Mohammad A A, Hamza A, Marah A, Fares A, Muna B, Hanadi A A. Perception and attitudes of pharmacists to continuous professional development-based mandatory relicensing: A Cross-sectional study. Pharmacy Practice. 2025 Oct-Dec;23(4):3318.
https://doi.org/10.18549/PharmPract.2025.4.3318

Original Research

Perception and attitudes of pharmacists to continuous professional development-based mandatory relicensing: A Cross-sectional study

Mohammad Abu Assab, Hamza Alhamad, Marah Alqaisi, Fares Albahar, Muna Barakat, Hanadi Abu Assab

Received (first version): 07-May-2025, Accepted: 16-Jul-2025, Published online: 04-Nov-2025

Abstract

Background: The changing role of pharmacists requires ongoing professional development to support continual learning, enhance competency, and improve patient care. The objective of this study was to assess Jordanian pharmacists' understanding of the role of Continuing Professional Development (CPD) in relicensing, their attitudes towards the relicensing process, their perceptions of the efficiency of online CPD during the COVID-19 pandemic, and the obstacles to CPD participation. **Methods:** A cross-sectional study utilised a validated online questionnaire, disseminated both electronically and in person to a convenience sample of pharmacists. Data were analysed using SPSS v26, employing descriptive statistics, and independent t-tests were performed to assess pharmacists' awareness. Cronbach's alpha was used to assess the questionnaire's internal consistency, with ($\alpha \geq 0.70$) indicating good reliability. **Results:** Of the 447 respondents (100% response rate), 97% acknowledged the significance of CPD, and 92.2% affirmed the efficacy of online CPD during the pandemic. Primary obstacles included insufficient time (72.2%), transportation difficulties (69.8%), and a shortage of qualified trainers. The least referenced obstacle was scepticism towards organising authorities (55.2%). **Conclusion:** Although Continuing Professional Development (CPD) is obligatory for relicensing, pharmacists underscored its importance for sustaining professional competence and displayed a favorable attitude towards the relicensing process. Obstacles such as time and cost constraints, accessibility issues, and unengaging content must be resolved to guarantee the efficacy and sustainability of CPD.

Keywords: Continuing professional development, Relicensing process, Jordan, COVID-19 pandemic, Online CPD, Pharmacists, Barriers

INTRODUCTION

Medicines are significant clinical interventions that enhance health outcomes, and pharmacists, as medical experts, play a vital role in improving health outcomes[1]. Pharmacists are an essential part of healthcare, and one of their responsibilities is to know pharmacological and non-pharmacological interventions. Consequently, pharmacists should stay up to date with the latest developments in the pharmaceutical sciences and laws related to pharmacy and medicines to ensure people receive the maximum benefit, which requires pharmacists' commitment to continuous professional development (CPD) to develop themselves. The role of a pharmacist has been expanded to include the provision of pharmaceutical care and public health services to patients. Patient-centered care requires sustained competency through improving pharmacists' knowledge, skills, and performance. Such improvements require pharmacists' involvement in continuing education (CE) activities[3]. Additionally, there is the concept of Continuous Professional Development (CPD). It is a self-directed, ongoing, methodical, and outcomes-focused method of lifelong learning. To acquire and retain competence, improve professional practice, and support career goals, CPD entails active involvement in both formal and informal learning activities[3].

Furthermore, the COVID-19 pandemic placed extraordinary demands on healthcare services, prompting innovations and adaptive practice methods across various health professions, including pharmacy[4]. Thus, the COVID-19 pandemic facilitates the expansion of pharmacists' roles from traditional dispensing practices to more clinical and patient-centered practices[5-6]. For example, community pharmacy plays a vital role in responding to the pandemic and relieving the pressure on other health services faculties[7-8]. In response to clinical-centered practices, patient-centered practices, and new demands from the pharmaceutical sector during a public crisis, sustaining pharmaceutical capacities became mandatory. Pharmaceutical capacities entail continuous knowledge expansion, skills improvement, and performance augmentation[3]. Hence, continuous education and professional development are necessary to maintain and improve pharmacists' knowledge and competency to fulfill individual and society's healthcare demands[9].

