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PHARMACISTS' BEHAVIOR TOWARDS PATIENT CENTERED CARE AND THE NEED FOR DEPRESCRIBING: A CROSS-SECTIONAL STUDY

Original Research

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ABSTRACT

Background: Patient-centered care emphasizes collaboration with patients to ensure that healthcare decisions align with their preferences, goals and clinical needs. Within this framework, deprescribing has emerged as an essential strategy to reduce inappropriate medication use, particularly in the context of polypharmacy and aging populations. Community pharmacists are uniquely positioned to support deprescribing through routine medication review and patient engagement. However, evidence regarding their readiness and practical involvement in deprescribing within low- and middle-income countries remains limited. This study addressed this gap by examining community pharmacists' orientation toward patient-centered care and deprescribing in Pakistan.

Objective: To assess community pharmacists' attitudes, practices, and readiness toward patient-centered deprescribing and to identify professional factors associated with deprescribing behavior.

Methods: A cross-sectional survey was conducted among community pharmacists in Punjab, Pakistan, between June and August 2025. A previously validated questionnaire was adapted with permission and administered using an electronic survey link and in-person outreach. Pharmacists aged over 20 years, registered with the Pakistan Pharmacy Council, and working in community pharmacies were eligible. Ethical approval was obtained from the Institutional Ethics Committee of Quaid-e-Azam College of Pharmacy, Sahiwal. Descriptive statistics summarized participant characteristics and practice patterns. Binary logistic regression was used to examine associations between pharmacist-related factors and readiness to engage in deprescribing.

Results: A total of 251 pharmacists participated (62.9% male; 37.1% female), with most working in independently owned pharmacies (40.2%). Overall, 75.0% reported receiving training in medication review, and 42.0% considered deprescribing a high priority in routine practice. Pharmacists with medication review training were significantly more likely to engage in deprescribing activities (adjusted OR = 0.249; $p < 0.01$). Increased exposure to older patients with polypharmacy was also positively associated with deprescribing behavior (adjusted OR = 1.427; $p = 0.016$). Pharmacist age and gender showed no significant association with deprescribing readiness.

Conclusion: Community pharmacists demonstrated positive attitudes toward patient-centered deprescribing, yet practical implementation remained inconsistent. Strengthening structured training, enhancing interprofessional collaboration, and integrating deprescribing into routine pharmacy practice may improve pharmacists' contribution to safe and patient-centered medication use.

Keywords: Community Pharmacy, Deprescribing; Medication Review, Patient-Centered Care, Pharmacists, Polypharmacy, Professional Practice.

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functional status, well-being, and quality of life (2). Within this conceptual framework, deprescribing has emerged as a tangible and clinically relevant expression of PCC principles (3). Deprescribing is defined as a systematic and supervised process of dose reduction or discontinuation of medications that are no longer necessary or for which the potential harms outweigh anticipated benefits in the context of an individual patient's goals and clinical status (4). The relevance of deprescribing has intensified with the rising prevalence of multimorbidity, particularly among older adults. As patients accumulate multiple chronic conditions, medication regimens often become increasingly complex, placing substantial cognitive, physical, and financial burdens on patients (5,6). Polypharmacy is strongly associated with adverse drug reactions, drug–drug interactions, reduced adherence, and avoidable hospitalizations, ultimately compromising patient safety and therapeutic outcomes (7). In this context, deprescribing has gained recognition as a structured strategy to optimize pharmacotherapy, reduce medication-related harm, and enhance patient-reported outcomes and quality of life (8). Effective deprescribing requires a comprehensive understanding of the patient's overall health status, prognosis, treatment priorities, life expectancy, preferences, and tolerance for risk, ensuring that medication decisions remain aligned with individualized care goals (9).

