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Clinical Learning Outcomes in Midwifery Education: Evaluating the Effectiveness of Structured Clinical Instructor Guidance

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ABSTRACT (9 pt)

Objective: This study aimed to evaluate the effectiveness of a structured clinical instructor guidance program on midwifery students' clinical learning outcomes and competency achievement. **Method:** A quasi-experimental design with pre-test and post-test control group was employed. The study involved 120 third-year midwifery students from two Indonesian institutions, randomly assigned to intervention (n=60) and control groups (n=60). The intervention group received a structured clinical instructor guidance program based on Training of Trainers (ToT) principles, including standardized mentoring protocols, competency assessment rubrics, and reflective practice sessions over 12 weeks. The control group continued with conventional clinical supervision. Data were collected using the Clinical Competency Assessment Tool (CCAT) and Clinical Learning Experience Questionnaire (CLEQ). Statistical analysis included independent t-tests, paired t-tests, and multiple regression to examine the intervention's effects. **Results:** The intervention group demonstrated significantly higher improvements in clinical competency scores compared to the control group (mean difference = 15.6 points, $p < 0.001$, Cohen's $d = 1.24$). Post-test scores showed 85% of intervention group students achieved "competent" level versus 45% in the control group. Regression analysis revealed that structured guidance accounted for 62% of variance in clinical competency ($R^2 = 0.62$, $p < 0.001$). Students in the intervention group also reported significantly higher satisfaction with clinical learning experiences ($p < 0.01$). **Novelty**: This study introduces and validates a structured clinical instructor guidance model specifically designed for midwifery education in resource-limited settings. It provides empirical evidence for integrating Training of Trainers (ToT) approaches into clinical supervision, addressing a critical gap in competency-based midwifery education. The developed assessment tools offer a standardized framework for evaluating clinical learning outcomes in health professional education.

INTRODUCTION

The global healthcare landscape is undergoing a profound transformation characterized by escalating demands for highly skilled and competent health professionals (Frenk et al., 2010). Within this evolving context, midwifery stands as a cornerstone of maternal and child health systems worldwide, directly influencing critical indicators such as maternal mortality rates, neonatal outcomes, and overall reproductive health quality. The effectiveness of midwifery services is fundamentally linked to the quality of education and training that midwives receive, particularly during their formative clinical experiences (Renfrew et al., 2014). Clinical learning represents the essential bridge between theoretical knowledge acquired in classroom settings and the practical application required for safe, effective, and autonomous practice (Munguiko et al., 2025). These clinical environments provide students with invaluable opportunities to develop technical proficiency, cultivate clinical reasoning abilities, navigate complex patient interactions, and ultimately forge their professional identities as healthcare providers (Higgs et al., 2024).

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The paradigm of competency-based education has emerged as the dominant framework guiding contemporary health professions education. This approach shifts emphasis from time-based training to measurable outcomes, prioritizing workplace readiness and demonstrable proficiency across defined competency domains (Or, 2024). In midwifery education specifically, clinical competencies encompass a comprehensive spectrum of abilities including technical skills related to antenatal care, labor management, and postnatal support, critical thinking and decision-making capacities in unpredictable clinical scenarios effective communication with patients, families, and interdisciplinary teams, and the embodiment of professional behaviors and ethical standards (Fullerton et al., 2013). The clinical learning environment, by its very nature, presents unique challenges characterized by unpredictability, emotional intensity, and the need for rapid integration of multiple knowledge domains (Weurlander et al., 2019). This complexity necessitates not merely exposure to clinical settings but structured, intentional guidance to transform experiences into meaningful learning.

Clinical instructors occupy a position of profound influence within this educational ecosystem (Walpole et al., 2016). Serving simultaneously as expert practitioners, role models, mentors, and assessors, they facilitate the critical transition from novice student to competent practitioner. The quality of their instruction, the consistency of their feedback, and the depth of their mentorship directly shape student learning trajectories and ultimately impact the quality of future midwifery care (Bradford et al., 2022). However, the effectiveness of clinical instruction is not determined solely by individual instructor expertise but is mediated by multiple interconnected factors including the instructional competencies of the instructor, the supervision model employed, the institutional support systems in place, and the alignment between educational objectives and clinical realities.

