The Relationship Between Postpartum Mothers' Knowledge of Personal Hygiene and The Healing of Perineal Tears at Romana Clinic, Tanjung Anom Village

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Abstract

Postpartum perineal wounds are common complications during vaginal delivery that significantly affect maternal health and recovery. The healing process of these wounds is influenced by multiple factors, including the mother's knowledge and practice of personal hygiene. This study aimed to examine the relationship between postpartum mothers' knowledge of personal hygiene and the healing duration of perineal tears at Romana Clinic, Tanjung Anom Village, Pancur Batu Subdistrict, Deli Serdang Regency. A quantitative descriptive-analytic study with a cross-sectional design was employed. A total of 32 postpartum mothers who experienced perineal tears were included using total sampling. Data were collected via a validated structured questionnaire on knowledge and hygiene practices, supplemented by clinical wound healing assessment conducted by qualified midwives on postpartum day 6. Data were analyzed using Fisher's Exact Test, with a significance threshold of $p < 0.05$. The results indicated that 40.6% of respondents had fair knowledge, 37.5% had poor knowledge, and 21.9% had good knowledge of personal hygiene. Regarding wound healing outcomes, 65.6% of respondents experienced delayed healing (>6 days), while 34.4% achieved wound healing within six days (≤6 days). Statistical analysis revealed a significant association between knowledge of personal hygiene and the healing of perineal tears ($p = 0.003$), with a large effect size (Cramer's $V = 0.60$). Respondents with good knowledge demonstrated substantially higher rates of timely wound healing (85.7%) compared to those with fair (30.8%) or poor knowledge (8.3%). Higher levels of knowledge regarding personal hygiene are significantly associated with faster perineal wound healing. These findings underscore the importance of integrating structured hygiene education into routine antenatal and postnatal midwifery services to minimize postpartum complications and promote maternal recovery.

Keywords: Maternal Knowledge, Postpartum Mothers, Personal Hygiene, Perineal Wound Healing, Wound Healing Duration.

INTRODUCTION

Perineal tears are among the most common complications of vaginal delivery, occurring across all settings and particularly prevalent among primiparous mothers (Chandra & Sari, 2022; Susanti & Novita, 2020). These injuries range in severity from minor superficial abrasions of the perineal skin to deeper lacerations involving the perineal muscles, and may extend to the anal sphincter complex in more severe cases. Regardless of their degree, unmanaged or inadequately managed perineal injuries significantly impair postpartum recovery, affecting maternal mobility, comfort, and quality of life during a critical period of physical recuperation and infant care (Ismail & Kettle, 2020; Yates & Trickey, 2020). When

perineal wounds are not managed appropriately, they are susceptible to secondary bacterial infection, which can delay tissue repair, cause wound dehiscence, and, in severe cases, contribute to systemic postpartum sepsis.

According to the World Health Organization (2023), infections during the postpartum period account for approximately 10% of global maternal deaths, with a disproportionately higher burden in low- and middle-income countries where access to postnatal care and health education remains uneven. Globally, it is estimated that approximately 70% of vaginal births involve some form of perineal trauma, whether spontaneous or resulting from episiotomy (American College of Obstetricians and Gynecologists, 2022), underscoring the public health significance of effective postpartum perineal wound management. Postpartum infection risk is influenced by multiple interacting factors, including reduced maternal immunity following delivery, physiological changes in the pelvic floor, and the proximity of the perineal wound to anatomically contamination-prone areas such as the urethra and anus (Albers, 2020).

