Society of Medical Education & Research

Annals of Pharmacy Education, Safety, and Public Health Advocacy

Design, Application, and Assessment of Entrustable Professional Activities within an Australian Pharmacy Intern Training Program

Karim A. Farid[1], Maha S. El-Gendy[1]*, Salma R. Youssef[1], Omar T. Nassar[1]

[1]Department of Pharmacy Practice, Faculty of Pharmacy, Cairo University, Cairo, Egypt.

*E-mail ✉ maha.elgendy@outlook.com

Abstract

This research examined how entrustable professional activities (EPAs) were introduced into, and appraised within, an Australian pharmacy intern training context. A mixed-methods approach was adopted, incorporating surveys and focus group discussions to capture the perspectives of provisionally registered pharmacists and supervising pharmacists who applied EPAs in routine practice. Qualitative data from focus groups were subjected to thematic analysis, while quantitative survey responses were summarized using frequency distributions and median Likert-scale scores. Levels of entrustment associated with each EPA were tracked at 6, 13, 26, and 44 weeks.

Analysis of focus group data from pharmacists (n = 6) and provisionally registered pharmacists (n = 8) revealed three central domains: practical integration of EPAs into daily work, perceived value and implementation challenges, and suggested refinements for future use. Survey findings indicated that pharmacists regarded EPAs as workable within the workplace environment. Provisionally registered pharmacists reported meaningful engagement with EPAs and perceived feedback from supervisors as beneficial. Longitudinal data from participating provisionally registered pharmacists (n = 40) demonstrated incremental increases in entrustment levels across all evaluation points. EPAs were perceived by both supervisors and learners as a viable mechanism for supporting learning in workplace settings, provided that adequate preparatory education is in place. Progressive development in entrustment was observed throughout the internship period.

Keywords: Pharmacy, EPAs, Implementation, Evaluation

Introduction

Achieving general pharmacist registration in Australia requires provisionally registered pharmacists, commonly referred to as interns, to demonstrate readiness for independent professional practice. Expectations for professional performance are articulated in the National Competency Standards Framework for Pharmacists in Australia (2016), which describes the professional capabilities that emerge through the integration of academic preparation and supervised practice experience

[1]. Ensuring consistent and competent execution of professional activities is fundamental to minimizing risk and optimizing patient outcomes [2, 3].

Pharmacy training in Australia typically follows completion of an undergraduate degree spanning four years, or a condensed graduate-entry pathway of two years for eligible candidates, after which candidates undertake 1575 hours of supervised practice during provisional registration. This experiential training generally occurs within a single practice setting, such as community or hospital pharmacy, under the supervision of an approved preceptor and workplace, as regulated by the Pharmacy Board of Australia [4]. Alongside workplace training, interns are required to participate in an accredited intern training program and achieve a passing standard in both written and oral examinations prior to full registration [5].

Entrustable professional activities offer an alternative approach to assessing competence by reframing abstract competency statements into discrete, observable professional tasks that can be entrusted to learners over time [6, 7]. Each EPA encompasses one or more core competencies and is associated with graduated supervision levels that reflect increasing professional autonomy as competence develops [7, 8]. Internationally, EPAs have gained prominence as a practical and authentic method of assessing clinical competence across health professions education [9, 10]. Within pharmacy education, prior studies have largely concentrated on EPA framework development, alignment with accreditation and curricular outcomes, validation of assessment instruments, and stakeholder perceptions of EPA use in workplace settings [11–14].

In Australia, the Australian Pharmacy Council (APC) introduced the Performance Outcomes Framework to assist education providers in evidencing that graduates meet professional standards for practice [15]. This framework comprises five domains that mirror those outlined in the National Competency Standards Framework for Pharmacists in Australia [1]. Within the APC accreditation documentation, EPAs are identified as one of several recommended workplace-based assessment strategies through which provisionally registered pharmacists may demonstrate achievement of defined performance outcomes [15].

