



## Evaluation of Preceptorship Implementation among Pharmacy Professional Program Students at Universitas Mataram across Practice Settings

**\*Raisya Hasina, Siti Rahmatul Aini, Mahacita Andanalusia, Tuhfatul Ulya, Baiq Risky Wahyu Lisnasari, Winiayu Devhi Prasasthi, Baiq Aulia Ali, Gusti Ayu Pratitha Devinta Putri, Fawwaz Aqila Putri, Jasmine Zaskia Kaori**

Pharmacist Professional Study Program | Pharmacy Study Program, Faculty of Medicine and Health Sciences, Universitas Mataram, Mataram, Indonesia

\*Corresponding Author e-mail: [raisya@unram.ac.id](mailto:raisya@unram.ac.id)

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### Abstract

Preceptorship is widely implemented in pharmacist professional education to facilitate experiential learning and competency development during the Pharmacist Professional Practice Program (PKPA). However, evaluations of its implementation across different practice settings remain limited. This study aimed to evaluate the implementation of the preceptorship method among students of the Pharmacist Professional Study Program (PSPPA), Faculty of Medicine and Health Sciences, Universitas Mataram, during PKPA in community pharmacies, hospitals, public health centers, and pharmaceutical wholesalers. This study employed a mixed-methods design using a sequential explanatory approach. Quantitative data were collected through a structured questionnaire administered to PSPPA students to assess perceptions of preceptorship implementation across six domains. Qualitative data were obtained through in-depth interviews with 11 preceptors and analyzed using thematic analysis to further explain the quantitative findings. The quantitative results showed that all assessment domains were categorized as “very good,” with scores ranging from 82.5% to 88.3%. The highest score was observed in the student skill development domain (88.3%), followed by preceptor involvement (86.6%) and knowledge assessment through evaluation and feedback (85.0%). Qualitative findings revealed that preceptorship was implemented through three main stages: orientation, implementation, and evaluation. Orientation facilitated students’ adaptation to practice environments, while the implementation stage involved direct supervision, reflective discussions, assignments, and progressive responsibility. Evaluation was conducted continuously through observation, feedback, portfolios, and collaborative monitoring between preceptors and academic supervisors. Challenges identified included limited preceptor availability, variations in student readiness, and the relatively short duration of PKPA placements. In conclusion, the preceptorship method was implemented effectively across PKPA settings and contributed positively to students’ competency development. Strengthening student preparation, institutional support, and collaboration between academic institutions and practice sites may further optimize preceptorship implementation.

**Keywords:** Preceptorship; Pharmacist professional practice program; Pharmacy education; Professional practice

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## INTRODUCTION

Pharmacist professional education plays a critical role in preparing graduates to provide safe, effective, and patient-centered pharmaceutical care. In Indonesia, the Pharmacist Professional Practice Program (*Praktik Kerja Profesi Apoteker*; PKPA) is an essential component of the Pharmacist Professional Study Program (*Program Studi Profesi Apoteker*; PSPPA) and serves as a bridge between academic learning and professional practice (APTFI,

2022). Through PKPA, students are provided with opportunities to gain direct learning experiences in various practice settings, including community pharmacies, hospitals, primary healthcare centers (*Puskesmas*), pharmaceutical industries, and pharmaceutical wholesalers (*Pedagang Besar Farmasi*; PBF) (Richter et al., 2023). These practice experiences are expected to facilitate the development of professional competencies required to meet the demands of contemporary pharmacy practice.

Experiential learning is widely recognized as an effective educational approach in health professions education because it enables students to acquire knowledge, skills, and professional attitudes through direct engagement in real-world practice environments. One of the most commonly implemented experiential learning methods in pharmacy education is preceptorship (Athiyah et al., 2020). Preceptorship refers to a structured mentoring process in which an experienced pharmacist serves as a preceptor and provides guidance, supervision, and professional support to students throughout their professional training (Kuncoro, 2024). Through this process, students are expected to integrate theoretical knowledge with practical experience while developing clinical reasoning, communication skills, and professional behavior (Yuliastiningsih, 2019).

Several studies have demonstrated the positive contribution of preceptorship to students' competency development and professional readiness. Al-Arifi (2018) reported that effective preceptor–student relationships enhance student satisfaction and facilitate professional growth during experiential learning. Similarly, Almetwazi et al. (2020) found that students who received adequate guidance and supervision during pharmacy practice experiences reported higher levels of preparedness and confidence. A scoping review conducted by Knott et al. (2020) highlighted that the effectiveness of preceptorship is strongly influenced by preceptor competence, supervision quality, and the availability of institutional support. Furthermore, Knott et al. (2022) emphasized that structured training and ongoing support for preceptors are essential to optimize learning outcomes among pharmacy students.

