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Comparative analysis of diploma and undergraduate midwifery students' perceptions of inclusive maternity care in Indonesia, 2024–2025

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Abstract

Background: Inclusive maternity care is critical for achieving equitable health outcomes, particularly in remote regions where access and cultural barriers persist. Midwifery education plays a central role in preparing students to deliver such care; however, comparative evidence between diploma and undergraduate programs in Indonesia remains limited.

Objectives: This study aimed to compare final-year diploma and undergraduate midwifery students' perceptions of inclusive maternity care in Southwest Papua.

Methods: A cross-sectional survey was conducted between June 2024 and January 2025 among 143 students (68 diploma, 75 undergraduate) selected via stratified random sampling. Data were collected using a validated questionnaire that assessed inclusivity across six domains: accessibility, equality and non-discrimination, respect and dignity in care, effective communication, patient-centred care, and cross-sectoral collaboration. Data were analyzed with independent t-tests and chi-square tests.

Results: Undergraduate students demonstrated significantly higher scores in understanding (mean 4.2 vs. 3.8, P=0.02) and preparedness (mean 4.0 vs. 3.7, P=0.04) for inclusive care, whereas diploma students more frequently reported limited hands-on training as a primary barrier (73.5% vs. 60.0%, P=0.04). No significant differences were observed across the six domains, though both groups identified communication -particularly with patients with disabilities- as the weakest aspect, with agreement rates of 62.7% (undergraduate) and 55.9% (diploma).

Conclusion: Educational level influences students' readiness but does not significantly affect overall attitudes toward inclusivity. Enhancing practical exposure, disability-sensitive communication skills, and institutional support is essential to translating inclusive maternity care policies into practice in Indonesia's underserved regions.

Keywords: Midwifery education, Culturally competent care, Maternal health services, Students, Health occupations.

Introduction

Inclusive maternity care, grounded in the principles of equity, respect, and accessibility, is widely recognized as a cornerstone of global strategies aimed at reducing maternal and neonatal morbidity and mortality. Despite substantial progress in maternal health indicators over the past two decades, disparities remain pronounced in low- and middle-income countries, where structural barriers such as limited infrastructure, geographical isolation, and shortages of skilled health professionals continue to restrict equitable access to quality care.[1,2] Remote and underserved populations bear a disproportionate burden of adverse maternal outcomes, underscoring the urgent need to strengthen inclusive and context-sensitive maternity services.[3,4]

Indonesia continues to experience high maternal

mortality relative to regional averages, with a Maternal Mortality Ratio (MMR) of 189 per 100,000 live births, exceeding the Southeast Asian average.[5,6] These national figures conceal profound regional disparities: in Papua and West Papua provinces, maternal mortality surpasses 565 per 100,000 live births, reflecting critical gaps in service delivery.[7-9] Contributing factors include limited skilled birth attendance, inadequate antenatal coverage, reliance on traditional birth attendants, and significant geographical barriers.[10,11] Addressing these inequities necessitates maternity care providers who possess not only robust clinical competence but also the ability to deliver inclusive, respectful, and culturally sensitive care in resource-constrained settings.[12,13]

Midwives constitute the backbone of Indonesia's maternal healthcare system, particularly in remote provinces such as Southwest Papua. Their preparedness to deliver inclusive maternity care is shaped substantially by educational background and clinical exposure.[14,15] In Indonesia, midwifery education is offered through two primary pathways: a three-year diploma program emphasizing practical skill development, and a four-year undergraduate program integrating broader theoretical knowledge with clinical training.[16,17] Variations in program length, curriculum content, and scope of clinical placements may influence students' perceptions of inclusivity in maternity care, ultimately affecting the quality of services provided in underserved regions.[18]

Although previous studies have examined midwifery education in Indonesia and identified general challenges in inclusivity and training,[19-21] limited evidence exists regarding how educational level specifically influences perceptions of inclusive maternity care. To date, no study has systematically compared diploma and undergraduate midwifery students' perspectives on this issue in Papua. Conducting such a comparative analysis is essential for identifying curriculum gaps, guiding targeted educational reforms, and ensuring that future midwives are adequately prepared to provide equitable care in settings characterized by extreme health disparities.[22]

Objectives

Accordingly, this study aims to compare the perceptions of diploma and undergraduate midwifery students regarding inclusive maternity care in remote areas of Southwest Papua. By examining educational determinants of students' perceptions, this study provides critical insights to inform curriculum development and strengthen the provision of inclusive maternal health services in Indonesia's most underserved regions.

