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The Relationship Between Knowledge and Attitude of Midwives with Infection Prevention and Control Practices in Mempawah Regency, West Kalimantan, Indonesia

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Abstract

Particularly in primary healthcare settings, healthcare-associated infections (HAIs) continue to be considered a serious threat to maternal and neonatal care. In order to lower the risk of infection, midwives are critical for the implementation of Infection Prevention and Control (IPC) strategies. However, midwives' adherence to IPC procedures is frequently inconsistent and might be impacted by personal characteristics like attitude and knowledge. The purpose of this study was to determine how midwives' attitudes and knowledge related to infection prevention and control (IPC) practices in Mempawah Regency, West Kalimantan, Indonesia. Midwives employed by Mempawah Regency's district health office and primary healthcare facilities participated in a quantitative cross-sectional study. Purposive sampling was used to identify 76 midwives in total. A validated and structured questionnaire measuring IPC practices, knowledge, and attitude was used to collect data. The Chi-square test was used to analyze the data at a significance level of $p < 0.05$. It was found that midwives who had positive attitudes and good knowledge were more likely to apply IPC practices correctly. A statistically significant correlation ($p < 0.05$) was found between knowledge and IPC practices, as well as between attitude and IPC practices. Midwives' infection prevention and control practices have a significant correlation with their knowledge and attitudes. To enhance

IPC implementation in primary healthcare settings, encouragement and ongoing training must be strengthened.

Keywords: Attitude, Infection Prevention and Control, Knowledge, Midwives, Primary Health Care.

Introduction

Healthcare-associated infections (HAIs) remain a major global public health problem, particularly in maternal and neonatal health services. HAIs contribute to increased morbidity, mortality, length of hospital stay, and health care costs. Infection Prevention and Control (IPC) is recognized as an essential strategy to reduce the risk of infection transmission in health care facilities, including primary health care services. Effective IPC implementation protects patients, health workers, and the community from preventable infections.

Midwives play a critical role in IPC implementation because they are directly involved in maternal, neonatal, and reproductive health services, which carry a high risk of infection. Proper hand hygiene, appropriate use of personal protective equipment, aseptic techniques, and safe waste management are fundamental components of IPC practices in midwifery care. However, previous studies have reported that compliance with IPC standards among health workers, including midwives, remains suboptimal, particularly in primary health care settings.

Individual factors such as knowledge and attitude are important determinants of health workers' behavior. Adequate knowledge of IPC principles and positive attitudes toward patient safety can encourage consistent and correct IPC practices. Conversely, limited knowledge and negative attitudes may hinder compliance, even when guidelines and facilities are available. Studies conducted in various health care settings have shown that knowledge and attitude are significantly associated with IPC behavior, but evidence from primary health care and district-level midwifery services remains limited.

Mempawah Regency, West Kalimantan, Indonesia, has a wide geographic coverage with diverse access to health services, which may influence IPC implementation in primary health care facilities. Limited resources, workload, and variability in training opportunities may affect midwives' compliance with IPC

practices. Therefore, empirical evidence is needed to understand factors related to IPC behavior among midwives in this setting.

This study aimed to examine the relationship between knowledge and attitude of midwives and Infection Prevention and Control practices in Mempawah Regency, West Kalimantan, Indonesia.

Method

1. Research design

This study employed a quantitative observational analytic design with a cross-sectional approach. The independent variables (knowledge and attitude) and the dependent variable (IPC practices) were measured simultaneously.

2. Setting and samples

The study was conducted in primary health care facilities and the district health office in Mempawah Regency, West Kalimantan, Indonesia. The study population consisted of all registered midwives working in the regency. A total of 76 midwives were recruited using purposive sampling based on predefined inclusion criteria, including active employment and willingness to participate in the study.

3. Measurement and data collection

Data were collected using a structured questionnaire developed from national and international IPC guidelines. The questionnaire consisted of three sections: knowledge, attitude, and IPC practices. Knowledge was measured using multiple-choice questions and categorized as good, moderate, or poor. Attitude was assessed using a Likert scale and categorized as positive or negative. IPC practices were measured based on the reported implementation of standard IPC procedures. The instrument had undergone validity and reliability testing before data collection. Data were collected directly by the researcher after obtaining informed consent from participants.

4. Data analysis

Data were analyzed using statistical software. Descriptive analysis was used to present the distribution of knowledge, attitude, and IPC practices. Bivariate analysis using the Chi-square test was conducted to examine the relationship between knowledge and IPC practices, as well as between attitude and IPC practices. A p-value of < 0.05 was considered statistically significant.

5. Ethical Considerations

Ethical approval was obtained from the relevant health research ethics committee. All participants provided written informed consent, and confidentiality and anonymity were ensured throughout the study.

Results

1. Characteristics of Respondents

A total of 76 midwives participated in this study. Respondents were actively working in primary health care facilities and the district health office in Mempawah Regency. All participants completed the questionnaire and were included in the analysis.

2. Infection Prevention and Control Practices

IPC practices among midwives were categorized as implemented or not implemented based on self-reported behaviors. The findings indicated that most midwives reported implementing standard IPC practices; however, a proportion of respondents reported inconsistent implementation, particularly during high workload situations.