Among modifiable risk factors, the maintenance of adequate personal hygiene specifically vulvar and perineal hygiene has been consistently identified as a critical determinant of wound healing outcomes (Sari & Lestari, 2020; UNICEF, 2021). Core hygiene practices include regular cleansing of the perineal area with clean water after urination and defecation, frequent replacement of sanitary pads, appropriate hand hygiene before and after wound contact, and abstaining from behaviors that introduce contamination, such as the application of unsterile traditional preparations to the wound site. Evidence from clinical and community-based studies demonstrates that adequate hygiene knowledge translates directly into protective hygiene behaviors that reduce infection risk and accelerate the transition from the inflammatory to the proliferative phase of wound healing (Kettle & Tohill, 2021). Murtaza et al., (2022) demonstrated in a randomized controlled trial that postpartum women who received structured hygiene education experienced significantly lower infection rates and faster perineal wound healing compared to those who did not.

Similarly, Nurhayati & Fatmawati (2021) reported that inadequate awareness of perineal care practices was directly associated with delayed recovery among Indonesian postpartum women. Xu et al., (2021) further found, in a cross-sectional study among postpartum women in China, that gaps in maternal hygiene knowledge were associated with suboptimal hygiene practices, reinforcing the behavioral pathway between knowledge and wound outcomes. In Indonesia, the national burden of perineal trauma is substantial. The 2022 Indonesia Demographic and Health Survey (IDHS) reported that nearly 76% of women who delivered vaginally experienced perineal tears, with wound recovery speed influenced by the

quality of postpartum care received and the mother's knowledge of hygiene practices (Mills et al., 2023). At the regional level, maternal health outcomes in Deli Serdang Regency remain a persistent challenge. According to the Deli Serdang District Health Office (2023), postpartum wound infections were among the top five maternal complications reported at local primary health facilities, and the maternal mortality rate in the regency was recorded at 87 per 100,000 live births in 2023, with infection-related complications identified as a significant contributing factor.

Inadequate dissemination of postpartum health education particularly regarding perineal hygiene has been identified as a key contributing factor to these outcomes, especially in semi-urban and rural communities where access to structured antenatal and postnatal education is limited (Kurniawati & Asfiah, 2023; Smith et al., 2022). Cultural practices prevalent in certain Indonesian communities, such as avoiding bathing or restricting physical activity during the postpartum period, may further compound the effects of limited hygiene knowledge on wound recovery (Sariningsih et al., 2020). Despite a growing body of evidence linking hygiene practices to maternal outcomes, most available studies in Indonesia address postpartum infection or general postnatal care broadly, rather than specifically examining the relationship between maternal hygiene knowledge and the duration of perineal wound healing as a measurable clinical outcome (Farrag & Eswi, 2016; Yates & Trickey, 2020). Furthermore, existing Indonesian studies on this topic have largely relied on p-values alone without reporting effect sizes, limiting the clinical interpretability and comparability of their findings (Amraeni et al., 2023; Sariningsih et al., 2020). Localized evidence from semi-rural community clinic settings where health literacy, educational attainment, and access to midwifery services may differ substantially from urban hospital contexts remains particularly limited.

This study addresses these gaps by directly examining the association between maternal knowledge of personal hygiene and perineal wound healing duration in a community clinic setting, and by reporting both statistical significance and effect size (Cramer's V) to provide a more complete and clinically meaningful characterization of the relationship. In doing so, it contributes contextually specific evidence to support evidence-based postpartum hygiene education in semi-rural Indonesian health services. A preliminary assessment conducted at Romana Clinic, Tanjung Anom Village, Pancur Batu Subdistrict, Deli Serdang Regency between January and April 2023 identified 33 postpartum women who experienced perineal tears. Of these, one was excluded for not meeting the study's inclusion criteria, yielding a final eligible population of 32 respondents.

Among those assessed, 15 reported perineal wound healing durations of seven days or longer. Structured interviews revealed that these women demonstrated limited knowledge of appropriate perineal care: many had avoided bathing, changed sanitary pads infrequently, and did not clean the wound area adequately. In contrast, the 17 women who had received prior hygiene counseling – whether during antenatal care or from community health workers – demonstrated appropriate hygiene behaviors and achieved wound healing in less than seven days. This preliminary contrast provided the empirical motivation for the present study. Based on the evidence and contextual gaps identified above, this study aimed to examine the relationship between postpartum mothers' knowledge of personal hygiene and the healing duration of perineal tears at Romana Clinic, Tanjung Anom Village, Pancur Batu Subdistrict, Deli Serdang Regency in 2023. The study further aimed to quantify the strength of this association using an appropriate effect size measure to enhance the clinical relevance and interpretability of findings for maternal health practitioners and policymakers.