Methods

Study design and participants

This cross-sectional study was conducted between June 2024 and January 2025 across several midwifery education institutions in Sorong, Southwest Papua, Indonesia. The study population comprised all final-year diploma (6th semester) and undergraduate (8th semester) midwifery students enrolled during the 2024–2025 academic year (N=240). The minimum required sample size was calculated using Slovin's formula:

$n=N/(1+Ne^2)$

where N=240 and margin of error (e)=0.05, yielding:

$n=240/(1+240\times0.05^2)=240/(1+0.6)=240/1.6=150$

respondents.

Stratified random sampling was applied according to educational level and clinical placement area. After excluding incomplete questionnaires, 143 valid responses were retained (Diploma=68, Undergraduate=75), corresponding to a response rate of 95.3%. Strata were defined by educational level (diploma vs. undergraduate) and clinical placement location (border, remote, and outermost areas), with proportional allocation to ensure representativeness. Random number generators were used to select participants within each stratum.

Inclusion criteria were: 1) enrollment as a final-year midwifery student, 2) completion of maternity care training during clinical placements in border, remote, or outermost areas, and 3) provision of written informed consent. Exclusion criteria included incomplete questionnaire responses or withdrawal from the study.

Data collection instruments

Data were collected using a structured, self-administered questionnaire developed by the research team based on established models of inclusive maternity care. The instrument assessed six domains: accessibility, equality and non-discrimination, respect and dignity in care, effective communication, patient-centred care, and cross-sectoral collaboration. Items were rated on a 5-point Likert scale (1=Strongly disagree to 5=Strongly agree). Construct validity was confirmed using Pearson's product–moment correlation (all items r>0.3), and reliability testing yielded a Cronbach's alpha of 0.78, indicating acceptable internal consistency. A pilot test involving 30 final-year students confirmed the clarity and comprehensibility of the questionnaire prior to full-scale administration.

Procedures

Questionnaires were distributed in printed form to eligible students during scheduled academic sessions. Researchers were present to provide clarification when needed. Completed questionnaires were collected

immediately to minimize missing data and ensure high response quality.

Ethical considerations

Ethical approval was obtained from the Health Research Ethics Committee, Polytechnic of Health, Ministry of Health Sorong (Approval No. DM.01.03/4.1/1358/2024). Written informed consent was obtained from all participants. Participation was voluntary, and anonymity was maintained by assigning unique codes to each response.

Data analysis

Data were analyzed using Jamovi version 2.6.26. Descriptive statistics (frequencies, percentages, means, and standard deviations) summarized demographic characteristics and perception scores. Independent t-tests and chi-square tests were conducted to compare perceptions between diploma and undergraduate students across multiple variables, including clinical placement factors (location, duration, type of facility, and frequency of patient interaction). Statistical significance was set at $P<0.05$.

Results

Demographic characteristics of participants

A total of 143 final-year midwifery students completed the survey, yielding a response rate of 95.3%. Of these, 75 students (52.4%) were enrolled in undergraduate programs, and 68 students (47.6%) were enrolled in diploma programs. Table-1 summarizes participants' demographic characteristics, including details of clinical placements and the frequency of patient interactions in remote areas.

Table-1. Demographic and clinical placement characteristics of undergraduate and diploma midwifery students (N=143)

Characteristics		Undergraduate (n=75)	Diploma (n=68)	Total (n=143)	P value
Age, years, Mean ± SD		21.5 ± 1.0	21.1 ± 1.2	21.3 ± 1.1	0.2[a]
Semester		8 (100%)	6 (100%)	–	–
Received training in Inclusive Maternity Care		62 (82.7%)	46 (67.6%)	108 (75.5%)	0.04*[b]
Clinical placement location	Border area	27 (36.0%)	20 (29.4%)	47 (32.9%)	0.52[b]
	Remote area	34 (45.3%)	31 (45.6%)	65 (45.5%)	
	Outermost area	14 (18.7%)	17 (25.0%)	31 (21.6%)	
Clinical placement duration	< 1 month	20 (26.7%)	24 (35.3%)	44 (30.8%)	0.44[b]
	1–3 months	37 (49.3%)	30 (44.1%)	67 (46.9%)	
	> 3 months	18 (24.0%)	14 (20.6%)	32 (22.3%)	
Healthcare facility type	Community health centre	31 (41.3%)	29 (42.6%)	60 (42.0%)	0.78[b]
	Government hospital	28 (37.3%)	22 (32.4%)	50 (35.0%)	
	Private hospital	10 (13.3%)	12 (17.6%)	22 (15.3%)	
	Independent clinic	6 (8.1%)	5 (7.4%)	11 (7.7%)	
Frequency of interaction with patients with disabilities	Frequent	19 (25.3%)	12 (17.6%)	31 (21.7%)	0.62[b]
	Occasional	43 (57.3%)	40 (58.8%)	83 (58.0%)	
	Never	13 (17.4%)	16 (23.6%)	29 (20.3%)	

SD, Standard Deviation. [a]Independent *t-test*; [b]Chi-square (χ^2) test. *P < 0.05 considered statistically significant.