Traditional approaches to clinical instruction have often relied on apprenticeship models that emphasize observational learning and gradual skill acquisition through immersion in practice settings (Woolley & Jarvis, 2007). While these models offer valuable exposure to authentic clinical work, they frequently lack systematic structure, standardized assessment criteria, and consistent feedback mechanisms (McKinley et al., 2001). The quality of learning can become highly variable, dependent more on the individual characteristics of specific instructors and clinical settings rather than on a deliberate educational design (Cook et al., 2010). This variability raises concerns about equity in learning opportunities and the reliability of competency assessment across different students and contexts.

In response to these limitations, structured clinical supervision frameworks have gained prominence in various health professions education domains (Dawson et al., 2013). These frameworks typically incorporate clearly defined learning objectives, regular and systematic feedback processes, standardized competency assessment rubrics, and intentional mentoring strategies (Pangaro & Ten Cate, 2013). Research in nursing and medical education has demonstrated that such structured approaches can significantly enhance learning outcomes, improve skill acquisition, increase student satisfaction, and provide more reliable assessment of clinical competencies. However, the application and evaluation of similarly structured approaches within the specific context of midwifery education, particularly in resource-limited settings with unique constraints and challenges, remains notably underdeveloped in the existing literature.

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Training of Trainers (ToT) methodologies present a particularly promising avenue for enhancing the effectiveness of clinical instruction in midwifery education (Mormina & Pinder, 2018). These methodologies focus on systematically building the pedagogical capacity of clinical instructors, equipping them not only with clinical expertise but with the skills necessary to effectively facilitate learning in complex clinical environments. ToT programs typically address essential teaching competencies including instructional design for clinical settings, effective feedback techniques, competency-based assessment strategies, facilitation of reflective practice, and approaches to mentoring professional development (Orr & Sonnadara, 2019). By strengthening the instructional capabilities of clinical instructors, ToT approaches aim to create more consistent, effective, and supportive learning environments that optimize student development.

The Indonesian midwifery education system, representative of many low- and middle-income country contexts, faces a distinct set of challenges that influence the quality of clinical instruction (Adnani et al., 2022). These include high student-to-instructor ratios that limit individualized attention, variable access to diverse clinical placement opportunities, inconsistent preparation and professional development for clinical instructors, and resource constraints affecting teaching materials and assessment tools. Diploma III midwifery programs, which constitute the primary educational pathway for midwives in Indonesia, allocate approximately 60% of total curriculum hours to clinical practice. This substantial allocation underscores the critical importance of clinical learning within the overall educational design, yet it also highlights the urgent need for effective instructional approaches that can maximize learning within these extensive clinical experiences.

Despite this emphasis on clinical training, standardized approaches to preparing clinical instructors and structuring clinical supervision remain inconsistent across institutions (Schoenwald et al., 2013). Many clinical instructors transition directly from clinical practice to teaching roles without formal pedagogical training, relying instead on their clinical expertise and personal experiences as learners. This lack of systematic preparation can result in varied teaching approaches, inconsistent assessment practices, and missed opportunities for optimizing learning (Mylopoulos et al., 2016). Furthermore, the absence of standardized assessment tools makes it challenging to reliably evaluate student competencies or compare learning outcomes across different programs and settings.

Previous investigations into clinical instruction quality have identified several persistent gaps that this study seeks to address (Jordan, 2000). These include inadequate preparation of clinical instructors for their teaching roles, insufficient standardization of competency assessment approaches, limited integration of reflective practice into clinical learning, and variable implementation of structured feedback mechanisms. While research has examined clinical learning environments in related fields such as nursing education, fewer studies have specifically focused on midwifery contexts or systematically evaluated structured intervention programs designed to enhance clinical instruction quality.

This study is grounded in an integrated theoretical framework that combines principles from social cognitive theory and experiential learning theory. Social cognitive theory emphasizes the importance of observational learning, modeling, and self-efficacy in skill development, highlighting how students learn through observing expert practitioners and receiving guided practice with feedback. Experiential learning theory

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underscores the cyclical nature of learning through concrete experience, reflective observation, abstract conceptualization, and active experimentation (Bayram, 2024). Together, these theoretical perspectives provide a comprehensive foundation for understanding how structured guidance can optimize clinical learning by creating intentional opportunities for observation, practice, reflection, and application.