Mohammad Abu Assab*. Department of Clinical Pharmacy, Faculty of Pharmacy, Zarqa University, Zarqa 13110, Jordan. mabuassab@zu.edu.jo
Hamza Alhamad. Department of Clinical Pharmacy, Faculty of Pharmacy, Zarqa University, Zarqa 13110, Jordan.
Marah Alqaisi. Department of Clinical Pharmacy, Faculty of Pharmacy, Zarqa University, Zarqa 13110, Jordan.
Fares Albahar. Department of Clinical Pharmacy, Faculty of Pharmacy, Zarqa University, Zarqa 13110, Jordan.
Muna Barakat. Faculty of Pharmacy, Applied Science Private University, Jordan
Hanadi Abu Assab. Department of Clinical Pharmacy, Faculty of Pharmacy, Zarqa University, Zarqa 13110, Jordan.

Accordingly, pharmacists are expected to demonstrate substantial engagement and participation in CE or CPD programs to fulfill their role in health care services and professionally provide pharmaceutical care. Evidence from low- and middle-income countries showed that CPD has the potential to enhance pharmacists' knowledge and pharmaceutical practices, and enable them to respond professionally to local health demands[10]. CPD is a lifelong development process that helps pharmacists improve efficiency and build customers' confidence. Therefore, most countries have ensured that CPD is essential for relicensing the profession of pharmacy by adopting lectures, courses, or conferences. Despite the release of the CPD legislation, the COVID-19 pandemic affected CPD tools in different ways. As a result, the approach to CPD and the extent of awareness of its importance varied.

Due to the lack of studies in Jordan on CPD and the knowledge gap regarding CPD legislation, this study aims to examine pharmacists' awareness of CPD and how it reflects the positive aspects of providing healthcare and keeping abreast of health and medical information. And studying the extent to which CPD is affected by the Covid-19 pandemic. The relicensing program is considered an integral part of the Jordanian health system. It is the responsibility of each practitioner of health institutions and other related relationships. The license is renewed every five years after the CPD tracks have been completed. The total CPD hours required for pharmacists in Jordan over the five years is 50 hours, equivalent to 10 hours annually, through participation in courses or conferences. A relicensing application must be filed at least three months before the license's expiration date. (According to the Jordanian Ministry of Health, the licensing of health professional workers should be renewed in 2026).

Despite the ancient Arabs' subsequent contributions to the science and art of pharmacy, there is no comprehensive evidence or review of pharmacy education and continuous professional development programs in Arab countries, such as the Middle East[5]. It was found that pharmaceutical practices in Jordan accounted for 21.9% of the research articles conducted in the Arabian or Middle Eastern countries, ranking Jordan second in the number of pharmaceutical research studies, followed by Saudi Arabia (30%) over a ten-year interval. Of 981 research articles, only 20 studies conducted continuous education in the pharmaceutical research corpus, most of which were conducted in Qatar and Saudi Arabia. Only 15.36% of the total studies tackled continuous education in Jordan[5]. A similar research conducted in low- and middle-income countries highlighted challenges in pharmacists' education and continuous training in clinical skills, vaccination, and minor ailment schemes. It noted that these countries did not always adhere to global professional standards or provisions for clinical pharmacy services[6]. A study[9] assessed the strong desire of Jordanian postgraduate pharmacists for continuous educational training across different practice areas, namely advanced counseling and communication skills, personal development skills, and pharmaceutical health promotion. Also, this study highlighted low use of available drug information and toxicology centers among pharmacists and lower incentives to encourage pharmacists to engage in continuous professional development, revealing a gap in the knowledge, skills, and pharmaceutical practices of Jordanian postgraduate pharmacists.

