragement.[59] Our findings suggest that effective counselling may play a role in addressing health behaviour changes and improving adherence to medication regimens in elderly patients. Many of the respondents highlighted the potential of counselling as an enabler of more appropriate prescribing practices.

Strengths and limitations

The study makes a significant addition to the limited qualitative information available in this field. The qualitative methodology enabled a thorough investigation of prescriber opinions regarding inappropriate prescribing practices in elderly patients. Rich, in-depth responses were made possible by the use of semistructured interviews, which provided important insights into the challenges of prescribing to this population. Furthermore, by obtaining a variety of viewpoints on the matter, the diversity of the respondents, which includes highly experienced GPs and consultants, further increased the validity of the results. However, the study also has limitations. The study involves healthcare professionals, predominantly male doctors with significant experience. It is possible that male and female prescribers may have different communication styles, prescribing habits or perspectives on the challenges of managing elderly patients. For example, studies have suggested that female physicians may be more patient centred in their approach,[60] which could affect their perceptions of prescribing dilemmas. While we did not explicitly explore gender-based differences in this study, the over-representation of male voices should be considered when interpreting the results. The views of female prescribers may be under-represented, which could affect the generalisability of the findings. Moreover, this limited diversity may not fully represent the perspectives of all healthcare providers, including nurses, pharmacists and other allied health professionals who play essential roles in medication management for elderly patients. While prescribers are central to the prescribing process, a more holistic understanding would benefit from incorporating the experiences of other members of the healthcare team. The study was conducted in a tertiary care hospital setting. Prescribing practices and challenges may differ significantly in primary care settings, rural clinics or other healthcare environments with different resource constraints and patient populations. The interviews lasted approximately 15 min on average. While this duration was sufficient to gather targeted information on prescribing practices, it may have limited the depth of exploration into more nuanced perspectives. The prescribers were still on duty when the interviews took place. They might have wanted to end the interview as quickly as possible because they were under time pressure. It is possible that the time constraint reduced the depth of information gleaned from the interviews. This relatively short interview time could be a limitation, potentially missing some in-depth experiences. Lastly, the relatively small sample size (n=13) limits the generalisability of the findings. A larger sample size, potentially incorporating prescribers from diverse geographical locations, practice settings (eg, rural clinics, private practices) and specialisations, could have provided a broader range of perspectives and potentially uncovered additional factors influencing inappropriate prescribing.

Implications

Larger scale studies involving a wider range of healthcare professionals are required to gain a comprehensive understanding of inappropriate prescribing practices among elderly patients. Future research should also explore specific interventions aimed at reducing inappropriate prescribing, such as educational initiatives based on standardised assessment tools and improved communication between providers and patients. Longitudinal studies could shed light on how prescribing practices evolve in response to implemented interventions. Furthermore, there is an urgent need for policy development that prioritises regulatory measures to monitor prescribing behaviours and address pharmaceutical companies' marketing strategies that may influence inappropriate prescribing. National prescribing guidelines specifically tailored for the elderly population should be developed and implemented by the health department of Pakistan. These guidelines should be evidence based, regularly updated and readily accessible to all prescribers. To ensure widespread adoption, these guidelines must be integrated into the core curricula of medical and pharmacy schools, and efforts should be made to achieve compliance.

CONCLUSION

The findings from the present study revealed that the inappropriate prescribing in the elderly population is a multifaceted challenge that encompasses patient characteristics, prescriber behaviours and systemic healthcare issues. Mandatory START/STOPP training, pharmacist-led prescribing reviews and regulatory oversight are essential to improve geriatric prescribing in Pakistan.

BMJ Open: first published as 10.1136/bmjopen-2024-094545 on 29 April 2025. Downloaded from http://bmjopen.bmj.com/ on May 20, 2025 at Department GEZ-LTA Erasmushogeschool . Protected by copyright, including for uses related to text and data mining, AI training, and similar technologies.

Future research should explore pharmacist involvement in elderly medication management. Furthermore, healthcare systems should prioritise the integration of clinical pharmacists into primary care teams to provide comprehensive medication reviews, optimise prescribing practices and ultimately reduce the incidence of PIP in the elderly. This multifaceted approach, which combines education and collaborative practice, offers the most promising pathway for improving medication safety and outcomes for Pakistan's ageing population.

Acknowledgements We would like to thank all the respondents for their contributions to this research.

Contributors All authors (HS, SN, HR and SJ) contributed to the design of the study. Data collection was done by HS and data analysis was completed by HS with support from SJ and HR. The manuscript has been drafted by HS. All authors (HS, SN, HR and SJ) have critically reviewed the manuscript and approved the final version for publication. HS is responsible for the overall content and is the guarantor.