Despite its strong conceptual and clinical justification, deprescribing remains challenging to implement in routine practice. Clinicians frequently report uncertainty about identifying medications suitable for discontinuation, concerns regarding withdrawal effects, and fear of disease recurrence following medication cessation (10). These challenges are compounded by the limited availability of clear deprescribing guidelines, time constraints during clinical encounters, and insufficient opportunities for structured medication reviews. From the patient perspective, deprescribing may be misconstrued as a withdrawal or abandonment of care, leading to resistance and anxiety. Additionally, fragmented healthcare systems, poor continuity of care, restricted access to comprehensive clinical information, and reimbursement models that prioritize prescribing over deprescribing further impede implementation (11,12). Addressing these barriers necessitates the development of supportive processes, interdisciplinary collaboration, and clearly defined professional roles that enable safe and effective deprescribing. The principles of PCC are inherently aligned with pharmacy practice, given pharmacists' focus on optimizing medication use and patient outcomes. Pharmacists are therefore well positioned to ensure that pharmacotherapy aligns with patients' clinical needs and personal goals (13). Community pharmacists, in particular, maintain frequent and sustained contact with patients, allowing them to identify potentially inappropriate medications, adherence challenges, and early signs of adverse effects during routine practice (14). Their accessibility enables timely recognition of subtle changes in patient status, including withdrawal symptoms or recurrence of symptoms, which may not be detected during episodic physician visits (15,16).

However, meaningful pharmacist involvement in deprescribing is neither automatic nor universally established. It requires adequate time, institutional support, access to patient health information, standardized guidelines, and targeted training in clinical decision-making and patient communication (17). Pharmacists' engagement in deprescribing is influenced by their attitudes, confidence, clinical judgment, communication skills, and willingness to involve patients in shared therapeutic decision-making (5). Given the close conceptual link between PCC and deprescribing, and the practical constraints encountered in real-world settings, it is essential to understand how community pharmacists currently perceive and engage with PCC-oriented deprescribing practices. Their readiness to implement deprescribing as part of routine care remains insufficiently explored, particularly in low- and middle-income settings (10). In Pakistan, existing research on deprescribing has predominantly focused on patients' perspectives, including their perceptions, beliefs, and willingness to discontinue medications (11–13). In contrast, limited attention has been directed toward community pharmacists' knowledge, attitudes, behaviors, and preparedness to undertake deprescribing within a patient-centered framework. This gap is particularly important, as pharmacists are increasingly recognized as key contributors to medication optimization in primary care. Therefore, the present study aims to examine community pharmacists' orientation toward patient-centered care and their perceptions of deprescribing, with a specific focus on identifying perceived barriers, facilitators, and levels of readiness to implement deprescribing in daily practice. By mapping these factors, the study seeks to generate evidence that can inform educational interventions, workflow redesign, and policy and regulatory reforms to support pharmacist-led deprescribing within a patient-centered care model.

METHODS

An online cross-sectional survey was conducted among community pharmacists practicing in Punjab, Pakistan, to evaluate their behaviors, perceptions, and readiness toward deprescribing. This design was selected to capture a snapshot of prevailing practices and attitudes within a defined time frame while allowing broad geographic reach. Data were collected between June and August 2025 using a structured electronic questionnaire. The survey instrument was adapted from a previously validated questionnaire, with formal permission obtained from the original author via email, and minor contextual modifications were made to ensure relevance to the local practice environment while preserving the core constructs of the tool. The target population comprised registered community

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pharmacists actively engaged in patient-facing roles. Pharmacists aged over 20 years, working in community pharmacies as owners, shift managers, or intern pharmacists, and registered with the Pakistan Pharmacy Council were eligible for inclusion. Pharmacists working exclusively in hospital settings, pharmaceutical industries, or other non-community roles were excluded to ensure that participants had direct interaction with patients and their prescriptions. Recruitment was carried out through dissemination of a Google Form survey link via internet-based messaging services. Participation was voluntary, and pharmacists were approached at their workplaces using a convenience-based outreach strategy. Although responses were collected from across Punjab, the sampling approach was non-probabilistic, reflecting pragmatic constraints commonly associated with online professional surveys. The required sample size was calculated using the Raosoft sample size calculator, assuming a population size equivalent to the population of Punjab (127,688,922), a 90% confidence level, and a 5% margin of error, yielding a minimum required sample of 271 respondents. Following data collection, a total of 271 responses were received. Twelve responses were excluded due to incomplete questionnaires, and an additional eight responses were removed after identification of straight-lining behavior, defined as selecting the same response option for all questionnaire items. The final dataset therefore comprised fully completed and analytically valid responses.

