Contents lists available at IOCS

Science Midwifery

journal homepage: www.midwifery.iocspublisher.org

Risk factors influencing the incidence of perineal rupture in normal delivery

Darlina[1], Dzulfikar Djalil Lukman Hakim[2], Johanes C. Mose[3], Mochamad Rizkar Arev Sukarsa[4], Sofie Rifayani Krisnadi[5], Hadi Susiarno[6]

[1]Master of Midwifery Program, Faculty of Medicine, Universitas Padjadjaran, Bandung, Indonesia.
[2]Department of pediatric, Faculty of Medicine, Universitas Padjadjaran, Bandung, Indonesia
[3,4,5,6]Department of Obstetrics and Gynecology, Faculty of Medicine, Universitas Padjadjaran, Bandung, Indonesia

ARTICLEINFO

Article history:

Received Jul 8, 2025
Revised Jul 15, 2025
Accepted Jul 21, 2025

Keywords:

Perineal Massage
Perineal Rupture
Pregnancy Exercise
Risk Factors
Vaginal Delivery

ABSTRACT

Perineal rupture is a common complication during vaginal delivery and can lead to long-term health consequences for the mother. This study aims to identify the risk factors associated with perineal rupture in normal vaginal delivery. A scoping review was conducted by analyzing relevant literature from 2020 to 2024. The results indicate that major risk factors for perineal rupture include birth weight, parity, duration of the second stage of labor, and the use of obstetric instruments. Additionally, pregnancy exercise and perineal massage were found to be effective in reducing the incidence of perineal rupture, particularly in primiparous women. Proper management of labor, including monitoring fetal weight and employing appropriate medical techniques, plays a significant role in minimizing the risk of perineal rupture. This study recommends the implementation of evidence-based preventive measures to reduce the prevalence of perineal rupture and its long-term impacts on maternal health.

Corresponding Author:

Darlina,
Master of Midwifery, Faculty of Medicine,
Padjadjaran University,
Jl. Prof. Eyckman No.38, Pasteur, Kec. Sukajadi, Kota Bandung, Jawa Barat 40161, Indonesia
Email: darlina1037a@gmail.com

INTRODUCTION

Perineal rupture is a common complication of vaginal delivery with a high prevalence in various populations (Ahmed et al., 2019). The prevalence of perineal rupture is influenced by various risk factors ranging from first to fourth degree, with long-term impacts on maternal health, such as urinary incontinence and sexual dysfunction (Faden et al., 2022). Perineal rupture is a common complication of vaginal delivery, with varying prevalence across different countries. In developed countries like the UK, approximately 3.5% of primiparous women experience severe perineal injuries (Grade III–IV) (Mahgoub et al., 2019) while in low-resource countries like South Africa, perineal trauma rates range from 36% to 55% (Ramphal & Sultan, 2024).

In Indonesia, studies report a high prevalence of perineal rupture, with 66% to 85% of vaginal deliveries affected, and primiparous women with higher birth-weight babies are at greater

risk for second- to third-degree tears (Yuliyantika & Laora Heryanto, 2021). These findings highlight the urgent need for evidence-based preventive strategies, particularly in developing countries, to address high rates of perineal injury and reduce its long-term impacts on maternal health (Faden et al., 2022). This rupture is often caused by excessive pressure on the perineum during labor, which can affect tissue integrity and increase the risk of postpartum complications, including infection and psychological problems (Zhuk, 2024). Risk factors that influence the incidence of perineal rupture include fetal weight, parity, duration of the second stage of labor, and the use of birth aids such as forceps and vacuum (Gupta et al., 2021).

A major issue requiring greater attention is the high prevalence of perineal rupture, particularly in primiparous mothers and those with babies with higher birth weights. It is crucial to study these risk factors given the high prevalence of perineal rupture in Indonesia, which can lead to long-term complications such as urinary incontinence, sexual dysfunction, and affect the quality of life for mothers after delivery (Faden et al., 2022). Previous research has shown that higher birth weight increases the risk of perineal rupture The risk of perineal rupture is due to increased pressure on the perineum during labor (Mivšek et al., 2021). Research at the Japara Community Health Center in Kuningan showed a significant association between birth weight and the incidence of perineal rupture, with higher birth weight babies increasing the likelihood of rupture (Gonzalez-Díaz et al., 2019). Other research suggests that mothers with heavier babies are more likely to experience second- or third-degree perineal rupture (Tobiaw Tefera, 2019).

