

## The Role of Midwives in the Early Detection of Infertility Risk Factors Among Women of Reproductive Age

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### A B S T R A C T

Primary infertility is an increasingly prevalent reproductive health issue, yet it often remains undetected at the primary care level. Midwives, as frontline health professionals, hold strategic potential in the early identification of infertility risk through maternal and child health (MCH) services. This study aimed to analyze the relationship between patients' perceptions of midwives' roles and the identification of infertility risk factors among couples of reproductive ages. This study employed a cross-sectional design with a quantitative approach. The sample consisted of 32 reproductive-age couples attending MCH services in Yogyakarta, Indonesia. Data were collected using a structured questionnaire assessing perceptions of midwives' roles across five dimensions: education, early detection, counseling, referral, and communication. Data analysis included chi-square tests and multivariate logistic regression. A significant association was found between positive perceptions of midwives' roles in education ( $p=0.041$ ), early detection ( $p=0.018$ ), and communication ( $p=0.029$ ) with successful identification of infertility risk factors. Early detection emerged as the most dominant factor (OR=3.47; 95% CI=1.29–9.31). Midwives' roles in early detection, education, and communication significantly contribute to identifying infertility risk factors. Strengthening midwives' authority and capacity in fertility-related issues is essential to promote a sustainable preventive approach in primary health care.

### INTRODUCTION

Infertility is a critical global public health concern, affecting an estimated 15% of reproductive-aged couples worldwide, with rising prevalence in both developed and developing countries. In Indonesia, recent epidemiological data indicate a concerning increase in primary infertility cases among women of reproductive age (WRA), often presenting late to fertility clinics, thereby reducing the effectiveness of medical intervention and increasing psychological distress (Carson & Kallen, 2021a; Teklemicheal et al., 2022; Vander Borgh & Wyns, 2018). Despite the significant burden of infertility, early detection and prevention remain under-addressed within the primary healthcare system, particularly in Maternal and Child Health (MCH) services (Garolla et al., 2021).

Midwives, as frontline healthcare providers, play a pivotal role in the delivery of reproductive health services at the primary level. Under the *Undang-Undang Republik Indonesia Nomor 4 Tahun 2019 tentang Kebidanan*, midwives are mandated to conduct promotive, preventive, curative, and rehabilitative services across the continuum of women's reproductive health. (Yulianik Mulyowati & Winarsih, 2024) However, their role in the early identification of infertility risk factors such as polycystic ovary syndrome (PCOS), endometriosis, sexually transmitted infections, menstrual irregularities, and lifestyle-related risks remains underutilized and poorly defined within current MCH service protocols (Garolla et al., 2021; Mosconi et al., 2021; Nik Hazlina et al., 2022). This gap potentially delays early intervention and compromises long-term fertility outcomes.

Preventing infertility is an essential component of improving the quality and comprehensiveness of reproductive health services, particularly within Maternal and Child Health (MCH) programs. Midwives, as frontline healthcare providers in primary care settings, play a pivotal role in delivering preventive care to women of reproductive age (WRA). Despite this strategic position, existing literature remains predominantly focused on clinical aspects of infertility, emphasizing curative interventions, assisted reproductive technologies, and treatment outcomes in tertiary care settings. Limited attention has been given to the preventive dimension, especially the role of midwives in community-based health services. (Woroniccka et al., 2023).

A notable gap persists in empirical, particularly quantitative, research examining patients' perceptions of midwives' specific roles in infertility prevention such as risk communication, health education, and early detection of risk factors. The absence of such evidence constrains the development of contextually relevant, evidence-based policies and interventions in Indonesia's primary healthcare system. Integrating infertility risk screening into routine midwifery practice represents a critical step toward shifting the healthcare paradigm from reactive treatment to proactive prevention. This study introduces a novel approach by positioning midwives as central agents in the early detection of infertility risk factors during routine MCH service delivery. Through a comprehensive analysis of current practices, knowledge gaps, and systemic barriers, the research aims to inform policy development and strengthen midwifery capacity. The overarching goal is to reposition midwifery within the broader infertility prevention framework, ultimately improving reproductive health outcomes and reducing the national burden of infertility.

## **METHODS**

### ***Study Design***

This study employed a quantitative approach with a descriptive-analytic cross-sectional design. The purpose of this design was to evaluate the perceptions of reproductive-age couples regarding the role of midwives in the early detection of infertility risk factors, based on their experiences when accessing Maternal and Child Health (MCH) services.