The questionnaire consisted of two main sections. The first section collected demographic and professional characteristics, including age, gender, designation, location, type of community pharmacy, and years of professional experience. The second section assessed participants' familiarity with and attitudes toward deprescribing and was further structured into five domains: pharmacist–patient interaction, familiarity with the concept of deprescribing, routine work practices, medication review activities, and interprofessional collaboration between pharmacists and physicians. In total, the instrument included 31 items designed to capture both behavioral and perceptual dimensions relevant to patient-centered deprescribing practices. Ethical approval for the study was obtained from the Institutional Ethical Committee of Quaid-e-Azam College of Pharmacy, Sahiwal (Ref No: QACP/25/340). Prior to accessing the questionnaire, all participants were provided with an electronic information sheet explaining the study objectives, voluntary nature of participation, and confidentiality safeguards. Informed consent was obtained electronically before survey initiation. No personally identifiable information was collected, and data anonymity was strictly maintained to protect participant privacy. Data were entered and analyzed using Statistical Package for the Social Sciences (SPSS) version 25. Descriptive statistics were used to summarize participant characteristics and questionnaire responses, with continuous variables expressed as means and standard deviations and categorical variables presented as frequencies and percentages. Binary logistic regression analysis was performed to examine associations between pharmacists' characteristics and their willingness to engage in deprescribing practices. Covariates were selected a priori based on clinical and professional relevance and included age, gender, frequency of providing care to geriatric patients, and prior professional training related to medication review. Statistical significance was defined as a p-value of less than 0.05.

RESULTS

A total of 251 community pharmacists were included in the final analysis after exclusion of incomplete and straight-lined responses. The majority of participants were male (62.9%), while females constituted 37.1% of the sample. Most pharmacists were young adults, with 74.9% aged between 20 and 30 years, followed by 21.4% aged 31–45 years, and a smaller proportion above 45 years of age. Regarding professional roles, 47.0% were intern pharmacists, 35.9% were practicing pharmacists, 12.7% were pharmacy owners, and 4.4% were pharmacy managers. Participants were employed across different community pharmacy settings, including independently owned pharmacies (40.2%), local pharmacies (32.7%), and chain pharmacies (27.1%). The majority of pharmacies were located in urban areas (83.3%). Overall professional experience was limited, with 63.0% having less than one year of experience, 23.5% having 1–5 years, and 13.5% reporting more than five years of practice. Pharmacists reported that, on average, approximately 2.43% (SD = 1.019) of their daily patient encounters involved individuals aged over 70 years with polypharmacy. In terms of medication-related work practices, pharmacists frequently engaged in activities aligned with patient-centered care. Asking patients about medication adherence was reported on a daily basis by 37.8% of participants, while 27.1% did so multiple times per week and 21.1% once per week. Reviewing prescription, herbal, and over-the-counter medications to create an accurate medication list was performed daily by 32.7% of pharmacists and at least once weekly by 85.7%. Complete medication profile reviews to identify medication-related problems were conducted daily by 37.8%, multiple times per week by 24.3%, and once weekly by 25.5%. The average time spent reviewing a patient's medication list was 2.07 minutes (SD = 0.055). Formal training in conducting detailed medication reviews was reported by 75.0% of participants, most commonly obtained during university education (46.0%), followed by further professional education or training programs (32.6%). Familiarity with the concept of deprescribing varied among pharmacists. Low familiarity was reported by 25.4%, moderate familiarity

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by 43.0%, and good familiarity by 31.0%. When asked about the priority of deprescribing in routine practice, 42.0% considered it a high priority, 29.0% rated it as a normal priority, 6.3% considered it a low priority, and 22.0% remained undecided.

