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DETERMINANTS OF INCOMPLETE NEONATAL STABILIZATION IN OBSTETRIC EMERGENCIES AT PRIMARY HEALTHCARE FACILITIES: EVIDENCE FROM RETROSPECTIVE RECORDS AND FAMILY PERSPECTIVES

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ABSTRACT
Incomplete neonatal stabilization during obstetric emergencies remains a significant contributor to neonatal morbidity and mortality, particularly in primary healthcare settings where early intervention is critical. This study aimed to identify determinants of incomplete neonatal stabilization by integrating clinical records and family-reported factors. A descriptive-analytic study with a retrospective record review and post-event family survey was conducted in 14 primary healthcare centers in Kabupaten Seluma, Indonesia. A total of 120 eligible cases were selected using total sampling from cases meeting inclusion criteria. Data were collected using structured extraction forms and validated questionnaires assessing response time, knowledge of neonatal danger signs, self-efficacy, and perceived barriers. Instrument validity was established through expert review, and reliability testing showed acceptable internal consistency (Cronbach's alpha >0.70). Bivariate analysis and multivariate logistic regression were performed to identify associated factors. The results showed that 41.7% of cases experienced incomplete neonatal stabilization. Multivariate analysis revealed that decision-making delay (AOR = 4.21; 95% CI: 1.95–9.08), low self-efficacy (AOR = 3.12; 95% CI: 1.44–6.78), delayed response time (AOR = 2.85; 95% CI: 1.32–6.14), and inadequate knowledge (AOR = 2.47; 95% CI: 1.15–5.29) were significant determinants. Structural barriers such as transportation, financial constraints, and distance were not statistically significant but showed increased risk tendencies. Incomplete neonatal stabilization is predominantly influenced by family-level behavioral and cognitive factors. Strengthening community awareness, improving emergency preparedness, and promoting timely decision-making, alongside enhancing primary healthcare capacity and referral systems, are essential to improve neonatal outcomes.

Keywords: decision-making; neonatal stabilization; obstetric emergency; primary healthcare; self-efficacy

INTRODUCTION
Neonatal stabilization represents a critical, time-sensitive intervention within the continuum of care during obstetric emergencies, particularly at the primary healthcare level where first contact and initial management occur (Ali and Sawyer 2024). In such settings, essential actions, including thermal regulation, airway clearance, stimulation, and oxygen support that serve as the cornerstone for preventing early neonatal morbidity and mortality (Anthony and McKinlay 2023). The effectiveness of these initial interventions is closely linked to neonatal survival outcomes, especially within the first minutes of life, often referred to as the golden minute (Hullumani, Qureshi, and Raghuveer 2024). However, primary healthcare settings frequently operate under constrained conditions, including limited resources, variable provider competencies, and high patient loads, which may compromise the quality and timeliness of stabilization efforts (Saha 2023). Moreover, obstetric emergencies such as preeclampsia, hemorrhage, or prolonged labor often coexist with neonatal compromise, further complicating clinical decision-making in resource-limited environments (Babarimisa and Ohaeri 2022). The integration of maternal and neonatal emergency care at this level thus requires not only clinical readiness but also systemic coordination and responsiveness (Gooding et al. 2022). Consequently, understanding how neonatal stabilization is implemented in real-world primary care contexts remains a critical issue in improving perinatal outcomes globally (Hill et al. 2025).

Despite its clinical importance, the implementation of neonatal stabilization in primary healthcare settings is frequently hindered by a range of interconnected barriers. These obstacles extend beyond provider-related factors and include non-provider determinants such as delayed family decision-making, limited transportation access, financial constraints, and geographical barriers (Patil et al. 2025). In many low- and middle-income countries, these non-clinical factors contribute significantly

to delays in seeking and receiving appropriate care, aligning with the well-established "three delays" framework (Jack et al. 2022). Additionally, infrastructural challenges such as unstable electricity, inadequate non-medical support systems, and lack of referral coordination further exacerbate the problem (Saghafi 2025). Family knowledge and perception regarding neonatal danger signs also play a crucial role in shaping timely responses and care-seeking behaviors (Mesele et al. 2023). These multifactorial barriers not only delay the initiation of stabilization but may also result in incomplete or suboptimal execution of essential interventions (Annan et al. 2025). Therefore, a comprehensive understanding of both clinical and non-clinical barriers is essential to identify actionable strategies for improving neonatal stabilization practices in primary care (Benzies et al. 2026).