Parity is also a significant risk factor for perineal rupture. Primiparous mothers (first-time birth mothers) have a higher risk of perineal rupture compared to multiparous mothers (Mahgoub et al., 2019). This is because the perineum has not previously been stretched, making it more susceptible to tearing (Zhuk, 2024). In Indonesia, research shows that primiparous mothers experience perineal rupture more frequently than multiparous mothers (Pebolo et al., 2019).

Other factors contributing to an increased risk of perineal rupture include the duration of the second stage of labor and the use of medical techniques such as episiotomy or instrumental delivery. Although episiotomy is often performed to reduce the risk of perineal rupture, research shows that this procedure often carries the risk of worsening perineal injury, particularly in cases of large babies or the use of instrumental delivery (Faden et al., 2022). Furthermore, the use of epidurals is associated with an increased incidence of perineal rupture, despite its potential to reduce pain during labor (Aikaterini E. Sousamli, 2024). Epidural analgesia, commonly used to manage labor pain, can increase the risk of perineal rupture. The primary mechanism behind this is that epidurals may reduce a mother's ability to control pelvic floor muscles, which are essential for guiding the fetus through the birth canal. This loss of control can lead to higher pressure on the perineum, increasing the likelihood of tearing, especially during the second stage of labor. Additionally, epidural use is associated with prolonged labor, further raising the risk of perineal injury (Aikaterini E. Sousamli, 2024; Gupta et al., 2021) .

Preventive approaches, such as prenatal exercise and perineal massage during pregnancy, have been shown to reduce the incidence of perineal rupture. A study in Lamongan, Indonesia, showed that mothers who regularly participated in prenatal exercise had a lower risk of perineal rupture than those who did not (Venzovska et al., 2024). This research demonstrates the importance of an evidence-based approach to minimizing the risk of perineal rupture through preventative measures that can be implemented in the community.

Deliveries managed by trained and experienced medical personnel also play a crucial role in reducing the incidence of perineal rupture. Research shows that midwives' experience in delivering deliveries is directly associated with lower rates of perineal rupture (Rodrigues et al., 2019). Trained medical personnel can employ safer techniques to prevent perineal injury, including the use of appropriate birthing aids and avoiding unnecessary episiotomies (Gupta et al., 2021).

The innovation in this research lies in the reassessment of existing medical practices, particularly regarding the prevention of perineal rupture, and the development of a more comprehensive, evidence-based approach. This research is expected to identify new, more effective strategies for reducing the prevalence of perineal rupture and mitigating its long-term impact on mothers. Furthermore, this research can provide insights into the importance of education and training for medical personnel to ensure safe and minimally invasive deliveries.

Overall, various factors influence the incidence of perineal rupture during normal delivery. Therefore, careful labor management, including monitoring the baby's weight, using appropriate medical techniques, and education about prenatal exercise and perineal massage, is crucial to reduce the risk of perineal rupture (Zhuk, 2024). Evidence-based preventive measures are expected to reduce the prevalence of perineal rupture and its long-term impact on the mother (Faden et al., 2022).

RESEARCH METHOD

This study used a scoping review method to map and analyze the existing literature on perineal rupture and its influencing factors in vaginal delivery. This method was chosen because the aim was to provide an overview of a broad and complex topic and to identify knowledge gaps in the relevant literature. The scoping review design followed the guidelines established by (Peters et al., 2020) and adapted to PRISMA-ScR (Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews) to ensure a transparent and systematic process. This process involved a broad literature search and was not limited to a specific type of study, allowing for the exploration of a wide range of evidence that could provide deeper insights into the topic under study. When defining the research question, the authors used the mnemonic Population, Exposure, and Outcome (PEO), shown in Table 1 (Alan Davies, 2024). The research question was: What are the risk factors that influence the incidence of perineal rupture in vaginal delivery?

Table 1.PEO mnemonic selection

Population	Exposure	Outcome
women in labor	Risk factors that can influence the occurrence of perineal rupture in vaginal delivery	Perineal rupture

Source: Author Discussion, 2025

The authors narrowed the scope by establishing inclusion and exclusion criteria for the literature used (Table 2). The purpose of establishing these criteria was to ensure a more focused review of studies and to ensure they align with the research topic. The keywords used were perineal rupture, risk factors, normal delivery, and women in labor.