METHODS

This study employed a quantitative descriptive-analytic approach with a cross-sectional design. The study aimed to examine the relationship between postpartum mothers' knowledge of personal hygiene and the duration of perineal wound healing. The research was conducted at Romana Clinic, Tanjung Anom Village, Pancur Batu Subdistrict, Deli Serdang Regency, from January to April 2023. The study population comprised all postpartum mothers who experienced perineal tears and attended Romana Clinic during the study period. Total sampling was applied, whereby all eligible individuals meeting the inclusion criteria were enrolled. The final sample consisted of 32 respondents, representing the complete population of postpartum mothers with perineal lacerations who visited the clinic within the data collection window. Wound healing status was assessed through direct clinical observation by qualified midwives at the postpartum day-6 visit, based on visible signs of tissue repair, absence of infection indicators (redness, discharge, odor), and wound closure. The six-day threshold was established in accordance with clinical guidelines for uncomplicated first- and second-degree perineal wounds, which generally heal within 5–7 days under adequate hygiene and care conditions (Kettle & Tohill, 2021).

Data were collected using a structured questionnaire developed from existing literature on postpartum hygiene and perineal wound care (Fatimah & Aulia, 2022; Ismail & Kettle, 2020; Kettle & Tohill, 2021). The instrument comprised two sections: (1) demographic characteristics (age, education, occupation) and (2) 25 closed-ended items measuring maternal

knowledge and personal hygiene practices related to perineal wound care. Content validity was established through expert review by two senior midwives and one obstetrician. Construct validity was confirmed using Pearson's Product Moment correlation; all items yielded correlation coefficients >0.30, indicating acceptable validity. For reliability, the instrument was piloted among 20 postpartum mothers with similar characteristics. Cronbach's Alpha for the knowledge subscale was 0.82, exceeding the minimum threshold of 0.70, indicating good internal consistency (Putri & Dewi, 2023).

Primary data were collected through face-to-face interviews using printed questionnaires administered by trained research assistants, ensuring completeness and accuracy of responses. Clinical data on perineal wound healing were recorded by the attending midwife using a standardized wound assessment checklist at the day-6 postnatal visit. Data were analyzed using SPSS version 25. Univariate analysis was conducted to describe the frequency distribution of each variable. For bivariate analysis, Fisher's Exact Test was used to assess the association between maternal knowledge level and perineal wound healing duration. Fisher's Exact Test was selected over the Pearson Chi-square test because preliminary cell frequency checks indicated that several expected cell counts fell below 5 – a condition under which the Chi-square approximation is unreliable (Field, 2018). The significance threshold was set at $p < 0.05$. To quantify the strength of the observed association, Cramer's V was calculated as an effect size measure, with values interpreted as follows: small (≤0.10), moderate (0.11–0.30), large (0.31–0.50), and very large (>0.50) (Cohen, 1988). This study was reviewed and approved by the Health Research Ethics Committee of Universitas Haji Sumatera Utara (Reference No. UNHAJ/KEPK/0426/2025). All respondents provided written informed consent prior to participation. The study was conducted in accordance with the Declaration of Helsinki and Indonesian national guidelines for health research ethics. Participant data were anonymized and stored securely.