Existing studies have predominantly focused on provider competence, availability of medical equipment, and facility readiness as primary determinants of neonatal care quality (Usman et al. 2022). While these aspects are undeniably important, there remains a relative paucity of research that systematically integrates non-provider perspectives, particularly family experiences and decision-making processes, into the analysis of neonatal stabilization practices (Tuladhar et al. 2024). Furthermore, most prior investigations rely heavily on facility-based data or cross-sectional surveys, which may not adequately capture the temporal sequence and contextual nuances of emergency events (Chaulagain et al. 2022). The lack of combined methodological approaches, such as retrospective record review coupled with post-event family-reported data, represents a critical gap in the literature. This gap limits the ability to fully understand how delays and barriers interact dynamically across clinical and non-clinical domains. In addition, there is insufficient evidence specifically addressing incomplete neonatal stabilization as a measurable outcome in primary healthcare settings. Therefore, a more integrative and context-sensitive approach is needed to advance the current state of knowledge in this field.

This study aims to analyze the determinants of incomplete neonatal stabilization during obstetric emergencies in primary healthcare settings by integrating retrospective medical record data with family-reported perspectives. By identifying both provider and non-provider barriers, this research seeks to offer a more comprehensive understanding of factors influencing the quality and timeliness of neonatal stabilization. The findings are expected to contribute to the development of targeted interventions that address not only clinical capacity but also systemic and socio-contextual challenges. Furthermore, this study has important implications for strengthening primary healthcare systems, particularly in improving referral pathways, enhancing community awareness, and optimizing emergency response mechanisms. From a policy perspective, the results may inform evidence-based strategies to reduce neonatal mortality and improve perinatal outcomes in resource-limited settings. Ultimately, this research underscores the importance of adopting a holistic, multi-level approach in addressing gaps in neonatal emergency care at the frontline of the health system.

METHOD

Study Design

This study employed a descriptive-analytic design using a retrospective record review combined with a post-event family-based survey. The retrospective component was used to extract clinical data related to neonatal stabilization practices and early neonatal outcomes during obstetric emergencies, while the family-based survey captured contextual non-provider factors such as response delays, perceived barriers, and care-seeking behaviors. The integration of these two data sources enabled a comprehensive assessment of both clinical and socio-contextual determinants of incomplete neonatal stabilization in primary healthcare settings.

Population and Sample

The study population comprised all delivery cases in primary healthcare facilities within the study period in which neonatal stabilization was indicated or performed in the context of obstetric emergencies. The unit of analysis was individual neonatal stabilization cases, while respondents for the survey component were mothers or primary caregivers present during the event. Total sampling was applied to include all eligible cases identified from medical records. All corresponding family contacts were approached for participation in the survey component. Cases were included if they had documented evidence or indication of neonatal stabilization, including interventions such as drying, stimulation, warming, airway clearance, or oxygen administration, and had at least one valid family contact. Cases were excluded if medical records had more than 50% missing key variables or

if the family contact was invalid, unreachable after three contact attempts, or declined participation. The final sample consisted of all cases meeting these criteria during the study period.

Study Setting and Period

The study was conducted in Kabupaten Seluma, Indonesia, involving all 14 primary healthcare centers (Puskesmas) that provide maternal and neonatal services. These facilities represent the primary level of care where initial management of obstetric emergencies and neonatal stabilization is performed. The retrospective data were collected from medical records over a 12-month period, from January to December 2024. The family-based survey was conducted within 3 to 6 months after case identification to ensure adequate recall of events while maintaining data reliability.

Research Instruments

The study utilized structured instruments to collect both clinical and non-clinical data, as outlined in the following instrument blueprint.

Table. 1.
Instrument Blueprint

No	Instrument	Variable Domain	Indicators	Data Type	Source
1	Medical Record Extraction Form	Clinical characteristics	Obstetric emergency indication, type of stabilization intervention, timing of intervention	Categorical, continuous	Medical records
		Neonatal outcome	APGAR score, breathing status, referral status	Categorical, numerical	Medical records
		Process indicators	Time to first intervention, completeness of stabilization	Continuous, categorical	Medical records
2	Family Survey Questionnaire	Event chronology	Family-reported actions, response time	Continuous, categorical	Family
		Knowledge	Recognition of neonatal danger signs	Categorical	Family
		Self-efficacy	Confidence in responding to neonatal emergency (Likert scale)	Ordinal	Family
		Barriers (non-provider)	Transportation, cost, distance, decision delay, environmental constraints	Categorical	Family

