



Received September 01, 2025;

Revised October 19, 10, 2025;

Accepted October 24, 2025;

Published October 30, 2025.

Pharmacists' Perspectives on Clinical Pharmacy Practice and Willingness to Engage in Structured Training: An Expanded Analysis from Libya

Salem. H. Abukres^{a,b,*}, Ryad. M. Alati^b, Ahmed. M. Doma^c

^{a & c} Faculty of Pharmacy, Elmergib University, Alkhmos, Libya

^b Faculty of Pharmacy, Alasmaya Islamic University, Ziltan, Libya

* Corresponding author, Salem Abukres Email: Shabukres@elmergib.edu.ly

ABSTRACT

Background: Pharmacy practice in Libya is shifting from dispensing-focused roles toward patient-centred clinical services, but training gaps and policy barriers remain. **Objectives:** To describe demographic and practice profiles of pharmacists in Libya, assess awareness and attitudes toward clinical pharmacy, determine willingness to undertake structured training, and identify barriers and facilitators for implementation. **Methods:** A descriptive cross-sectional survey of 65 licensed pharmacists from public and private sectors was conducted. Data included demographics, practice setting, prior clinical training, training preferences, and perceived barriers; quantitative summaries and qualitative synthesis were performed. **Results:** Respondents were predominantly female (62%) and mostly aged 30–39 years (49%). Hospital pharmacists comprised 55% of respondents. Prior structured clinical training was reported by 31%; 83% expressed willingness to engage in structured training. Preferred modalities were interactive workshops (74%), in-hospital rotations (61%), and blended learning (55%). Main barriers were lack of institutional support (58%), time constraints, and unclear career recognition. **Conclusions:** Libyan pharmacists show strong willingness for structured clinical training but face systemic and institutional barriers. Policy action, accredited training pathways, and institutional support are required to integrate clinical pharmacy sustainably into Libyan healthcare.

Keywords: *clinical pharmacy; pharmacists; continuing professional development; Libya; training preferences*

1. Introduction

The landscape of pharmacy practice in Libya is experiencing a gradual transformation, shifting from a model heavily rooted in traditional dispensing roles toward a more advanced, patient-centered clinical service model. This change is reflective of global trends, where pharmacists are increasingly recognized as integral members of multidisciplinary healthcare teams, contributing directly to patient care through medication management, counseling, monitoring of therapeutic outcomes, and public health initiatives [1]. Yet, despite international momentum, the implementation and integration of clinical pharmacy in Libya faces unique challenges. These stem from historical, educational, policy-related, and socioeconomic factors inherent to the Libyan context [2].

There is a need of surveys in Libya that reveal a critical knowledge gap regarding pharmacist preparedness for clinical roles, highlighting the necessity for more in-depth research to effectively develop and implement structured training initiatives. The current study aims to deepen



that initial inquiry, enriching it with disaggregated demographic analysis, regional and institutional breakdowns, training preferences and modalities, comparative literature review, and policy implications [3]. By contextualizing local findings within Libyan and international discourse, this analysis seeks to elucidate the current position, potential trajectories, and necessary interventions for the advancement of clinical pharmacy in Libya. [4].

Aims: To examine pharmacists' awareness of clinical pharmacy principles, their attitudes towards structured training, and their actual willingness to engage in such programs. To compare the Libyan pharmacists' perspectives and preferences with international trends in clinical pharmacy education and practice. To identify barriers and facilitators to structured training and advanced practice. To discuss policy environment factors shaping pharmacy practice and propose actionable recommendations for integration and future development of clinical pharmacy in the Libyan healthcare system.

2. Methods

A descriptive cross-sectional survey was conducted among licensed pharmacists working in public and private sectors across Libya using convenience sampling through professional networks and institutional contacts, yielding N = 65 respondents; the questionnaire was developed from a targeted review of the literature on clinical pharmacy education and workforce surveys and adapted to the Libyan context by the study team, then piloted with 10 practicing pharmacists to assess clarity, face validity, and timing and revised accordingly before fielding; the final instrument comprised mostly closed items (demographics, qualifications, practice setting, prior training, and predefined training-modality options), several Likert-type items to measure attitudes and perceived barriers (5-point scale from strongly disagree to strongly agree), and a small number of open-ended questions for qualitative comments; items asking about preferences (e.g., training modalities) allowed multiple responses and were analysed as multiple-response categorical variables, quantitative data were summarised with descriptive statistics (counts, percentages) and qualitative free-text was synthesised thematically. Ethical approval was obtained from Elmergib University Ethics Committee (PH 02:2025).

3. Results

3.1 Demographic data:

A total of 65 licensed pharmacists participated in the cross-sectional survey. The demographic and practice-related characteristics of the respondents are summarized in Table 1.