Although the benefits of preceptorship have been widely recognized, its implementation may vary across practice settings. Ardiningtyas et al. (2017) reported differences in mentoring practices across pharmacy internship sites, which may affect students' learning experiences. Variations in organizational structure, resource availability, and operational systems have also been identified as factors influencing the implementation of preceptorship in healthcare facilities (Ismail et al., 2022). As a result, students may experience different levels of learning support and competency development depending on the characteristics of their practice settings. For instance, Ardiningtyas et al. (2017) found that mentoring practices in community pharmacies in Yogyakarta were less structured compared to hospital-based internships, with students reporting inconsistent supervision quality. Similarly, Ismail et al. (2022) reported that variations in organizational structure and resource availability across healthcare facilities significantly influenced the implementation of preceptorship, with limited preceptor time identified as a major barrier to effective mentoring. These empirical findings suggest that while preceptorship is widely implemented, its quality and consistency may vary considerably across practice settings, potentially affecting student learning outcomes and competency development.

Despite the growing body of research on preceptorship in pharmacy education, several critical gaps remain. Al-Arifi (2018) examined preceptor–preceptee relationships among PharmD students in Saudi Arabia, focusing primarily on interpersonal dynamics and student satisfaction, but did not evaluate the systematic implementation of preceptorship across orientation, implementation, and evaluation stages. Similarly, Almetwazi et al. (2020) assessed student satisfaction with introductory pharmacy practice experiences, yet their study was limited to community pharmacy settings and did not compare implementation across multiple practice environments. Knott et al. (2020) conducted a scoping review of preceptor training programs and identified the importance of structured preceptor development, but their review

did not examine how preceptor training translates into actual mentoring practices during student placements. Ardiningtyas et al. (2017) reported variations in mentoring practices across pharmacy internship sites in Yogyakarta, but their study did not explore how these variations specifically affect the consistency of preceptorship implementation or identify the factors that facilitate or hinder effective mentoring in different practice settings. These gaps highlight the need for a comprehensive evaluation of preceptorship implementation that (1) covers the entire professional practice continuum, (2) compares multiple practice settings, and (3) integrates both student and preceptor perspectives.

To address these gaps, this study offers several novel contributions. First, it provides a systematic evaluation of preceptorship implementation across the three key stages of professional practice-orientation, implementation, and evaluation which has not been previously examined in the context of Indonesian pharmacy professional education. Second, this study employs a sequential explanatory mixed-methods design that integrates quantitative student perceptions with qualitative preceptor experiences, enabling a more comprehensive understanding of both the strengths and contextual challenges of preceptorship. Third, unlike previous studies that focused on single practice settings, this research compares preceptorship implementation across four distinct PKPA settings community pharmacies, hospitals, primary healthcare centers, and pharmaceutical wholesalers providing insights into how setting-specific characteristics influence mentoring practices. Fourth, this study identifies specific barriers to effective preceptorship, including limited preceptor availability, variability in student readiness, and duration constraints, which have important implications for program improvement and policy development in pharmacy education.

The Pharmacist Professional Study Program (PSPPA), Faculty of Medicine and Health Sciences, Universitas Mataram, is the first pharmacy professional education program established in West Nusa Tenggara Province. As a relatively new program, continuous evaluation of the educational process is required to ensure the quality of learning experiences and the achievement of graduate competencies. To date, no study has specifically evaluated the implementation of preceptorship among PSPPA Universitas Mataram students during PKPA across various practice settings. Therefore, a systematic evaluation is needed to provide evidence based insights into the strengths and challenges of the current preceptorship model.

This study aims to evaluate the implementation of preceptorship among PSPPA Universitas Mataram students during PKPA in community pharmacies, hospitals, and primary healthcare centers. Specifically, this study addresses the following research questions:

- (1) How do students perceive the implementation of preceptorship during PKPA?
- (2) How do preceptors implement the orientation, implementation, and evaluation stages of preceptorship in various PKPA settings?
- (3) What factors support and hinder the implementation of preceptorship across different practice settings?

The findings are expected to provide useful input for educational institutions, preceptors, and practice sites in optimizing experiential learning and strengthening the quality of pharmacy professional education.

## **METHOD**

### **Research Design and Research Location**

This study used a mixed methods design with a sequential explanatory approach. In this design, quantitative data were collected and analyzed in the first phase, followed by qualitative data collection and analysis to explain and deepen the findings obtained in the quantitative phase. The integration of quantitative and qualitative results was carried out to gain a more comprehensive understanding of the implementation of the preceptorship method during the Pharmacist Professional Internship (PKPA). The study was conducted at the PKPA facility within the Pharmacist Professional Education Study Program (PSPPA) network of the Faculty of Medicine and Health Sciences, University of Mataram, which includes pharmacies,

hospitals, and community health centers. Data collection was conducted from December 2025 to January 2026.

### **Participants and Sampling Techniques**

The study population consisted of PSPPA FKIK University of Mataram students undergoing PKPA and the preceptors who guided the students in each practice area. In the quantitative stage, respondents were selected using a total sampling technique, namely all students who met the criteria and underwent PKPA during the study period were included as respondents. Students who were willing to participate in the study and completed the questionnaire were included in the analysis. In the qualitative stage, informants were selected using a purposive sampling technique based on their involvement and experience in guiding PSPPA students during the PKPA implementation. This technique was used to obtain in-depth and relevant information regarding the implementation of the preceptorship method in various practice areas.