Regression analysis examining factors associated with pharmacists' readiness to engage in deprescribing demonstrated no significant association with age or gender. A 15-year increase in age was not associated with deprescribing behavior after adjustment (adjusted odds ratio = 0.795; 95% confidence interval = 0.460–1.373; p = 0.410). Female pharmacists similarly showed no statistically significant difference compared to males (adjusted odds ratio = 0.803; 95% confidence interval = 0.445–1.448; p = 0.465). In contrast, frequency of encounters with patients aged 70 years or older receiving multiple medications was significantly associated with deprescribing activity. For every 10-percentage-point increase in such encounters, the likelihood of making deprescribing recommendations increased significantly (adjusted odds ratio = 1.427; 95% confidence interval = 1.067–1.908; p = 0.016). Training in medication review emerged as the strongest predictor of deprescribing engagement; pharmacists with such training were significantly more likely to participate in deprescribing activities than those without training (adjusted odds ratio = 0.249; 95% confidence interval = 0.134–0.469; p < 0.01). Interprofessional collaboration findings indicated variable levels of interaction with physicians. Communication to clarify medication-related issues occurred weekly for 26.7% of pharmacists, several times per week for 15.5%, and daily for 9.2%. However, limited collaboration was evident, as 19.1% reported rare communication and 13.9% reported never communicating with physicians regarding prescribed medicines. Similarly, providing medication-related recommendations to physicians was most commonly reported once per week (25.5%) or several times per week (17.1%), while 15.5% rarely and 20.7% never offered such recommendations.

Although direct patient-level deprescribing outcomes were not explicitly measured, indirect indicators derived from pharmacists' reported practices provide insight into patient-focused deprescribing activity and shared decision-making. A high proportion of pharmacists reported routine behaviors that are prerequisites for patient-level deprescribing actions. Regular assessment of medication adherence was common, with 64.9% reporting that they asked adherence-related questions at least once a week, and 37.8% doing so daily. Similarly, 85.7% reported reviewing prescription, herbal, and over-the-counter medications at least weekly to construct a complete medication list, while 87.6% reviewed full medication profiles at least weekly to identify medication-related problems. These practices indicate frequent opportunities for identifying potentially inappropriate medications at the individual patient level. Pharmacists reported encountering older patients with polypharmacy relatively infrequently overall, with a mean probability score of 2.43 (SD = 1.019); however, increased exposure to this patient group was significantly associated with higher likelihood of deprescribing recommendations, suggesting that patient-level contact with high-risk populations translated into more active deprescribing behavior. Indicators of interprofessional and patient-centered engagement further contextualized these findings. While 42.0% of pharmacists rated deprescribing as a high priority in routine practice, only 37.1% communicated with physicians at least weekly to clarify medication-related issues, and 54.2% provided medication-use recommendations to physicians at least weekly. Conversely, 34.6% rarely or never communicated with physicians, and 36.2% rarely or never provided recommendations. This pattern suggests that although pharmacists frequently performed patient-level medication assessments, translation of these assessments into accepted deprescribing actions through physician collaboration may have been inconsistent. Nevertheless, the high prevalence of medication review training (75.0%) and moderate-to-good familiarity with deprescribing (74.0%) indicates a substantial foundation for patient involvement in shared decision-making.

Table 1: Characteristics of participating pharmacists (n=251).

	Categories	n (%)
Gender	Male	158 (62.9%)
	Female	93 (37.1%)

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Age	20-30	188 (74.9%)
	31-45	54 (21.4%)
	46-60	6 (2.4%)
	>60	3 (1.2%)
Pharmacist designation	Pharmacist	90 (35.9%)
	Pharmacy manager	11 (4.4%)
	Pharmacy owner	32 (12.7%)
	Intern pharmacist	118 (47%)
Type of pharmacy	Independently owned	101 (40.2%)
	Chain pharmacy	68 (27.10%)
	Local pharmacy	82 (37.2%)
Location of pharmacy	Urban	209 (83.3%)
	Rural	42 (16.7%)
Working experience	Less than 6 months	79 (31.5%)
	Less than 1 year	79 (31.5%)
	1 to 5 years	59 (23.5%)
	More than 5 years	34 (13.5%)
The probability of advising patients with > 5 medications and above 70 years of age		
Mean (SD)		2.43 (1.019)

Table 2: Working practices of community pharmacists working in Pakistan regarding medication reviews and attitude towards deprescribing (n=251).