Table 1. Participant characteristics of survey respondents (N = 65)

Characteristic	Categories			
Gender	Female: 40 (62%) Male: 25 (38%)			
Age	<30: 18 (28%)	30–39: 32 (49%)	40–49: 11 (17%)	≥50: 4 (6%)
Experience	<5 yrs: 18 (27%) 5–10 yrs: 23 (35%) >10 yrs: 24 (38%)			
Qualification	BPharm: 44 (68%) MS: 13 (20%) Doctorate: 5 (7%) Other: 3 (5%)			
Practice Setting	Hospital: 36 (55%) Community: 18 (28%) Academic: 6 (9%) Other: 5 (8%)			
Prior Clinical Training	Yes: 20 (31%) No: 45 (69%)			
Willingness for Training	Yes: 54 (83%) No/Unsure: 11 (17%)			

The cohort was predominantly female (62%), consistent with regional trends indicating the feminization of the pharmacy workforce across the Middle East and North Africa. Most respondents were in the early to mid-career stages, with the largest group aged 30-39 years (49%). In terms of professional experience, 38% had over ten years of experience, while 35% had 5-10 years. The majority of pharmacists held a



Bachelor of Pharmacy (BPharm) as their highest qualification (68%). A notable minority had obtained higher qualifications, including Master (20%) and Doctorate degrees (7%). Occupationally, hospital practice was the most common setting reported (55%), followed by community practice (28%) and academic affiliations (9%). A small proportion (8%) worked in mixed or other settings. Notably, fewer than one-third of respondents (31%) had previous exposure to structured clinical training, highlighting a crucial gap in professional development pathways for clinical pharmacy roles.

3.2 Regional distribution of respondents

Survey participants were drawn from across Libya's principal regions—western, central, eastern, and southern—with the following distribution: Western (e.g. Tripoli): 46%, Central (e.g., Misrata, Sirte): 18%, Eastern (e.g., Benghazi): 27% and Southern (e.g., Sebha): 9%. This relatively broad geographic representation reflects the current distribution of pharmacy educational institutions and healthcare infrastructure, with a concentration in the western and eastern urban centers, but also representation from smaller cities and rural areas.

3.2 Institutional affiliations of participants

Among institutional settings, over half the respondents were affiliated with government hospitals, particularly tertiary and teaching hospitals such as Zliten Medical Center and major urban hospitals in Tripoli and Benghazi. The remainder were distributed among community pharmacies, private clinics, universities, and, to a small extent, pharmaceutical industry roles.

Within the hospital cohort, pharmacists reported a range of responsibilities, from traditional dispensing to participation in clinical ward rounds, medication reconciliation, and provision of drug information. Academic participants were mainly engaged in undergraduate teaching, with limited direct clinical involvement.

3.4 Training preferences and modalities

The survey revealed a strong preference for interactive, practice-based learning experiences. As shown in Table 2, the most preferred modalities were interactive workshops (74%) and in-hospital clinical rotations (61%). Blended learning, combining e-learning with hands-on training, was also highly favored (55%). A smaller, but substantial, proportion expressed interest in short intensive courses (42%) and online/virtual learning (33%), while formal academic postgraduate pathways were preferred by 24% of respondents.

Table 2. Training modality preferences

Item: Training modality preferences (multiple responses allowed)	n (%)	Key summary indicators	
Interactive workshops	48 (74%)	Prior structured clinical training	20 (31%)
In-hospital clinical rotations	40 (61%)	Awareness of core clinical pharmacy components	44 (67%)
Blended learning (hybrid)	36 (55%)	Positive attitude toward structured training	54 (83%)
Short intensive courses	27 (42%)	Willingness to engage in structured training	54 (83%)
Online / virtual learning	21 (33%)	Main reported barrier — lack of institutional support	38 (58%)
Formal postgraduate diploma / MSc	16 (24%)		

3.5 Awareness of clinical pharmacy practices

The majority of surveyed pharmacists (67%) recognized core components of clinical pharmacy as involving direct patient care activities—medication therapy management, counseling, participation in multidisciplinary teams, pharmacovigilance, and health education. However, awareness was uneven, with some respondents viewing clinical pharmacy narrowly as an extension of traditional dispensing tasks. Knowledge deficits were particularly evident in areas such as pharmacokinetics, therapeutic drug monitoring, and application of evidence-based medicine in patient care.



3.6 Attitudes toward and willingness for structured training

Attitudes towards structured training were overwhelmingly positive: 83% of respondents expressed that such training is essential for career progression and effective patient care. Respondents cited professional motivation, perceived patient safety benefits, and alignment with global pharmacy trends as key drivers for pursuing structured clinical pharmacy education. This positive attitude translated directly into a robust willingness to participate, with 83% (54 pharmacists) indicating they were willing to engage in structured clinical pharmacy training. This willingness was particularly pronounced among pharmacists in hospital settings and those early in their careers. A minority (17%) were ambivalent or hesitant, citing factors such as perceived inadequacy of existing programs, concerns over recognition of clinical roles, and competing personal or professional responsibilities.