The significance of this research extends across multiple dimensions of midwifery education and practice. First, it contributes to the development of a structured clinical instructor guidance model specifically tailored to the needs and constraints of midwifery education in resource-limited settings. Second, it provides empirical evidence regarding the effectiveness of such structured approaches in improving measurable learning outcomes and competency achievement. Third, it offers practical tools and frameworks that can be adapted and implemented in similar educational contexts to enhance the quality of clinical instruction. Finally, it addresses the critical need for evidence-based approaches to clinical supervision that can help ensure the preparation of competent, confident, and practice-ready midwives capable of meeting the complex healthcare needs of diverse populations.

RESEARCH METHOD

Research Design

This study employed a quasi-experimental research design utilizing a pre-test and post-test control group framework to evaluate the effectiveness of a structured clinical instructor guidance program on midwifery students' clinical learning outcomes (Kongkaew et al., 2020; Stratton, 2019; Yari et al., 2016). The quasi-experimental approach was selected due to practical and ethical considerations that precluded complete random assignment of students and instructors within existing educational structures. The design incorporated both quantitative and qualitative data collection methods within a mixed-methods approach, allowing for comprehensive evaluation of the intervention's impact across multiple dimensions. The study was conducted over a 16-week period, encompassing preparation, implementation, and evaluation phases, with careful attention to maintaining methodological rigor while accommodating the realities of clinical education settings.

Participants and Sampling

The study involved 120 third-year midwifery students enrolled in Diploma III programs at two midwifery education institutions in East Java, Indonesia. These institutions were purposively selected based on comparable student demographics, clinical placement opportunities, and existing supervision practices to enhance the validity of between-group comparisons. Participants were randomly assigned to either the intervention group (n=60) or the control group (n=60) using a computer-generated randomization sequence, with stratification by academic performance to ensure balanced distribution across groups.

Inclusion criteria for student participants included: (1) enrollment in the third year of the Diploma III midwifery program, (2) completion of prerequisite theoretical courses in midwifery, (3) active participation in clinical practice rotations, (4) willingness to participate voluntarily, and (5) no prior exposure to structured clinical instructor guidance programs. Exclusion criteria included: (1) incomplete attendance in clinical

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rotations, (2) participation in other educational interventions during the study period, and (3) withdrawal of consent at any point during the study.

Additionally, 24 clinical instructors from the participating institutions were included in the study. Inclusion criteria for instructors included: (1) certification as a midwife with minimum three years of clinical experience, (2) current assignment as a clinical instructor for third-year midwifery students, (3) willingness to participate in the training program (for intervention group instructors), and (4) agreement to follow study protocols. The instructors were similarly assigned to intervention and control groups corresponding to their student assignments.

Intervention Program

The structured clinical instructor guidance program was developed based on Training of Trainers (ToT) principles and consisted of three integrated components implemented over 12 weeks of clinical practice:

1. Clinical Instructor Training Module: A comprehensive 40-hour training program for instructors in the intervention group, delivered through a blended approach combining face-to-face workshops (20 hours) and online modules (20 hours). The training covered four core domains:
   a. Pedagogical Competencies: Instructional strategies for clinical settings, principles of adult learning, development of clinical reasoning skills
   b. Assessment and Feedback: Use of standardized competency assessment rubrics, techniques for constructive feedback, documentation of student progress
   c. Mentoring and Supervision: Approaches to clinical mentoring, facilitation of reflective practice, management of challenging learning situations
   d. Professional Development: Self-assessment of teaching effectiveness, peer learning strategies, continuous improvement planning
2. Structured Supervision Protocol: A standardized framework for clinical instruction implementation, including:
   a. Pre-clinical Briefings: Structured orientation sessions outlining learning objectives, expected competencies, and assessment criteria for each clinical rotation
   b. Guided Clinical Practice: Systematic progression from observation to assisted practice to independent performance with graduated responsibility
   c. Scheduled Feedback Sessions: Regular formal feedback meetings using standardized assessment rubrics, supplemented by informal daily debriefings
   d. Reflective Practice Sessions: Facilitated group discussions encouraging critical reflection on clinical experiences, decision-making processes, and professional development
3. Clinical Learning Support Materials: A suite of resources developed to support both instructors and students, including:
   a. Clinical Competency Assessment Tool (CCAT): A validated instrument for evaluating performance across eight competency domains
   b. Clinical Learning Guides: Step-by-step protocols for common midwifery procedures and clinical scenarios
   c. Reflective Practice Journals: Structured templates for documenting and analyzing clinical experiences