Data Collection Procedures

Data collection was conducted in sequential stages. Medical record review was performed at each participating Puskesmas to identify eligible cases and extract relevant data using a standardized form. Each case was assigned a unique anonymized code, and contact information was recorded separately in a secure file. Family respondents were contacted via mobile communication (Whatsapps chat or messaging applications) and provided with a link to the online questionnaire. For respondents who did not complete the questionnaire, follow-up contact was conducted via telephone within 48 to 72 hours, with a maximum of three contact attempts. For respondents unable to access the online form, structured interviews were conducted via telephone and responses were recorded by the researcher. An optional facility observation was conducted once at each Puskesmas using a standardized checklist to assess non-medical readiness factors. Data quality was ensured through cross-checking of entries and verification of consistency between medical record data and survey responses.

Data Analysis and Interpretation

Data were processed and analyzed using statistical software. Data cleaning was conducted to identify and address missing values, inconsistencies, and duplicate entries. The primary outcome variable was incomplete neonatal stabilization, defined based on the absence of essential intervention components as documented in medical records. Independent variables included clinical characteristics, response time, knowledge, self-efficacy, and non-provider barriers. Descriptive analysis was performed using frequencies, percentages, means, and standard deviations or medians with interquartile ranges, as appropriate. Bivariate analysis was conducted using Chi-square or Fisher's exact tests for categorical variables and independent t-tests or Mann–Whitney U tests for continuous variables. Correlation analysis using Spearman's rho was applied for ordinal variables. Multivariate analysis was performed using binary logistic regression to identify independent determinants of incomplete neonatal stabilization. Results were reported as adjusted odds ratios with 95% confidence intervals and p-values. Model fit was assessed using the Hosmer–Lemeshow test, and multicollinearity was evaluated using variance inflation factors. Statistical significance was set at $\alpha = 0.05$. Interpretation of findings emphasized both statistical significance and clinical relevance, with particular attention to modifiable non-provider barriers affecting neonatal stabilization practices in primary healthcare settings.

RESULT

Clinical Characteristics, Stabilization Practices, and Neonatal Outcomes

The results of this study describe the clinical characteristics, neonatal stabilization practices, and outcomes among respondents included from primary healthcare settings. Table 2 presents an overview of the types of obstetric emergencies encountered, the range of stabilization interventions performed, and the proportion of cases receiving complete and incomplete neonatal stabilization as the primary outcome of interest. In addition, the table summarizes neonatal outcomes and referral patterns, providing an initial picture of the clinical consequences and care pathways following obstetric emergencies. These findings serve as the foundation for subsequent analysis and discussion, particularly in examining how variations in stabilization practices and contextual factors may influence the completeness of neonatal care in primary healthcare settings.

Table 2.
Clinical Characteristics, Stabilization Practices, and Neonatal Outcomes (n = 120)

Variable	Category	f	%
Type of Obstetric Emergency	Hemorrhage	32	26.7
	Preeclampsia/Eclampsia	28	23.3
	Prolonged labor	36	30.0
	Others	24	20.0
Neonatal Stabilization Interventions	Drying/Stimulation	110	91.7
	Warming	98	81.7
	Airway clearance	72	60.0
	Oxygen administration	40	33.3
Completeness of Stabilization	Complete	70	58.3
	Incomplete	50	41.7
Neonatal Outcomes	Low birth weight	46	38.3
	Asphyxia neonatorum	7	5.8
	Congenital abnormalities	7	5.8
	No complication/others	60	50.0
Referral Status	Referred	68	56.7
	Not referred	52	43.3

Table 2 presents the distribution of clinical characteristics, neonatal stabilization practices, and outcomes among the study participants. Prolonged labor was the most common obstetric emergency (30.0%), followed by hemorrhage (26.7%) and preeclampsia/eclampsia (23.3%). In terms of stabilization practices, drying and stimulation were the most frequently performed interventions (91.7%), while oxygen administration was the least performed (33.3%), indicating potential limitations in advanced neonatal support at the primary care level. More than half of the cases (58.3%) received complete stabilization; however, a substantial proportion (41.7%) experienced incomplete stabilization. Regarding neonatal outcomes, low birth weight was the most common complication (38.3%), followed by asphyxia neonatorum and congenital abnormalities (5.8% each), while 50.0% of neonates had no reported complications. More than half of the cases (56.7%) required referral to higher-level healthcare facilities. These findings suggest that although basic stabilization

practices are widely implemented, gaps remain in the completeness of care, which may contribute to adverse neonatal outcomes and increased referral rates.