Comparative perceptions of inclusive maternity care

Table-2 presents the differences in perceptions of inclusive maternity care between undergraduate and diploma students. Undergraduate students demonstrated significantly higher mean scores for understanding inclusive maternity care (4.2±0.6 vs. 3.8±0.7, P=0.02) and preparedness to provide services (4.0±0.8 vs. 3.7±0.9, P=0.04). In contrast, diploma students more frequently reported challenges related to limited hands-on training (73.5% vs. 60.0%, P=0.04). No statistically significant differences were observed between the two groups regarding perceived challenges associated with limited healthcare facilities (P=0.41), personnel shortages (P=0.22), or willingness to work in remote areas (P=0.31).

Perceptions across six dimensions of inclusive maternity care

Table-3 presents the comparative distribution of perceptions across the six core domains of inclusive maternity care. Both groups exhibited generally positive attitudes toward accessibility, equality and non-discrimination, and respect and dignity in care, with agreement levels exceeding 70% in most domains. The effective communication domain received the lowest agreement rates among both groups (undergraduate:

62.7%; diploma: 55.9%), highlighting communication with patients with disabilities as a key challenge. Although undergraduate students consistently reported slightly higher agreement levels across all domains, chi-square tests indicated no statistically significant differences between groups for any of the six domains (P>0.05)

Table-2. comparative analysis of perceptions of inclusive maternity care between undergraduate and diploma students (N=143)

Indicator	**Undergraduate** (n=75) Mean ± SD / n(%)	**Diploma** (n=68) Mean ± SD / n(%)	P value
Understanding of inclusive maternity care	4.2 ± 0.6	3.8 ± 0.7	0.02*[a]
Preparedness to provide services	4.0 ± 0.8	3.7 ± 0.9	0.04*[a]
Main challenge: Lack of hands-on training	45 (60.0%)	50 (73.5%)	0.04*[b]
Main challenge: Limited healthcare facilities	56 (74.7%)	48 (70.6%)	0.41[b]
Main challenge: Shortage of personnel	39 (52.0%)	42 (61.8%)	0.22[b]
Willingness to work in remote areas	32 (42.7%)	25 (36.8%)	0.31[b]

[a]Independent *t-test*; [b]Chi-square (χ^2) test. *P < 0.05 considered statistically significant.

Table-3. Distribution of midwifery students' perceptions across six domains of inclusive maternity care in southwest Papua (N=143)

Perception Aspect	**Undergraduate, n** (% Agree/Strongly Agree)	**Diploma, n** (% Agree/Strongly Agree)	**Total, n** (% Agree/Strongly Agree)	P value
Accessibility	62 (82.6%)	50 (73.6%)	112 (78.3%)	0.18
Equality and Non-Discrimination	60 (80.0%)	48 (70.6%)	108 (75.6%)	0.21
Respect and Dignity	66 (88.0%)	52 (76.5%)	118 (82.6%)	0.09
Effective Communication	47 (62.7%)	38 (55.9%)	85 (59.4%)	0.39
Evidence-Based and Patient-Centred Care	60 (80.0%)	45 (66.2%)	105 (73.4%)	0.08
Cross-Sector Collaboration	56 (74.7%)	44 (64.7%)	100 (69.9%)	0.20

Chi-square (χ^2) test used to compare proportions between groups. P < 0.05 considered statistically significant.

Discussion

This comparative study examined the influence of educational level on midwifery students' perceptions of inclusive maternity care in one of Indonesia's most underserved regions, Southwest Papua. Both diploma and undergraduate students expressed broadly positive attitudes toward the principles of accessibility, equality, and respectful maternity care. Notably, undergraduate students scored significantly higher in understanding and preparedness for inclusive care. This finding likely reflects the longer and more comprehensive structure of undergraduate programs, which integrate theoretical coursework with extended clinical immersion.[23,24] Exposure to diverse patient experiences and interdisciplinary learning opportunities appears to foster greater readiness for inclusive practice.