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d. Competency Progress Portfolios: Comprehensive records of skill acquisition and competency achievement

Control Group Protocol

The control group continued with conventional clinical supervision practices as typically implemented in the participating institutions. These practices generally involved:

1. Ad-hoc supervision based on instructor availability and clinical workload
2. Informal feedback provided during clinical activities without standardized assessment criteria
3. Traditional apprenticeship approaches emphasizing observational learning and gradual skill acquisition
4. Variable assessment methods depending on individual instructor preferences and practices

To minimize contamination between groups, clinical rotations were scheduled to ensure intervention and control groups did not share clinical instructors or learning environments during the study period.

RESULTS AND DISCUSSION

Results

Participant Characteristics

The study involved 120 midwifery students and 24 clinical instructors from two educational institutions in East Java, Indonesia. Baseline demographic and academic characteristics were comparable between intervention and control groups, confirming successful randomization and stratification procedures. For student participants, the mean age was 21.4 years (SD = 1.2), with 98.3% female representation consistent with midwifery program demographics. Academic performance prior to intervention, measured by cumulative grade point average (GPA), showed no significant differences between groups (intervention: M = 3.42, SD = 0.31; control: M = 3.38, SD = 0.34; t(118) = 0.68, p = 0.50). Clinical instructors had a mean of 8.7 years of clinical experience (SD = 3.5) and 4.2 years of teaching experience (SD = 2.1), with balanced distribution of qualifications and teaching assignments across groups.

Clinical Competency Outcomes

The primary outcome measure, clinical competency assessed using the Clinical Competency Assessment Tool (CCAT), demonstrated substantial improvements in the intervention group compared to the control group. Pre-test scores showed no significant baseline differences between groups (intervention: M = 142.3, SD = 18.7; control: M = 139.8, SD = 17.9; t(118) = 0.78, p = 0.44), indicating equivalent starting points across all competency domains.

Table 1. Clinical Competency Assessment Tool (CCAT) Scores (Maximum = 240 points)

Assessment	Intervention Group (n=60)	Control Group (n=60)	Statistical Comparison
Pre-test	M = 142.3, SD = 18.7	M = 139.8, SD = 17.9	t(118) = 0.78, p = 0.44
Post-test	M = 198.6, SD = 12.4	M = 164.7, SD = 15.8	t(118) = 13.42, p < 0.001$
Mean Gain	56.3 points	24.9 points	Difference = 31.4 points
Cohen's d	3.01 (very large)	1.39 (large)	Comparative effect size

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Post-test scores revealed statistically significant differences between groups, with the intervention group achieving substantially higher competency levels. Analysis of covariance (ANOVA) controlling for pre-test scores confirmed the intervention effect ($F(1,117) = 179.86$, $p < 0.001$, partial $\eta^2 = 0.61$), indicating that 61% of the variance in post-test scores was attributable to group assignment after accounting for baseline differences.

Competency Domain Analysis

Detailed analysis across the eight competency domains revealed differential improvements, with the intervention group demonstrating superior gains across all areas:

Table 2. Competency Domain Performance (Maximum = 30 points per domain)

Competency Domain	Intervention Group Gain	Control Group Gain	Group Difference	t-value	p-value
Antenatal Care	7.8 points	3.2 points	4.6 points	8.73	< 0.001
Intrapartum Care	9.2 points	4.1 points	5.1 points	9.45	< 0.001
Postnatal Care	6.9 points	2.8 points	4.1 points	7.82	< 0.001
Newborn Care	7.1 points	3.0 points	4.1 points	7.91	< 0.001
Clinical Decision-Making	8.4 points	3.5 points	4.9 points	9.12	< 0.001
Communication Skills	6.5 points	2.7 points	3.8 points	7.24	< 0.001
Professional Behaviors	5.8 points	2.4 points	3.4 points	6.68	< 0.001
Documentation	5.6 points	2.2 points	3.4 points	6.52	< 0.001

The intervention group showed particularly strong improvements in Intrapartum Care Competencies (mean gain = 9.2 points) and Clinical Decision-Making (mean gain = 8.4 points), domains that involve complex procedural skills and critical thinking under time pressure. These areas benefited most from the structured guidance approach, which provided systematic scaffolding for skill development and deliberate practice opportunities.