### **Quantitative Data Collection**

Quantitative data were collected using a structured questionnaire to evaluate students' perceptions of the implementation of the preceptorship method during PKPA. The questionnaire consisted of six assessment domains, namely: (1) clarity of goals, objectives, and rotation activities; (2) preceptor involvement in the learning process; (3) knowledge assessment through evaluation and feedback; (4) student interaction with the practice environment; (5) student skill development; and (6) student-preceptor relationship. Each item was assessed using a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). Before use, the instrument underwent a content validation process by pharmacy education experts to ensure the suitability of each item to the research objectives.

### **Qualitative Data Collection**

Qualitative data were obtained through in-depth interviews using a semi-structured interview guide developed based on the research objectives and the results of quantitative data analysis. The interviews aimed to explore preceptors' experiences regarding orientation, the mentoring process, student evaluation, and various obstacles encountered in implementing the preceptorship method. All interviews were conducted face-to-face at each informant's practice location at a predetermined time. Each interview lasted approximately 30–60 minutes. With the informant's consent, all interviews were recorded using a voice recorder and subsequently transcribed verbatim for data analysis purposes.

### **Data Analysis**

Quantitative data were analyzed using IBM SPSS Statistics version 25 software. Descriptive analysis was conducted to describe the characteristics of respondents and students' perceptions of the implementation of the preceptorship method. Data were presented in the form of frequencies, percentages, means, and standard deviations. Scores in each domain were then converted into percentages and categorized based on predetermined assessment criteria.

Qualitative data were analyzed using thematic analysis based on the Braun and Clarke approach, which includes six stages: (1) understanding and recognizing the data (familiarization), (2) initial coding, (3) identifying themes, (4) reviewing themes, (5) determining and naming themes, and (6) compiling a research report. All interview recordings were transcribed verbatim and re-checked by comparing the transcription results with the original recordings to ensure data accuracy. The coding process was carried out independently by four researchers. The coding results were then compared and discussed until agreement was reached on the themes formed. Data collection was stopped when additional interviews no longer produced new relevant information or themes, so that the data was declared to have reached saturation.

### **Ethical Considerations**

This study has obtained ethical approval from the Health Research Ethics Committee of

the Faculty of Medicine and Health Sciences, University of Mataram, with approval number (173/UN18.F8/ETIK/2025). All participants received an explanation of the research objectives and procedures and provided informed consent to participate before data collection. Participants' identities were kept confidential throughout the study, and all data obtained were used solely for research purposes.

### Instrument Validation

The qualitative instrument used was an interview guideline, compiled based on the research objectives, literature review, and indicators for implementing the preceptorship method in the PKPA PSPPA FKIK UNRAM Module (2025). The interview guideline was validated through expert judgment by a preceptor who was also the research supervisor. Validation was carried out to assess the suitability of the question content, language clarity, and its relevance to the research objectives. The interview guideline was piloted with a validator to identify unclear or ambiguous questions. The interview guideline was revised based on the validator's input to obtain an instrument suitable for use in the research.

## RESULTS AND DISCUSSION

This study evaluated the implementation of the preceptorship method among PSPPA students undertaking PKPA across three practice settings: community pharmacies, hospitals, and primary healthcare centers (*Puskesmas*). Quantitative findings were derived from student questionnaires and complemented by qualitative insights obtained from interviews with 18 preceptors. Although all assessment domains achieved "very good" ratings (82.5%-88.3%), these results should be interpreted cautiously as they reflect students' subjective perceptions of the learning experience rather than objective measurements of competency achievement. The qualitative findings revealed three significant challenges that may affect the consistency of preceptorship implementation: (1) limited preceptor availability due to clinical workload demands, (2) variability in student readiness, and (3) the relatively short duration of PKPA placements. The apparent contradiction between students' positive perceptions and these implementation challenges suggests that "very good" ratings may reflect the effectiveness of preceptors' adaptive mentoring strategies in overcoming structural constraints, rather than indicating uniform implementation quality across all practice settings.

Accordingly, the results and discussion are presented in two sections: (1) students' perceptions of preceptorship implementation across six assessment domains, and (2) preceptors' perceptions of implementing the preceptorship model, covering the orientation, implementation, and evaluation stages, as well as implementation challenges.

### Implementation of the Preceptorship Method in Students

**Table 1.** Evaluation of the Preceptorship Program Based on Six Assessment Domains

| Domain                                                           | Average Percentage | Category  |
|------------------------------------------------------------------|--------------------|-----------|
| – Clarity of Objectives, Targets, and Rotation Activities        | 82.5%              | Very Good |
| – Preceptors Involvement in the Learning Process                 | 86.6%              | Very Good |
| – Knowledge Assessment through Evaluation and Preceptor Feedback | 85%                | Very Good |
| – Student Interaction with the Practice Environment              | 84.8%              | Very Good |
| – Student Skill Development Assessment                           | 88.3%              | Very Good |
| – Student–Preceptor Relationship                                 | 83.5%              | Very Good |