The present study builds upon earlier work that focused on the design and validation of a set of EPAs tailored for an Australian pharmacy intern training program [16]. At the time of implementation, these EPAs functioned as optional formative learning activities and were not linked to summative assessment decisions. Since then, the APC has mandated a standardized suite of Workplace-Based Assessments across all intern training programs nationwide [17]. Against this evolving assessment landscape, this study aims to provide an in-depth account of the implementation and evaluation of validated EPAs within an Australian pharmacy intern training program, offering novel empirical evidence on their application for provisionally registered pharmacists.

Materials and Methods

This study employed a pragmatic mixed-methods design, integrating qualitative and quantitative approaches to comprehensively examine the implementation of EPAs. Data triangulation was achieved through the use of focus

groups, survey instruments, and longitudinal analysis of EPA entrustment data collected over the internship period.

Recruitment of training sites
Training sites located in Victoria, Australia were purposively selected based on the research team's established collaborations with internship providers and prior knowledge of site suitability. Selection criteria included demonstrated familiarity with EPAs, involvement of at least one pharmacist in the earlier phase of EPA development [16], or expressed interest in adopting EPAs within workplace training. In total, nine sites across Victoria were recruited.

At each site, one pharmacist with experience in workplace-based assessment was appointed as the primary site contact. These nominated pharmacists were provided with an EPA reference guide detailing each activity and outlining the process for determining entrustment levels. They were responsible for overseeing EPA implementation locally and confirming final entrustment decisions for participating interns.

All pharmacists and provisionally registered pharmacists at participating sites were invited to attend an online education session covering EPA principles, use of the electronic portfolio system, and the study's implementation and evaluation processes. Written informed consent was obtained from all participants prior to data collection. All provisionally registered pharmacists at recruited sites (n = 56) were invited to enroll in the study.

Focus group recruitment and analysis
The nominated pharmacist at each site was invited to participate in a focus group and asked to disseminate an expression-of-interest invitation to colleagues involved in using EPAs, employing a snowball sampling strategy. Consequently, the total number of pharmacists invited could not be predetermined. Provisionally registered pharmacists who had consented to participate in the study were invited to a separate focus group to capture learner perspectives.

The recruitment strategy aimed to include at least one representative from each participating site to ensure a breadth of experiences and viewpoints. Focus group recordings were transcribed verbatim and analyzed using the six-phase thematic analysis framework described by Braun and Clarke [18]. Two researchers (C.A., K.S.) independently coded the data. Analysis combined

deductive elements, informed by existing EPA literature, with semantic coding grounded in participant responses, guided by a structured interview protocol aligned with the study objectives.

Survey distribution

Nominated pharmacists were also invited to complete an online Likert-scale questionnaire administered via Qualtrics and were requested to circulate the survey link among colleagues engaged with EPAs at their respective sites. The survey was additionally distributed to all focus group participants and provisionally registered pharmacists enrolled in the study. Completion of the survey constituted implied consent.

Participants were given a 25-day window to respond, during which two reminder emails were issued. Survey findings were summarized by reporting response frequencies for each Likert-scale item.

Measurement of entrustment levels

Provisionally registered pharmacists consented to the research team accessing their EPA entrustment records within the electronic portfolio system. Each participating workplace received an EPA educator guide outlining the entrustment scale and detailing the 14 EPAs included in the study. Ongoing support and clarification were provided to sites throughout the data collection period as required.

Entrustment decisions were recorded at four time points—6, 13, 26, and 44 weeks—corresponding with established milestones in the intern training program. At each interval, the nominated pharmacist was responsible for documenting an entrustment level for each provisionally registered pharmacist within the e-portfolio. Reminder communications were sent to workplaces one week prior to each scheduled data collection point.

Entrustment ratings were reported as ordinal scores ranging from 1 to 5. The descriptors associated with each level are presented in **Table 1**. Median entrustment scores were calculated for each EPA at all four assessment time points.

Table 1. EPA level descriptors.

EPA level	Descriptors
Level 1	Observe only, even with direct supervision
Level 2	Perform with direct, proactive supervision and intervention
Level 3	Perform with reactive supervision (ie, on request and quickly available)
Level 4	Supervise at a distance and/or post hoc
Level 5	Supervise more junior colleagues

Abbreviation: EPA= entrustable professional activity.