### ***Population and Sample***

The study population comprised all reproductive-age couples who accessed MCH services in the Yogyakarta region. Sampling was conducted using purposive sampling, involving a total of 32 reproductive-age couples. The sample size was determined based on population coverage, time constraints, and available research resources. Inclusion criteria were: (1) women aged 20–45 years who had been married for at least one year and had no children, (2) accessed MCH services at least twice within the past six months, (3) willing to participate and signed informed consent, and (4) able to communicate effectively. Exclusion criteria included: (1) couples currently undergoing intensive infertility treatment and (2) individuals with cognitive or communication impairments.

### ***Study Procedure***

The study was conducted after obtaining ethical approval from the Health Research Ethics Committee No. 216/EC/UK/X/2024. Upon securing institutional permission, socialization and respondent selection were carried out based on the inclusion criteria. Data were collected through a structured questionnaire completed by patients (reproductive-age couples) with the assistance of the researcher.

### ***Research Instrument***

The main instrument was a patient perception questionnaire regarding the role of midwives in early infertility risk detection. The questionnaire was developed based on literature review, WHO guidelines, and national midwifery service policies. Content validity was assessed by three experts in midwifery and reproductive health, and reliability testing yielded a Cronbach's Alpha of 0.81. The questionnaire consisted of 25 items across five key dimensions: Educational Role (5 items); Early Detection Role (5 items); Counseling and Psychological Support Role (5 items); Referral Role (5 items); and Communication and Trust-Building Role (5 items). Each item was rated on a 4-point Likert scale: 1 = Never, 2 = Occasionally, 3 = Often, 4 = Always.

### ***Data Analysis***

Data were analyzed using the latest version of SPSS. Univariate analysis was conducted to describe the frequency distribution of respondents' perceptions of midwives' roles across each dimension. Bivariate analysis employed the Chi-

square test or Fisher's exact test (when assumptions were not met) to examine the relationship between perceptions of midwives' roles and the identification of infertility risk factors. A p-value of <0.05 was considered statistically significant.

## RESULT AND DISCUSSION

A total of 32 reproductive-age couples participated in this study. Respondent characteristics included age, length of marriage, educational background, employment status, and menstrual history.

Table 1. Distribution of Respondent Characteristics

Characteristic	Frequency (n)	Percentage (%)
<b>Age (years)</b>		
20–29	12	37.5%
30–39	16	50.0%
≥40	4	12.5%
<b>Length of marriage (years)</b>		
1–3	14	43.8%
4–6	12	37.5%
>6	6	18.8%
<b>Last education level</b>		
Junior high school or equivalent	6	18.8%
Senior high school or equivalent	18	56.3%
Higher education	8	25.0%
<b>Employment status</b>		
Unemployed	10	31.3%
Employed	22	68.8%
<b>Irregular menstruation history</b>	11	34.4%

Most respondents were in the productive age group of 30–39 years (50%), with a marriage duration of 1–3 years (43.8%). The majority had completed senior high school (56.3%) and were employed (68.8%). A total of 34.4% reported a history of irregular menstruation, which is a known infertility risk indicator that can be identified through primary MCH services.

Perceptions of midwives' roles were assessed across five key dimensions: education, early detection, counseling, referral, and communication.

Table 2. Distribution of Respondents' Perception of Midwives' Role

Midwife Role Dimension	Good (≥75%)	Fair (50–74%)	Poor (<50%)
Education	18 (56.3%)	10 (31.3%)	4 (12.5%)
Early risk detection	20 (62.5%)	9 (28.1%)	3 (9.4%)
Counseling and psychological support	14 (43.8%)	13 (40.6%)	5 (15.6%)
Referral	13 (40.6%)	11 (34.4%)	8 (25.0%)
Communication and trust	21 (65.6%)	8 (25.0%)	3 (9.4%)

Most respondents had a positive perception of midwives' roles in communication (65.6%) and early detection (62.5%). However, lower scores were observed for referral (40.6%) and counseling (43.8%), suggesting these aspects of midwifery services require strengthening. This highlights the need for targeted training to enhance midwives' competencies in infertility counseling and referral systems.