Table 2. Inclusion and exclusion criteria

Inclusion Criteria	Exclusion Criteria
Research articles published in 2020-2024Articles in Indonesian and EnglishArticles have full text	books, blogs Paid full text access

Source: Author Discussion, 2025

The author screened the literature obtained from various article search engines using previously determined keywords. A total of 1,311 articles were obtained, with details from each search engine as follows: Pubmed 151 articles, Science Direct 82 articles, Google Scholar 1,010 articles, and Worldcat 68 articles. The author used the PRISMA guide in compiling this scoping review. In addition, the author includes a PRISMA diagram showing the number of literatures found, the screening process, literature that met the criteria, and which were finally included in the overall review (Figure 1).

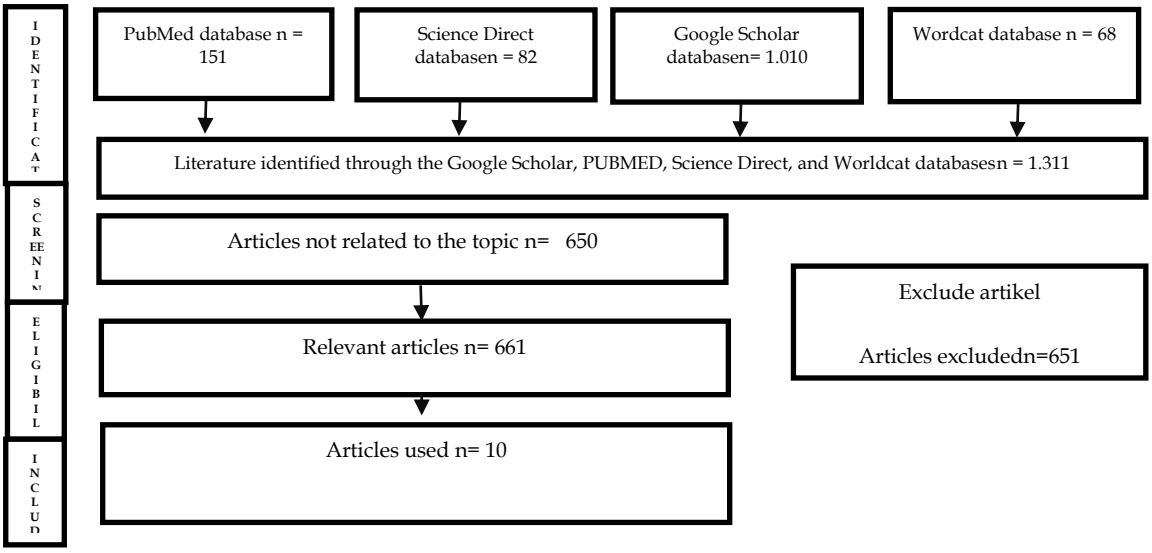

Figure 1. Prisma

RESULTS AND DISCUSSIONS

The data synthesis process in this study involved collecting and summarizing articles that met the inclusion criteria into a table. The table included the titles, findings, methodology, and results of the 10 synthesized articles.

Table 3. Review article data synthesis

No	Author(s),Year	Title	Country	Sample Size	Research Findings
1	(Agustina Hadiningsih & Esti Anggrraeni, 2024)	*The Association Between Birth Weight and the Occurrence of Perineal Rupture in Talang Public Health Center,Tegal District*	Indonesia	119 women with normal vaginal delivery	This study found no significant relationship between birth weight and the incidence of perineal rupture at Talang Health Center (p-value = 0.650). However, infants with extreme birth weight (>4000 grams) were more likely to experience perineal rupture.
2	(Kim & Lee, 2021)	*Childbirth outcomes and perineal damage in women with natural childbirth in Korea*	Korea	358 women (natural childbirth)	This study found that age, parity, position during delivery, and therapeutic procedures like epidural anesthesia were associated with perineal damage in women with natural childbirth.
3	(Petrenko & Bulba, 2024)	*Prevention of perineal injuries during vaginal births (literature review)*	Ukraina	Literature review, not sample-based	This review analyzed risk factors and prevention methods for perineal injuries during childbirth, identifying that perineal injuries can lead to significant physical and psychological morbidity, as well as increased healthcare costs.
4	(Nikmah et al., 2021)	*The Correlation Between Participation In Pregnancy Workouts And Perineum Ruptures Incidence In Women With Normal Labor*	Indonesia	24 postpartum mothers	This study found a significant relationship between participation in pregnancy workouts and the incidence of perineal rupture during normal labor. Women who regularly engaged in pregnancy exercises had a lower likelihood of experiencing perineal rupture.
5	(Yuliyantika &	*Hubungan antara*	Indonesia	52 primiparous	This study found a significant