Questions	**n (%)**
Medication optimization	
I ask questions to access patients' medication adherence.	
Every working day	95(37.8%)
Multiple times a week	68 (27.1%)
Once a week	53 (21.1%)
Once a month	11 (4.4%)
Less frequent than that	18(7.2%)
Never	6 (2.4%)
I review prescription, herbals and OTC medications of patients to create a correct and complete medication list.	
Every working day	82 (32.7%)

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Questions	**n (%)**
Multiple times a week	67 (26.7%)
Once a week	66 (26.3%)
Once a month	12 (4.8%)
Less frequent than that	18 (7.2%)
Never	6 (2.4%)
I review complete medication profile of patients to identify medication-related problems.	
Every working day	95 (37.8%)
Multiple times a week	61 (24.3%)
Once a week	64 (25.5%)
Once a month	7 (2.8%)
Less frequent than that	16 (6.4%)
Never	8 (3.2%)
How long does it take to review patients' medication list?	
Mean, minutes (SD)	2.07 (0.055)
Have you been trained to carry out detailed medication reviews?	
Yes (comparison to no)	187 (75%)
If yes, did this training take place during your studies at university or afterwards?	
At university	86 (46%)
In further education/training	61 (32.6%)
Other	40 (21.3%)
Attitudes towards deprescribing	
What is the level of your familiarity with the concept of deprescribing before this survey?	
Low familiarity (1-3)	64 (25.4 %)
Moderate familiarity (4-7)	108 (43 %)
Good familiarity (8-10)	79 (31 %)
What kind of priority does the deprescribing have in your routine practice?	
High priority	106 (42%)
Normal	73 (29%)
Low priority	16 (6.3%)
Not determined	56 (22%)

Table 3: Association between making deprescribing recommendations to the patients and pharmacists' characteristics

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	Odds ratio (95 % CI)	p-value	Adjusted odds ratio (95 % CI) a	p-value
Pharmacist age				
Per 15 years increase	0.916 (0.517-1.623)	0.763	0.795 (0.460-1.373)	0.410
Gender (ref: Male)				
Female	0.760 (0.408-1.415)	0.386	0.803 (0.445-1.448)	0.465
Frequency of seeing patient ≥ 70 years old with polypharmacy				
Per 10- percentage increase	1.254 (0.927-1.698)	0.042	1.427 (1.067-1.908)	0.016
Training in medication review (ref: Not having training in medication review)				
Having a medication review training	0.270 (0.245-0.527)	<0.01	0.249 (0.134-0.469)	<0.01

Table 4: Pharmacist experience about interprofessional collaboration with regard to deprescribing and medication review (n=251)

Question	n (%)
How frequently do you communicate with doctors to clarify issues related to prescribed medicines?	
Everyday	23(9.2%)
Several times a week	39(15.5%)
Once a week	67(26.7%)
Once a month	39(15.5%)
Rarely	48(19.1%)
Never	35(13.9%)
How frequently do you provide recommendations to physicians regarding your patient medication use?	
Everyday	29(11.6%)
Several times a week	43(17.1%)
Once a week	64(25.5%)
Once a month	24(9.6%)
Rarely	39(15.5%)
Never	52(20.7%)

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Table 5: Indirect Indicators of Patient-Level Deprescribing Activity and Shared Decision-Making (n = 251)

Domain	Indicator	n (%) or Mean (SD)
Patient-level medication assessment	Adherence assessment at least weekly	163 (64.9%)
	Complete medication list review at least weekly	215 (85.7%)
	Full medication profile review at least weekly	220 (87.6%)
Exposure to high-risk patients	Probability of encountering patients ≥70 years with >5 medications	2.43 (1.019)
Deprescribing orientation	Deprescribing rated as high priority	106 (42.0%)
Interprofessional translation	Communication with physicians at least weekly	129 (51.4%)
	Provision of medication-use recommendations at least weekly	136 (54.2%)
Capacity for shared decision-making	Trained in medication review	187 (75.0%)
	Moderate to good familiarity with deprescribing	187 (74.0%)

