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Barriers to pharmaceutical care provision in the community and hospital pharmacies of Motta town, Northwest Ethiopia: a cross-sectional study

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Abstract

Background Although pharmaceutical care has tangible positive importance in ensuring patient pharmacotherapy safety, its provision encounters several barriers. Therefore, this study investigated the obstacles pharmacy professionals faced while providing pharmaceutical care in Motta town, Northwest Ethiopia.

Methods A cross-sectional study was conducted from July 30, 2022, to August 30, 2022, at all community and hospital pharmacies in Motta town, Northwest Ethiopia. The data were collected via a self-administered questionnaire and analyzed via SPSS version 26.0. Descriptive statistics and statistical analysis tests, such as the independent t-test, variance, and multiple linear regressions, were employed to analyze the data.

Results The study had a 97.7% response rate. Among the 130 participants, 71 (54.6%) were females. The mean (±SD) total score of pharmaceutical care provision barriers was 85.06 (±20.2). The highest and lowest mean subscale scores of pharmaceutical care provision barriers were related to lack of resources and skill, respectively. Among resource-related barriers, lack of time and money, lack of trained staff, and lack of private space for consultation scored higher than other barriers. Concerning vision/attitudinal barriers, patients and other healthcare workers' inappropriate attitudes toward pharmaceutical care obtained the highest scores. The lack of clinical education in pharmaceutical care, lack of communication, and lack of documentation skills of pharmacists scored higher than other barriers in the educational and skill-related barriers subscales. For the regulatory/environmental subscale, a lack of clinical practice guidelines and legal barriers scored higher than the other subscales did. Pharmaceutical care provision barriers were significantly associated with age (B = 14.008), years of practice (B = 13.009), and graduating institution (B=-16.773).

Conclusions Resource and attitudinal/vision-related barriers were reported to be the most common barriers to pharmaceutical care implementation. Stakeholders should work together to develop strategic solutions to overcome these barriers and thus achieve optimal pharmaceutical care provision. These strategies should include

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optimizing the number of trained pharmacy staff, time and financial problems should be resolved, communication and documentation skills should be improved, pharmacy layouts should incorporate private counseling rooms, policies that support the pharmacist's role in patient care should be developed, and effective training and continuing professional education programs should be offered.

Keywords Pharmacy professionals, Pharmaceutical care, Barriers to pharmaceutical care provision, Ethiopia

Background

Since 1990, the role of pharmacists has expanded from traditional product-oriented dispensing to patient-oriented pharmaceutical care (PC) practices [1–3]. Hepler and Strand defined PC as "The responsible provision of drug therapy to achieve definite outcomes that improve the patient's quality of life [4]. The listed outcomes include curing the disease, eliminating or reducing a patient's symptomatology, arresting or slowing the disease's progression, and preventing a disease [5]. Pharmaceutical care practices are both outcome-oriented and patient-centered approaches, requiring the pharmacist to collaborate with the patient and other healthcare providers to develop, implement, and monitor a care plan intended to prevent and address drug therapy problems (DTPs) [6, 7].

To guarantee that patients receive the best care possible, the American Pharmacists Association (APhA) adopted five principles of pharmaceutical care. The five guiding principles included gathering and evaluating patient data, examining medical records, developing and implementing a medication therapy plan, and monitoring and modifying the plan [8].

A large body of studies analyzing the impacts of PC in diverse situations revealed that these services optimize patients' adherence [9–11], reduce health care costs [11], improve patient health outcomes [12–15] and health-related quality of life [13] and enable patients to have better knowledge of the disease [13, 14, 16–18]. Findings from a separate study also showed that PC reduces mortality, prescription errors [19], hospital readmissions, and the length of hospital stays [16–18]. The incorporation of PC in the management of chronic conditions, such as chronic obstructive pulmonary disease (COPD), diabetes, hypertension, cardiovascular diseases, and asthma, has yielded promising outcomes [10–14, 20], including significant reductions in glycated hemoglobin (HbA1c) levels, lower systolic and diastolic blood pressure [12–14, 21], optimized medication adherence [11, 20, 22, 23], improved health-related quality of life [13, 22], and a reduced rate of hospital readmissions [16–18, 23].

PC is used widely in countries with better-developed healthcare infrastructure [24], whereas in Ethiopia, where pharmacist orientation is still predominantly focused on selling medications, the situation might differ. Pharmacy professionals (PPs) in Ethiopia are focused mainly on dispensing medicines, controlling inventory, and providing patient counseling. However, they are less involved in the provision of PC. In particular, their involvement in managing drug-related problems is rare. As a result, PC practice in Ethiopia has not been fully implemented, remains underdeveloped, and is still in its early stages [25].