These desires are consistent with a study that addressed the incidence, nature, severity, and causes of medication dispensing errors in the community pharmacy in Jordan, which revealed that 13.1% of medication dispensing errors contributed to pharmacist counseling errors involving wrong dose (quantity 37.9%) and wrong drug (41.9%)[8]. The study indicated a high prevalence of medication dispensing errors among Jordanian pharmacists, in light of serious demands to reconsider the pharmaceutical training program regarding safe practices. These results were critical and alarming, given the safe and effective use of medications in Jordan, as Jordanian regulations and pharmacy privileges do not prohibit dispensing medication without a prescription in community pharmacies, except for narcotics and controlled substances. In Jordan, 75% of antibiotics were dispensed without prescriptions, which increases pharmacists' responsibilities to ensure the safe use of medication [11].

Likewise,[12] illustrated the lack of basic skills and knowledge among Jordanian pharmacy graduates, as well as inadequate preparation and practices in performing basic pharmaceutical duties, such as patient counseling and providing evidence-based clinical decisions, particularly in clinical or hospital settings. The lack of competency among Jordanian pharmacies was attributed to the gap between universities' curricula and the lack of engagement in postgraduate continuous professional development. Moreover, a recent study investigated the ethical pharmacy practices in Jordan[13] found that pharmacists' personal moral values and legal requirements are the only decisive influencing factors on decision-making in pharmacy practices, and there was a substantial inclination toward acting irrespective of patients' autonomy, which represented a gap in understanding and assimilating the fundamental professional ethics and the huge demands for professional training and education.

Nevertheless, Jordanian pharmacists exhibit great interest in pursuing continuous professional development (63.5%), and more than 80% believe that CPD could improve their professional competence, knowledge, and practices. They also disclosed poor time (52%) and cost (51%) barriers to CPD activities and engagements[14]. In addition, the Jordanian Pharmacists Association (JPA) administers pharmacy practices and pharmacist relicensing. In 2018, JPA recognized the need for professional development programs. Thus, the relicensing process was obligated every five years for practicing pharmacy post-completion of the CPD track, which required accomplishing 50 hours of CPD before relicensing (equivalent to 10 hrs. of CPD annually) from approved private and public bodies such as JPA, the Ministry of Health, and the Royal Medical Services. CPD activities in these bodies take a variety of formats, including conferences, seminars, lectures, and other structured professional development programs.

However, the COVID-19 pandemic emerged in the country two

years after relicensing was released (2018), which affected the enforcement of these regulations and the CPD program's ability to meet the 50-hour relicensing requirements. Thus, JPA and relevant bodies offer online CPD activities to accommodate the COVID-19 pandemic conditions. Therefore, this study aims to explore pharmacists' awareness of the importance of continuous professional development for practice renewal and to assess Jordanian pharmacists' attitudes toward the new relicensing process.

MATERIALS AND METHODS

Study design and sampling

This study was conducted using convenience sampling techniques in October 2022. A cross-sectional study design was used to explore pharmacists' awareness of the importance of continuous professional development for practice renewal and to assess Jordanian pharmacists' attitudes toward the new relicensing process. The sample size calculation was determined using the Raosoft sample calculator[15]. According to JPA, there are 20468 currently licensed pharmacists in Jordan; the sample size was calculated by determining a margin of error (5%), confidence level (95%), and response distribution (50%). A sample size of 447 was found to be minimally required.

Questionnaire development and data collection

The authors developed a self-reported questionnaire in concordance with the research aims and based on previous studies. The questionnaire was first developed in English and then translated into Arabic with the help of a professor in English translation whose native language is Arabic. To ensure the face validity of the questionnaire, both the Arabic and English versions were reviewed by a panel of three academic experts in pharmacy practice and accordingly revised. The academic experts commented on the wording, clarity, and comprehensiveness of the questionnaire items, as well as whether each item was relevant to the study's aims and objectives. The academic experts' feedback and comments were reviewed by the Authors and used to refine the questionnaire. After completing the piloting process, the final questionnaire version was created in Google Forms and distributed face-to-face and online through the authors' networks and on social media platforms: Facebook, WhatsApp, and Twitter. The questionnaire's reliability (i.e., internal consistency) was assessed during piloting, and Cronbach's alpha values were > 0.90 (Table 1). Data used for piloting were not included in the final analysis.