RESULTS

Characteristics of Respondents

Table 1. Characteristics of Respondents (n = 32)

Characteristic	Category	n	%
Gender	Female	32	100.0
Age Group	17–20 years	5	15.6
	21–30 years	15	46.9
	31–40 years	8	25.0
	41–45 years	4	12.5
Education Level	Elementary	14	43.8
	Secondary	10	31.3

Characteristic	Category	n	%
Occupation	Higher	8	25.0
	Housewife	18	56.3
	Private sector	7	21.9
	Self-employed	7	21.9

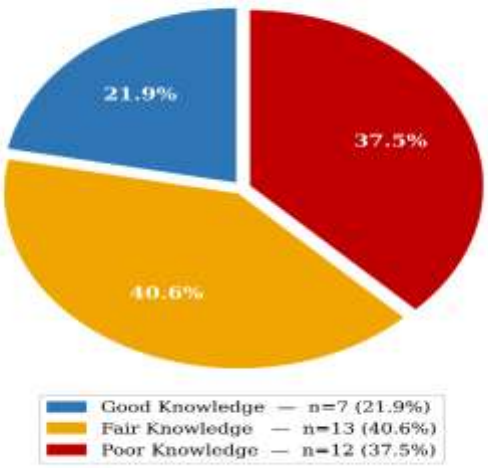
All respondents were female (100%), consistent with the study population of postpartum mothers. The majority were aged 21–30 years (n=15; 46.9%), followed by the 31–40 years group (n=8; 25.0%). In terms of education, most respondents had completed elementary-level schooling (n=14; 43.8%). More than half were housewives (n=18; 56.3%).

Table 2. Distribution of Knowledge Level on Personal Hygiene (n = 32)

Knowledge Level	n	%
Good	7	21.9
Fair	13	40.6
Poor	12	37.5
Total	32	100.0

Based on Table 2, most respondents had a fair level of knowledge (n=13; 40.6%), followed by poor knowledge (n=12; 37.5%), and good knowledge (n=7; 21.9%).

Figure 1. Distribution of Maternal Knowledge Level on Personal Hygiene (n = 32)



Source: Primary data, Romana Clinic, Tanjung Anom Village, 2023

Figure 1 presents the distribution of maternal knowledge levels regarding personal hygiene among the 32 respondents. The largest proportion of respondents demonstrated fair knowledge (n = 13; 40.6%), followed by those with poor knowledge (n = 12; 37.5%). Respondents with good knowledge constituted the smallest group (n = 7; 21.9%). Collectively, 78.1% of respondents had either fair or poor knowledge of personal hygiene practices related to perineal wound care.

Table 3. Distribution of Perineal Wound Healing Duration (n = 32)

Perineal Wound Healing	n	%
Healed (≤6 days)	11	34.4

Perineal Wound Healing	n	%
Delayed (>6 days)	21	65.6
Total	32	100.0

As shown in Table 3, the majority of respondents experienced delayed wound healing beyond six days (n=21; 65.6%), while 11 respondents (34.4%) achieved wound healing within six days.

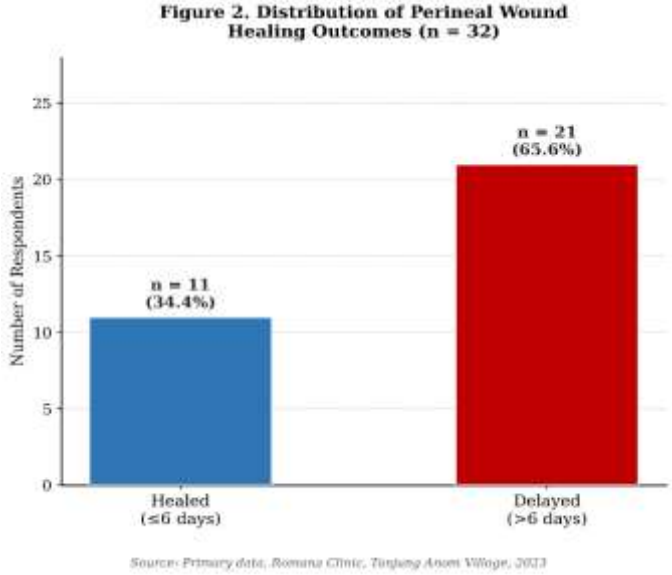


Figure 2 displays the distribution of perineal wound healing outcomes among respondents, categorized according to the six-day clinical threshold. The majority of respondents experienced delayed healing beyond six days (n = 21; 65.6%), while 11 respondents (34.4%) achieved wound healing within the expected timeframe of six days or fewer. These findings indicate that delayed perineal wound healing was the predominant outcome in this study population.