Different countries have various forms and levels of pharmaceutical care development and adoption, depending on their legal, political, and healthcare systems [23]. Ethiopia has taken several measures to integrate PC into the healthcare system. In 2008, health authorities recognized the need for patient-centered pharmacists, and the 4-year undergraduate pharmacy program was upgraded to a 5-year clinical pharmacy program by adding 1-year mandatory clerkship attachments. Soon after, the National Harmonized Modular Curriculum was framed to empower undergraduates toward more clinically oriented education. In addition, the Masters of Science in Clinical Pharmacy and Pharmacy Practice were launched by Jimma University in collaboration with partners from the Ethiopian Pharmaceutical Association, the Strengthening Pharmaceutical Systems Program of Management Sciences for Health, and the University of Washington [26–28]. The Ethiopian Hospital Reform Implementation Guideline (EHRIG) [14], which promotes interdisciplinary collaboration between doctors and pharmacists in the practice of patient-oriented pharmacy services, was also introduced to the national healthcare system by the Ethiopian Food, Medicines, and Health Care Administration and Control Authority (FMHACA) [25, 29, 30]. The reform guidelines are seldom reflected in actual practice because, in Ethiopia, physicians handle all direct patient care, making pharmacists' involvement in drug therapy management reliant on physicians' openness to their role. Additionally, the general public has a limited understanding of pharmacists' roles. Consequently, PC practices in Ethiopia remain underdeveloped, not fully implemented, and are still in their early stages.

Continuing education (CE) programs are implemented in several countries for pharmacists as mandatory lifelong learning initiatives aimed at enhancing clinical pharmacy and PC services [31]. In Ethiopia, a continuing professional development (CPD) system is being established, supported by the introduction of the CPD Guideline for Health Professionals in 2013 [32]. The country is witnessing a shift in pharmacy practice toward a more patient-centered approach, which leads to a growing need for pharmacists to develop and maintain expertise

in areas such as pharmacotherapy, pharmaceutical care, and interpersonal communication [31, 33, 34].

Since introducing pharmaceutical care, its development has not progressed as smoothly as expected. Many obstacles have prevented PPs from consistently providing pharmaceutical care as a professional service [1–3]. Thus, pharmacists from various locations and with varying levels of experience should pinpoint their challenges and prioritize the issues that should be addressed first [35].

Some authors have described and classified barriers to implementing pharmaceutical care as a lack of resources, time, knowledge, and training in the field [36–38]. In a study conducted in Iran (2013), Mehralian et al. also categorized pharmaceutical care barriers into five domains: resources, attitudes/vision, education/training, skills, and regulatory-related obstacles [39].

While PC appears to benefit patients and the healthcare system as a whole, there are obstacles unique to each country that prevent the concept from being used to its full potential [40, 41]. In Thailand, the primary challenges to implementing pharmaceutical care are insufficient therapeutic knowledge, inadequate clinical problem-solving skills, a lack of data on the proven benefits of pharmaceutical care, and limited time [38]. Although the implementation of pharmaceutical care by Canadian PPs continues to become more widespread, barriers to providing pharmaceutical care still exist, including lack of time, lack of funding, and difficulty communicating with patients and physicians [41]. Van Mil et al. reported that the implementation of pharmaceutical care in 11 European countries was impeded by insufficient time and funding. In addition, a lack of communication and clinical education were reported as barriers in 10 of those 11 countries [36]. According to AbuRuz et al., there is little implementation of PC in Jordan, and one of the greatest obstacles to PC provision is a lack of training [42]. A lack of financial resources in pharmacies was identified as the main barrier to the implementation of PC in Denmark [43] and Iran [39].

Although the number of reported obstacles to the practice of pharmaceutical care is increasing globally and pharmaceutical care implementation in Ethiopia is suboptimal [25], few studies have been conducted on the barriers encountered by PPs in the delivery of PC in Ethiopia and the study area. This study aimed to determine the barriers to the provision of PC and its determinants among PPs working in Motta town, Northwest Ethiopia.

Methods and materials

Study design, setting, and period

A cross-sectional study was conducted from July 30, 2022, to August 30, 2022, on PPs working in hospitals or community pharmacies in Motta Town, Northwest Ethiopia. Motta town is located in the northwestern part of Ethiopia, at a distance of 372 km from Addis Ababa, the capital city of Ethiopia. The Amhara Regional Health Bureau registered 133 pharmacy professionals working in Motta town, Northwest Ethiopia, including 60 in community settings and 73 in hospitals.

Study population

The source population comprised all PPs in Motta town, whereas the study population included those working in hospitals and community pharmacies in Motta town during the data collection period.

Eligibility criteria

PPs from community or hospital pharmacies in Motta town who agreed to participate in the study were included as study subjects. Participants who were not present at their work sites during the data collection period were excluded from the study. Approximately 130 of the 133 PPs working in Motta Town participated in the study. Three pharmacists were out of town during the data collection period.