Funding The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

Competing interests None declared.

Patient and public involvement Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

Patient consent for publication Not applicable.

Ethics approval This study involves human participants and was approved by the Institutional Review Board of the Jinnah University for Women (JUW/IERB/PHARM-ARA-013/2023). Similarly, prior approval was also obtained from the tertiary care hospital where the study was conducted (DIR/ASH/ESTT/955/2024). Participants gave informed consent to participate in the study before taking part.

Provenance and peer review Not commissioned; externally peer reviewed.

Data availability statement All data relevant to the study are included in the article or uploaded as supplementary information.

Supplemental material This content has been supplied by the author(s). It has not been vetted by BMJ Publishing Group Limited (BMJ) and may not have been peer-reviewed. Any opinions or recommendations discussed are solely those of the author(s) and are not endorsed by BMJ. BMJ disclaims all liability and responsibility arising from any reliance placed on the content. Where the content includes any translated material, BMJ does not warrant the accuracy and reliability of the translations (including but not limited to local regulations, clinical guidelines, terminology, drug names and drug dosages), and is not responsible for any error and/or omissions arising from translation and adaptation or otherwise.

Open access This is an open access article distributed in accordance with the Creative Commons Attribution Non Commercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited, appropriate credit is given, any changes made indicated, and the use is non-commercial. See: http://creativecommons.org/licenses/by-nc/4.0/.

ORCID iD

Halima Sadia http://orcid.org/0000-0001-6669-2458

REFERENCES

1 Dagli RJ, Sharma A. Polypharmacy: a global risk factor for elderly people. *J Int Oral Health* 2014;6:i–ii.
2 Zainab S, Khoso A, Siddiqui M, *et al*. Healthy ageing: Assessment of health-promoting lifestyle among the elderly population in Karachi Pakistan. *J Educ Health Promot* 2021;10:389.
3 Cassum LA, Cash K, Qidwai W, *et al*. Exploring the experiences of the older adults who are brought to live in shelter homes in Karachi, Pakistan: a qualitative study. *BMC Geriatr* 2020;20:8.
4 Petrovic M, O'Mahony D, Cherubini A. Inappropriate prescribing: hazards and solutions. *Age Ageing* 2022;51:afab269.
5 Hudhra K, García-Caballos M, Casado-Fernandez E, *et al*. Polypharmacy and potentially inappropriate prescriptions identified by Beers and STOPP criteria in co-morbid older patients at hospital discharge. *J Eval Clin Pract* 2016;22:189–93.
6 Khatter A, Moriarty F, Ashworth M, *et al*. Prevalence and predictors of potentially inappropriate prescribing in middle-aged adults: a repeated cross-sectional study. *Br J Gen Pract* 2021;71:e491–7.
7 Rochon PA, Schmader K. *Drug prescribing for older adults*. Toronto: UpToDate, 2019.
8 Vukoja M, Mimica S. Comparison of explicit criteria for potentially inappropriate drug prescribing among the elderly: a narrative review. *Discov Health Systems* 2024;3:62.
9 Hedna K, Hakkarainen KM, Gyllensten H, *et al*. Potentially inappropriate prescribing and adverse drug reactions in the elderly: a population-based study. *Eur J Clin Pharmacol* 2015;71:1525–33.
10 Saeed AI, Amer MS, Elakkad RM. Association between potentially inappropriate prescription (PIP) and health outcome among geriatric home residents. *Egypt J Hosp Med* 2018;72:4660–5.