Table 1
Distribution of Infection Prevention and Control Practices Among Midwives

No.	IPC Practices	Amount	
		Frequency (n)	Percentage (%)
1.	Implemented	46	60.5
2.	Not Implemented	30	39.5
	Total	76	100

3. Knowledge of Infection Prevention and Control

The results showed that midwives had varying levels of knowledge regarding Infection Prevention and Control (IPC). Knowledge levels were categorized into good, moderate, and poor. The majority of respondents demonstrated adequate to good knowledge of IPC principles, including hand hygiene, use of personal protective equipment, and sterilization procedures.

Table 2
Distribution of Midwives' Knowledge on Infection Prevention and Control Practices

No.	Knowledge Level	Amount	
		Frequency (n)	Percentage (%)
1.	Good	39	51.3
2.	Moderate	21	27.6
3.	Poor	16	21.1
	Total	76	100

4. Attitude Toward Infection Prevention and Control

Most respondents exhibited a positive attitude toward IPC practices. Positive attitudes were reflected in agreement with the importance of IPC implementation for patient safety, personal protection, and prevention of infection transmission in health care settings.

Table 3
Distribution of Midwives' Attitude Toward Infection Prevention and Control

No.	Attitude Category	Amount	
		Frequency (n)	Percentage (%)
1.	Positive	48	63.1
2.	Negative	28	36.9
	Total	76	100.0

5. Relationship Between Knowledge and IPC Practices

Bivariate analysis using the Chi-square test demonstrated a statistically significant relationship between knowledge level and IPC practices ($p < 0.05$). Midwives with good knowledge were more likely to consistently implement IPC practices compared to those with moderate or poor knowledge.

Table 4
Relationship Between Knowledge and Infection Prevention and Control Practices

No.	Knowledge Level	IPC Practices				Amount		p-value
		Implemented		Not Implemented				
		n	%	n	%	Frequency (n)	Percentage (%)	
1.	Good	36	47.4	3	3.9	39	51.3	
2.	Moderate	9	11.8	12	15.8	21	27.6	<0.05
3.	Poor	1	1.3	15	19.8	16	21.1	
	Total	46	60.5	30	39.5	76	100	

Chi-square test

6. Relationship Between Attitude and IPC Practices

A significant relationship was also found between attitude and IPC practices ($p < 0.05$). Midwives who had a positive attitude toward IPC were more likely to apply IPC

measures consistently in their daily practice.

Table 5
Relationship Between Attitude and Infection Prevention and Control Practices

No.	Attitude Category	IPC Practices				Amount		p-value
		Implemented		Not Implemented				
		n	%	n	%	Frequency (n)	Percentage (%)	
1.	Positive	42	55.2	6	7.9	48	63.1	<0.05
2.	Negative	4	5.3	24	31.6	28	36.9	
	Total	46	60.5	30	39.5	76	100	

Chi-square test

Discussion

This study demonstrated that knowledge and attitude are significantly associated with Infection Prevention and Control practices among midwives in primary health care settings. Midwives with higher levels of knowledge were more likely to implement IPC measures appropriately, supporting the concept that knowledge is a key predisposing factor influencing health behavior. Adequate understanding of IPC principles enables midwives to recognize infection risks and apply preventive measures consistently.

The significant association between attitude and IPC practices indicates that positive attitudes toward patient safety and infection prevention play an important role in shaping professional behavior. Midwives who perceive IPC as essential and beneficial tend to show greater commitment to its implementation, even in challenging working conditions. This finding aligns with behavioral health theories that emphasize the role of attitudes in translating knowledge into action.

Despite generally good knowledge and positive attitudes, some midwives reported inconsistent IPC practices. This finding suggests that factors beyond individual knowledge and attitude, such as workload, availability of facilities, and organizational support, may influence IPC implementation. High patient volume and limited resources in primary health care settings may reduce compliance, particularly during busy service periods.

The results of this study are consistent with previous research indicating that knowledge and attitude are important determinants of IPC behavior among health workers. However, this study adds evidence from a primary health care and district-level midwifery context, which is less frequently reported in the literature. The findings highlight the need for continuous education, regular training, and supportive supervision

to strengthen IPC practices among midwives.

Strengthening IPC implementation requires not only improving individual competencies but also ensuring supportive working environments. Health authorities should prioritize regular IPC training, monitoring, and adequate provision of facilities to promote sustainable improvements in infection prevention practices.

Limitation

This study has several limitations. The cross-sectional design limits the ability to infer causal relationships between knowledge, attitude, and Infection Prevention and Control (IPC) practices. Data were collected using self-reported questionnaires, which may introduce reporting bias. Additionally, the study was conducted in a single regency, which may limit the generalizability of the findings to other settings.

Conclusion

This study concludes that knowledge and attitude are significantly associated with Infection Prevention and Control practices among midwives in primary health care settings in Mempawah Regency, West Kalimantan, Indonesia. Midwives with better knowledge and more positive attitudes were more likely to implement IPC practices consistently. These findings emphasize the importance of strengthening continuous education, regular training, and supportive supervision to improve IPC compliance. Enhancing both individual competencies and organizational support is essential to reduce infection risks and improve the quality of maternal and neonatal health services.

Ethical Considerations

Ethical approval for this study was obtained from the Health Research Ethics Committee. Written informed consent was obtained from all participants prior to data collection. Confidentiality and anonymity of respondents were strictly maintained throughout the research process.

Conflict of Interest

The author declares that there is no conflict of interest related to this study.

Author contribution

Yulianti contributed to the study conception and design, data collection, data analysis, interpretation of results, and manuscript preparation.

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