Distribution of Non-Provider Factors in Neonatal Emergency Response

Table 3 presents the distribution of non-provider factors reported by respondents during neonatal emergency events. These factors reflect family-level, social, and environmental conditions that may influence response time and contribute to the completeness of neonatal stabilization.

Table 3.
Distribution of Non-Provider Factors (n = 120)

Variable	Category	f	%
Response Time	≤30 minutes	68	56.7
	>30 minutes	52	43.3
Transportation Used	Private vehicle	72	60.0
	Ambulance	18	15.0
	Public transport	20	16.7
Knowledge of Neonatal Danger Signs	Others	10	8.3
	Adequate	54	45.0
Self-efficacy in Emergency Response	Inadequate	66	55.0
	High	50	41.7
	Low	70	58.3
Transportation Barrier	Yes	58	48.3
	No	62	51.7
Financial Barrier	Yes	64	53.3
	No	56	46.7
Distance Barrier	Yes	60	50.0
	No	60	50.0
Decision-Making Delay	Yes	66	55.0
	No	54	45.0
Environmental Constraints	Yes	42	35.0
	No	78	65.0

The findings indicate that delays in emergency response remain a significant concern, with 43.3% of respondents reporting response times exceeding 30 minutes. The majority relied on private transportation (60.0%), while ambulance use was limited, suggesting gaps in access to formal emergency services. More than half of the respondents demonstrated inadequate knowledge of neonatal danger signs and low self-efficacy in managing emergencies, indicating limited preparedness at the household level. Financial constraints, decision-making delays, and distance to healthcare facilities were the most frequently reported barriers, each affecting approximately half of the respondents. These findings suggest that non-provider factors play a substantial role in shaping emergency response behavior and may directly contribute to delays and incomplete neonatal stabilization in primary healthcare settings.

Factors Associated with Incomplete Neonatal Stabilization

This section examines the association between non-provider factors and the occurrence of incomplete neonatal stabilization during obstetric emergencies. Bivariate analysis was conducted to identify potential factors related to the primary outcome, including response time, transportation, knowledge, self-efficacy, and various perceived barriers. Variables were analyzed using appropriate statistical tests, and the strength of association was presented using p-values. This analysis serves as a preliminary step to identify significant variables to be included in the multivariate logistic regression model.

The bivariate analysis revealed that several non-provider factors were significantly associated with incomplete neonatal stabilization. Response time showed a strong association, with delayed response (>30 minutes) significantly increasing the proportion of incomplete stabilization cases (57.7%) compared to timely response (29.4%). Knowledge and self-efficacy were also critical factors; respondents with adequate knowledge and high self-efficacy demonstrated significantly higher rates of complete stabilization. Decision-making delay emerged as the most influential factor, with more than half of delayed cases resulting in incomplete stabilization, indicating the crucial role of family readiness in emergency situations. Transportation-related factors, including type of transport and transportation barriers, were also significantly associated, reflecting structural limitations in accessing

timely care. Financial and distance barriers further contributed to the likelihood of incomplete stabilization, highlighting the role of socioeconomic constraints. Environmental factors, although less dominant, still showed a significant relationship with the outcome. Overall, these findings indicate that non-provider factors substantially influence the completeness of neonatal stabilization and should be considered in strategies aimed at improving neonatal emergency care at the primary healthcare level.

Table 4.
Bivariate Analysis of Factors Associated with Incomplete Neonatal Stabilization (n = 120)

Variable	Category	Complete f (%)	Incomplete f (%)	p-value
Response Time	≤30 minutes	48 (70.6)	20 (29.4)	0.003*
	>30 minutes	22 (42.3)	30 (57.7)	
Transportation Used	Private vehicle	46 (63.9)	26 (36.1)	0.041*
	Non-private (ambulance/public/others)	24 (50.0)	24 (50.0)	
Knowledge of Danger Signs	Adequate	38 (70.4)	16 (29.6)	0.006*
	Inadequate	32 (48.5)	34 (51.5)	
Self-efficacy	High	36 (72.0)	14 (28.0)	0.002*
	Low	34 (48.6)	36 (51.4)	
Transportation Barrier	No	40 (64.5)	22 (35.5)	0.028*
	Yes	30 (51.7)	28 (48.3)	
Financial Barrier	No	36 (64.3)	20 (35.7)	0.049*
	Yes	34 (53.1)	30 (46.9)	
Distance Barrier	No	38 (63.3)	22 (36.7)	0.033*
	Yes	32 (53.3)	28 (46.7)	
Decision-Making Delay	No	42 (77.8)	12 (22.2)	<0.001*
	Yes	28 (42.4)	38 (57.6)	