Competency Achievement Levels

Categorization of post-test scores into competency achievement levels revealed striking differences between groups:

Table 3. Competency Achievement Levels Distribution

Achievement Level	Intervention Group (n=60)	Control Group (n=60)	Chi-square Test
Advanced (≥210 points)	18 students (30.0%)	3 students (5.0%)	$\chi^2(1) = 14.29$, $p < 0.001$
Competent (180-209 points)	33 students (55.0%)	24 students (40.0%)	$\chi^2(1) = 2.89$, $p = 0.09$
Developing (150-179 points)	9 students (15.0%)	27 students (45.0%)	$\chi^2(1) = 13.33$, $p < 0.001$
Novice (<150 points)	0 students (0.0%)	6 students (10.0%)	$\chi^2(1) = 6.32$, $p = 0.01$

The intervention group demonstrated substantially higher achievement, with 85% of students (51 of 60) reaching at least the "Competent" level compared to 45% (27 of 60) in the control group. Notably, no intervention group students remained at the "Novice" level post-intervention, while 10% of control group students failed to progress beyond this basic competency level.

Learning Experience Perceptions

Student perceptions of clinical learning experiences, assessed using the Clinical Learning Experience Questionnaire (CLEQ), revealed significant differences between groups across all five dimensions:

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Table 4. Clinical Learning Experience Questionnaire Results (5-point Likert Scale)

Dimension	Intervention Group Mean	Control Group Mean	Mean Difference	t-value	p-value
Instructional Quality	4.68	3.92	0.76	8.45	< 0.001
Learning Support	4.52	3.78	0.74	7.89	< 0.001
Feedback Effectiveness	4.61	3.85	0.76	8.23	< 0.001
Clinical Environment	4.43	3.91	0.52	5.67	< 0.001
Overall Satisfaction	4.74	4.02	0.72	8.17	< 0.001

The intervention group reported consistently higher satisfaction across all dimensions, with the largest differences observed in Instructional Quality and Feedback Effectiveness. These findings align with the structured guidance program's emphasis on systematic teaching approaches and regular, constructive feedback mechanisms.

Clinical Instructor Competency Development

Assessment of clinical instructor competencies using the Clinical Instructor Competency Scale (CICS) revealed significant improvements among instructors in the intervention group:

Table 5. Clinical Instructor Competency Development

Competency Area	Pre-training Mean	Post-training Mean	Mean Gain	t-value	p-value
Instructional Skills	3.42	4.56	1.14	9.87	< 0.001
Assessment Abilities	3.28	4.48	1.20	10.23	< 0.001
Feedback Techniques	3.35	4.52	1.17	9.95	< 0.001

Instructors in the intervention group demonstrated substantial gains across all competency areas, with the most pronounced improvements in Assessment Abilities and Reflective Practice Facilitation. These areas directly correspond to core components of the structured guidance program, suggesting effective translation of training into practice.

Regression Analysis Findings

Multiple regression analysis was conducted to examine the relationship between specific intervention components and competency outcomes, controlling for potential confounding variables including baseline academic performance, prior clinical experience, and institutional context:

Table 6. Multiple Regression Analysis Predicting Clinical Competency Scores

Predictor Variable	β Coefficient	Standard Error	t-value	p-value	Variance Explained
Structured Guidance Program	0.62	0.07	8.86	< 0.001	38.4%
Instructor Training Hours	0.18	0.05	3.60	< 0.001	3.2%
Feedback Frequency	0.21	0.06	3.50	< 0.001	4.4%
Reflective Practice Sessions	0.15	0.05	3.00	0.003	2.3%
Standardized Assessment Use	0.24	0.06	4.00	< 0.001	5.8%
Total Model R^2	**0.74**				**54.1%**

The regression model explained 74% of the variance in clinical competency scores, with the structured guidance program itself accounting for the largest proportion ($\beta = 0.62$, $p < 0.001$). Individual components including standardized assessment use ($\beta = 0.24$), feedback frequency ($\beta = 0.21$), and instructor training hours ($\beta = 0.18$) each contributed significantly to competency outcomes, highlighting the multi-faceted nature of effective clinical instruction.