The evaluation results for the clarity of goals, objectives, and rotation activities domain obtained a percentage of 82.5%, which is included in the "very good" category. This finding indicates that students assessed the orientation process before the PKPA implementation as being well implemented. During the orientation stage, students received information regarding learning objectives, regulations at the practicum site, service systems, and the duties and responsibilities they would carry out during the PKPA. The orientation stage is a fundamental component of the preceptorship method because it provides a foundation for students to

understand the practicum environment, adapt to the work system, and prepare themselves to carry out professional roles during the PKPA. Effective orientation implementation is known to increase learning readiness, accelerate the adaptation process, and support student involvement in practicum activities. Hyrkäs and Shoemaker (2007) in Al-Arifi (2018) stated that good orientation contributes to the creation of a positive learning experience and increases student participation during practicum. In line with this, Almetwazi et al. (2020) reported that students tend to be more prepared to undergo practicum when they receive a clear explanation from the beginning regarding learning objectives, service systems, and preceptor expectations. Furthermore, the presence of the PKPA module as a practice guide is also thought to support students' understanding of the activities to be undertaken, thereby reducing confusion at the start of the rotation. Although included in the "very good" category, this domain received the lowest score compared to the other domains. This finding indicates variations in orientation implementation across various practice settings. Interview results indicated that hospitals tended to implement orientation in a more structured manner through formal education and training units, while pharmacies and community health centers adopted a more informal approach. These differences reflect adjustments to the characteristics and operational systems of each practice setting. Therefore, variations in orientation implementation can be viewed as a form of flexibility within the preceptorship model, where preceptors adapt mentoring strategies to the practice context without compromising the primary goal of orientation, which is to prepare students for the learning process and achieve the expected professional competencies.

In the second domain, namely the role and involvement of preceptors in learning, a percentage of 86.8% was obtained, which is included in the "very good" category. These results indicate that students assessed that preceptors had played an active role in supporting the learning process during PKPA through discussion activities, providing guidance, and direct involvement in various practical activities. This finding reflects the implementation of the preceptor's main function as an educator, mentor, facilitator, and role model in professional education (Athiyah et al., 2020). The active involvement of preceptors plays a crucial role in helping students integrate theoretical knowledge with practical experience, while simultaneously developing professionalism, communication skills, and decision-making skills in pharmaceutical services. Hyrkäs and Shoemaker (2007) in Al-Arifi (2018) stated that the success of the preceptorship method is greatly influenced by the preceptor's ability to provide guidance, motivation, and create a conducive learning environment. In addition, the preceptor's professional experience and competence in guiding students also contribute to the comfort and effectiveness of the learning process during professional practice. Despite receiving high ratings, interview results revealed that limited time due to the workload remains a major challenge in implementing preceptorship. This finding suggests that students likely value the quality of interactions more than the frequency of meetings with the preceptor. In other words, despite relatively limited mentoring time, preceptors are still able to provide targeted supervision, adequate support, and timely feedback on important learning activities. This condition is suspected to be one of the factors supporting the high student ratings in this domain. However, limited mentoring time requires attention because it has the potential to impact the sustainability of preceptorship implementation. If the workload continues to increase without adequate support, the quality of mentoring may decline (Ardiningtyas et al., 2017). Therefore, institutional support is needed, both in the form of workload management and the provision of adequate resources, to ensure that preceptors can carry out their mentoring role optimally without compromising the quality of service or the student learning process.

In the third domain, related to knowledge assessment through the evaluation and feedback process by preceptors, a percentage of 85% was obtained, which is categorized as "very good." These results indicate that students assessed the evaluation and feedback process during PKPA as being implemented well. In the preceptorship method, feedback is a crucial

component that helps students understand their competency achievements, identify aspects that still need improvement, and support the process of reflective learning and continuous competency development. This finding is in line with research by Al-Arifi (2018), which shows that student satisfaction levels tend to be higher when preceptors provide regular evaluations, are supportive, and are easily accessible during the practicum learning process. Through constructive evaluation and feedback, students can obtain clear direction regarding their development of skills and the steps needed to improve practicum performance. Interview results indicate variations in feedback mechanisms across practicum settings. In hospitals, feedback is more often provided through direct observation of student activities and case discussions, while in pharmacies and community health centers, pre-test and post-test methods are more frequently used. These differences reflect adjustments to the learning characteristics, types of practical activities, and workflows within each platform. Overall, these variations in feedback mechanisms can be viewed as a natural adaptation to the context of the practical environment, as long as they continue to support the achievement of learning objectives and the development of student competencies.

In the fourth domain, regarding student interaction with the rotation environment, a percentage of 84.813% was obtained, which is included in the "very good" category. These results indicate that the practice environment is considered capable of supporting the student learning process during PKPA through the availability of access to patients, patient information, reference sources, and opportunities to interact with various healthcare professionals. Interaction with the practice environment is an important aspect of professional education because it contributes to the development of interprofessional communication skills, clinical skills, and problem-solving abilities directly in the context of healthcare. A conducive practice environment allows students to gain a more active learning experience through direct involvement in patient care and collaboration with other healthcare professionals. This finding is consistent with Almetwazi et al. (2020) who stated that student satisfaction tends to increase when the practice environment provides adequate learning resources and opportunities to collaborate with other healthcare professionals. Interview results showed that the level and form of student interaction differed between practice settings. In pharmacies and community health centers, students have greater opportunities to interact directly with patients, although with limitations due to case complexity and resource availability compared to hospitals. In contrast, hospitals offer more complex case presentations and access to more comprehensive resources, but with varying levels of direct interaction. These differences reflect the diverse roles and capacities of each practice setting in supporting experiential learning, ultimately contributing to the varying learning experiences of students during their internships across practice settings.