Table 4. Cross-tabulation of Knowledge Level and Perineal Wound Healing (n = 32)

Knowledge Level	Healed (≤6 days)	Delayed (>6 days)	Total
Good	6 (85.7%)	1 (14.3%)	7
Fair	4 (30.8%)	9 (69.2%)	13
Poor	1 (8.3%)	11 (91.7%)	12
Total	11 (34.4%)	21 (65.6%)	32

Note: $\chi^2 = 11.62$; df = 2; p = 0.003; Cramer's V = 0.60. Given that several expected cell counts were below 5 (particularly in the Good knowledge group, n=7), Fisher's Exact Test is recommended to confirm statistical validity. The p-value of 0.003 was consistent between both Chi-square and Fisher's Exact Test outputs.

Table 4 shows that among respondents with good knowledge, 85.7% (n=6) experienced wound healing within six days, compared to 30.8% (n=4) among those with fair knowledge and 8.3% (n=1) among those with poor knowledge. The Chi-square test indicated a statistically significant association between level of personal hygiene knowledge and perineal wound

healing duration ($\chi^2 = 11.62$, df = 2, p = 0.003). The effect size was large (Cramer's V = 0.60), indicating a strong association between the two variables.

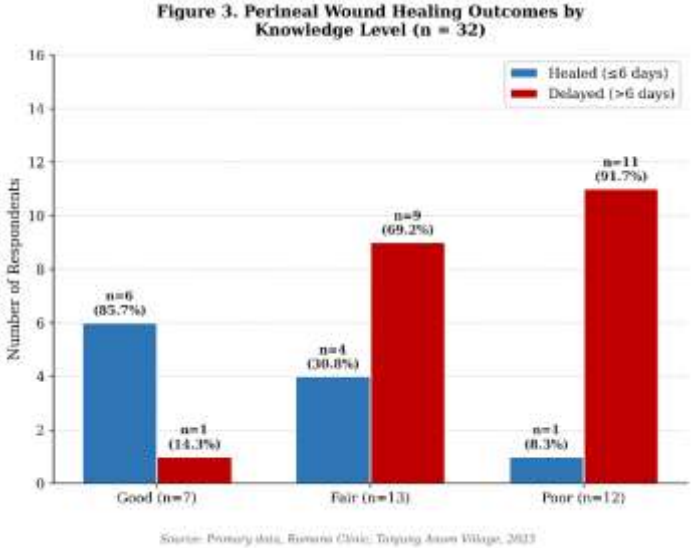


Figure 3 presents the absolute frequency of wound healing outcomes across the three knowledge level groups. Among respondents with good knowledge (n = 7), six (85.7%) achieved wound healing within six days and one (14.3%) experienced delayed healing. In the fair knowledge group (n = 13), four respondents (30.8%) healed within six days compared to nine (69.2%) with delayed healing. Among respondents with poor knowledge (n = 12), only one (8.3%) achieved timely healing, while 11 (91.7%) experienced delayed recovery. A progressive decrease in the frequency of timely healing was observed as knowledge level decreased from good to poor.