Sample size and sampling techniques

The sample for this study included all PPs working in community- and hospital-based pharmacies in Motta Towns during the study period. The list of all the pharmacists was obtained from Amhara Regional Health Bureaus (the list was checked to evaluate the fulfillment of the inclusion criteria). Finally, all the pharmacists who met the inclusion criteria were selected to participate in the study via a census sampling technique. Approximately 130 of the 133 PPs working in Motta Town participated in the study. Three pharmacists were out of town during the data collection period.

Study variables

The dependent variable in this study was the barriers encountered by PPs in providing pharmaceutical care. This variable was derived from PPs reports and was evaluated as a continuous variable.

The independent variables included sex, age, marital status, training curriculum, work experience, work setting, and graduating institution.

Data collection tool and technique

Data were gathered via a self-administered questionnaire, which was designed based on information from relevant literature. The items assessing barriers were derived from existing evidence on pharmaceutical care-related obstacles [36, 38, 39, 44–47]. Therefore, the questions had already been tested, which probably resulted in a high degree of validity. The initial version of the questionnaire was reviewed by three researchers with expertise in pharmaceutical care and pharmacy practice-related studies to

evaluate content validity, clarity, relevance, and conciseness. Additionally, the questionnaire was tested with 10 randomly selected pharmacy professionals in Bichena town to gather feedback on its wording and usability. Some items were adjusted based on this feedback (language-related modifications were made to clarify some of the questions), and the data from the pilot test were excluded from the final analysis.

The questionnaire consists of 7 questions in the first section to address sociodemographic characteristics and 28 questions to explore barriers encountered by PPs in providing pharmaceutical care. The second section is structured under five subdomains, including resource-related barriers, attitude/vision-related barriers, educational/training-related barriers, skill-related barriers, and regulatory/environmental barriers [27], which are measured via a 5-point Likert scale ranging from "strongly agree" to "strongly disagree".

The total score can range from 28 to 140, with a higher score associated with greater barriers to pharmaceutical care provision (PCP). The Cronbach's alpha coefficients of the total scale and the subscales of resource-related barriers, attitudinal barriers, educational/training-related barriers, skill-related barriers, and regulatory/environmental barriers were 0.93, 0.80, 0.85, 0.77, 0.70, and 0.71, respectively. The self-administered questionnaire was distributed by three trained and experienced pharmacists (those trained for three days). The data collectors followed a standardized procedure during the data collection: (1) introducing themselves briefly, (2) explaining the overall nature and procedures of the study and the participant information sheet, (3) emphasizing the anonymous nature of the study, and (4) confirming respondents' participation and obtaining their voluntary consent. The data collectors addressed any questions from respondents with more specific information. All questionnaires were distributed to the respondents' workplaces and collected the following day.

Data quality assurance

To ensure the quality of the data, the data collectors were trained for three days about the objective, methodology, tool, and scope of the study; furthermore, the study participants were informed about the study scope and objective. The data collection tool was sent to senior pharmacists with a clinical pharmacy and pharmacy practice specialty for face validity and approval and an English version of the data collection questionnaire was translated into Amharic and back-translated to English.

Data processing and analysis

The data were entered into Epi-data V.3.5.1 and exported to the Statistical Package for the Social Sciences (SPSS V.26) for further analysis. Following the assessment of skewness, kurtosis, Kolmogorov–Smirnov, and Shapiro–Wilk tests, the data were considered to be normally distributed. Descriptive statistics, such as frequency, percentage, mean, and standard deviation, were used to describe demographic characteristics, along with barriers to PCP. For the subscales of the barrier tool, higher scores were considered indicative of a greater number of barriers. To calculate each subscale's normalized score, its score was subtracted from the minimum score of that subscale and divided by the difference between the maximum and minimum scores of that subscale. Finally, the answer obtained was multiplied by 100. To compare the continuous variables of barriers to PCP with the categorical variables of sociodemographic characteristics, an independent t-test and ANOVA were employed. Additionally, in this comparison, the partial eta squared effect size, Cohen's d defect size, and confidence interval were reported. According to Colin et al. (2012), partial eta squared effect sizes are classified as small (0.01), medium (0.06), or large (0.14 and higher) [48]. Here, the effect sizes were reported based on Cohen's d, and standardized mean differences were reported based on Cohen's d defect size (null efect=0, trivial efect=0–0.19, small efect=0.2–0.49, medium efect=0.5–0.79, large efect=0.8–1.19, very large efect=1.2–2, and large effect≥2) [49, 50]. To determine the relationship of each of the independent variables (individual characteristic variables) on the dependent variable (barriers to PCP), those variables were confirmed to be significant in the bivariate test ($p<0.05$) and were entered into a multiple linear regression model via a backward strategy. The backward strategy is a stepwise regression approach that begins with a full (saturated) model. At each step, this strategy gradually eliminates variables from the regression model to find a reduced model that best explains the data. The results from the linear regression analysis are presented as beta coefficients with associated 95% CIs. The level of statistical significance was set at $p<0.05$.