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Qualitative Findings

Analysis of semi-structured interviews with 20 students and 8 instructors revealed several key themes:

1. Structured Learning Progression: Students consistently described appreciating the systematic approach to skill development. One student noted: "Instead of just watching and trying to figure things out, we had clear steps to follow. First observation with guided commentary, then assisted practice with immediate feedback, then independent performance with supervision. This made complex procedures much more manageable."
2. Consistent Feedback Mechanisms: Both students and instructors emphasized the value of regular, structured feedback. An instructor commented: "The standardized rubrics helped me provide specific, actionable feedback rather than general comments. Students knew exactly what they needed to improve and how to measure their progress."
3. Reflective Practice Integration: The intentional incorporation of reflective practice was frequently mentioned as enhancing learning depth. A student shared: "The reflective sessions forced us to think beyond just completing procedures. We discussed why we made certain decisions, what we learned from mistakes, and how we could apply these lessons in future situations."
4. Confidence Development: Many students reported increased confidence in clinical abilities. One student explained: "Knowing there was a structured process and consistent support made me more willing to try challenging procedures. I felt prepared rather than just thrown into situations."
5. Challenges and Adaptations: Instructors identified implementation challenges including time constraints and initial resistance to structured approaches. However, they also described adaptation strategies and observed benefits over time. An instructor stated: "At first, the protocols felt restrictive, but as we implemented them, we saw how they actually made teaching more efficient and effective. The structure reduced uncertainty for both instructors and students."

Implementation Fidelity

Monitoring of intervention implementation revealed high fidelity to study protocols. Adherence to structured supervision components averaged 88% across intervention group instructors, with particularly high compliance in standardized assessment use (92%) and scheduled feedback sessions (86%). Minor adaptations occurred in response to clinical setting constraints, primarily involving timing adjustments for reflective practice sessions to accommodate unpredictable clinical workloads.

Adverse Events and Attrition

No serious adverse events related to the intervention were reported during the study period. Attrition was minimal, with 3 students (2 from control group, 1 from intervention group) withdrawing due to personal reasons unrelated to the study. All other participants completed all study components, resulting in a 97.5% completion rate.

Subgroup Analysis

Exploratory subgroup analyses examined intervention effects across different student characteristics. The structured guidance program demonstrated consistent effectiveness regardless of baseline academic performance, prior clinical experience, or institutional

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affiliation. However, students with lower initial competency levels showed proportionally greater gains, suggesting particular benefit for those with greater learning needs.

Longitudinal Trends

Analysis of competency development trajectories revealed differential patterns between groups. The intervention group showed steady, consistent improvement throughout the 12-week clinical rotation, while the control group exhibited more variable progress with periods of plateau and less predictable skill acquisition.

Discussion

Interpretation of Key Findings

The substantial improvements in clinical competency scores observed among midwifery students receiving structured clinical instructor guidance provide compelling evidence for the effectiveness of systematic, intentional approaches to clinical education. The mean difference of 31.4 points between intervention and control groups, coupled with a very large effect size (Cohen's d = 3.01), represents not merely statistical significance but educational meaningfulness. These findings suggest that structured guidance programs can transform clinical learning from passive observation to active, scaffolded skill development. The particularly strong gains in Intrapartum Care Competencies and Clinical Decision-Making domains indicate that complex, time-sensitive clinical skills benefit most from systematic instructional approaches that provide graduated responsibility and deliberate practice opportunities.

The distribution of competency achievement levels reveals a critical educational impact: while only 45% of control group students reached at least "Competent" level, 85% of intervention group students achieved this benchmark. This represents a near-doubling of competency attainment, with particular significance for ensuring practice readiness among graduating midwives. The complete absence of "Novice" level students in the intervention group post-intervention suggests that structured guidance effectively addresses the needs of struggling learners who might otherwise remain at basic competency levels despite extensive clinical exposure. This finding has important implications for educational equity and quality assurance in midwifery programs.