In the fifth domain, related to student skill development, the highest percentage was obtained compared to other domains, namely 88.3%, categorized as "very good." This finding indicates that the practical experience during PKPA is considered capable of supporting the development of student competencies as prospective professional pharmacists. These results indicate that the preceptorship method makes a positive contribution to improving various student skills, including verbal communication, clinical skills, documentation skills, and the ability to apply theoretical knowledge to practice. This practice-based learning allows students to integrate the knowledge gained during lectures with real-world conditions in pharmaceutical services in various settings, such as hospitals, community health centers, and pharmacies. The high achievement in this domain is an interesting finding considering the preceptor reports that indicate significant variation in students' initial readiness. This indicates that the preceptorship model has the potential to help equalize differences in initial readiness levels through structured supervision and experiential learning. However, this interpretation should be considered carefully because skill development is measured based on students' self-perceptions, not objective competency assessments. In health professions education, self-assessments often

show weak correlations with objective performance measures (Davis et al., 2006). Therefore, future research is recommended using objective assessments before and after practice to validate these findings (Mhango et al., 2021).

In the sixth domain, concerning the relationship between students and preceptors, a percentage of 83.5% was obtained, which is included in the "very good" category. This result indicates that students gave a positive assessment of the interpersonal relationships established during the implementation of PKPA. Students assessed that the preceptor was able to treat them as colleagues, provide space for discussion, explain the clinical approach used, and encourage active involvement in practical activities. A good interpersonal relationship between students and preceptors is one of the important components in the success of the preceptorship method. Positive interactions can increase student confidence, facilitate communication, and create a more supportive and conducive learning environment. Hyrkäs and Shoemaker (2007) stated that preceptors act as role models, facilitators, and educators who help students develop professional competencies during the clinical learning process. However, the score in this domain was slightly lower than the skill development domain. This likely reflects the limited opportunity to build a more intense relationship due to the limited availability of preceptor time. These conditions can affect the frequency of non-formal interactions which play an important role in strengthening interpersonal relationships between students and preceptors during the internship period.

Based on the overall analysis of the percentage scores, the majority of respondents rated all domains as "good" to "very good," resulting in an overall rating of "very good" across all domains. Although all domains received "very good" ratings, several caveats warrant consideration. These ratings reflect students' subjective perceptions, not objective measures of competency attainment. Furthermore, there may be biases, such as a tendency to give positive ratings and variations in student experience that are not reflected in the average scores. Overall, these results indicate positive student perceptions of the implementation of preceptorship. However, several limitations remain in its implementation, such as the availability of preceptors, student preparedness, and the limited duration of the PKPA, which may impact the consistency of learning. To complement the quantitative results, qualitative interviews with preceptors were conducted to obtain a more comprehensive picture of implementation in the field, including strengths and challenges encountered in various practice settings.

### **Implementation of the Preceptorship Method in Various PKPA Practice Settings in Preceptors' Perceptions**

To gain a deeper understanding of how the preceptorship method was implemented across different PKPA practice settings, in-depth interviews were conducted with 11 preceptors representing community pharmacies, and hospitals, primary healthcare centers (Puskesmas). The profiles of PKPA preceptors in the PBF setting are presented in Table 2.

**Table 2.** Profile of PKPA Preceptors

| <b>Characteristics</b>   | <b>Total (n=11)</b> | <b>Percentage (%)</b> |
|--------------------------|---------------------|-----------------------|
| Gender                   |                     |                       |
| Female                   | 7                   | 63.6                  |
| Male                     | 4                   | 36.4                  |
| Practice Vehicle         |                     |                       |
| Hospital                 | 5                   | 45.5%                 |
| Pharmacy                 | 3                   | 27.3%                 |
| Community Health Center  | 3                   | 27.3%                 |
| Preceptorship Experience |                     |                       |
| 1–2 years                | 4                   | 36.4%                 |
| 3–4 years                | 7                   | 63.6%                 |
| Work Experience          |                     |                       |
| 5-10 Years               | 5                   | 18.2%                 |
| 11-15 Years              | 4                   | 18.2%                 |

| Characteristics           | Total (n=11) | Percentage (%) |
|---------------------------|--------------|----------------|
| 16-20 Years               | 2            | 9.1%           |
| Level of Education        |              |                |
| S1                        | 11           | 100%           |
| S2                        | -            | -              |
| S3                        | -            | -              |
| Profession                | 11           | 100%           |
| Preceptor Training Status |              |                |
| Already following         | 11           | 100%           |

This proportion aligns with the state of pharmacy education in Indonesia, particularly in pharmaceutical services, which are dominated by women, as found in research by Lingga et al. (2025) and supported by research by Ardinintyas et al. (2017), which shows that the majority of preceptors are also female. However, the effectiveness of preceptorship guidance is not influenced by gender, but rather by the preceptor's competence and experience in guiding students.