Operational definitions

Attitudinal or vision-related barriers to pharmaceutical care refer to the obstacles that prevent the effective delivery of pharmaceutical services due to the beliefs, attitudes, or perceptions of PPs.

"Graduating institution" refers to an educational institution where PPs have completed a Bachelor of Pharmacy (BPharm) program.

Results

Among the 130 PPs who participated in this study (97.7% response rate), more than half (54.6%) were female, over two-thirds (67.7%) were employed in hospital pharmacies, and the majority (70%) had graduated from a government university. The age range of the participants was

20–47 years, with a mean of 32.6±6.9 years. Concerning the training curriculum, fewer than half (41.5%) of the participants were trained with a clinically oriented curriculum or had in-service training in clinical pharmacy. A significant number of PPs had over ten years of experience (47.7%) and were married (48.5%).

The study found statistically significant relationships between the total score of barriers to providing pharmaceutical care and age ($p<0.001$), training curriculum ($p=0.020$), years of practice ($p<0.001$), marital status ($p=0.002$), and the university from which the professionals graduated ($p<0.001$). As demonstrated in Table 1, these relationships were not statistically significant for variables related to gender and work setting. Tables 1, 2 and 3 show the relationships between the characteristics of PPs and the subscales of the PCP barriers.

The mean and standard deviation (SD) of the total score for the PCP barriers were 85.06±20.2. To facilitate a comparison of the PCP barrier subscales, the scores were adjusted to a 100-point scale. Higher scores indicate more significant barriers, whereas lower scores reflect fewer barriers. As demonstrated in Table 2, the highest scores and the lowest scores were related to resource-related barriers and skill-related barriers. Items with a higher mean score were identified in the following subscales: resource-and attitudinal/vision-related barriers. The higher scores were related to the following items: lack of time, lack of money (reimbursement), lack of trained staff, and inappropriate attitudes of other health professionals and patients toward pharmaceutical care.

To estimate the effect of each of the individual characteristic variables on barriers to PCP, all variables with $P<0.05$ based on the results in Table 1 were entered into the linear regression model via the backward method. The associations between individual PPs characteristics and barriers to PCP are presented in Table 3, where some of the variables that were entered into the model, including age, year of practice, and graduating institution, remained significant in the multiple linear regressions. As indicated, for every score increase in age greater than 30 years, the barrier score increased by 14.01 units. PPs with more than ten years of experience were reported to have a greater barrier score (13.001 units higher) than those with less than five years of experience. The barrier scores for PCPs among PPs who graduated from government universities decreased by 16.77 units. Consequently, 46.7% of the variation in the dependent variable (barriers) was explained by the independent variables (age, year of practice, and Graduating University).

Discussion

The present study examined the barriers associated with PCP and its predictors among pharmacy professionals in Motta town, Northwest Ethiopia. The mean score (±SD) of the total number of PCP barriers was 85.06 (±20.27). The highest and the lowest mean scores were related to resource-related barriers, and skill-related barriers to pharmaceutical care provision respectively.

According to the respondents, "resource-related barriers" and "attitudinal/vision-related barriers" were identified as the two most common obstacles. Among the resource-related barriers, lack of time had the highest mean score. Time constraints are frequently cited as a major challenge to delivering pharmaceutical care in

Table 1 Relationships between PPs individual characteristics and barriers to PCP ($n=130$)

Variable	Category	*N*	Mean	SD	*P* value	[c] ES (CI[d])
Gender	Male	59	82.94	19.99	[b]$P=0.278$	-0.19(-0.53,0.15)
	Female	71	86.81	20.31		
Age	< 30yrs	56	77.00	19.73	**[a]$P<0.001$**	0.17(0.06,0.28)*
	30-39yrs	51	95.23	15.46		
	≥ 40yrs	23	82.13	21.38		
Training curriculum	BPharm with new clinical-oriented curriculum and Others*	54	89.70	18.69	**[b]$P=0.026$**	0.40(0.04,0.75)*
	BPharm with the old curriculum	76	81.76	20.67		
Years in practice	≤ 4yrs	39	74.38	20.04	**[a]$P<0.001$**	0.16(0.05,0.27)*
	5-9yrs	29	82.10	21.27		
	≥ 10yrs	62	93.16	16.11		
Work setting	Hospital pharmacy	88	87.18	20.29	[b]$P=0.083$	0.32(-0.04,0.69)
	Community pharmacy	42	80.61	19.44		
Marital Status	Single	45	87.15	17.95	**[a]$P=0.001$**	0.09(0.01,0.19)*
	Married	63	88.42	19.12		
	Divorced/widowed	22	71.13	22.37		
Graduating institution	Government	91	92.18	16.39	**[b]$P<0.001$**	1.39(0.97,1.80)*
	Private	39	68.43	18.46		

Significance level: $P<0.05$, *B. Pharm with old curriculum plus 1 month in-service and MSc in clinical pharmacy

[a]One-way ANOVA, [b] independent sample t-test, [c] effect size, [d] confidence interval