Reported facilitators for engagement included institutional support (time allowances, financial incentives), access to training resources, mentorship, and clearly articulated professional benefits. The most frequently cited barrier was a lack of institutional support (58%), followed by workload and staffing constraints, limited access to quality training programs, and uncertainty around job market rewards.

4. Discussion

Recent assessments of pharmacy practice in Libya underscore findings congruent with this study: the profession has been slow to transition from a medication-dispensing paradigm to a more elaborate clinical pharmacy model. Historical inertia, limited curriculum reforms, and fragmented regulatory frameworks are recurrent themes in both published research and expert commentary [2]. The theory-practice gap is further evidenced by previous findings that many Libyan pharmacy practitioners operate in environments with limited exposure to interprofessional care or advanced practice models [4]. Similarly, students and pre-registration pharmacists report that experiential training is uneven, with many critical skills and competencies underemphasized in practical settings despite substantial theoretical input in undergraduate curricula [5].

Perhaps most significantly, studies on practice in southern and rural regions document persistent challenges related to professional identity, scope of practice, and patient trust. In these areas, commercial imperatives can sometimes take precedence over healthcare delivery, indicative of broader systemic issues that necessitate both policy and educational reform [6].

Globally, the trajectory of pharmacy practice is unambiguous. Advanced health systems are rapidly incorporating pharmacists into multidisciplinary clinical teams, where their contributions to medication management, antimicrobial stewardship, chronic disease care, and public health promotion are well established [7]. A recent international qualitative analysis involving pharmacy leaders identified several common themes essential for this advancement: strong leadership, coherent policy frameworks, structured postgraduate training, reflective practice, and motivation for change among the practitioner workforce [7].

The preferred training modalities identified in our Libyan survey are echoed internationally. Interactive, case-based education, in-hospital placements, and blended delivery formats are globally recognized as effective for equipping pharmacists with the skills and confidence needed for clinical roles [8]. Notably, no universal "best" model for continuing education has emerged; the highest practice outcomes are associated with continued professional development (CPD) models that are structured, learner-centered, and emphasize opportunities for real-world practice over passive, didactic teaching [9].

4.1 Barriers and facilitators in the Libyan context

Respondents' qualitative feedback, and the Libyan experience more broadly, align with international findings but exhibit several context-specific challenges [10].

4.3.1 Barriers



Legacy Practice Models: A persistent emphasis on traditional dispensing over clinical care, embedded within both legal frameworks and institutional cultures [2].

Policy Gaps: A significant incongruity exists between national pharmaceutical regulations and emerging clinical pharmacy paradigms, resulting in unclear recognition and career progression for advanced practice roles [6].

Institutional Support: A frequently reported lack of dedicated time, funding, and administrative backing for professional development.

Workforce Shortages: Inadequate staffing in both hospital and community environments, creating concerns over workload and the capacity for additional training.

Public Perception: Limited societal recognition of the clinical pharmacist's role beyond the dispensing function, particularly in rural areas.

4.3.2 Facilitators

High Motivation: A majority of pharmacists are personally motivated and recognize the necessity of upskilling to meet modern healthcare demands.

Emergence of Clinical Training Programs: The development of new and proposed PharmD, postgraduate programs and structured short-course programs at leading universities and teaching hospitals.

International Benchmarking: A growing awareness of international practice standards and a willingness to adapt curricula accordingly [5].

Positive Policy Momentum: National reform efforts are beginning to align, albeit unevenly, with WHO/FIP good pharmacy practice guidelines [11].

4.2 Impact of structured training on competency

The direct relationship between structured, competency-based training and improvement in pharmacist practice is well-established. Evidence from the Libyan context, though limited, suggests substantial benefits: pharmacists with prior structured clinical training report higher confidence, greater involvement in patient care, and stronger engagement in quality initiatives such as pharmacovigilance and antimicrobial stewardship. Similarly, studies among pharmacy students and early-career practitioners in the region reveal improved communication, counseling, and problem-solving skills after experiencing well-designed, patient-facing training programs [5].

4.3 Institutional and policy environment for advanced practice

The regulatory and institutional environment is a crucial determinant in the progression of clinical pharmacy. In Libya, a patchwork of outdated policy, slow-moving regulatory change, and uneven institutional prioritization have hindered rapid advancement [2]. Nonetheless, promising signs are emerging, including pilot projects by the Libyan Board of Pharmacy and the Ministry of Health to promote revised CPD standards. Furthermore, regulatory authorities, informed by WHO and the International Pharmaceutical Federation (FIP) recommendations, are gradually adopting guidelines for good pharmacy practice, including clinical pharmacy as a core competency [11].