Thematic analysis of the interview results identified four main themes, namely (1) the orientation stage, (2) the implementation stage which includes guidance and assignments, (3) the evaluation stage, and (4) challenges in implementing preceptorship. These four themes describe various practices implemented by preceptors while accompanying students in PKPA activities in pharmaceutical services.

### Implementation of the Orientation Stage

Orientation is conducted at all PKPA facilities at the beginning of student placement, typically on the first or second day. The material provided includes an introduction to the organizational structure, rules and regulations, room layout, and standard operating procedures (SOPs). While the orientation objectives are relatively similar, the methods vary across facilities, ranging from formal presentations and oral explanations to room tours and independent learning through provided documentation.

In the hospital, orientation is carried out in a structured manner through the education and training (diklat) section and is continued with a room tour of the pharmaceutical service units as expressed by the following preceptor:

*"Then we were invited to go around the depots and what...caseling...IKL, uh the environment, then CSSD." (Hospital Preceptor)*

Meanwhile, pharmacies and community health centers generally combine direct explanations with an introduction to the work environment through observation and student involvement in practical activities, as expressed by the following preceptor:

*"So, while they're working, they sometimes...watch. So, uh...for example, what are the activities. So the procedure is like this, this, this." (Health center Preceptor)*

*"Usually on the first day, I gather all the students. I explain directly the structure of the pharmacy, who the pharmacists are, the pharmaceutical technicians, and other staff, and how the tasks will be divided." (Pharmacy Preceptor)*

The results of this study align with research by Aryanti et al. (2020), which states that in the preceptorship method, the student adaptation process is influenced by the preceptor's readiness, ongoing mentoring, and student motivation during clinical practice. The study also explains that clinical practice students still require ongoing guidance and reinforcement to adapt to the hospital environment and achieve the expected practical competencies.

The introduction of SOPs also shows variation across settings. In hospitals, SOPs are generally explained directly, particularly those related to quality of care and patient safety, as expressed by the following preceptor:

*"The explanation of the SOP is that when practice starts..." (Hospital Preceptor)*

In contrast, in pharmacies and community health centers, SOPs are available in the form of documents posted in the work area or distributed in soft file form for students to study independently, as expressed by the following preceptor:

*"We have several types of SOPs, so you can read them yourself" (Health Center Preceptor)*

*"The SOP, it just so happens...it's already posted...so it's automatically visible. But we also have the soft copy, which can be provided as well." (Pharmacy Preceptor)*

Although the methods used varied, all *preceptors* considered orientation to be crucial in helping students adapt to the practice environment. One preceptor stated,

*"For initial adaptation, I think it's been quite helpful. At least they get a general idea." (Pharmacy Preceptor)*

These findings indicate that orientation is a crucial component in the implementation of preceptorship because it helps students understand the work environment, the tasks to be performed, and the learning expectations during PKPA. These results align with Nyoni's findings. et al. (2021) emphasized that effective orientation not only introduces the practice environment but also facilitates students' understanding of the professional roles they will undertake.

### **Implementation Stage**

The implementation phase is the core of the preceptorship method because at this stage students are directly involved in practical activities with the guidance of a preceptor. Based on the results of the interview, guidance is provided through various methods, including direct assistance during practice, regular discussions, and communication via online media such as WhatsApp to support coordination and supervision. In some institutions, especially hospitals and pharmacies, guidance is provided in stages, starting with observation, mentoring, and finally providing opportunities for students to practice more independently, as expressed by the following preceptor:

*"We are still accompanying the first handover, the second handover is still ongoing, and we have started to release the third handover." (Hospital Preceptor)*

*"So, during the PKPA, they will gradually become involved... There's usually some mentoring. For example, providing prescriptions or self-medication is done together." (Pharmacy Preceptor)*

In addition to direct mentoring, discussions are a widely used method to discuss practical experiences and connect theory to field conditions. Discussions are held routinely to evaluate the day's activities. The frequency of discussions varies between platforms, ranging from daily to weekly.

The assignments given generally refer to the PKPA portfolio, but some preceptors add other tasks tailored to the characteristics of the facility, such as creating educational media in health centers and pharmacies, as expressed by the following preceptor:

*"Yes, that's what I said earlier, so if for example the portfolio assignment is checked every day, I'll check it, okay?" (Health center Preceptor)*

*"For counseling, the teaching aids are that they make posters while conducting the counseling, while making posters, usually we ask them to make educational videos about medicines like that." (Health center Preceptor)*

*"From my own experience, I took a disease or a specific topic, then created posters and brochures...then I was tasked with directly delivering it to at least 3-5 patients, and this was documented."* (Pharmacy Preceptor)

Meanwhile, in the hospital setting, assignments can also take the form of patient counseling, as expressed by the following preceptor:

*"Regarding the task, um... we have communicated, but each person's task is different, but if you are an outpatient, there is counseling"* (Hospital Preceptor)

These findings indicate that the learning process in preceptorship occurs not only through direct observation and practice, but is also supported by reflective activities through discussions and assignments relevant to the practice environment. The variety of guidance methods implemented in each setting demonstrates the preceptor's efforts to adapt learning strategies to the characteristics of the practice setting and the students' needs. These research findings align with Mhango's findings. et al. (2021) stated that the effectiveness of preceptorship is greatly influenced by the quality of interactions between preceptors and students, including mentoring, discussions, and feedback during the learning process. Furthermore, the gradual approach found in some platforms reflects the principle of progressively assigning responsibility, allowing students to develop competence and independence in professional practice.