Table 2 Scores of the PCP barriers and their subscales ($n = 130$)

Factor	Item	Mean	SD	Total mean ± SD	Minimum	Maximum
Resources related barriers	Lack of money (reimbursement)	3.35	1.19	22.95 + 6.31 56.96 + 22.55	7	35
	Lack of time	3.52	1.33			
	Lack of space in pharmacies	3.11	1.40			
	Lack of suitable software (for financial and inventory management)	3.22	1.36			
	Lack of trained staff	3.31	1.37			
	Lack of private space for consultation	3.33	1.34			
	Lack of access to information sources	3.11	1.16			
Attitude and vision related barriers	Inappropriate attitude of staff toward pharmaceutical care	3.00	1.38	22.88 + 6.72 56.70 + 24.00	7	35
	Inappropriate attitude of other health professionals toward pharmaceutical care	3.37	1.35			
	Inappropriate attitude of pharmacists	3.20	1.31			
	Inappropriate attitude of pharmacy owners/administrators toward pharmaceutical care	3.09	1.36			
	Inappropriate attitude of patients toward pharmaceutical care	3.35	1.34			
	Inappropriate attitude of health policymakers toward pharmaceutical care	3.33	1.34			
	Lack of appropriate vision for professional development	3.55	1.30			
Factor	**Items**	**Mean**	**SD**	**Total mean ± SD**	**Minimum**	**Maximum**
Education and training Related barriers	Lack of clinical education about pharmaceutical care	3.25		12.16 + 3.74 51.01 + 23.33	4	20
	Lack of education in communication	3.09	1.31			
	Lack of education about social pharmacy	2.87	1.22			
	Lack of education in the public domain toward professional services of pharmacists	2.95	1.19			
Skills related barriers	Lack of skills for pharmacotherapy assessment	2.76	1.25	11.90 + 3.02 46.00 + 20.14	5	20
	Lack of communication skills of pharmacists	3.30	1.33			
	Lack of documentation skills of pharmacists	3.22	1.18			
	Lack of managerial skills	2.62	1.18			
Regulatory and environmental barriers	Legal barriers	2.99	1.37	15.17 + 3.60 48.05 + 21.20	7	24
	National healthcare structure in general	2.03	1.09			
	Inertia of pharmacists as a group	2.04	1.03			
	Customers' hesitance to speak about private issues	2.15	1.19			
	Lack of clinical practice guideline	3.02	1.44			
	Inappropriate system for assessment and encouraging pharmacies toward pharmaceutical care	2.92	1.39			
Total				85.06 + 20.20		

Minimum value (the lowest possible total score across all subdomains), maximum value (the highest possible total score across all subdomains)

most research, regardless of the setting [35, 36, 38, 41, 44, 51–53]. This issue is particularly pressing in Ethiopia, where the low density of pharmacists per population and the challenge of managing a high volume of patients daily exacerbate the problem [26, 54]. The demands of dispensing medications, handling administrative tasks, and managing limited drug supplies consume much of the PPs' time, making them hesitant to fully engage in pharmaceutical care services. As a result, this leads to reduced quality of care and missed opportunities for improving patient health outcomes [25, 55].

To enable PPs to devote more time to PCP, several measures should be taken. Pharmacists should prioritize their tasks and delegate nonessential duties to other technical staff. Additionally, higher education institutions should integrate training modules into their curriculum that teach effective time management for their students. Policymakers should focus on hiring additional support staff to ensure that pharmacists have adequate time for patient interactions and should establish guidelines for the minimum time required for patient consultations or other PC services.

The present study reinforces the findings of similar studies in various countries [36, 39, 41, 43, 56, 57] that identified money (reimbursement) as the major barrier to its implementation. Owing to financial barriers,

Table 3 Relationships of PPs individual characteristics with PCP barriers based on the results of multiple linear regression analysis ($n=130$)

Independent variable	Category	Unstandardized coefficients B	Standardized coefficient beta	95% CI for B	*P* value	R2
Age	< 30yrs	Reference Category				0.467
	30-39yrs	14.01	0.34	7.81 to 20.21	0.000*	
	≥ 40yrs	3.85	0.07	-3.84 to 11.54	0.324	
Year of practice	≤ 4yrs	Reference Category				
	5-9yrs	5.65	0.12	-2.01 to 13.30	0.147	
	≥ 10yrs	13.01	0.32	6.36 to 19.66	0.000*	
Training curriculum	Bpharm with new clinical-oriented curriculum	-2.72	-0.07	-8.53 to 3.10	0.357	
	Bpharm with the old curriculum	Reference Category				
Marital Status	Single	4.54	0.11	-3.44 to 12.53	0.262	
	Married	2.88	0.07	-4.67 to 10.44	0.452	
	Widowed/Divorced	Reference Category				
Graduating institution	Government	-16.77	-0.38	-23.21 to -10.33	0.000*	
	Private	Reference Category				