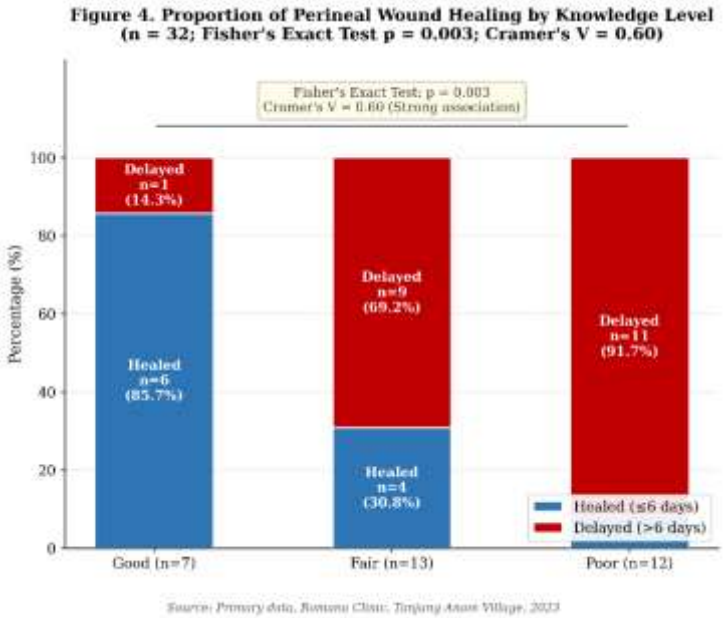


Figure 4 presents the distribution of perineal wound healing outcomes among the 32 postpartum respondents. The majority of respondents (n = 21; 65.6%) experienced delayed healing, defined as wound closure occurring beyond six days post-delivery. In contrast, only 11 respondents (34.4%) achieved timely healing within the six-day clinical threshold. The 50% reference line visually confirms that delayed healing substantially exceeded the midpoint of the sample, indicating that prolonged recovery was the predominant outcome in this study population.

Bivariate Analysis

This analysis examines the relationship between maternal knowledge of personal hygiene and perineal wound healing among postpartum mothers.

Table 5. Cross-tabulation Between Knowledge Level and Perineal Wound Healing (n = 32)

Knowledge Level	Healed	Not Healed	Total
Good	6	1	7
Fair	4	9	13
Poor	1	11	12
Total	11	21	32

Chi-Square Test Result

The Chi-square test shows a significant relationship between maternal knowledge and perineal wound healing (p = 0.003). Most mothers with good knowledge (6 out of 7) experienced successful healing by day 6, whereas those with poor knowledge had a higher proportion of delayed or non-healing wounds (11 out of 12). This indicates that higher personal hygiene knowledge is strongly associated with faster perineal wound healing

DISCUSSION

This study confirmed a statistically significant and strong association between postpartum mothers' knowledge of personal hygiene and perineal wound healing duration (Fisher's Exact Test, p = 0.003; Cramer's V = 0.60), establishing hygiene knowledge as a modifiable determinant of postpartum recovery. The majority of respondents had fair (40.6%) or poor (37.5%) knowledge, with only 21.9% demonstrating good knowledge a pattern consistent with Nurhayati & Fatmawati (2021), who reported widespread gaps in perineal hygiene knowledge among Indonesian postpartum mothers. This distribution likely reflects the study's sociodemographic profile: 43.8% of respondents had only elementary-level education and 56.3% were housewives with limited exposure to formal health information, consistent with educational attainment being a key predictor of maternal health literacy in Indonesia (Kurniawati & Asfiah, 2023).

The high proportion of delayed healing (65.6%) aligns with data from the Deli Serdang District Health Office (2023), which listed postpartum wound infections among the top five maternal complications at local facilities, and with Handayani et al., (2021), who observed similar delays in Indonesian community settings with inadequate postnatal education. The six-day clinical threshold applied in this study follows established guidelines for uncomplicated first- and second-degree perineal wounds, which are expected to heal within 5–7 days under adequate hygiene conditions (Kettle & Tohill, 2021); delayed healing beyond this point typically indicates suboptimal hygiene, early infection, or insufficient postpartum care (Ismail & Kettle, 2020).