The questionnaire was divided into three sections: the first was created to gather information on respondents' socio-demographics. A total of eleven questions were included in the second section of the questionnaire, which examined respondents' awareness of the value of continuing professional development, and fifteen in the third section, which examined respondents' attitudes toward the system for renewing professional licenses. Five-point Likert scales were used in the sections. For the study, the questionnaire's final version was translated into English.

Data analysis

The Statistical Package for the Social Sciences (SPSS) version 26 (SPSS Inc., Chicago, IL, USA) was used to analyze the data collected in this study. No incomplete responses were used in the analysis. Frequencies and percentages for categorical data were evaluated using descriptive statistics, and the one-sample t-test was used to assess awareness. Cronbach's alpha was used to determine the questionnaire's internal consistency.

Compliance with ethical standards.

This study was approved by the University Ethics Committee for Scientific Research (ECSR), approval number (2022/1/3705/20). In addition, an informed consent form was collected from all participants before participation in the study, ensuring voluntary participation and the right to withdraw at any time, with their responses kept confidential.

RESULTS

Table 1 presents Cronbach's alpha results for the research instrument's internal consistency. Values were > 0.90, indicating the high reliability of the study questionnaire.

Characteristics of the sample

A total of 447 pharmacists volunteered to participate in the study, as shown in Table 2, which presents the sociodemographic details of the participants. Of the 447 pharmacists, 316 were from the middle governorate, and 312 (69.8%) were women. A minority of participants (19.2%) were over 40 years old, whereas 50.1% were under 30. Only 16.6% of the sample held a postgraduate degree, and less than half (47%) had fewer than years of practical experience. The majority of participants (72.3%) had earned a bachelor's degree in pharmacy. 351 (78.5%) of the participating pharmacists were from the private sector. Only 69 pharmacists work in hospital pharmacies, compared to nearly half of the sample (49.7%) who were community pharmacists.

Table 2 also shows that 107 pharmacists were enrolled in students' training activities, while 116 pharmacists from the sample registered in online classes, seminars, and sessions last year. However, the majority of pharmacists (74%) reported taking advantage of CPD opportunities when they arise, and 82.9% enrolled more frequently in CPD opportunities linked to their line of work. In addition, pharmacists frequently learned about continuous professional development through the following three sources: their place of employment (32.4%), educational institutions (31.3%), and the mechanism for renewing their professional licenses (26.8%).

Table 1. Reliability analysis

Variables	Item Numbers	Cronbach's Alpha
Evaluation of Pharmacists' Awareness of the Importance of Continuous Professional Development	11	0.952
Pharmacists' attitudes toward the Profession License renewal system	15	0.933

Table 2. Sample's demographic characteristics (N=447)

Variables	Categories	Total
		n (%)
Gender	Male	135 (30.2)
	Female	312 (69.8)
Age	Less than 30 years	224 (50.1)
	30-40 years	137 (30.6)
	Above 40 years	86 (19.2)
Qualification	Bachelor of Pharmacy	323 (72.3)
	PharmD	50 (11.2)
	Postgraduate	74 (16.6)
Practical Experience	Less than five years	210 (47.0)
	5-10 years	126 (28.2)
	More than 10 years	111 (24.8)
Current workplace	Public	96 (21.5)
	Private	351 (78.5)
Site of Practice	Unemployed	9 (2.0)
	Community pharmacy	222 (49.7)
	Hospital pharmacy	69 (15.4)
	Business development	2 (.4)
	Academic field	47 (10.5)
	Ministry of Health	3 (.7)
	Data Entry and content writing	2 (.4)
	Research Center or Drug Laboratory	5 (1.1)
	Regulatory affairs	10 (2.2)
	Pharmaceutical Industry	18 (4.0)
	Pharmaceutical Sales and Marketing	40 (8.9)
	Medical Insurance	3 (.7)
	Drug Store	17 (3.8)
Governorate	South Governorate	59 (13.2)
	Middle Governorate	316 (70.7)
	North Governorate	72 (16.1)
Type of Continuous Professional Development activities you enrolled in during the last year	None	6 (1.3)
	On-site class/workshop/session	54 (12.1)
	Online class/workshop/session	116 (26.0)
	On-site Scientific Day/Conference	54 (12.1)
	Online Scientific Day/Conference	80 (17.9)
	Student training	107 (23.9)
	Authoring or translating a book/an article	7 (1.6)
	Scientific publication	23 (5.1)
Type of Continuous Professional Development activities you prefer to enroll in	On-site	272 (60.9)
	Online	175 (39.1)
I enroll more often in Continuous Professional Development activities	Related to my work field	369 (82.6)
	Unrelated (self-learning)	78 (17.4)