	Laora Heryanto, 2021)	*Berat Badan Lahir Bayi dengan Ruptur Perineum pada Primipara*		women	relationship between infant birth weight and the occurrence of perineal rupture in women delivering vaginally. Babies with higher birth weight were at greater risk of causing perineal rupture.
6	(Prihartini et al., 2021)	*The Relationship Between Maternal Parity and Perineal Rupture Incidence in Normal Delivery*	Indonesia	18 women (9 primiparous and 9 multiparous)	This study found a significant relationship between parity and the incidence of perineal rupture during normal delivery. Primiparous women had a higher risk of perineal rupture compared to multiparous women.
7	(Irdayani et al., 2023)	*Risk Factors for Perineal Rupture in Normal Maternity Women at Midwife Independent Practice (BPM)*	Indonesia	94 women with normal vaginal delivery	This study found a significant relationship between infant birth weight and perineal rupture in normal deliveries (p=0.001). However, no relationship was found between precipitous labor and perineal rupture (p=0.192).
8	(Man Victoria Hodgetts Morton Katie Morris, 2024)	*Childbirth-related perineal trauma and its complications: prevalence, risk factors, and management*	Inggris and Australia	Data from several cohorts, including studies from the UK and Australia	This review discusses the prevalence, risk factors, and complications of perineal trauma associated with childbirth. It found that primiparity, use of forceps, duration of the second stage of labor, and high infant birth weight were major risk factors for third- and fourth-degree perineal tears. Mediolateral episiotomy was found to be effective in reducing the risk of anal sphincter injury in instrumental deliveries.
9	(Moura et al., 2024)	*A biomechanical perspective on perineal injuries during childbirth*	Portugal, Switzerland	Modeling, no direct sample	This study developed a finite element model to analyze perineal trauma during childbirth. It found that the structure of the perineum plays a crucial role in increasing stress on the pelvic floor muscles (PFM), especially near the urogenital hiatus, making the perineum and anal sphincter susceptible to rupture and injury.
10	(Ramphal & Sultan, 2024)	*Perineal injuries during vaginal birth in low-resource countries*	Afrika Selatan, UK	Data from several low-income countries	This review highlights that Obstetric Anal Sphincter Injuries (OASIS) are a significant issue in low-resource settings, with perineal trauma related to birth (BRPT) ranging from 36% to 55%. Factors such as fetal macrosomia, prolonged labor, and improper episiotomy techniques were identified as major contributors to OASIS.

The search results that match the research keywords produce 10 articles. The articles reviewed come from developing countries. Some of the countries are Indonesia, Turkey, Egypt, Iran, Ethiopia, and Malaysia. The following are the countries that are the research locations in the articles.

Table 4. Distribution of countries in articles

Country	Freq	Country	Freq
Indonesia	5	Inggris	1
Korea	1	Portugal	1
Ukraina	1	Afrika Selatan	1

Source: Author Discussion, 2025

This article evaluates the factors influencing the incidence of perineal rupture during normal delivery. Based on the synthesized research results, it can be concluded that several factors such as infant weight, parity, and duration of the second stage of labor have a significant influence on the incidence of perineal rupture. Several studies conducted in Indonesia have shown an association between higher infant weight and an increased risk of perineal rupture, particularly in primiparous mothers. Furthermore, participation in prenatal exercise has also been found to reduce the likelihood of perineal rupture. The findings of this article illustrate that the risk factors influencing perineal rupture are diverse, and evidence-based preventive approaches, such as prenatal exercise and perineal massage, may play a role in reducing the prevalence of this occurrence.