11 Harasani K, Xhafaj D, Qipo O. Prevalence and types of potentially inappropriate prescriptions among older and middle-aged community-dwelling Albanian patients. *Int J Risk Saf Med* 2020;31:5–13.
12 Cleland JA. The qualitative orientation in medical education research. *Korean J Med Educ* 2017;29:61–71.
13 Mazhar F, Akram S, Malhi SM, *et al*. A prevalence study of potentially inappropriate medications use in hospitalized Pakistani elderly. *Aging Clin Exp Res* 2018;30:53–60.
14 Moser A, Korstjens I. Series: Practical guidance to qualitative research. Part 1: Introduction. *Eur J Gen Pract* 2017;23:271–3.
15 Jamshed S. Qualitative research method-interviewing and observation. *J Basic Clin Pharm* 2014;5:87–8.
16 Mashuri S, Sarib M, Alhabsyi F, *et al*. Semi-structured interview: a methodological reflection on the development of a qualitative research instrument in educational studies. *IOSR-JRME* 2022;12:22–9.
17 Kamau M, Nyanja N, Lusambili AM, *et al*. Knowledge, attitudes and beliefs toward polypharmacy among older people attending Family Medicine Clinic, Nairobi, Kenya. *BMC Geriatr* 2024;24:132.
18 Anthierens S, Tansens A, Petrovic M, *et al*. Qualitative insights into general practitioners views on polypharmacy. *BMC Fam Pract* 2010;11:65.
19 Braun V, Clarke V. Using thematic analysis in psychology. *Qual Res Psychol* 2006;3:77–101.
20 Hamilton HJ, Gallagher PF, O'Mahony D. Inappropriate prescribing and adverse drug events in older people. *BMC Geriatr* 2009;9:5.
21 Bala SS, Chen TF, Nishtala PS. Reducing Potentially Inappropriate Medications in Older Adults: A Way Forward. *Can J Aging* 2019;38:419–33.
22 Manias E, Kabir MZ, Maier AB. Inappropriate medications and physical function: a systematic review. *Ther Adv Drug Saf* 2021;12:20420986211030371.
23 Keche YN, Gaikwad NR, Wasnik PN, *et al*. Usefulness of STOPP/START criteria and Beers criteria for prescribing in geriatric patients in a tertiary health care center, Raipur, Central India. *J Family Med Prim Care* 2022;11:7064–71.
24 Mohd Roslan U, Zaini S, Akkawi ME. Physicians' perception on prescribing potentially inappropriate medications for older patients: a qualitative study from Malaysia. *JOP* 2024;4:92–102.
25 Voigt K, Gottschall M, Köberlein-Neu J, *et al*. Why do family doctors prescribe potentially inappropriate medication to elderly patients? *BMC Fam Pract* 2016;17:93.
26 Akkawi ME, Nik Mohamed MH. Are physicians and clinical pharmacists aware and knowledgeable enough about inappropriate prescribing for elderly patients? Findings from Malaysia. *Eur J Hosp Pharm* 2018;25:e29–34.
27 Dalleur O, Feron J-M, Spinewine A. Views of general practitioners on the use of STOPP&START in primary care: a qualitative study. *Acta Clin Belg* 2014;69:251–61.
28 Clyne B, Cooper JA, Hughes CM, *et al*. "Potentially inappropriate or specifically appropriate?" Qualitative evaluation of general practitioners views on prescribing, polypharmacy and potentially inappropriate prescribing in older people. *BMC Fam Pract* 2016;17:109.
29 Rathore A, Sharma R, Bansal P, *et al*. Knowledge, attitude, and practice of medical interns and postgraduate residents on American Geriatric Society updated Beers criteria. *J Educ Health Promot* 2023;12:1.
30 Tariq H. Knowledge of guidelines of drug use in geriatric patients can avoid high misuse of antibiotics in these patients. *Pak J Med Res* 2016:55.
31 Noreen N, Abdullah M, Lalani N. Geriatric care in Pakistan: current realities and way forward. *PJPH* 2021;11:214–9.