### **Implementation of the Evaluation Stage**

The evaluation phase is conducted to assess students' competency achievement during the PKPA (Program of Internship Program). Based on interviews, all facilities use assessment forms or rubrics provided by the study program as a reference in the evaluation process. In addition to referring to these instruments, preceptors also conduct ongoing assessments through direct observation, discussions, assignment and portfolio reviews, and in some facilities, pre- and post-tests.

Ethics and behavioral assessments are generally conducted through observation of students' activities during their internships. Aspects assessed include discipline, responsibility, communication, and professionalism in interactions with patients and other healthcare professionals.

In addition to using the available assessment rubrics, some preceptors also make personal notes to document certain behaviors or events that are considered important during the learning process, as expressed by the following preceptor:

*"It's just that for me, every time there's a PKPA, I have my own data that I create, for example, in an Excel file, for example, from the results of weekly discussions or the main results of any incidents, I record it there..."* (Hospital Preceptor)

Skills assessment is conducted using various methods depending on the characteristics of the practice setting. In pharmacies and community health centers, some preceptors use pre- and post-tests to measure the development of student understanding, as explained by the following preceptor:

*"That's it, from us pretest, posttest, and daily observations, so their reports are per day."* (Health Center Preceptor)

Meanwhile, in hospitals, assessments are also conducted through direct observation of students providing services, counseling, or discussing cases. In addition to practical skills, student assignments and portfolios are also evaluation components examined to assess students' understanding and ability to integrate theory with field practice.

In the evaluation practice, the supervising lecturer is also involved in monitoring students through a WhatsApp group consisting of students, preceptors, and supervising lecturers, as conveyed by the preceptor:

*"I asked them to create a WhatsApp group, the contents of which were students, supervisors, and lecturers." (Health Center Preceptor)*

The involvement of lecturers in the monitoring process allows for more open communication and facilitates coordination regarding student development during practice.

These findings indicate that evaluation in preceptorship is not limited to the end of the activity but occurs continuously throughout the learning process. This approach aligns with the concept of formative assessment in professional education, which emphasizes the importance of ongoing monitoring to support student competency development. Research by Mhango et al. (2021) also confirms that the availability of preceptors to provide guidance and feedback is a crucial component in supporting student learning in the practicum environment. Furthermore, the involvement of various parties in the evaluation process, such as preceptors and supervising lecturers, has the potential to improve the quality of monitoring and ensure that learning outcomes can be evaluated more comprehensively.

### **Challenges in Preceptorship Implementation**

Based on interviews, there are three main obstacles to implementing preceptorship: limited preceptor time, suboptimal student preparedness, and the relatively short duration of the PKPA. These three factors were found across all platforms to varying degrees.

Preceptors' time constraints are primarily due to the heavy workload of service and administrative tasks that must be carried out concurrently with student mentoring activities. This situation results in the mentoring and feedback process not always being carried out optimally, as expressed by the following preceptor:

*"For me, it's probably more about time, I think, the time to see them is full in the service, but for me, it's more about the lack of time because I have to divide myself, you know." (Hospital Preceptor)*

*"The obvious challenge is that. First of all, it was a real challenge because we're here, you know, uh...we can't just sit around. So there's a lot of work." (Health center preceptor)*

*"Maybe it's more about timing, and because their shifts are different." (Pharmacy Preceptor)*

In addition, several preceptors also revealed that students still showed varying levels of readiness, both in mastery of basic theory, activeness during learning, and discipline in completing assignments as expressed by the following preceptor:

*"That's the challenge, more likely because people are not familiar with it because there are so many drugs, so their understanding usually needs to be improved." (Hospital Preceptor)*

*"Usually students forget the basic knowledge... I ask what a prescription is, what the components are, and they definitely forget." (Health Center Preceptor)*

*"Then there are basic things they forget. Like maybe how many mL is in one sample, how many mL is in a tablespoon, how many mL is in a cc, and things like that." (Pharmacy Preceptor)*

Another frequently encountered obstacle is the perceived insufficient duration of the PKPA to provide a comprehensive learning experience. Several preceptors, particularly those at community health centers, stated that the limited practice time limits students' ability to optimally complete all learning stages, as expressed by the following preceptor:

*"For example, there are many holidays, and then in one rotation they are not full, so there are still many who are lacking, well that's the challenge" (Puskesmas Preceptor)*

These findings indicate that the implementation of preceptorship is influenced not only by the preceptor's ability to supervise, but also by institutional factors and student readiness. These findings align with those of Mhango et al. (2021), who reported that preceptor workload can affect the quality of supervision provided to students. Furthermore, Haidar et al. (2021) emphasized that the gap between theoretical knowledge and the demands of field practice remains a challenge in health professions education. Therefore, optimizing the implementation of preceptorship requires support that focuses not only on preceptors but also on student preparation and overall management of the practice program.