Table 5.Article synthesis results

No	Main	Topic
1	Risk Factors for Perineal Rupture	a. Birth Weight (1,2,3,5) b. Parity (1,2,6) c. Use of Obstetric Instruments (Forceps and Vacuum) (2,4,5)
2	Long-Term Effects of Perineal Rupture	a. Urinary Incontinence (3,6,9) b. Sexual Dysfunction (4,7,9) c. Other Postpartum Complications (2,5,10)
3	Preventive Approaches and Clinical Management	a. Pregnancy Exercise and Perineal Massage (1,4,9) b. Education and Training for Healthcare Providers (3,5,7) c. Use of Appropriate Medical Techniques (2,6,8)

Source: Author Discussion, 2025

Discussion

Risk Factors for Perineal Rupture

a. Baby Weight, one of the most significant factors in the occurrence of perineal rupture is the baby's weight. Research shows that babies weighing more (>4000 grams) have an increased risk of perineal rupture due to the pressure exerted by the baby's head as it passes through the birth canal. A study conducted at the Juwita Midwife Clinic found that babies weighing more than 4000 grams were associated with an increased risk of perineal rupture in mothers who delivered vaginally (Susanti & Ilawati, 2023).

b. Parity, or the number of previous births, also plays a role in the risk of perineal rupture. Mothers giving birth for the first time (primiparas) are at higher risk of perineal rupture than mothers who have given birth multiple times (multiparas). This is due to the reduced elasticity of the perineal tissue in primiparas. A study showed that lower parity (primiparas) increases the risk of perineal rupture during vaginal delivery (Dwi Saputri Susita Utami, 2022).

c. Use of Birthing Aids (Forceps and Vacuum), the use of birthing aids such as forceps and vacuum devices is also a risk factor that can increase the incidence of perineal rupture. These aids are typically used to assist in the delivery of babies in unfavorable positions or when labor is challenging. While these aids can facilitate delivery, their use increases pressure on the perineum, potentially leading to further tears (Agustina Hadiningsih & Esti Anggrraeni, 2024).

Long-Term Impact of Perineal Rupture

a. Urinary Incontinence, one of the most common effects of perineal rupture is urinary incontinence, which can occur when the tear damages the pelvic floor muscles that control the bladder. Mothers who experience second- or third-degree perineal ruptures are more likely to experience postpartum urinary incontinence. This incontinence can last a long time, depending on the severity of the tear and how quickly treatment is provided. Urinary incontinence is more common in mothers who give birth to larger babies or those with deeper

perineal tears, such as second- or third-degree tears. Physical therapy and pelvic floor exercises can help restore bladder control in mothers who experience postpartum urinary incontinence (Ferdinandus et al., 2022).

b. Sexual Dysfunction, in addition to physical problems, sexual dysfunction is also a common long-term impact in mothers who experience perineal tears, especially high-degree tears. These sexual disorders can include pain during intercourse, decreased libido, and discomfort during intercourse. Mothers with third- or fourth-degree perineal tears tend to experience more serious sexual problems. Severe tissue damage can cause ongoing pain during intercourse. Recovery of maternal sexual function requires time and the appropriate medical approach, including counseling and physical therapy (Ferdinandus et al., 2022).
c. Other Postpartum Complications, perineal rupture can also lead to other postpartum complications, including psychological complications such as anxiety, depression, and post-traumatic stress disorder (PTSD), especially for mothers who experience severe tears. Traumatic childbirth experiences can lead to long-term mental health problems. Mothers who experience severe perineal rupture can experience significant psychological distress, including fear of giving birth again and ongoing anxiety about their physical health. Excessive trauma and fear after experiencing a severe perineal rupture can lead to long-term mental health problems, such as postpartum anxiety. Appropriate emotional and psychological support after childbirth can reduce the negative psychological impact on mothers (Susanti & Ilawati, 2023).