BMJ Open: first published as 10.1136/bmjopen-2024-094545 on 29 April 2025. Downloaded from http://bmjopen.bmj.com/ on May 20, 2025 at Department GEZ-LTA Erasmushogeschool . Protected by copyright, including for uses related to text and data mining, AI training, and similar technologies.

32 Anderson K, Stowasser D, Freeman C, *et al*. Prescriber barriers and enablers to minimising potentially inappropriate medications in adults: a systematic review and thematic synthesis. *BMJ Open* 2014;4:e006544.
33 Rochon PA, Petrovic M, Cherubini A, *et al*. Polypharmacy, inappropriate prescribing, and deprescribing in older people: through a sex and gender lens. *Lancet Healthy Longev* 2021;2:e290–300.
34 World Health Organization. *Medication safety in polypharmacy: technical report*. World Health Organization, 2019.
35 Tommelein E, Mehuys E, Petrovic M, *et al*. Potentially inappropriate prescribing in community-dwelling older people across Europe: a systematic literature review. *Eur J Clin Pharmacol* 2015;71:1415–27.
36 Cahir C, Fahey T, Teeling M, *et al*. Potentially inappropriate prescribing and cost outcomes for older people: a national population study. *Br J Clin Pharmacol* 2010;69:543–52.
37 Robinson M, Mokrzecki S, Mallett AJ. Attitudes and barriers towards deprescribing in older patients experiencing polypharmacy: a narrative review. *NPJ Aging* 2024;10:6.
38 Rankin A, Cadogan CA, Patterson SM, *et al*. Interventions to improve the appropriate use of polypharmacy for older people. *Cochrane Database Syst Rev* 2018;9:CD008165.
39 Van Wilder L, Pype P, Mertens F, *et al*. Living with a chronic disease: insights from patients with a low socioeconomic status. *BMC Fam Pract* 2021;22:233.
40 Aravantinou-Karlatou A, Kavasileiadou S, Panagiotakis S, *et al*. The Impact of Socioeconomic Factors and Geriatric Syndromes on Frailty among Elderly People Receiving Home-Based Healthcare: A Cross-Sectional Study. *Healthcare (Basel)* 2022;10:2079.
41 Reeve E, To J, Hendrix I, *et al*. Patient barriers to and enablers of deprescribing: a systematic review. *Drugs Aging* 2013;30:793–807.
42 Schuling J, Gebben H, Veehof LJG, *et al*. Deprescribing medication in very elderly patients with multimorbidity: the view of Dutch GPs. A qualitative study. *BMC Fam Pract* 2012;13:56.
43 Dickinson R, Knapp P, House AO, *et al*. Long-term prescribing of antidepressants in the older population: a qualitative study. *Br J Gen Pract* 2010;60:e144–55.
44 Ahmed T. The case of doctor-patient relationship in Bangladesh: an application of relational model of autonomy. *Bangladesh J Bioethics (BJBio)* 2021;12:14–24.
45 Cullinan S, Fleming A, O'Mahony D, *et al*. Doctors' perspectives on the barriers to appropriate prescribing in older hospitalized patients: a qualitative study. *Br J Clin Pharmacol* 2015;79:860–9.
46 Khan A, Javaid R, Pervaiz F, *et al*. An assessment of door to consultation time in outpatient department (OPD) of a tertiary care cardiac hospital: a clinical quality improvement project (QIP). *PAFMJ* 2022;72:S673–77.
47 Kastner M, Estey E, Hayden L, *et al*. The development of a guideline implementability tool (GUIDE-IT): a qualitative study of family physician perspectives. *BMC Fam Pract* 2014;15:19.
48 Maio V, Jutkowitz E, Herrera K, *et al*. Appropriate medication prescribing in elderly patients: how knowledgeable are primary care physicians? A survey study in Parma, Italy. *J Clin Pharm Ther* 2011;36:468–80.
49 Doherty AJ, Boland P, Reed J, *et al*. Barriers and facilitators to deprescribing in primary care: a systematic review. *BJGP Open* 2020;4:4.
50 Falch C, Alves G. Pharmacists' Role in Older Adults' Medication Regimen Complexity: A Systematic Review. *Int J Environ Res Public Health* 2021;18:8824.
51 O'Connor MN, Gallagher P, O'Mahony D. Inappropriate prescribing: criteria, detection and prevention. *Drugs Aging* 2012;29:437–52.
52 Azhar S, Hassali MA, Ibrahim MIM, *et al*. The role of pharmacists in developing countries: the current scenario in Pakistan. *Hum Resour Health* 2009;7:54.
53 Siddiqui NH, Dayo A, Arain MI, *et al*. Assessment of knowledge, qualification, experience, and medication dispensing practices in South Karachi, Pakistan. *SJMS* 2021;16:245–58.
54 Bashir I, Ahmad M, Jamshaid M, *et al*. Illicit sale of controlled drugs at community pharmacy/medical stores of Punjab, Pakistan: A road to demolition of public health. *Heliyon* 2021;7:e07031.
55 Mitchell AP, Trivedi NU, Gennarelli RL, *et al*. Are Financial Payments From the Pharmaceutical Industry Associated With Physician Prescribing?: A Systematic Review. *Ann Intern Med* 2021;174:353–61.
56 Larkin J, Pericin I, Collins M, *et al*. GPs' perceptions of their relationship with the pharmaceutical industry: a qualitative study. *BJGP Open* 2021;5:BJGPO.2021.0057.
57 Malik F, Khan S, Hakeem L, *et al*. How pharmaceutical marketing manipulates the prescription pattern of physicians? A grounded theory study. *IJICC* 2021;15:735–53.
58 Dixit R, Patil P, Chandrashekar R, *et al*. Drug promotional activities as a source of medical information and its influence on prescribing. *Int J Pham Bio Sci* 2014;4:113–9.
59 Williams SL, Haskard KB, DiMatteo MR. The therapeutic effects of the physician-older patient relationship: effective communication with vulnerable older patients. *Clin Interv Aging* 2007;2:453–67.
60 Alameddine M, Otaki F, Bou-Karroum K, *et al*. Patients' and physicians' gender and perspective on shared decision-making: A cross-sectional study from Dubai. *PLoS One* 2022;17:e0270700.

BMJ Open: first published as 10.1136/bmjopen-2024-094545 on 29 April 2025. Downloaded from http://bmjopen.bmj.com/ on May 20, 2025 at Department GEZ-LTA Erasmushogeschool . Protected by copyright, including for uses related to text and data mining, AI training, and similar technologies.