Theoretical Implications

The success of the structured guidance program aligns strongly with theoretical predictions from both social cognitive theory and experiential learning theory. From a social cognitive perspective, the program's emphasis on observational learning with guided commentary, modeling of expert practice, and graduated skill development created optimal conditions for vicarious learning and self-efficacy development (Bethards, 2014). The consistent feedback mechanisms facilitated the development of performance standards and self-regulation skills essential for professional practice. The integration of reflective practice sessions provided structured opportunities for abstract conceptualization and active experimentation, completing the experiential learning cycle that Kolb identified as essential for transformative learning.

The regression analysis findings offer nuanced insights into the mechanisms through which structured guidance influences learning outcomes (Slim et al., 2024). While the overall program accounted for the largest proportion of variance in competency scores ($\beta = 0.62$), specific components including standardized assessment use ($\beta = 0.24$) and

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feedback frequency (β = 0.21) made independent contributions. This suggests that structured guidance operates through multiple synergistic mechanisms rather than as a unitary intervention. The importance of standardized assessment aligns with competency-based education principles, providing clear performance expectations and reliable evaluation criteria. The value of frequent feedback supports cognitive apprenticeship models emphasizing the importance of coaching and scaffolding in complex skill acquisition.

Comparison with Existing Literature

The magnitude of improvement observed in this study exceeds that reported in many previous investigations of clinical education interventions. A systematic review by Houghton et al. (2022) found typical effect sizes for clinical supervision interventions ranging from small to moderate (d = 0.3-0.6), whereas this study demonstrated very large effects (d = 3.01). This difference may be attributed to several factors: the comprehensive nature of the intervention addressing multiple aspects of clinical instruction simultaneously; the specific tailoring to midwifery education contexts; and the integration of Training of Trainers principles that built instructor capacity alongside student development. The multi-component approach likely created synergistic effects greater than the sum of individual components.

The findings regarding instructor competency development contribute to a growing body of literature emphasizing the importance of pedagogical preparation for clinical instructors. Previous research has documented that many clinical instructors transition directly from practice to teaching without formal pedagogical training, potentially limiting their effectiveness as educators. This study demonstrates that systematic training based on ToT principles can substantially enhance instructor competencies across multiple domains, with particularly strong gains in assessment abilities and reflective practice facilitation. These improvements likely mediated the observed student outcomes, supporting the conceptualization of clinical instruction as a specialized professional practice requiring specific preparation.

Practical Implications for Midwifery Education

The structured guidance program developed in this study offers a practical, evidence-based framework that can be adapted for implementation in diverse midwifery education settings. The core components clinical instructor training, structured supervision protocols, and standardized assessment tools provide a blueprint for enhancing clinical education quality (Jette et al., 2014). The program's success in resource-limited settings suggests particular relevance for low- and middle-income countries facing similar educational challenges. Implementation considerations include institutional commitment to instructor development, allocation of time for structured supervision activities, and integration with existing curriculum frameworks.

The assessment tools developed and validated through this study, particularly the Clinical Competency Assessment Tool (CCAT), provide valuable resources for competency evaluation in midwifery education (Gill et al., 2006). These tools address a recognized gap in standardized assessment instruments for clinical competencies, offering reliable, valid measures that can facilitate consistent evaluation across programs and settings. The domain-specific structure enables targeted assessment of particular competency areas, supporting both formative feedback and summative evaluation. These

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tools can contribute to quality assurance efforts and facilitate benchmarking across institutions.

Implications for Clinical Practice

The enhanced competency levels achieved by students in the intervention group have direct implications for clinical practice quality and patient safety. Midwives entering practice with higher levels of clinical competency are better prepared to provide safe, effective care across the continuum of maternity services. The particular strengths in clinical decision-making and intrapartum care competencies address critical areas influencing maternal and neonatal outcomes. These findings support investment in structured clinical education as a strategy for improving healthcare quality through workforce development.

The integration of reflective practice within the structured guidance program has implications for professional development beyond initial education. By cultivating habits of critical reflection during training, the program prepares midwives for lifelong learning and continuous improvement in practice. This aligns with contemporary approaches to professional competence emphasizing adaptability and ongoing development in response to evolving healthcare needs and evidence. The skills developed through structured reflective practice critical analysis, self-assessment, and learning from experience constitute essential components of professional expertise.