This study received ethical clearance from the Monash University Human Research Ethics Committee (approval number: 27102).

Results and Discussion

Entrustment levels

Forty provisionally registered pharmacists, representing 71.4% of those eligible, were included in the analysis. The cohort was predominantly drawn from hospital-based practice, with only a single participant practicing in a community pharmacy setting. Median entrustment scores at six, thirteen, twenty six, and forty four weeks of supervised practice are illustrated in the Figure.

The progression of entrustment was not uniform across all EPAs, with increases occurring at different stages depending on the activity. Despite this variability, by the final assessment point at 44 weeks, all EPAs achieved a median entrustment level of 4.
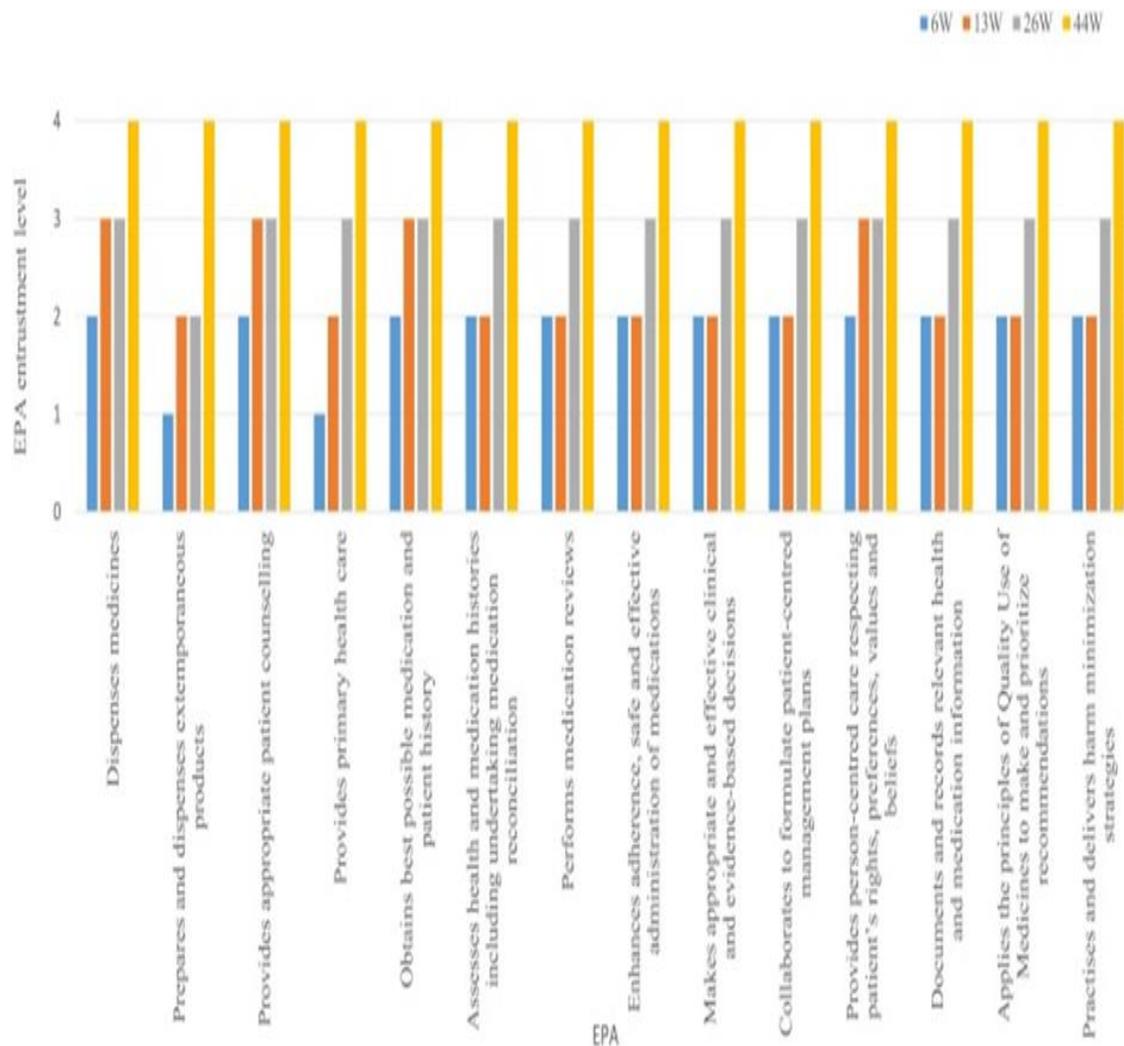
Figure 1. Median intern entrustment level at 6, 13, 26, and 44 Weeks (n = 40). EPA, entrustable professional activity.