Participation frequency in CPD activities	Weekly	20 (4.5)
	Monthly	47 (10.5)
	quarterly	49 (11.0)
	Once available	331 (74.0)
The Source of knowledge regarding the CPD concept	Educational institute	140 (31.3)
	Pharmacist association	35 (7.8)
	Profession License Renewal System	120 (26.8)
	Workplace	145 (32.4)
	Else	3 (.7)
	Outsource, social media	2 (.4)
	None	2 (.4)

Awareness items

The assessment of pharmacists' awareness of the value of continuing professional development for renewing practice in Jordan and the significance of their trend toward consensus among pharmacists is summarized in Table 3.

Table 3 shows that (97%) of the pharmacists indicated that they were aware of the significance of continued professional development. This level of knowledge is statistically significant (Mean= 4.10, SD= 0.69, p <0.05). Additionally, Table 3 shows that the maximum mean score was (Mean= 4.19), and the lowest mean score was (Mean= 3.95). In addition, pharmacists' replies to the items varied slightly. Item (4), which states that "Continuous Professional Development activities strengthen my ability to give healthcare," was selected by 85% of pharmacists. It was ranked first (Mean= 4.19, SD= 0.79), and it differs noticeably from the response mean (Mean= 3) (t= 31.78, p <0.05).

Also, the second item, which states that "Continuous Professional Development activities boost my confidence in my capacity to assess," received yes votes from 84% of the sample (Mean= 4.17, SD= 0.75), and it differs noticeably from the response mean (Mean= 3) (t= 32.79, p <0.05). "Continual professional development activities help advance my career" showed the lowest mean agreement score (Mean= 3.9508, SD= 0.95), and the lowest agreement rate (74.9%) that deviates considerably from the response mean (Mean= 3) (t= 21.09, p <0.05).

Attitudes items

Table 4 shows that the pharmacists agreed with the following statements: "For professional license renewal purposes, I am interested in continuous professional development activities that are concerned with my work field" (P=75.6%), "The authority which is responsible for holding continuous professional development activities is the pharmacists' association" (no. 5, P=67.3%), and "The pharmacists association." The following statement was, "I am eager to participate in continuing professional development activities to achieve the required hours in accordance with the system" (no. 3, P=66.4%)

Table 3. Detailed analysis of Pharmacists' awareness of the importance of continuing professional development

No.	Items	Agreements n (%)	Mean (SD)	t-test*, *p* value**
1	Enrolment in Continuous Professional Development activities improves my professional practice.	378 (84.6)	4.14 (.808)	29.784, *P* <0.05
2	Continuous Professional Development activities increase my confidence in my ability to assess	380 (85.0)	4.17 (.751)	32.799, *P* <0.05
3	Continuous Professional Development activities contribute to raising the practitioner's professional status.	362 (81.0)	4.09 (.858)	26.968, *P* <0.05
4	Continuous Professional Development activities enhance my ability to deliver healthcare.	379 (84.8)	4.197 (.796)	31.785, *P* <0.05
5	Continuous Professional Development activities increase my scientific outcomes.	376 (84.1)	4.18 (.835)	29.965, *P* <0.05
6	Continuous Professional Development activities contribute to highlighting the role of the pharmacist in society.	355 (79.4)	4.10 (.813)	28.639, *P* <0.05
7	Engaging in continuing professional development activities is an urgent need.	341 (76.3)	4.04 (.868)	25.387, *P* <0.05
8	Continuous Professional Development activities help in my career development.	335 (74.9)	3.95 (.953)	21.097, *P* <0.05
9	Continuous Professional Development activities enhance my career prospects.	350 (78.3)	4.01 (.913)	23.358, *P* <0.05
10	Continuing professional development activities improve my ability to perform my duties.	363 (81.2)	4.096 (.824)	28.125, *P* <0.05
11	Lifelong learning is the responsibility of pharmacists.	371 (83.0)	4.17 (.8198)	30.233, *P* <0.05