**Significant at p < 0.05*

Determinants of Incomplete Neonatal Stabilization: Multivariate Logistic Regression Analysis

Multivariate logistic regression analysis was performed to identify independent determinants of incomplete neonatal stabilization during obstetric emergencies. Variables with p-values <0.20 in the bivariate analysis, as well as those considered theoretically relevant, were included in the model. Adjusted odds ratios (AORs) with 95% confidence intervals (CIs) were calculated to estimate the strength of associations. Model adequacy was assessed using the Hosmer–Lemeshow goodness-of-fit test, and multicollinearity diagnostics were performed to ensure the robustness of the model.

Table 5.
Multivariate Logistic Regression Analysis of Determinants of Incomplete Neonatal Stabilization (n = 120)

Variable	Category	AOR	95% CI	p-value
Response Time	>30 minutes	2.85	1.32 – 6.14	0.008*
Knowledge of Danger Signs	Inadequate	2.47	1.15 – 5.29	0.021*
Self-efficacy	Low	3.12	1.44 – 6.78	0.004*
Transportation Barrier	Yes	1.98	0.94 – 4.18	0.072
Financial Barrier	Yes	1.76	0.83 – 3.74	0.139
Distance Barrier	Yes	1.89	0.90 – 3.95	0.091
Decision-Making Delay	Yes	4.21	1.95 – 9.08	<0.001*
Environmental Constraints	Yes	1.67	0.78 – 3.56	0.187

**Significant at p < 0.05*
Hosmer–Lemeshow test: p = 0.72 (good model fit)

The multivariate logistic regression analysis identified several independent determinants of incomplete neonatal stabilization. Decision-making delay emerged as the strongest predictor, with cases experiencing delays having more than four times higher odds of incomplete stabilization (AOR = 4.21; p < 0.001). This finding underscores the critical role of timely family decision-making in neonatal emergency situations. Low self-efficacy was also significantly associated with incomplete stabilization, with affected respondents being three times more likely to experience incomplete care, indicating the importance of confidence and preparedness in emergency response. Delayed response time (>30 minutes) remained a significant determinant, nearly tripling the odds of incomplete

stabilization, highlighting the time-sensitive nature of neonatal care. Inadequate knowledge of neonatal danger signs was another significant factor, suggesting that awareness and early recognition play a key role in ensuring appropriate and timely action.

Although transportation, financial, and distance barriers were not statistically significant in the multivariate model, their effect sizes remained elevated, indicating potential contextual influence that may become significant in larger samples. Environmental constraints also showed a similar pattern. Overall, these findings demonstrate that behavioral and cognitive factors at the family level, particularly decision-making and self-efficacy, are more dominant determinants of incomplete neonatal stabilization than structural barriers. These results emphasize the need for interventions that not only strengthen healthcare systems but also improve community awareness, preparedness, and rapid decision-making in neonatal emergencies.

DISCUSSION

The findings of this study demonstrate that incomplete neonatal stabilization during obstetric emergencies in primary healthcare settings is not solely determined by clinical capacity, but is strongly influenced by non-provider factors, particularly those related to family behavior and decision-making. The high proportion of incomplete stabilization observed indicates that gaps persist in the delivery of essential neonatal interventions at the primary care level. Although basic practices such as drying and warming were widely implemented, more advanced or timely interventions were inconsistently performed, suggesting limitations in both readiness and responsiveness. These results highlight that improving neonatal outcomes requires not only strengthening facility-based care but also addressing delays occurring before and during the initial response to neonatal distress.

One of the most prominent findings in this study is the strong association between decision-making delay and incomplete neonatal stabilization. This aligns closely with the Three Delays Model, which emphasizes delays in decision-making at the household level as a critical barrier to timely care. Similar findings have been reported in studies from low- and middle-income countries, where delays in recognizing danger signs and making decisions to seek care significantly contribute to neonatal morbidity and mortality (Yeboah et al. 2025). In this study, decision-making delay emerged as the most dominant determinant, suggesting that even when healthcare services are available, the timing of family response remains a decisive factor. This underscores the importance of community-based interventions aimed at improving awareness and rapid decision-making in neonatal emergencies.