Focus groups

Focus group discussions included eight provisionally registered pharmacists and six pharmacists with expertise in education and the use of EPA-based assessments for interns. All participants were practicing within hospital environments, representing six distinct hospital sites. Analysis of the focus group data yielded three overarching themes, which are summarized in **Table 2**.

Table 2. Key theme quotes

Theme	Representative quotes
Theme 1: Application of EPAs in workplace practice	"We tend to rely on EPAs mainly during clinical rotation periods rather than general or dispensary-focused rotations. They are primarily used during the two-week clinical placements, often within specialty areas, which is where we find them most applicable." (Pharmacist #1) "What I find useful is the structured nature of the EPAs. Similar to other competency frameworks, they require deliberate consideration of each component, which encourages more detailed and meaningful feedback instead of broad, nonspecific positive comments." (Pharmacist #2) "Some pharmacists usually review the EPAs with me toward the end of a rotation and complete them collaboratively, while others return them later, sometimes after I've already started my next rotation." (Provisionally registered pharmacist #2)

Theme 2: Perceived advantages and limitations of EPAs	"From my perspective, EPAs are a thorough and practical mechanism for delivering feedback. The interns I've supervised generally respond positively to reviewing the feedback together and discussing the entrustment level they've achieved." (Pharmacist #3) "I feel like I'm constantly being evaluated anyway, regardless of EPAs, simply because of the hierarchical nature of the workplace. I don't change my behavior to perform artificially, but I do adjust what I do in response to feedback and awareness of areas where I need to improve." (Provisionally registered pharmacist #2) "One challenge with EPAs is time pressure. Pharmacists already have clinical responsibilities, and on top of that, they're required to complete other forms of assessment in addition to EPAs." (Provisionally registered pharmacist #3)
Theme 3: Future directions and recommendations for EPA use	"There have been situations where supervisors assigned very low entrustment levels because they hadn't observed every element listed in the EPA description, even when the specific situation didn't require all aspects to be demonstrated. That issue needs careful consideration." (Pharmacist #1) "Providing education sessions for pharmacists would be valuable, particularly for those who may not have supervised interns or students before. Training on how to interpret and assess EPAs could improve consistency." (Pharmacist #3) "When EPAs appear long or complex, it can reduce motivation to complete them promptly, which contributes to delayed feedback. Improving the layout and usability of EPAs could support better uptake and timely completion." (Provisionally registered pharmacist #4)

Abbreviation: EPA, entrustable professional activity.

Theme 1: application of EPAs in workplace practice
Supervising pharmacists reported that EPAs were implemented either at predetermined time points or whenever appropriate during rotations relevant to the specific EPA tasks (e.g., extemporaneous dispensing). Some pharmacists used EPAs primarily as a grading mechanism, others as a tool to provide developmental feedback for provisionally registered pharmacists, and some employed both purposes. Similarly, provisionally registered pharmacists noted that their supervisors applied EPAs at these fixed intervals or during particular rotations. Feedback was generally provided at scheduled times and tended to decrease as interns gained independence and confidence in completing workplace tasks.

Theme 2: perceived advantages and limitations of EPAs
Pharmacists identified time constraints as a major challenge when completing EPA assessments due to existing workplace-based evaluation requirements. Many indicated that they already had sufficient assessment tools in place (e.g., site-specific EPAs) but were open to integrating the current EPAs if they became mandatory. Provisionally registered pharmacists valued the qualitative feedback from supervisors more than the numeric entrustment levels because it highlighted areas for skill improvement and professional development. They also acknowledged adjusting their usual work behavior during EPA assessments to optimize performance. A notable difficulty for interns was arranging time with pharmacists to receive timely feedback.