Preventive Approach and Clinical Management in Reducing the Risk of Perineal Rupturea

a. Perineal Massage as Prevention of Perineal Rupture, is an effective technique for preventing perineal rupture by increasing the elasticity of the perineal tissue. This technique involves massaging the perineal area during the third trimester of pregnancy, which can increase blood flow and improve tissue flexibility. Perineal massage can significantly reduce the incidence of perineal rupture in pregnant women, especially in primigravida. Perineal massage not only reduces the likelihood of perineal rupture but also reduces the rate of episiotomy, which is often an unnecessary preventive procedure. Although perineal massage is effective, global standards for the implementation of this technique are still needed so that it can be consistently applied by medical personnel and pregnant women (Ferdinandus et al., 2022).
b. Pregnancy Exercises to Increase Pelvic Floor Muscle Strength, prenatal exercise can help prepare a mother's body for labor by increasing the strength and elasticity of the pelvic floor muscles, which support the birth process and reduce the risk of perineal rupture. Regular prenatal exercise can reduce the incidence of perineal rupture in women who deliver vaginally, especially in primigravida women who participate in prenatal exercise. In addition to reducing the risk of perineal rupture, prenatal exercise also helps increase maternal stamina during labor and reduce pain during labor (Nikmah et al., 2021).
c. Education on Safe Childbirth Techniques, education about safe birthing techniques is crucial in preventing perineal rupture. Using proper birthing positions and pushing techniques can reduce excessive pressure on the perineum. Education about birthing techniques and the use of proper positioning can reduce the risk of perineal rupture in women who deliver vaginally. Educational programs that involve husbands and midwives in teaching birthing techniques can improve maternal preparedness for labor and prevent perineal injury (Arisandi Siallagan & Elfrida Manurung, 2021).

CONCLUSION

This study identified that infant weight, parity, and duration of the second stage of labor are the main factors influencing the incidence of perineal rupture during vaginal delivery. Primiparous mothers and babies with higher birth weights are at higher risk of perineal rupture due to the

inability of the perineal tissue to stretch sufficiently. Furthermore, a longer duration of the second stage of labor increases pressure on the perineum, worsening the likelihood of rupture.

A preventive approach involving prenatal exercise and perineal massage has been shown to be effective in reducing the incidence of perineal rupture, particularly in first-time mothers. Prenatal exercise strengthens pelvic floor muscles, while perineal massage improves tissue elasticity and minimizes the risk of injury. This study also highlights the importance of training competent medical personnel in labor management and the use of appropriate medical techniques, including avoiding unindicated episiotomies. Priority recommendations for healthcare workers include training on proper birthing positions, pelvic floor exercises, and strategies to avoid unnecessary interventions during labor. Based on the findings, evidence-based protocols for preventing perineal rupture can be developed for primary care settings. Healthcare workers in primary care should be trained to screen for risk factors such as birth weight, parity, and labor duration. Early interventions, including the promotion of prenatal exercises and perineal massage, should be incorporated into routine prenatal care to reduce the risk of perineal injury. Additionally, educating pregnant women about the benefits of prenatal exercise and perineal massage is crucial to reducing the risk of perineal rupture.

Overall, the results of this study emphasize the need for an evidence-based approach to labor management to prevent perineal rupture and reduce long-term complications. Implementing preventive measures and strengthening the capacity of medical personnel can significantly reduce the prevalence of perineal rupture and its impact on maternal health after delivery.

References

Agustina Hadiningsih, T., & Esti Anggrraeni, I. (2024). *THE ASSOCIATION BETWEEN BIRTH WEIGHT AND THE OCCURRENCE OF PERINEAL RUPTURE IN TALANG PUBLIC HEALTH CENTER, TEGAL DISTRICT*. *13*(1), 2549–5054. https://doi.org/DOI:https://doi.org/10.30591/siklus.v13i01.5566

Ahmed, H., Abdollah, W., & Al-Tawil, N. (2019). Prevalence and Risk Factors of Episiotomy and Perineal Tear in the Maternity Teaching Hospital of Erbil City, Iraq. *Erbil Journal of Nursing and Midwifery*, *2*(1), 44–50. https://doi.org/10.15218/ejnm.2019.06

Aikaterini E. Sousamli, P. D. D. (2024). Relationship between episiotomy and dyspareunia. A narrative review of the most recent literature. *World Journal of Advanced Research and Reviews*, *24*(3), 1805–1810. https://doi.org/10.30574/wjarr.2024.24.3.3878

Alan Davies. (2024). An introduction to carrying out and appraising systematic reviews in healthcare. *Journal of Paramedic Practice*, *Vol. 15, No. 11*. https://doi.org/https://doi.org/10.12968/jpar.2023.15.11.CPD1