Table 3. Association Between Midwives' Role and Identification of Infertility Risk

Midwife Role Dimension	Risk Identified	Not Identified	p-value
Education (good/fair vs. poor)	18	10	0.041*
Early detection (good/fair vs. poor)	20	9	0.018*

Midwife Role Dimension	Risk Identified	Not Identified	p-value
Counseling (good/fair vs. poor)	15	12	0.133
Referral (good/fair vs. poor)	14	14	0.087
Communication (good/fair vs. poor)	19	10	0.029*

\*Significant at  $\alpha = 0.05$

There were statistically significant associations between positive perceptions of midwives' roles in education ( $p = 0.041$ ), early detection ( $p = 0.018$ ), and communication ( $p = 0.029$ ) with successful identification of infertility risk factors. This indicates that patients who feel well-informed, actively screened, and who experience open communication with midwives are more likely to recognize infertility risks early. Although counseling and referral were not statistically significant, they demonstrated positive trends warranting further attention.

Table 4. Multivariate Logistic Regression Results

Variable	OR	95% CI	p-value
Educational role (good/fair)	2.91	1.12–7.58	0.027*
Early detection role (good/fair)	3.47	1.29–9.31	0.014*
Communication role (good/fair)	2.65	1.01–6.94	0.046*

\*Significant at  $\alpha = 0.05$

Multivariate regression results revealed that positive perceptions of midwives' early detection role were the strongest predictor of successful identification of infertility risk factors (OR = 3.47;  $p = 0.014$ ). Patients who perceived midwives as actively performing early screening were 3.47 times more likely to identify infertility risks than those with poor perceptions. Educational and communication roles were also significant predictors, emphasizing the importance of a holistic, communication-based approach in midwifery services for reproductive health.

The findings of this study indicate a significant association between positive perceptions of midwives' roles in education, early detection, and communication and the successful identification of infertility risk factors among reproductive-age couples (Alirezai et al., 2022; Gasemi et al., 2025). The early detection dimension emerged as the most dominant variable, statistically demonstrating the highest contribution within the logistic regression model. This underscores the central role of midwives in preventive infertility services through initial assessments during routine interactions within maternal and child health (MCH) services. As the first point of contact in the healthcare system, midwives occupy a strategic position in promoting reproductive literacy and awareness of fertility disorders. (Mokhtari Sorkhani et al., 2021; Perez Capotosto, 2021)

A positive perception of the educational role of midwives was correlated with patients' ability to recognize personal risk factors, including menstrual patterns, lifestyle habits, and infection history. Education provided by midwives was not merely informative but transformative shaping reproductive health perceptions and encouraging anticipatory behaviors (Perez Capotosto, 2021; Shirazi et al., 2024). Proportion of respondents still perceived midwifery education as inadequate. This suggests that not all midwives are equipped with comprehensive fertility education modules or possess the pedagogical competencies needed to effectively communicate reproductive information. High workloads, limited consultation time, and a lack of specialized training in infertility may be contributing factors that need to be systematically addressed (Mokhtari Sorkhani et al., 2021; Perez Capotosto, 2021).

The early detection dimension showed the strongest influence in enabling patients to identify infertility risk factors. Midwives' early screening practices may include thorough anamnesis, assessment of menstrual cycles, nutritional status, and evaluation of sexually transmitted infection risks (Aker et al., 2024; Garolla et al., 2021). In practice, this approach is vital, as the early symptom of primary infertility causes such as polycystic ovary syndrome, endometriosis, or tubal infections are often subtle and easily overlooked by patients (Carson & Kallen, 2021b; Mosconi et al., 2021). Therefore, when midwives perform proactive screening, the likelihood of delayed diagnosis is significantly reduced. These findings align with existing literature, which confirms that early infertility risk detection at the primary care level can reduce referral costs and improve the success rate of further interventions (Carson & Kallen, 2021b; Pallotti et al., 2022).

Perceptions of midwives' roles in counseling and referral did not reach statistical significance, though positive trends were noted in the data. This suggests structural and functional gaps within the tiered healthcare system. Ideally, midwives should act as facilitators, bridging patients to secondary or tertiary care when risks are identified (Alirezaei et al., 2022; Soleimani et al., 2023). However, in practice, referral processes are often hindered by limited access, bureaucratic procedures, or insufficient inter-facility support systems. Similarly, counseling services provided by midwives may not adequately address the emotional and psychosocial needs of couples facing fertility challenges. These aspects are crucial for preparing patients for possible diagnoses and informed decision-making (Alirezaei et al., 2022; Gasemi et al., 2025). The low perception of these roles reveals an urgent need to enhance midwives' capacity to deliver ethical, empathetic, and integrated fertility counseling (Alirezaei et al., 2022; Mosconi et al., 2021).