*Critical (tabulated t) value = 3 at 0.05 level, ** *p* value less than 0.05 indicates statistical significance.

Table 4. Descriptive analysis of Pharmacists' attitudes toward the Profession License Renewal System

No.	Items	Agreements n (%)	Natural	Disagreement	Rank
			n (%)	n (%)	
1	Participation in CPD activities must be mandatory	218 (48.8)	142 (31.8)	87 (19.5)	15
2	I have enough knowledge about the professional license renewal system through continuous professional development activities	237 (53.0)	131 (29.3)	79 (17.7)	11
3	I am keen to participate in continuing professional development activities to obtain the required hours according to the system	297 (66.4)	105 (23.5)	45 (10.1)	3
4	The professional license renewal system enhanced pharmacists' enrolment in Continuous Professional Development activities	294 (65.8)	104 (23.3)	49 (11.0)	5
5	The authority responsible for conducting continuous professional development activities is the pharmacist's association.	301 (67.3)	106 (23.7)	40 (8.9)	2
6	For professional license renewal, I am interested in continuous professional development activities related to my field of work.	338 (75.6)	74 (16.6)	35 (7.8)	1
7	For professional license renewal purposes, I am interested in self-learning activities (not related to my work field.	228 (51.0)	139 (31.1)	80 (17.9)	12
8	Gaining the requested hours from continuous professional development activities is easy and available.	243 (54.4)	109 (24.4)	95 (21.3)	10
9	For professional license renewal, I rely on activities held by the pharmacist's association.	283 (63.3)	107 (23.9)	57 (12.8)	7
10	For professional license renewal, I rely on activities held by private centers.	227 (50.8)	112 (25.1)	108 (24.2)	13
11	For professional license renewal, I rely on activities held by the university's health faculties.	246 (55.0)	117 (26.2)	84 (18.8)	9
12	For professional license renewal purposes, I rely on activities held by the Ministry of Health.	260 (58.2)	112 (25.1)	75 (16.8)	8
13	I have sufficient knowledge of the accredited platforms for continuous Professional Development activities.	225 (50.3)	138 (30.9)	84 (18.8)	14
14	I am interested in following up on accredited local scientific platforms.	285 (63.8)	108 (24.2)	54 (12.1)	6
15	I am interested in following up on accredited international scientific platforms.	295 (66.0)	101 (22.6)	51 (11.4)	4

The statement "For professional license renewal purposes, I depend on activities that private centers hold" received the least support among pharmacists (P(disagreement)=24.2%), which is followed by answer number 13, "I have enough knowledge about the accredited platforms for continuous Professional Development activities". Consequently, No. 1 specifies that "Participation in Continuous Professional Development activities must be mandatory".

DISCUSSION

This study verifies a significant awareness among Jordanian pharmacists about the necessity of CPD, aligning with previous findings in Jordan and other contexts[9,12,14]. Most participants recognized the significance of CPD in improving professional competence, consistent with the global perspective of CPD as a self-directed, systematic method for lifelong learning that fosters career advancement and patient-centered care[3,6]. Significantly, more than 80% of participants stated that CPD improves their professional competence, boosts their confidence in evaluating clinical scenarios, and fortifies their capacity to provide healthcare services. These findings underscore the perceived importance of CPD in strengthening pharmacists' responsibilities in patient-centered care and align with international guidelines that promote ongoing skill development.