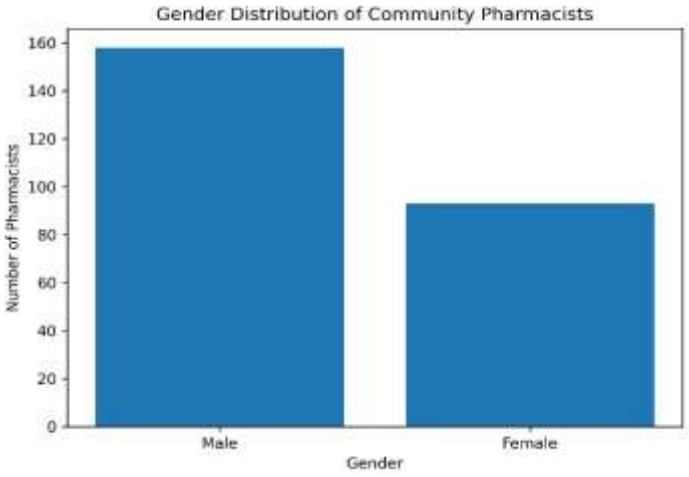

Figure 1 Gender Distribution of Community Pharmacists

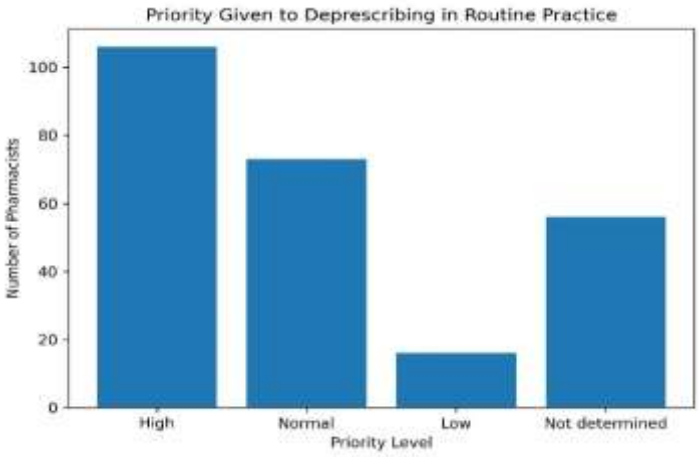

Figure 2 Priority Given to Deprescribing in Routine Practice

DISCUSSION

The present study explored community pharmacists' orientation toward patient-centered care and deprescribing in Punjab, Pakistan, and provides insight into how evolving professional roles intersect with real-world practice constraints. Overall, the findings indicated a generally positive attitude toward patient-centered principles and medication optimization, although the depth of understanding and level of practical engagement with deprescribing varied considerably among participants. Pharmacists with greater professional experience appeared more comfortable with patient-centered approaches, a pattern that aligns with earlier evidence suggesting that experiential learning and sustained patient contact strengthen commitment to individualized care and therapeutic decision-making (12,13). At the same time, the relatively limited interaction with older patients experiencing polypharmacy suggested that opportunities to apply deprescribing principles in high-risk populations remained infrequent, potentially constraining skill development and confidence in this area (14). Encouragingly, most pharmacists reported prior exposure to medication review concepts during undergraduate education, and a substantial proportion had received some form of post-graduate or professional training. This finding is consistent with international literature indicating that deprescribing is increasingly recognized within academic curricula, particularly as healthcare systems respond to the challenges of multimorbidity and polypharmacy (15). However, the data also suggested that such training may be insufficiently structured or reinforced in routine practice. While many pharmacists were involved in medication

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optimization activities, the frequency and depth of these practices were inconsistent, and the average time allocated to medication review was notably short. This pattern implied that medication reviews were often brief and opportunistic rather than comprehensive, reflecting previously reported constraints such as high workload, staffing limitations, and the absence of formalized medication review frameworks in community pharmacy settings (16,17).