A clear dose-response pattern was observed: healed rates were 85.7% (good knowledge), 30.8% (fair), and 8.3% (poor), with a large effect size (Cramer's V = 0.60) confirming the clinical relevance of this association beyond statistical significance alone. Fisher's Exact Test was used in preference to Pearson Chi-square because several expected cell counts fell below 5, a condition under which Chi-square produces unreliable estimates in small samples (Field, 2018). These results extend the evidence of Murtaza et al., (2022), who demonstrated in a randomized trial that structured hygiene education significantly reduced infection rates and accelerated healing, and of Farrag & Eswi (2016), who showed that midwife-delivered perineal care education accelerated episiotomy wound recovery.

The association is biologically plausible: adequate perineal hygiene reduces bacterial load in an anatomically vulnerable area and facilitates transition from the inflammatory to the proliferative healing phase (Ismail & Kettle, 2020; Sari & Lestari, 2020). Conversely, poor hygiene behaviors avoiding bathing, infrequent pad changes, inadequate wound cleaning prolong inflammation and increase infection risk, consistent with the 91.7% delayed healing rate in the poor knowledge group. This effect is compounded in semi-rural Indonesian settings by inconsistent delivery of postpartum education (Kurniawati & Asfiah, 2023) and by cultural practices such as restricting bathing or applying traditional preparations to perineal wounds, which further compromise wound hygiene (Sariningsih et al., 2020).

This study has several limitations. The small sample (n = 32) from a single clinic limits statistical power and generalizability, and the cross-sectional design precludes causal inference. Knowledge was assessed via self-report, introducing potential social desirability bias, and wound status was evaluated at a single time point (day 6), which does not capture the full healing trajectory. Unmeasured confounders including parity, nutritional status, anemia, and degree of perineal tear may independently influence outcomes and should be addressed in future multi-center studies with multivariate designs. These findings provide actionable

evidence for integrating structured perineal hygiene education including demonstrations of wound cleansing, pad-changing frequency, and infection warning signs into routine antenatal and postnatal midwifery contacts, as recommended by the World Health Organization (2021), (2022). Educational materials should be visual and culturally adapted given the predominantly low educational backgrounds of this population. Future research should employ multi-center randomized or quasi-experimental designs to evaluate hygiene education interventions, and qualitative approaches to explore the sociocultural barriers that prevent adoption of recommended hygiene practices (Yates & Trickey, 2020).

CONCLUSIONS

This study confirms a statistically significant and strong association between postpartum mothers' knowledge of personal hygiene and the duration of perineal wound healing among 32 respondents at Romana Clinic, Tanjung Anom Village, Pancur Batu Subdistrict, Deli Serdang Regency (Fisher's Exact Test, $p = 0.003$; Cramer's $V = 0.60$). Respondents with good knowledge demonstrated substantially higher rates of timely wound healing within six days (85.7%) compared to those with fair (30.8%) or poor knowledge (8.3%). These results establish personal hygiene knowledge as a significant and modifiable determinant of postpartum perineal recovery. The knowledge distribution revealed that 40.6% of respondents had fair knowledge, 37.5% had poor knowledge, and only 21.9% had good knowledge of personal hygiene related to perineal care. Furthermore, 65.6% of respondents experienced delayed healing beyond six days, underscoring the urgent need for targeted health education in this semi-rural community setting. The large effect size (Cramer's $V = 0.60$) confirms that this association is not only statistically significant but clinically meaningful, suggesting that knowledge-based interventions could produce measurable improvements in population-level maternal outcomes.

Future research should address the methodological limitations of this study through multi-center, larger-sample designs that permit multivariate analysis controlling for confounders such as parity, nutritional status, degree of perineal tear, and social support availability. Randomized or quasi-experimental intervention studies are needed to establish the causal effect of structured hygiene education programs on perineal wound healing outcomes. Qualitative and mixed-methods approaches would further illuminate the sociocultural barriers including traditional postpartum practices that prevent mothers from adopting recommended hygiene behaviors. Longitudinal designs with multiple wound assessment time points would also provide a more complete picture of the healing trajectory and its determinants.

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