Arisandi Siallagan, E., & Elfrida Manurung, F. (2021). GAMBARAN TINGKAT PENGETAHUAN IBU NIFAS TENTANG PENCEGAHAN INFEKSI LUKA PERINEUM DI KLINIK KRISTINA SIDIKALANG TAHUN 2021. *JINTAN : Jurnal Ilmu Keperawatan*, *1*(2), 127–140. https://doi.org/https://doi.org/10.51771/jintan.v1i2.134

Dwi Saputri Susita Utami, E. J. (2022). FAKTOR YANG BERHUBUNGAN DENGAN RUPTURE PERINEUM PADA PERSALINAN NORMAL. *WOMB Midwifery Journal (WOMB Mid.J)*, *1*(2), 1–5. https://doi.org/https://doi.org/10.54832/wombmidj.v1i2.70

Faden, Y. A., Fatani, A. M., Fallatah, B. M., Rawa, T. S., Almasri, S. A., El Amin, N. O., Rawas, S. A., & Al-Hindi, M. Y. (2022). Examining the Association Between Episiotomy and Severe Perineal Tears in a Tertiary Care Center Implementing a Restrictive Episiotomy Policy. *Cureus*. https://doi.org/10.7759/cureus.31606

Ferdinandus, E. D., Maharani, G. A. G., & Jayanti, R. D. (2022). Management of Perineal Massage in Pregnant Women as an Effort to Prevent Perineal Rupture in Vaginal Delivery (Literative Review). *Kesans International Journal of Health and Science*, *1*(7), 698–702. https://doi.org/10.54543/kesans.v1i7.74

Gonzalez-Díaz, E., Fernández Fernández, C., Gonzalo Orden, J. M., & Fernández Corona, A. (2019). Which characteristics of the episiotomy and perineum are associated with a lower risk of obstetric anal sphincter injury in instrumental deliveries. *European Journal of Obstetrics and Gynecology and Reproductive Biology*, *233*, 127–133. https://doi.org/10.1016/j.ejogrb.2018.12.019

Gupta, A., Pampapati, V., Khare, C., Murugesan, R., Nayak, D., & Keepanasseril, A. (2021). Postpartum urinary retention in women undergoing instrumental delivery: A cross-sectional analytical study. *Acta Obstetricia et Gynecologica Scandinavica*, *100*(1), 41–47. https://doi.org/10.1111/aogs.13954

Irdayani, Sri Wahyuni.MS, & Hidayana. (2023). Risk Factors for Perineal Rupture in Normal Maternity Women at Midwife Independent Practice (BPM) Barirah Madeni, Bebesen District, Central Aceh Regency, Indonesia. *Community Medicine and Education Journal*, *4*(3), 357–360. https://doi.org/10.37275/cmej.v4i3.401

Kim, K. W., & Lee, S. (2021). Childbirth outcomes and perineal damage in women with natural childbirth in Korea: A retrospective chart review. In *Korean Journal of Women Health Nursing* (Vol. 27, Issue 4, pp. 379–387). Korean Society of Women Health Nursing. https://doi.org/10.4069/KJWHN.2021.08.31

Mahgoub, S., Piant, H., Gaudineau, A., Lefebvre, F., Langer, B., & Koch, A. (2019). Risk factors for obstetric anal sphincter injuries (OASIS) and the role of episiotomy: A retrospective series of 496 cases. *Journal of Gynecology Obstetrics and Human Reproduction*, *48*(8), 657–662. https://doi.org/10.1016/j.jogoh.2019.07.004

Man Victoria Hodgetts Morton Katie Morris, R. R. (2024). Childbirth-related perineal trauma and its complications: prevalence, risk factors and management. *OBSTETRICS, GYNAECOLOGY AND REPRODUCTIVE MEDICINE*. https://doi.org/https://doi.org/10.1016/j.ogrm.2024.06.003

Mivšek, A. P., Petročnik, P., & Došler, A. J. (2021). Secondary Dyspareunia After Childbirth: A Pilot Study for Comparison Between Group of Women With Episiotomy and Women Without Perineal Trauma. *International Journal of Childbirth*, *11*(3), 122–130. https://doi.org/10.1891/IJCBIRTH-D-20-00034

Moura, R., Oliveira, D. A., Parente, M. P. L., Kimmich, N., & Natal Jorge, R. M. (2024). A biomechanical perspective on perineal injuries during childbirth. *Computer Methods and Programs in Biomedicine*, *243*. https://doi.org/10.1016/j.cmpb.2023.107874