Despite widespread acknowledgment of the clinical importance of deprescribing, only a minority of pharmacists regarded it as a high priority in daily practice. This gap between conceptual acceptance and practical implementation has been reported in other healthcare systems and is frequently attributed to structural and professional barriers rather than lack of motivation alone (18). In the present context, limited authority to modify prescriptions, lack of nationally endorsed deprescribing guidelines, and uncertainty surrounding legal and professional accountability may have contributed to pharmacists' cautious approach. These findings supported the argument that individual-level awareness is insufficient to drive practice change in the absence of enabling policies, standardized protocols, and institutional support (19). Evidence from settings where deprescribing has been more successfully integrated suggests that clear role delineation and formal guidance can significantly enhance pharmacists' contribution to medication safety (20). Interprofessional collaboration emerged as a critical weakness within the current practice environment. A substantial proportion of pharmacists reported rare or no communication with physicians regarding medication-related issues, and many seldom offered proactive recommendations. This limited interaction represented a significant barrier to effective deprescribing, which inherently requires shared clinical judgment and coordinated decision-making (21). In contrast, healthcare systems that have implemented successful deprescribing initiatives typically emphasize team-based care models, where pharmacists and physicians engage in regular, structured communication to align treatment decisions with patient goals (22). The findings therefore highlighted an urgent need to strengthen collaborative pathways and integrate community pharmacists more formally into primary care teams.

From a strengths perspective, the study addressed an underexplored area by focusing on pharmacists rather than patients and included a relatively large sample drawn from diverse community pharmacy settings across Punjab. The use of a validated questionnaire enhanced methodological rigor and allowed comparison with international findings. Nevertheless, several limitations should be acknowledged. The cross-sectional design precluded causal inference, and reliance on self-reported data introduced the possibility of recall and social desirability bias. Additionally, the study did not capture direct patient-level outcomes, physician acceptance rates of deprescribing recommendations, or observable changes in medication burden, which limited assessment of the real-world impact of pharmacists' attitudes and practices. Future research would benefit from longitudinal or mixed-methods designs that incorporate objective clinical outcomes, patient perspectives, and physician feedback to provide a more comprehensive understanding of deprescribing implementation. Evaluating the effectiveness of targeted training programs, structured medication review models, and formal collaboration mechanisms may also help identify scalable strategies to embed deprescribing within routine community pharmacy practice. Taken together, the findings underscored that while community pharmacists in Pakistan demonstrated readiness and positive attitudes toward patient-centered deprescribing, translating this potential into consistent clinical practice required systemic support, interprofessional integration, and sustained professional development.

CONCLUSION

The study demonstrated that community pharmacists hold a strategically important yet underutilized position in advancing patient-centered deprescribing within routine practice. While a foundational understanding of deprescribing was evident, this knowledge has not been consistently translated into day-to-day clinical action. The findings highlighted that limited and irregular collaboration with physicians remains the most critical barrier, restricting pharmacists' ability to actively participate in medication optimization and shared decision-making. These results underscore the need for healthcare regulatory bodies and policymakers to establish clear, formalized communication frameworks and practice guidelines that support sustained pharmacist–physician collaboration. Strengthening such systems would enable community pharmacists to more effectively apply their clinical expertise, enhance medication safety, and contribute meaningfully to patient-centered care.

AUTHOR CONTRIBUTIONS

Author	Contribution
Sana Yousaf	Substantial Contribution to study design, analysis, acquisition of Data Manuscript Writing Has given Final Approval of the version to be published
Syed Nisar Hussain Shah	Substantial Contribution to study design, acquisition and interpretation of Data Critical Review and Manuscript Writing Has given Final Approval of the version to be published
Muneeb Ahmad	Substantial Contribution to acquisition and interpretation of Data Has given Final Approval of the version to be published
Aousaf Ahmad*	Contributed to Data Collection and Analysis Has given Final Approval of the version to be published
Shakeel Ijaz*	Contributed to Data Collection and Analysis Has given Final Approval of the version to be published
Laiba Surosh Tahir	Substantial Contribution to study design and Data Analysis Has given Final Approval of the version to be published
Aiza Ali	Contributed to study concept and Data collection Has given Final Approval of the version to be published
Ayesha Saddiqa	Writing - Review & Editing, Assistance with Data Curation
Hurain Zafar	Writing - Review & Editing, Assistance with Data Curation
Moeeza Malik	Writing - Review & Editing, Assistance with Data Curation
Mahnoor Shafiq	Writing - Review & Editing, Assistance with Data Curation
Maryam Khalid	Writing - Review & Editing, Assistance with Data Curation

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