4.4 Patient outcomes and public health

A prominent theme in both Libyan and international discourse is the link between advanced pharmacist training and improved health outcomes. Clinical pharmacists have demonstrated measurable impacts on patient safety, medication adherence, chronic disease control, and resource utilization in multiple global studies [7, 12]. In Libya, anecdotal and limited survey data suggest nascent improvements in patient care where clinical pharmacy services and training have been piloted.

4.6 Policy implications

The integration of clinical pharmacy into the Libyan healthcare system requires coordinated policy action [2, 11] as follows:

Formal Recognition: National health authorities should promulgate regulations that recognize clinical pharmacy as a distinct practice area.



Incentivization and Career Progression: Structured career ladders linking advanced training to career progression and remuneration are essential.

Resource Allocation: Funding, staffing, and protected time must be embedded within healthcare institutions.

Curriculum Reform: All schools of pharmacy should be incentivized to incorporate longitudinal, hands-on clinical experience, aligning with international accreditation standards [5, 11].

4.5 Study strengths and limitations

A key strength of this study is its novel exploration of clinical pharmacy training readiness in Libya, providing timely data from a diverse cohort of pharmacists across multiple regions and practice settings. The high willingness to engage in training and the clear preference for practical modalities are valuable findings for policymakers. However, the findings must be interpreted considering the limitations, including the relatively small sample size and the use of convenience sampling, which may limit the generalizability of the results.

5. Conclusion

Libyan pharmacists demonstrate readiness for structured clinical training; systemic reforms and targeted investment in training infrastructure and policy recognition are essential to translate willingness into sustainable practice change. The current cross-sectional survey reveals a Libyan pharmacy workforce that is predominantly young, well-educated, and eager to transition toward more advanced clinical roles. There is clear consensus on the value of structured clinical pharmacy training, strong willingness to engage in such opportunities, and an alignment in preferred learning methods with global trends. However, systemic barriers including historical practice models, limited policy support, and resource constraints, continue to hinder rapid progress. To advance clinical pharmacy in Libya, a multi-pronged approach is essential: comprehensive policy reform, robust institutional support for CPD, curriculum renovation, and ongoing evaluation of patient and system outcomes. By leveraging local motivation, international standards, and policy momentum, Libya can realize the full potential of its pharmacists as key contributors to modern, patient-centered healthcare.

ETHICS STATEMENT

Ethical approval was obtained from Elmergib University Ethics Committee (PH 02:2025). All participants provided informed consent.

AUTHORS' CONTRIBUTIONS

Conceptualization: S.A.; Data curation: R.A.; Formal analysis: A.D.; Writing—original draft: S.H.A.; Writing, review and editing: all authors.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

References

1. Hepler CD, Strand LM. Opportunities and responsibilities in pharmaceutical care. *Am J Hosp Pharm.* 1990 Mar;47(3):533-43.
2. Sherif FM. Pharmacy education and practice in Libya: challenges and future directions. *Mediterr J Pharm Pharm Sci.* 2022;2(1):1-3.
3. International Pharmaceutical Federation (FIP). Global competency framework for services provided by pharmacists. The Hague: International Pharmaceutical Federation; 2012.
4. Badreldin HA, Alosaimy S, Al-Jedai A. Clinical pharmacy practice in Saudi Arabia: historical evolution and future perspective. *J Am Coll Clin Pharm.* 2020 Aug;3(5):920-9.
5. Basheti IA, Qunaibi EA, Hamadi SA. Pharmacy students' perceptions of their preparedness to practice: a study from Jordan. *Am J Pharm Educ.* 2014 Feb;78(1):7.
6. Al-Worafi YM. Pharmacy practice and its challenges in Yemen. *Australas Med J.* 2014;7(1):17-23.
7. Moura Gomes M, Silva R, Costa FA. Advancing clinical pharmacy practice: a global qualitative study. *Int J Clin Pharm.* 2025 Apr;47(2):101-15.





8. Ballaram A, Naidoo P, Govender I. Continuing professional development preferences among pharmacists: a global scoping review. Res Social Adm Pharm. 2024 Jan;20(1):45-53.
9. Wilbur K. Continuing Professional Development and Travel Health. In: Keystone JS, Kozarsky PE, Connor BA, Nothdurft HD, Mendelson M, Leder K, editors. Travel Medicine. 4th ed. Elsevier; 2019. p. 505-10.
10. Scahill S, Atif M, Babar ZU. Defining the scope of pharmacy practice: Applying stakeholder management. Res Social Adm Pharm. 2017 Mar-Apr;13(2):369-80.
11. World Health Organization. WHO guideline on health policy and system support to optimize community health worker programmes. Geneva: World Health Organization; 2018.