Theme 3: future directions and recommendations for EPA use
Pharmacists suggested that more detailed, task-specific EPAs would be preferable for complex activities, as they reported discomfort in assigning entrustment levels to EPAs with multiple components. They also recommended additional training on the interpretation of each EPA and guidance on applying the 1-to-5 entrustment scale appropriately. Provisionally registered pharmacists emphasized that including a dedicated comment or feedback section for each EPA would enhance their learning and skill development during the internship. Future improvements highlighted by interns included making EPAs more user-friendly and providing further education for pharmacists on their use.

Provisionally registered pharmacist survey
Out of the 40 provisionally registered pharmacists enrolled in the study, 29 (72.5%) completed the survey, with only one participant from a community pharmacy setting. Survey response frequencies for individual items are presented in **Table 3**. For six of the seven survey questions, the median response was 4, corresponding to

"usually," indicating a generally positive engagement   with the EPA process.

Table 3. Responses on likert scale from provisionally registered pharmacists (N = 29)

Survey Item	Always (5)	Usually (4)	About half the time (3)	Seldom (2)	Never (1)	Median (Q1–Q3)
My supervising pharmacist utilized EPAs to establish learning goals	3	7	5	12	2	3 (2–4)
The EPAs assisted me in clarifying what was expected for my learning	7	10	7	4	1	4 (3–4)
My supervising pharmacist employed EPAs when giving me feedback	8	8	2	9	2	4 (2–5)
The EPAs provided valuable feedback from my supervising pharmacist during clinical work	8	7	8	5	1	4 (3–5)
My supervising pharmacist showed readiness to work with the EPA framework	13	3	8	4	1	4 (3–5)
In general, the EPA assessments provided by my supervising pharmacist matched my own self-assessment	6	18	5	0	0	4 (4–4)
The EPAs improved my awareness of the level of supervision required from my supervising pharmacist for particular tasks	9	10	8	1	1	4 (3–5)

Abbreviations: EPA = entrustable professional activity; Median (Q1–Q3) = median with first and third quartiles.

Pharmacist survey
Seventeen pharmacists participated in the survey, including one from a community practice. Of these, fifteen had previously engaged with EPA ratings, and the same number endorsed the ongoing use of EPAs in their professional setting. **Table 4** presents the response frequencies for each survey question, revealing that the median score for nine items was 4 ("usually"), two items had a median of 3 ("about half the time"), and one item reached a median of 5 ("always").

Table 4. Likert-scale responses for pharmacist survey (N = 17)

Survey Item	Always (5)	Usually (4)	About half the time (3)	Seldom (2)	Never (1)
The EPAs align well with content relevant to pharmacy practice	5	8	4	0	0
The EPAs helped in clarifying learning expectations for the intern(s) during their internship	5	5	6	1	0
The EPAs assisted in outlining expectations for skill development of the intern(s) during their internship	6	4	6	1	0
The EPAs were effective for assessing the intern(s)' competence in the evaluated activities	4	8	3	1	1
The EPAs supported providing formative feedback to the intern(s) (e.g., feedback during completion of an EPA task)	3	5	5	2	2
The EPAs aided in delivering summative feedback to the intern(s) (e.g., feedback after completing an EPA task)	4	6	5	1	1
Incorporating EPAs for intern assessment was feasible alongside my regular workload	8	4	3	1	1
The initiation of using the EPA platform came from the intern(s)	4	2	4	2	5
The wording of the EPAs matched closely with my clinical practice setting	4	6	4	3	0
The EPA framework guide was helpful for understanding each individual EPA	6	7	4	0	0
I clearly comprehended the descriptions of each EPA entrustment level (1–5) when evaluating the intern(s)	9	5	3	0	0

| Overall, I felt satisfied with employing EPAs in the workplace to evaluate the intern(s)' entrustment levels | 6 | 5 | 5 | 1 | 0 |

Abbreviations: EPA = entrustable professional activity; Median (Q1–Q3) = median with first and third quartiles.