Communication emerged as a critical factor in establishing trust between midwives and patients. Respondents who felt that midwives communicated clearly and openly were more likely to share fertility-related complaints (Mosconi et al., 2021). This finding is consistent with the principles of therapeutic communication in midwifery, which emphasize empathy, honesty, and patient engagement. Effective communication allows for a more comprehensive exploration of reproductive histories, subjective symptoms, and relationship dynamics. Moreover, strong communication underpins the quality of both education and counseling, as trust is a prerequisite for effective information exchange (Mokhtari Sorkhani et al., 2021; Mosconi et al., 2021).

Respondent characteristics also influenced how midwives' roles were perceived and responded to. Most respondents were aged 30–39 years and had been married for more than one year, a demographic that epidemiologically falls within the risk group for primary infertility. With the majority holding secondary education degrees, their access to medical information largely depended on counseling from healthcare providers, especially midwives. In this context, midwives play a critical role in bridging information gaps and improving access to fertility-related services. Hence, reproductive literacy within communities is inextricably linked to the quality of interactions between midwives and patients (Gasemi et al., 2025).

This study provides meaningful contributions to the development of evidence-based midwifery practices that inclusively address infertility. Traditionally, MCH agendas have focused on pregnancy, childbirth, and neonatal care, while fertility disorders remain outside the scope of routine primary care interventions (Boudreau et al., 2024; Carson & Kallen, 2021b). The current findings open scientific discourse arguing that early detection and initial management of infertility should be integral to midwifery services. This is clinically relevant and socially urgent, given the profound impacts of infertility on family stability, women's mental health, and social stigma (Brigance et al., 2021; Chamorro et al., 2024).

The policy implications of these findings hold considerable significance for strengthening regulatory frameworks and institutional mechanisms that support the expansion of midwives' roles in addressing infertility. Development of national technical guidelines for infertility screening at the primary healthcare level is essential to enable standardized implementation by midwives (Brigance et al., 2021). Revision of midwifery education curricula, both at vocational and professional levels, is necessary to incorporate dedicated modules on fertility education, early detection strategies, and the development of comprehensive, patient-centered counseling competencies. Implementation at the service level requires structured systems of continuous professional training and clinical supervision to ensure adherence to ethical and evidence-based practices (Gasemi et al., 2025; Shirazi et al., 2024).

Alignment of these policy recommendations with existing national health initiatives, such as the *Rencana Aksi Nasional Kesehatan Reproduksi* (National Action Plan for Reproductive Health) and the *Program Indonesia Sehat dengan Pendekatan Keluarga* (Healthy Indonesia Program with a Family Approach), would enhance their feasibility and sustainability within the current health system infrastructure. Integration of infertility prevention into these programs allows for a more systemic, promotive, and preventive approach at the community level. Implementation of digital referral platforms linking primary care midwives with secondary fertility services represents a strategic innovation to strengthen coordination and continuity of care. Expansion of midwives' legal mandates and technical competencies in the domain of infertility management will enable the health system to respond more effectively, promptly, and equitably to the increasing burden of fertility-related disorders in Indonesia (de Santiago & Polanski, 2022; Woroniecka et al., 2023).

## CONCLUSION AND RECOMMENDATION

This study demonstrates that positive perceptions among reproductive-age couples regarding the role of midwives in education, early detection, and communication are significantly associated with the successful identification of infertility risk factors. The early detection role emerged as the strongest determinant, underscoring the critical importance of optimizing fertility screening functions within maternal and child health (MCH) services. Although the counseling and referral dimensions did not show statistical significance, their positive trends highlight the urgent need to strengthen midwives' capacity in these areas.

The limitations of this study include its cross-sectional design and relatively small sample size, which restrict the ability to infer causal relationships and generalize findings to a broader population. Furthermore, the assessment of midwives' roles was based on patients' subjective perceptions, which may introduce response bias. There is a need for the development of standardized policies and interventions that reinforce midwives' authority in addressing infertility issues. This includes training in fertility screening, fertility counseling, and the implementation of responsive referral systems. Future studies using longitudinal designs and mixed-methods approaches are recommended to explore more deeply the effectiveness of midwife-led interventions in the sustainable prevention of infertility.

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