Despite these differences, both groups demonstrated similar perceptions across six core domains -accessibility, equality, respect, communication, evidence-based care, and collaboration- with no statistically significant variation. This finding suggests that while undergraduate students may exhibit greater self-confidence and theoretical readiness, both educational tracks cultivate comparable ethical foundations toward inclusivity. Comparable outcomes have been observed in studies of equity-oriented training among nursing and midwifery students in Southeast Asia.[22,25,26]

Diploma students reported greater challenges in obtaining hands-on experience, a limitation commonly associated with shorter program durations and restricted clinical exposure. Research indicates that reduced placement time can constrain students' ability to translate inclusive principles into practice.[27] Globally, midwifery students frequently report feeling unprepared to provide equitable care for women with disabilities, with up to 90% indicating a need for additional training or mentorship to develop these competencies.[28,29] These findings reinforce the notion that inclusivity requires experiential learning - engaging directly with diverse patient contexts-rather than solely didactic instruction.[30]

Communication emerged as a consistent challenge for both groups, particularly in interactions with patients with disabilities. Although differences between groups were not statistically significant, the lower scores in this domain

highlight a gap in disability-sensitive communication training. Studies from Europe and Africa have documented similar challenges, noting that students often struggle to adapt communication strategies for women with sensory, hearing, or cognitive impairments.[31,32] In Indonesia, such challenges are compounded by cultural and linguistic diversity and the limited availability of assistive communication tools in rural health facilities. Encouragingly, evidence indicates that structured disability-awareness modules can enhance confidence, empathy, and self-efficacy among health professional students.[33-35]

From an educational perspective, these findings underscore the need to systematically embed inclusive care within midwifery curricula. Simulation-based modules, role-play exercises, and community partnerships with disability advocacy organizations can help translate inclusive principles into practice.[36-38] Aligning standards across diploma and undergraduate programs is also critical to ensure uniform competency across Indonesia's midwifery workforce and prevent educational disparities from translating into inequitable care in underserved regions.[39,40]

Inclusive maternity care also depends on enabling learning environments. Without accessible infrastructure, communication aids, and institutional support, even well-prepared students may struggle to implement inclusive practices effectively. Global evidence emphasizes that policy-level commitments and investment in disability-friendly clinical settings are essential for achieving equity in maternity care.[41-43] Accordingly, government and professional bodies should regard inclusive education and service delivery as mutually reinforcing priorities.[44]

This study has some limitations. Its cross-sectional design precludes causal inference, and its focus on students in Southwest Papua may limit generalizability to midwifery education nationwide. Nevertheless, the findings provide valuable evidence on how educational structures influence inclusivity in regions experiencing severe healthcare inequities. Future research should employ longitudinal and mixed-methods designs to track the development of inclusivity competencies throughout academic and early professional stages. Experimental interventions, such as piloting disability-awareness modules or extended rural placements, could generate actionable evidence to inform national midwifery education reform and policy.

Conclusion

Undergraduate students demonstrated significantly higher understanding and preparedness for inclusive maternity care than diploma students, reflecting the benefits of longer, integrated training. However, both groups shared similar perceptions across core domains, suggesting that inclusive values are cultivated consistently. Persistent gaps in communication -particularly with patients with disabilities- highlight a critical area for structured, experiential learning within curricula. Strengthening practical exposure, disability-awareness modules, and institutional support is essential to translating inclusivity from theory into routine midwifery practice, especially in underserved regions such as Southwest Papua.

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Competing interests

The authors declare that they have no competing interests.

Abbreviations

Standard Deviation: SD; Maternal Mortality Ratio: MMR.

Authors' contributions

R.A conceptualized the study, developed the research framework, and served as the primary investigator responsible for manuscript preparation and correspondence. L.A.S contributed to the study design, supervised the methodological process, and provided critical review of the statistical analysis. D.I guided the interpretation of findings, refined the discussion, and revised the manuscript for intellectual and contextual accuracy. A.Ch.M coordinated data collection in Papua, contributed to data validation, and assisted in drafting and finalizing the manuscript. All authors read and approved the final manuscript. All authors take responsibility for the integrity of the data and the accuracy of the data analysis.

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Availability of data and materials

The data used in this study are available from the corresponding author on request.

Ethics approval and consent to participate

This study received ethical approval from the Health Research Ethics Committee, Polytechnic of Health, Ministry of Health Sorong (Approval No. DM.01.03/4.1/1358/2024). Written informed consent was obtained from all participants prior to data collection

Consent for publication

By submitting this document, the authors declare their consent for the final accepted version of the manuscript to be considered for publication.

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