Nikmah, K., Sarofah Ningsih, E., & Yushofa, V. (2021). *The Correlation Between Participation In Pregnancy Workouts And Perineum Ruptures Incidence In Woman With Normal Labor At The Sumengko Village Maternity Cottage, Lamongan District*. https://doi.org/10.33086/jhs.v14i2.2014

Pebolo, F., Judith, A., & Kabonge Dan, K. (2019). Prevalence and factors associated with episiotomy practice among primiparous women in mulago national referral hospital Uganda. *International Journal of Pregnancy & Child Birth*, *5*(5), 197–201. https://doi.org/10.15406/ipcb.2019.05.00176

Peters, M. D. J., Marnie, C., Tricco, A. C., Pollock, D., Munn, Z., Alexander, L., McInerney, P., Godfrey, C. M., & Khalil, H. (2020). Updated methodological guidance for the conduct of scoping reviews. *JBI Evidence Synthesis*, *18*(10), 2119–2126. https://doi.org/10.11124/JBIES-20-00167

Petrenko, E. V., & Bulba, P. A. (2024). Prevention of perineal injuries during vaginal births (literature review). In *Ukrainian Journal of Perinatology and Pediatrics* (Vol. 98, Issue 2, pp. 107–114). Group of Companies Med Expert, LLC. https://doi.org/10.15574/PP.2024.98.107

Prihartini, S. D., Rahmawati, V. E., Azizah, N., & Wardah, R. (2021). THE RELATIONSHIP BETWEEN MATERNAL PARITY AND PERINEAL RUPTER INCIDENCE IN NORMAL DELIVERY AT PMB MINARTI, Amd. b. TRAWASAN VILLAGE KEC. SUMOBITO REGENCY. JOMBANG. *International Journal of Social Science (IJSS)*, *1*, 2798–4079. https://doi.org/10.53625/ijss.v1i3.4948

Ramphal, S. R., & Sultan, A. H. (2024). Perineal injuries during vaginal birth in low-resource countries. In *Best Practice and Research: Clinical Obstetrics and Gynaecology* (Vol. 94). Bailliere Tindall Ltd. https://doi.org/10.1016/j.bpobgyn.2024.102484

Rodrigues, S., Silva, P., Agius, A., Rocha, F., Castanheira, R., Gross, M., & Calleja-Agius, J. (2019). Intact Perineum: What are the Predictive Factors in Spontaneous Vaginal Birth? *Materia Socio-Medica*, *31*(1), 25–30. https://doi.org/10.5455/msm.2019.31.25-30

Susanti, N., & Ilawati, S. (2023). The Relationship Between Infant Birth and Perineal Rupter in Normal Delivery in Juwita Clinic. *Scientific Periodical Journal of Public*, *5 (1)*. https://doi.org/https://doi.org/10.30829/contagion.v5i1.15039

Tobiaw Tefera, B. K. T. M. (2019). PREVALENCE OF EPISIOTOMY AND FACTORS ASSOCIATED WITH PRACTICE OF EPISIOTOMY AT SAINT PAUL'S HOSPITAL MILLENNIUM MEDICAL COLLEGE: A CROSS SECTIONAL STUDY. *Ethiopian Journal of Reproductive Health (EJRH)*, *11 (3)*. https://doi.org/https://doi.org/10.69614/ejrh.v11i3.306

Venzovska, Y., Beniuk, V., Kovaliuk, T., Lastovetska, L., & Shcherba, O. (2024). Episiotomy in modern obstetrics. *The Ukrainian Scientific Medical Youth Journal*, *150*(4), 52–59. https://doi.org/10.32345/usmyj.4(150).2024.52-59

Yuliyantika, S., & Laora Heryanto, M. (2021). Hubungan antara Berat Badan Lahir Bayi dengan Ruptur Perineum pada Primipara. *Jurnal Kebidanan Harapan Ibu Pekalongan, 8(1)*. https://doi.org/https://doi.org/10.37402/jurbidhip.vol8.iss1.119

Zhuk, O. D. S. O. S. (2024). Obstetric perineal trauma. *Reproductive Health of Woman*. https://doi.org/http://dx.doi.org/10.30841/2708-8731.3.2024.306392