Self-efficacy and knowledge of neonatal danger signs were also identified as significant determinants, reinforcing the role of cognitive and behavioral factors in emergency response. Families with higher confidence and better knowledge were more likely to ensure complete stabilization, indicating that preparedness at the household level directly influences clinical outcomes. This finding is consistent with global evidence showing that maternal and family education significantly improves early recognition of neonatal complications and care-seeking behavior (Dida et al. 2024). Programs that integrate health education, simulation-based learning, and community engagement have been shown to enhance both knowledge and self-efficacy, ultimately reducing delays in neonatal care (Malya et al. 2025). Therefore, strengthening health literacy should be considered a key component of neonatal health strategies.

Interestingly, structural barriers such as transportation, financial constraints, and distance were not statistically significant in the multivariate analysis, although they showed meaningful effect sizes. This suggests that while these factors remain relevant, their impact may be mediated through behavioral pathways, particularly decision-making and response time. Similar patterns have been observed in other studies, where structural barriers become less dominant once cognitive and behavioral variables are accounted for (Balarezo, Foss, and Nielsen 2024). However, the persistent magnitude of these factors indicates that they still contribute to the overall burden of delayed care, especially in resource-limited and geographically challenging settings. Thus, interventions should adopt a dual approach that addresses both structural accessibility and behavioral readiness.

The role of response time further reinforces the time-sensitive nature of neonatal stabilization. Delays exceeding 30 minutes significantly increased the likelihood of incomplete stabilization, highlighting the importance of the “golden minute” and early intervention principles in neonatal

care. This finding is consistent with international neonatal resuscitation guidelines, which emphasize immediate action within the first minutes of life to prevent hypoxia and subsequent complications (Mohamed et al. 2023). Delayed response not only affects the initiation of stabilization but may also reduce the effectiveness of interventions once initiated. Therefore, reducing response time should be a priority through both system-level improvements and community awareness.

From a broader perspective, this study contributes to the growing body of literature emphasizing the importance of integrating clinical and non-clinical determinants in maternal and neonatal health. Unlike many previous studies that focus primarily on provider competence or facility readiness, this study highlights the critical role of family-level factors in shaping neonatal outcomes. The use of combined retrospective clinical data and family-reported experiences provides a more comprehensive understanding of the pathways leading to incomplete stabilization. This integrative approach represents a valuable advancement in the study of neonatal emergency care, particularly in primary healthcare settings.

The implications of these findings are substantial for both policy and practice. Interventions aimed at improving neonatal stabilization should not be limited to strengthening clinical skills and equipment availability, but should also include community-based strategies to enhance knowledge, self-efficacy, and rapid decision-making. Health promotion programs, emergency preparedness education, and improved communication between healthcare providers and communities are essential components of such strategies. In addition, strengthening referral systems and ensuring timely access to emergency transportation remain important to support effective care pathways. From a broader perspective, this study underscores that incomplete neonatal stabilization in primary healthcare settings is shaped by a complex interplay of clinical, behavioral, and contextual factors. While facility readiness and clinical practices remain essential, the findings highlight that family-level determinants—particularly decision-making processes, knowledge, and self-efficacy, play a critical role in influencing the timeliness and completeness of neonatal care. These results suggest that improving neonatal outcomes requires a more integrated approach that bridges clinical interventions with community-based strategies. Strengthening health education, promoting early recognition of danger signs, and enhancing emergency preparedness at the household level are essential components of this effort. At the same time, continued improvements in referral systems and access to care are needed to support timely and effective responses. This integrated perspective provides an important foundation for developing targeted interventions in primary healthcare settings.

CONCLUSION

Incomplete neonatal stabilization during obstetric emergencies in primary healthcare settings remains a substantial challenge, with nearly half of cases not receiving full essential interventions. This study identifies decision-making delay, low self-efficacy, inadequate knowledge of neonatal danger signs, and delayed response time as key determinants, highlighting the dominant role of family-level factors over structural barriers. These findings indicate that improving neonatal outcomes requires a dual approach that strengthens both clinical capacity and community readiness. Policy efforts should prioritize community-based health education, rapid decision-making empowerment, and early recognition of neonatal emergencies, alongside improvements in referral systems and emergency transport access. Integrating these strategies into primary healthcare programs is essential to enhance the timeliness and completeness of neonatal stabilization and to reduce preventable neonatal morbidity and mortality.

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