*Significance level: $P<0.05$, R2: R squared

improper payment (remuneration) systems significantly retard the capacity of PPs in the delivery of PC [36, 56]. There are no remuneration schemes or incentives arranged for pharmacists for PC services in Ethiopia [58], which can severely impact the delivery of pharmaceutical care by reducing motivation and job satisfaction [59, 60], leading to high turnover rates and increased workload. These factors compromise the quality of care, resulting in poor patient health outcomes by increasing the risk of medication errors or inadequate patient counseling [61, 62]. Furthermore, financial instability may hinder PPs from participating in continuing education and training, which can negatively impact their professional growth and the quality of the services they provide. Addressing these remuneration issues is crucial for improving the overall effectiveness and sustainability of pharmaceutical care in Ethiopia [36, 56]. Therefore, the Ethiopian Pharmacy Association and the government should reform the remuneration system to ensure timely and adequate compensation for PPs. This might include revising payment structures, increasing funding for pharmaceutical services, and improving financial management practices within healthcare institutions. These changes can help ensure that pharmacists are well-supported and motivated to deliver high-quality pharmaceutical care.

PPs in various countries also face issues such as the absence of private consultation areas and a shortage of trained supportive staff [5, 41, 44, 63]. This finding is also consistent with the studies conducted in Ethiopia, which state that the lack of private consultation areas is considered a barrier to pharmacy services in the country as a result of weaknesses in the legal bodies' enforcement of private counseling areas, as well as insufficient facility space and financial constraints in constructing a private counseling room [64, 65]. Pharmacists have claimed that incorporating a patient waiting area and a private or semi-private counseling area in their pharmacy will improve the counseling environment, increase patient privacy, and facilitate pharmacist-patient interactions [44, 66]. However, the absence of private counseling spaces might result in incomplete or inaccurate communication between the pharmacist and the patient, potentially leading to suboptimal pharmaceutical care delivery and adherence to treatment [67, 68]. Moreover, PPs may feel stressed or distracted when they lack a designated space to conduct private consultations. It can reduce overall efficiency and job satisfaction and negatively affect the delivery of PC [66, 69, 70]. Thus, it is essential for regulatory bodies to ensure that all establishments comply with the criteria for constructing medicine retail outlets/hospital pharmacies before they begin operations and involve redesigning pharmacy layouts to include separate spaces to create an environment that supports effective and confidential patient interactions.

Trained supportive staff enhances pharmacy operations by managing routine tasks such as prescription processing, inventory control, and patient management. This enables pharmacists to concentrate more on clinical responsibilities, including medication therapy management, patient counseling, and pharmaceutical care delivery [71]. However, a lack of trained supportive staff leads to a busy work schedule that naturally limits the provision of PC services. In particular, a study by Farris and Schopflocher claimed that a lack of trained supportive staff for minor dispensing work was a limitation that affected the successful implementation of pharmaceutical care [72]. The shortage of pharmacy technicians in Ethiopia severely impacts pharmaceutical care, especially in rural areas. This shortage increases pharmacists' workloads, limits access to essential medicines, and hampers

comprehensive care. The situation is worsened by inadequate training and a lack of CPD programs for pharmacy staff [73]. These challenges underscore the need for policy changes to increase the number of trained pharmacy technicians and improve their working conditions.

Concerning attitudinal barriers related to pharmaceutical care provision, the inappropriate attitudes of healthcare professionals and patients toward the PCP were greater than those toward other barriers. These findings are consistent with those reported in earlier studies [5, 74, 75]. Even though pharmaceutical care depends greatly on the collaboration of healthcare professionals, such as pharmacists, nurses, and physicians, other healthcare professionals, insufficient attitudes toward PC remain a barrier in Ethiopia. The negative attitudes of physicians and nurses toward pharmaceutical care reflect a lack of recognition of the pharmacist's role as an integral part of the healthcare team. This undermines the potential for effective interprofessional collaboration and limits the ability of pharmacists to contribute effectively to managing drug therapy, which is essential for comprehensive patient care [4, 44]. In Ethiopia, direct patient care remains largely the responsibility of physicians, whereas pharmacists' participation in managing drug therapy largely depends on how open physicians are [25]. As a result, Ethiopian higher education institutions should incorporate interprofessional education into both undergraduate and postgraduate programs, allowing physicians, nurses, and pharmacists to be trained together, which will help cultivate mutual respect and a better understanding of each other's roles [63]. Policymakers should also consider developing and implementing guidelines that clearly define and promote the role of pharmacists in patient care. Moreover, ongoing professional development programs for physicians and nurses are needed to increase their understanding of the value that pharmacists bring to patient care, particularly in optimizing drug therapy.