## CONCLUSION

The findings indicate that the implementation of the preceptorship method during PKPA was perceived positively by students and preceptors across community pharmacies, hospitals, and public health centers. Quantitative results showed that all assessment domains were categorized as very good, with the highest score observed in the student skill development domain. Qualitative findings further revealed that preceptorship was implemented through three key stages-orientation, implementation, and evaluation which collectively supported students' adaptation, competency development, and professional growth. Despite these positive outcomes, several challenges were identified, including limited preceptor availability due to workload demands, variations in student readiness, and the relatively short duration of PKPA placements.

Based on these findings, the Pharmacist Professional Study Program (PSPPA) of Universitas Mataram should strengthen student preparation prior to PKPA, particularly in essential pharmaceutical knowledge and professional readiness. Enhanced collaboration between academic institutions and practice sites is also necessary to optimize preceptorship implementation and ensure consistent learning experiences across settings. Future studies should involve a broader range of practice sites and participants, including academic supervisors and students, and incorporate observational methods to provide a more comprehensive evaluation of preceptorship implementation in pharmacist professional education.

## LIMITATION

This study has several limitations that should be considered when interpreting the results. Quantitative data were obtained through a self-report questionnaire, thus subject to possible respondent bias. Furthermore, this study was conducted only at the PSPPA FKIK Universitas Mataram, so the results may not necessarily reflect the implementation of preceptorship at other pharmacist professional education institutions. This study also did not involve direct observation of the mentoring process at the practice site and did not objectively measure student competency. Therefore, the results reflect students' perceptions and preceptors' experiences of preceptorship implementation rather than its effectiveness in achieving student competency. All assessment domains scored in the "very good" category, so the possibility of respondents' tendency to give high ratings (ceiling effect) or positive responses cannot be completely ruled out. Therefore, the results should be interpreted cautiously. Future research is recommended to involve more educational institutions, combine survey and observation methods, and use more objective competency measurements to obtain a more comprehensive picture of the implementation and effectiveness of preceptorship.

## RECOMMENDATION

Based on the research findings, the PSPPA FKIK Universitas Mataram is advised to strengthen student preparation prior to PKPA, particularly regarding basic pharmacy material frequently used in practice. Furthermore, improved coordination between educational institutions and PKPA facilities is needed to optimize the mentoring process and ensure the appropriateness of preceptorship implementation across various practice facilities. For PKPA facilities and preceptors, well-established mentoring practices, such as direct mentoring,

regular discussions, and continuous feedback, need to be maintained and improved. A more structured mentoring schedule is also needed to address time constraints due to service workloads.

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### AUTHOR CONTRIBUTIONS STATEMENT

| Name of Author          | C | M | So | Va | Fo | I | R | D | O | E | Vi | Su | P | Fu |
|-------------------------|---|---|----|----|----|---|---|---|---|---|----|----|---|----|
| Raisya Hasina           | ✓ | ✓ | ✓  | ✓  | ✓  | ✓ | ✓ | ✓ | ✓ | ✓ | ✓  | ✓  | ✓ | ✓  |
| Siti Rahmatul Aini      |   | ✓ |    | ✓  |    | ✓ |   |   | ✓ |   |    | ✓  |   |    |
| Mahacita Andanalusia    | ✓ | ✓ | ✓  | ✓  | ✓  |   | ✓ | ✓ |   | ✓ |    | ✓  |   |    |
| Tuhfatul Ulya           | ✓ |   | ✓  | ✓  |    | ✓ |   | ✓ | ✓ |   | ✓  |    |   |    |
| Baiq Risky W. Lisnasari |   |   |    |    | ✓  | ✓ | ✓ | ✓ |   | ✓ | ✓  |    |   |    |
| Winiayu Devhi Prasasthi |   |   |    |    | ✓  |   |   |   | ✓ |   |    |    | ✓ |    |
| Baiq Aulia Ali          |   |   |    |    | ✓  |   |   |   | ✓ |   |    |    | ✓ |    |
| Gusti Ayu P. D. Putri   |   |   |    |    |    |   |   |   |   | ✓ |    |    |   |    |
| Fawwaz Aqila Putri      |   |   |    |    |    |   |   |   |   | ✓ |    |    |   |    |
| Jasmine Zaskia Kaori    |   |   |    |    |    |   |   |   |   | ✓ |    |    |   |    |

### CONFLICT OF INTEREST STATEMENT

Authors state no conflict of interest.

### INFORMED CONSENT

We have obtained informed consent from all individuals included in this study.

### ETHICAL APPROVAL

The research related to human use has been complied with all the relevant national regulations and institutional policies in accordance with the tenets of the Helsinki Declaration and has been approved by the authors' institutional review board or equivalent committee.

### DATA AVAILABILITY

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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