The results also indicate the ongoing disparities in practice and education identified in other studies, including pharmaceutical dispensing errors and the restricted utilization of drug information centers[12,17]. These limitations may help explain the strong urge among pharmacists to participate in CPD, recognizing it as vital for integrating theoretical knowledge with practical skills. The study underscores the need to revise pharmacy curricula and prioritize postgraduate training to rectify these competency deficiencies[6]. The disparity in awareness and attitudes between Jordanian pharmacists and those in countries such as Pakistan indicates that local regulatory frameworks and professional support systems significantly influence CPD participation[16].

The licensing requirements in Jordan and the influence of the Jordan Pharmacists Association (JPA) seem to enhance pharmacists' perceptions of CPD, particularly in light of the recent transition to compulsory relicensing.

This study contributes to the sparse regional literature on CPD by indicating substantial endorsement among Jordanian pharmacists for the relicensing process and emphasizing practical obstacles, including time and financial constraints. These findings resonate with trends identified in research from other low- and middle-income nations, underscoring

the necessity for regulatory reform, focused professional development programs, and enhanced access to CPD platforms[6,18]. To guarantee that CPD effectively facilitates relicensing and professional development, interventions must address both individual mindsets and systemic obstacles. A comprehensive strategy—integrating legislative requirements, educational programs, workplace motivators, and awareness initiatives—could improve the adoption and sustainability of CPD. Ultimately, improved CPD implementation will enhance medication safety and uphold public confidence in pharmacy services.

CONCLUSION

The study revealed that a significant proportion of Jordanian pharmacists recognize the importance of CPD and display favorable attitudes towards the new relicensing procedure. Nevertheless, greater focus is needed on delivering consistent, accessible, and well-organized CPD programs to fulfil relicensing obligations, enhance pharmacological knowledge, strengthen competencies, and promote good counselling practices. Sustained efforts are necessary to enhance CPD engagement among pharmacists. Additional research is advised to assess and improve CPD activities, guaranteeing their impact on sustained career development and professional advancement.

AUTHOR CONTRIBUTIONS

Conceptualization: M. A and M.AL; Methodology: M.A, H.AL and M.B; Resources: M.A and F.A; Data curation: M.A, H.A and M.AL; Formal analysis: M.A, H.AL, M.B and H.A; Investigation: M.B, H.A and M.AL; Software and supervision: F.A; Validation: H.AL; Visualization: F.A; Project administration: M.A Writing-Original draft: M.A, H.AL, F.A, M.B, H.A and M.AL; Writing-review and editing: M.A, H.AL, F.A, M.B, H.A and M.AL. All authors reviewed the manuscript.

CONFLICT OF INTEREST

The authors report that there are no competing interests to declare regarding this work.