Patients also have much less understanding of the word "pharmaceutical care" and its concept. This relative lack of knowledge leads to a lack of demand for this service [3, 53, 76]. One significant factor contributing to the poor attitudes of patients toward PC in Ethiopia is the lack of adequate counseling by pharmacists. Many patients report dissatisfaction with the counseling they receive regarding medication side effects, drug interactions, and proper storage of medicines at home. Moreover, logistical challenges such as long waiting times and the unavailability of prescriptions lead to a negative perception of the pharmaceutical care provided [77, 78]. An insufficient attitude of patients leads to poor trust and engagement with pharmacists. This can lead to reluctance to seek advice or follow recommendations, which diminishes the role of pharmacists in managing and optimizing drug therapy. Therefore, PPs need to focus more on educating patients about the importance and advantages of pharmaceutical care by using clear communication and patient-centered methods, which can help change attitudes and build a more favorable view of pharmacists' roles in maintaining and improving health.

In this study, the subscale of resource-related barriers to the PCP received the highest score. In this context, many researchers claim that resource-related barriers can be the most important factors that prevent PC provision [35, 38, 51–53]. The lack of time, funding, and staff indicates that PPs are working in an environment with limited resources. This constraint likely hinders their ability to deliver comprehensive care, which may result in lower patient satisfaction and potentially worse health outcomes. Addressing these resource constraints is essential for improving the overall efficiency and effectiveness of pharmaceutical care.

Among education- and training-related barriers, a lack of clinical education about pharmaceutical care and a lack of education about communication are considered barriers to PCPs [53, 79]. These results are in line with those of previous studies [38, 44, 80–83]. PPs with a solid basis in therapeutics/PC can recognize more drug-related issues, do so faster, and create a wider range of possible interventions and treatment strategies [66]. In Ethiopia, pharmacy programs often focus on technical skills, leaving pharmacists underprepared for patient-centered care. This gap in clinical training affects their ability to perform medication therapy management, counsel patients, and collaborate with healthcare teams, leading to suboptimal care and patient dissatisfaction [78]; therefore, changes must be made to the undergraduate pharmacy curriculum to ensure that students acquire more insight into patient-focused courses and relevant aspects of information management and technology, communication, documentation, and health problem resolution. Furthermore, ongoing professional development programs are essential for equipping PPs with the knowledge and skills required to effectively deliver patient care [84]. The absence of communication skills training for pharmacists greatly affects the quality of pharmaceutical care. Without proper education in this area, pharmacists may find it difficult to effectively convey important information, resulting in misunderstandings and decreased patient satisfaction. Addressing this gap in education is vital for enhancing patient outcomes and the overall effectiveness of pharmaceutical care in the country.

Among skills-related barriers, the majority of PPs cited the lack of communication skills and lack of documentation skills of pharmacists as barriers to PCP. Pharmaceutical care concept, well recognizes the responsibilities of other healthcare providers (physicians and nurses). Thus, strong cooperation and communication are required

between pharmacists and other healthcare professionals to design care plans for patient drug-related problems and to optimize their therapeutic outcomes. Practitioners from all disciplines can use their specific training and professional experience to improve patient care. Future healthcare professionals will be more likely to collaborate when undergraduate medical and pharmacy students receive interprofessional education [53, 85]. This could solve the present problems of healthcare professionals not working well together and poor communication [4, 58, 65, 80].

According to Cipolle and others, "if you are not documenting the care you provide comprehensively, then you do not have a practice" [86]. Even though documentation of the activities of PPs is a crucial aspect of pharmaceutical care, its practices] in Ethiopia are often inadequate and frequently neglected. This challenge may stem from insufficient training, a lack of time, limited knowledge, and negative attitudes among healthcare workers toward documentation [87]. This result is also consistent with studies conducted in Jordan [76], Brazil [88], and Malaysia [15]. Inadequate medical care documentation is associated with preventable medical errors that can result in poor patient outcomes [89]. Thus, healthcare organizations may need to implement standardized documentation protocols to ensure consistency and completeness in record-keeping. Furthermore, higher education institutions should incorporate more comprehensive training on documentation practices into the pharmacy curriculum.

PPs with more than ten years of experience were found to have higher barrier scores compared to those with less than five years of experience. PPs with fewer years of experience were more actively involved in pharmaceutical care practice and faced fewer barriers to its' implementation than those with more experience. Various reports have suggested that after completing a pharmacy program, fresh PPs might demonstrate good self-efficiency and belief and start providing pharmaceutical care frequently; however, after 5–10 years of practice, they may deteriorate and start to exclusively support dispensing medications rather than deliver patient care [85]. Thus, they became reluctant to provide PC by confronting inherent obstacles that could prevent them from doing so, and they were more likely to reflect on the difficulties involved in starting a new service [5].

Age was significantly associated with the incidence of PCP. However, PPs over the age of 30 years have reportedly experienced greater barriers to PCP than their younger counterparts. A possible explanation is that older PPs were trained in the old curriculum, which lacked an adequate understanding of and attitudes toward PC since the curriculum allowed pharmacy professionals to participate in medication consultation, drug supply, and compounding rather than patient-focused services [90, 91].