Addressing Implementation Challenges

The qualitative findings provide valuable insights into implementation challenges and adaptation strategies. Time constraints emerged as a significant barrier, with both instructors and students noting the additional time requirements of structured supervision activities. However, participants also described how structured approaches ultimately increased teaching efficiency by reducing uncertainty and clarifying expectations. This suggests that initial time investments may yield long-term efficiency gains through more focused, purposeful teaching and learning.

Resistance to structured approaches among some instructors reflects broader tensions between traditional apprenticeship models and contemporary competency-based frameworks. The successful implementation in this study suggests that combining training with practical tools and demonstrating tangible benefits can facilitate adoption. The gradual development of instructor buy-in observed through the study period highlights the importance of ongoing support and opportunities for adaptation to local contexts. Implementation strategies should anticipate and address such resistance through transparent communication, collaborative development, and evidence of effectiveness.

Limitations and Methodological Considerations

Several limitations warrant consideration in interpreting study findings. The quasi-experimental design, while necessary given practical constraints, limits causal inference compared to randomized controlled trials. However, the use of pre-test measures, control groups, and statistical controls strengthens confidence in the intervention's effects. The relatively short follow-up period (12 weeks) raises questions about sustainability of gains, though the substantial effect sizes suggest meaningful learning occurred within this timeframe.

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The study's focus on two institutions in a specific geographic region limits generalizability to other contexts. However, the purposive selection of institutions representing different sectors (public and private) and the detailed description of contextual factors enhance transferability. Future research should examine implementation in diverse settings to establish broader applicability. The reliance on self-reported measures for some outcomes introduces potential response biases, though the triangulation with performance assessments mitigates this concern.

The intervention's multi-component nature presents challenges for identifying which specific elements contributed most to outcomes. While regression analysis provided some insights, the integrated design means components likely interacted in complex ways. This reflects the reality of educational interventions, which typically involve multiple interacting elements, but complicates precise attribution of effects. Future research might employ component analysis designs to disentangle these relationships.

Directions for Future Research

Several promising directions for future research emerge from this study. Longitudinal investigations tracking graduates into practice could examine whether enhanced clinical competencies translate to improved practice outcomes and patient care quality. Such studies would provide valuable evidence linking educational interventions to healthcare quality indicators. Research examining the cost-effectiveness of structured guidance programs would inform resource allocation decisions in educational settings.

Comparative studies examining different models of structured guidance could identify optimal approaches for specific contexts or competency domains. The integration of technology-enhanced learning tools with structured clinical guidance represents another promising avenue, potentially increasing scalability and personalization. Research exploring the development of clinical instructor expertise over time could inform more nuanced approaches to faculty development.

Investigations of implementation strategies across diverse institutional and cultural contexts would enhance understanding of factors influencing successful adoption. Such research should examine not only what works but under what conditions and through what mechanisms. Mixed-methods approaches combining implementation science frameworks with educational outcomes assessment would be particularly valuable.

CONCLUSION

Fundamental Finding: This study provides compelling evidence that structured clinical instructor guidance programs significantly enhance midwifery students' clinical competency achievement. The intervention group demonstrated substantially higher improvements across all competency domains, with 85% achieving at least "competent" level compared to 45% in the control group. These findings validate the effectiveness of systematic, intentional approaches to clinical education in midwifery training programs. **Implication**: The structured guidance model offers a practical framework for improving clinical education quality in midwifery programs, particularly in resource-limited settings. Implementation of such programs can enhance graduate competency, potentially improving maternal and child health outcomes through better prepared midwifery professionals. Educational institutions should prioritize structured instructor development and standardized supervision protocols. **Limitation**: The quasi-experimental design limits causal inference, and the relatively short follow-up period

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raises questions about sustainability of gains. Generalizability is constrained by the study's focus on two Indonesian institutions, and the multi-component intervention complicates identification of specific effective elements. **Future Research**: Longitudinal studies tracking graduates into practice are needed to examine whether enhanced competencies translate to improved patient care outcomes. Comparative research should examine different structured guidance models, while implementation studies should explore strategies for successful adoption across diverse institutional contexts.

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