Existing research on EPAs in medical education has primarily concentrated on their development [8], and a similar trend is observed in pharmacy education, where studies largely focus on formulating EPA statements, ensuring alignment with accreditation standards, and validating EPA tools [11, 12]. However, the successful translation of EPAs into workplace practice requires attention to both implementation and evaluation, areas in pharmacy where the literature remains limited [11–14]. This study represents the first in Australia to both implement and evaluate specific EPAs mapped to APC performance outcomes as an educational strategy during the intern training year. The APC has since adopted EPAs as a workplace-based assessment method for provisionally registered pharmacists [5].

During the implementation and evaluation phase, focus groups with pharmacists and provisionally registered pharmacists highlighted several key themes: workplace application of EPAs, perceived benefits and challenges, and future recommendations for EPA use. Given the deductive and semantic approach applied, similar themes emerged across both groups. The focus group questions were designed to achieve the study's investigative objectives, and combining surveys with focus groups enabled cross-validation and deeper understanding of the findings [19], with survey results reflecting the focus group insights.

Participants generally exhibited positive and receptive attitudes toward the newly implemented EPAs. Pharmacist survey responses suggested satisfaction with EPA use in the workplace, noting their relevance to practice, the utility of the EPA pharmacist guide, and comprehension of EPA entrustment levels, with no responses indicating "seldom" or "never." A median score of 4 ("usually") suggested that participants found EPAs manageable alongside their workload.

Focus group pharmacists described using EPAs either at scheduled intervals or when practical, often supported by grading or feedback tools to aid provisionally registered pharmacists' learning. As a pilot study, entrustment decisions were formative, with no summative impact on learner progression. Previous research has highlighted the importance of formative feedback in conjunction with EPAs [20], and our findings reinforce EPAs as an effective prompt for providing feedback. Provisionally registered pharmacists noted that feedback occurred at set intervals and decreased as their independence grew. Most existing literature has focused on EPA development rather than evaluating their practical feasibility and usability as an educational tool in the workplace [21, 22]. Provisionally registered pharmacists reported that EPAs enabled meaningful formative feedback with their supervising pharmacists. This was supported by survey results showing pharmacists used EPAs for feedback, and provisionally registered pharmacists found the feedback valuable. Variability in responses regarding whether supervising pharmacists provided feedback using EPAs **(Table 3)** may reflect differences in workplace procedures across study sites. Focus group participants emphasized that feedback was more important for improving performance than the entrustment decision itself. This aligns with findings by van der Vleuten *et al*. [23], who suggested that grades are poor feedback carriers and can distract learners from focusing on their learning process, and Moon *et al*. [24], who emphasized that regular feedback is more beneficial than the EPA rating itself. These observations underscore the need to further train educators on EPA use and entrustment ratings, clarifying that these ratings do not function as numerical grades. Our focus group findings also highlighted the necessity of educating pharmacists about entrustment levels. Feedback, as a critical component of assessment, should be meaningful and provided consistently throughout the training year [25]. Previous studies indicate that students value feedback from credible sources who have long-term insight into their progress [26, 27]. A competency-based assessment system succeeds when the learning environment fosters a "feedback culture," where learners regularly receive feedback to enhance learning and performance [28].

Time constraints were commonly reported as a barrier to effective EPA implementation. Pharmacists acknowledged that completing EPA assessments alongside other workplace assessments for a range of learners (including students and registered pharmacists) posed time challenges. Provisionally registered pharmacists similarly noted time limitations and overlap with other educational assessment tools, finding it difficult to schedule meetings with pharmacists for feedback. Literature acknowledges the burden of time and mental workload associated with providing feedback in rater-based clinical assessments such as EPAs [29].