Compared with private university graduates, government university-graduated PPs have lower PCP barrier scores. Government university trainers had a better understanding of and attitude toward PC since they received training from more educated and experienced instructors, and they were followed attentively by university administrators and lecturers during a one-year training program. Thus, they had a lower PCP barrier score.

To the author's knowledge, this is the first empirical study conducted on barriers to pharmaceutical care provision among PPs working in Motta town. Our study provides an in-depth evaluation of the obstacles encountered by PPs in the provision of PC in Motta town, Northwest Ethiopia. In addition, the study results revealed potentially important areas that need to be addressed if pharmaceutical care is to be implemented. It also serves as a basis for further research projects in pharmaceutical care or related healthcare fields. Since resource-related barriers are the most common barriers in the implementation of PC, the Amhara Health Bureau and other stakeholders need to work together to deliver adequate and appropriate resources, which could have positive impacts on the implementation of these services in routine daily practice. PPs should ensure adequate trained human resources and pharmacy facilities to offer PC services. Collaborative efforts between health authorities, educational institutions, and policymakers should critically evaluate the pharmacy curriculum and, if necessary, should be updated to offer PC competencies, in addition, policymakers and healthcare professionals should formulate national standard pharmaceutical care guidelines to enhance its implementation. Finally, our research provides a foundation for future research that could explore interventions to overcome these barriers, assess the effectiveness of different strategies, and investigate similar challenges in other areas of healthcare and from the perspective of other healthcare professionals. The findings of this study will offer baseline information for policymakers, public health agencies, and researchers to grasp the challenges faced by PPs in delivering pharmaceutical care. This understanding will help stakeholders develop strategies and educational programs to overcome these obstacles and enhance the provision of pharmaceutical care in Ethiopia. Additionally, this research will open avenues for future studies in the field, given the current scarcity of data in Ethiopia.

Limitations of the study

The following limitations should be considered when interpreting the study's findings: (i) Since the study design was cross-sectional, establishing cause–and–effect relationships is difficult. (ii) Data were collected through

a self-administered questionnaire, so the risk of bias was high. (iii) The instrument used to evaluate barriers to pharmaceutical care provision has not been validated. (iv) (v) A smaller sample size and the use of a nonprobability sampling technique decrease the generalizability of the results to the whole country. Furthermore, a power analysis was not conducted during the sample size calculation.

Conclusion

The results of the study revealed that PPs in Ethiopia face various barriers to PCPs. Resources and attitudinal/vision-related barriers are the most important barriers to PCP. Therefore, to stimulate the implementation of pharmaceutical care in Ethiopia, pharmaceutical organizations need to work continuously to change attitudes among other healthcare professionals and patients. Significant barriers have also been identified in the education and resources domains, highlighting the need for changes in the Ethiopian pharmacy curriculum.

Abbreviations

ANOVA	Analysis of variance
B. Pharm	Bachelor of Pharmacy
CI	Confidence interval
CPD	Continuing Professional Development
FIP	International Pharmaceutical Federation
PC	Pharmaceutical care
PCP	Pharmaceutical care provision
PPs	Pharmacy professionals
SD	Standard deviation
SPSS	Statistical Package for the Social Sciences

Supplementary Information

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Supplementary Material 1.

Supplementary Material 2. Supplementary file 2 shows the questionnaire used to collect the data in this study.

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Authors' contributions

Conceptualization and data curation: Mekdes Kiflu, Sintayehu Simie Tsega, Helen Abebaw Alem, and Tilaye Arega Moges Data curation and investigation: Mekdes Kiflu, Sintayehu Simie Tsega, Helen Abebaw Alem, Abebaw Abie Gedif, Melese Getachew, Fisseha Nigussie Dagnew, Aysheshim Belaineh Haimanot, Endalamaw Aschale Mihiretie, and Tilaye Arega Moges, Software and validation: Mekdes Kiflu, Sintayehu Simie Tsega, Helen Abebaw Alem, Abebaw Abie Gedif, Melese Getachew, Fisseha Nigussie Dagnew, Aysheshim Belaineh Haimanot, Endalamaw Aschale Mihiretie, and Tilaye Arega Moges Writing and editing: All the authors have read and approved the manuscript.

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Availability of data and materials

All data were included in the manuscript.

Declarations

Ethics approval and consent to participate

We obtained ethical approval (APPROVAL NUMBER/ID/147/01/14) from Debre Markos University, College of Health Sciences, Department of Pharmacy. Privacy and confidentiality were ensured during the data collection period. Thus, the names and addresses of the participants were not recorded in the questionnaire, and the data were collected unanimously. Written informed consent was obtained from the study participants before data collection. The participants were informed about the purpose of the study, why and how they were selected to be involved in the study, what was expected from them, and why they could withdraw from the study at any time. All participants provided written informed consent.

Competing interests

The authors declare no competing interests.

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