References

1. Ahmed A, Saqlain M, Tanveer M, Blebil AQ, Dujaili JA, Hasan SS. The impact of clinical pharmacist services on patient health outcomes in Pakistan: a systematic review. BMC Health Serv Res. 2021 Dec ;21(1). Available from: https://bmchealthservres.biomedcentral.com/articles/10.1186/s12913-021-06897-0. https://doi.org/10.1186/s12913-021-06897-0
2. Schindel TJ, Yuksel N, Breault R, Daniels J, Varnhagen S, Hughes CA. Pharmacists' learning needs in the era of expanding scopes of practice: Evolving practices and changing needs. Res Soc Adm Pharm. 2019 Apr;15(4):448–58. https://doi.org/10.1016/j.sapharm.2018.06.013
3. Aldosari H, Alsairafi Z, Waheedi S. Continuing education in pharmacy: A cross-sectional study exploring pharmacists' attitudes and perceptions. Saudi Pharm J. 2020 Jul;28(7):803–13. https://doi.org/10.1016/j.jsps.2020.05.008
4. Alhamad H, Abu-Farha R, Albahar F, Jaber D. Public perceptions about pharmacists' role in prescribing, providing education and delivering medications during COVID-19 pandemic era. Int J Clin Pract. 2021 Apr ;75(4). Available from: https://onlinelibrary.wiley.com/doi/10.1111/ijcp.13890
5. Obaid D, El-Dahiyat F, Babar ZUD. Pharmacy practice and clinical pharmacy research in the Middle East: a scoping review of studies from Bahrain, Iraq, Jordan, Kuwait, Lebanon, Oman, Palestine, Qatar, Saudi Arabia, Syria, United Arab Emirates, and Yemen. J Pharm Policy Pract. 2022 Dec ;15(1). Available from: https://joppp.biomedcentral.com/articles/10.1186/s40545-022-00434-y
6. Babar ZUD. Ten recommendations to improve pharmacy practice in low and middle-income countries (LMICs). J Pharm Policy Pract . 2021 Dec;14(1). Available from: https://joppp.biomedcentral.com/articles/10.1186/s40545-020-00288-2
7. Cadogan CA, Hughes CM. On the frontline against COVID-19: Community pharmacists' contribution during a public health crisis. Res Soc Adm Pharm. 2021 Jan;17(1):2032–5. https://doi.org/10.1016/j.sapharm.2020.03.015
8. Hess K, Bach A, Won K, Seed SM. Community Pharmacists Roles During the COVID-19 Pandemic. J Pharm Pract. 2022 Jun;35(3):469–76. DOI: 10.1177/0897190020980626
9. Odeh M, Alkhader E, McCloskey A, Aljabra R, Al-sharayri M, Al-Noimi F, et al. Postgraduate pharmacist development- an evaluation of Jordanian pharmacist experiences to inform and shape an evidence-based professional development policy. Rajiah K, editor. PLOS ONE. 2021 Jul 27;16(7):e0255026. https://doi.org/10.1371/journal.pone.0255026
10. Khamis S, Abdi AM, Basgut B. Preparing lifelong learners for delivering pharmaceutical care in an ever-changing world: a study of pharmacy students. BMC Med Educ. 2020 Dec ;20(1). Available from: https://bmcmededuc.biomedcentral.com/articles/10.1186/s12909-020-02394-w
11. Nazer LH, Tuffaha H. Health Care and Pharmacy Practice in Jordan. Can J Hosp Pharm. 2017 Apr 28 ;70(2). Available from: http://www.cjhp-online.ca/index.php/cjhp/article/view/1649. https://doi.org/10.4212/cjhp.v70i2.1649
12. Bader LR, McGrath S, BPharm CA. 1 A conceptual framework and research approach to 2 identifying and analysing challenges to the 3 advancement of the pharmacy profession: a case study.
13. Fino LB, Basheti IA, Chaar BB. Exploring Ethical Pharmacy Practice in Jordan. Sci Eng Ethics. 2020 Oct;26(5):2809–34. https://doi.org/10.1007/s11948-020-00231-3

www.pharmacypractice.org (eISSN: 1886-3655 ISSN: 1885-642X)

14. Abuloha S, Sharaydih R, Wazaify M. Exploring the needs, barriers, and motivation of Jordanian pharmacists towards continuing education.
15. Sample Size Calculator by Raosoft, Inc. Available from: http://www.raosoft.com/samplesize.html
16. Almaghaslah D, Alsayari A. Using a Global Systematic Framework Tool to Identify Pharmacy Workforce Development Needs: A National Case Study on Saudi Arabia. Risk Manag Healthc Policy. 2021 Aug;Volume 14:3233–45. https://doi.org/10.2147/RMHP.S322577
17. Abdel-Qader DH, Al Meslamani AZ, Lewis PJ, Hamadi S. Incidence, nature, severity, and causes of dispensing errors in community pharmacies in Jordan. Int J Clin Pharm. 2021 Feb;43(1):165–73. https://doi.org/10.1007/s11096-020-01126-w
18. Reardon J, Rainkie D, Black E, Wilby K, Mukhalalati B, Aboulsoud S, Khalifa SI, Austin Z. Pharmacist and pharmacy student perceptions of a competency-based national licensing exam for entry to pharmacy practice in Qatar: A qualitative study. Pharm Educ. 2016 Oct. 5;16. Available from: https://pharmacyeducation.fip.org/pharmacyeducation/article/view/504

www.pharmacypractice.org (eISSN: 1886-3655 ISSN: 1885-642X)