Future recommendations for improving EPA implementation include providing pharmacists with additional training on effective EPA use and educating provisionally registered pharmacists about the timing and process of EPA assessments in the workplace, which is essential to ensure appropriate application. Without proper training, EPAs risk being treated as mere administrative checklists for registration rather than meaningful entrustment decisions [23], a challenge also reported in nursing education [30]. Further research is needed to address these issues and optimize EPAs as standardized assessment tools, emphasizing the importance of preparing educators rather than solely refining the tool [23]. Allocating dedicated time to train pharmacist educators in EPA use is a valuable investment to ensure the tool achieves its intended purpose. O'Connor and colleagues [31] noted that despite the advantages of EPAs, widespread implementation may be limited by the time and resource demands placed on clinicians, highlighting the need for a better understanding of EPA implementation in healthcare. They also recommended evaluating implementation using the APEASE criteria—affordability, practicability, effectiveness and cost-effectiveness, acceptability, side effects/safety, and equity [31]. Building on these insights, future research should mirror this study's approach by prioritizing implementation and evaluation alongside EPA development to ensure EPAs fulfill their intended role.

Role recognition for pharmacists or educators may further support EPA adoption and acceptability. The American Association of Colleges of Pharmacy (AACP) identifies formal recognition of clinical teaching as a strategy to enhance student learning and patient care [32], and recommends a self-assessment tool for pharmacist educators using EPAs to improve understanding and provide learning opportunities [32]. Such initiatives should be integrated into workplace EPA implementation.

As provisionally registered pharmacists advance through supervised practice, an increase in entrustment levels is expected. In this study, the median entrustment level at the end of supervised practice was level 4, indicating readiness for independent practice, while the AACP recommends PharmD students achieve level 3 for each EPA at graduation [33]. Although this sets performance expectations, guidance on achieving these milestones throughout the course is limited [33], underscoring the need for regular checkpoints from early training to

graduation. Future research should examine the implications when learners do not reach required entrustment levels, particularly concerning patient safety. Longitudinal reporting of entrustment levels is scarce, as current literature emphasizes EPA development rather than ongoing learner performance [8]. Moreover, an entrustment rating may reflect increased trust without necessarily indicating improved skill [34], making future research on learners' trustworthiness crucial to ensure EPAs confirm competency for safe patient care [31]. Provisionally registered pharmacists reported initially modifying their practice behavior when tasks were linked to EPA assessments, which they viewed positively, although these changes decreased over time as tasks became routine, suggesting skill development associated with entrustment-linked activities.

During the study, pharmacists documented learner performance via an online e-portfolio provided by the faculty, with participating sites already familiar with the platform. Delivering EPAs online aimed to improve efficiency and reduce administrative burden, with eight survey participants indicating EPAs were "always" manageable with their workload. Longitudinal e-portfolios can support workplace EPA implementation by improving efficiency [31], though training is required to maximize acceptability and utility [35].

A further consideration overlooked in this study was the potential of EPAs to reveal curriculum strengths or gaps. Comparing expected versus actual student performance can highlight curriculum deficiencies and trends in learner outcomes, representing a future research direction [34]. Competency-based assessments, including EPAs, also assist in identifying underlying causes of performance difficulties [36, 37] and are more effective than traditional methods at recognizing learners who struggle in workplace programs and understanding how to address competency gaps [38]. This aspect warrants further exploration when evaluating workplace EPAs.

Limitations

As only a single community pharmacy participated in this study, the generalizability of the findings to other community pharmacy settings in Australia is uncertain. Additionally, the implementation sites were already familiar with EPAs, so it is unclear whether sites without prior EPA experience would yield similar survey and focus group outcomes. Since provisionally registered pharmacists received feedback at regular intervals, it is also difficult to determine whether the observed benefits

were due to the use of EPAs specifically or simply the opportunity for additional feedback.

Conclusion

Both pharmacists and provisionally registered pharmacists reported that EPAs were practical and could serve effectively as an educational tool in the workplace. The pharmacist focus group emphasized that training staff on proper EPA use is critical for successful implementation. Provisionally registered pharmacists demonstrated progression in entrustment levels at each milestone. The results of this pilot study provide valuable insights for researchers and educators considering the adoption of EPAs as a workplace-based assessment tool within pharmacy programs.

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