



Perineal Massage on the Prevention of Perineal Lacerations Among Maternity Mothers : A Literature Review

Riezka Putri Utami¹, Yulizawati², Hardisman³, Firdawati⁴, Rauza Sukma Rita⁵,
Ulfa Farrah Lisa⁶, Uliy Iffah⁷

^{1,2,6,7} Department of Midwifery, Faculty of Medicine, Andalas University, Indonesia, Padang

^{3,4,5} Department of Public Health and Community Medicine Faculty of Medicine, Andalas University,
Indonesia

Corresponding author: yulizawati@med.unand.ac.id

ABSTRACT

Background: Childbirth is a physiological process, which is ended by removal of the fetus, placenta, and membrane from the uterus in full-term pregnancy without action and complications. During the childbirth there are complications that can cause death, one of which is the case of perineal lacerations. Perineal massage is an action that can be done to prevent the occurrence of perineal lacerations in maternity mothers.

Purpose: This study aims to determine perineal massage on the prevention of perineal lacerations in maternity mothers.

Methods: This research method was a literature review study. Journal searches were carried out by applying online database such as Scencedirect, PubMed, Scopus, Google Scholar, Semantic Scholar, and Portal Garuda. Articles were selected based on inclusion and exclusion criteria.

Results: The analysis was carried out on 18 research articles. It was found that perineal massage can cause vasodilation of blood vessels so that blood flow to the perineum increases so that the perineal area becomes more elastic. The application of perineal massage is able and effective in preventing and reducing the incidence of perineal lacerations in maternity mothers.

Conclusion: The influence of perineal massage is useful in the prevention of perineal lacerations in maternity mothers.

Keywords: *Perineal massage; perineal laceration; perineal tear; labor.*

BACKGROUND

Childbirth is a physiological process, which is ended by removal of the fetus, placenta, and membrane from the uterus in full-term pregnancy without action and complications (Beyable et al., 2022). Complications that occur in maternity mothers are at risk of maternal death. The maternal mortality rate is the number of maternal deaths per 100,000 live births. Maternal mortality rates throughout the world can occur during pregnancy, childbirth and the postpartum period (Hoyert, 2021).

According to data from WHO, 140 million mothers experience childbirth every year, and around 600,000 maternal deaths (MMR) occur throughout the world every year. More than one-third of maternal deaths and life-threatening conditions related to pregnancy are caused by complications that arise during labor, immediately after delivery. However, cases of maternal death are often caused by bleeding, obstructed labor or sepsis (World Health Organization, 2018).

The maternal mortality rate, based on data collected from family health program records by the Indonesian Ministry of Health, was found to increase every year. According to the Ministry of Health, in 2020 there were 4,627 cases of maternal death in Indonesia. The number of maternal deaths shows an increase in cases compared to what occurred in 2021, namely 7,389 deaths (Mosallam et al., 2004). Based on data from the Padang City Health Service, in Padang City in 2020 there was an increase in cases of maternal death from the previous year to 21 people. The number of cases of maternal death in 2019 was 16 people. The maternal mortality rate consists of 9 pregnant women, 3 postpartum women and 9 postpartum mothers. The cases of maternal death encountered were caused by several factors, namely bleeding (3 cases), hypertension (2 cases), infection (2 cases), circulatory system disorders (3 cases), metabolic disorders (2 cases) and other causes. is a comorbidity (9 cases) (Magoga et al., 2019).

Maternal death caused by bleeding and infection is one of the consequences of perineal laceration during childbirth. During the birth process, it is not uncommon for mothers to experience tears in the birth canal due to spontaneous labor, episiotomy or both. Perineal laceration cases have occurred in as many as 85% of all normal deliveries (Haylen & et al, 2022). Based on the WHO report in 2018, there were 4.7 million incidents of perineal lacerations that occurred among mothers giving birth. Mothers who experience perineal lacerations are more susceptible to infection which can risk maternal death. Among the 20% of cases of infection in mothers after giving birth, perineal infections accounted for 11% of cases. Infection can occur because the perineal area is moist and exposed to lochia fluid which can increase the development of bacteria in the mother's perineum (Sinaga, 2022).

The perineum is a part that is formed like an inverted trapezoid which is located at the pelvic floor and is between the vagina and anus. The perineum plays a very important role in the birth process because the perineum can provide space for the baby to pass through when the birth process occurs (Haylen & et al, 2022).

The incidence of perineal lacerations that occur in women giving birth has several levels, some of the incidents of perineal lacerations that occur in women giving birth are lacerations that are still in the first and second level conditions, while as many as 3.3% of other mothers in labor experience perineal lacerations at the third level. Meanwhile, another 1.1% of mothers experiencing perineal lacerations had reached grade 4 (Chen et al., 2022; Magoga et al., 2019).

Actions that can be taken to prevent perineal lacerations during childbirth are by performing perineal massage on pregnant women. The incidence of perineal tears can be

minimized with perineal massage because during massage of the mother's perineum, the muscles around the mother's perineum will relax, which will increase the elasticity of the birth canal. Perineal massage also improves blood circulation in the mother's perineum and vaginal area as well as the flow of hormones that help relax the pelvic floor muscles so that labor becomes easier (Manuaba SpOG(K), 2017; Zubaidah, 2021).

According to research conducted by Asnita Sinaga in 2022, perineal massage can minimize perineal lacerations, increase blood flow to the mother's perineum, soften the tissue around the mother's perineum, and make all muscles related to the birthing process more elastic, including the mother's vaginal skin. When the muscles around the mother's perineum are elastic, the mother does not need to push too hard, just push slowly, so that perineal lacerations do not occur in the mother (Sinaga, 2022). This is related to Shinta's (2022) research that by carrying out perineal massage, the mother's perineum will be elastic, this is because during the massage process there is hand pressure on the soft tissue, usually the mother's muscles, tendons and ligaments. This creates smooth circulation in the mother's perineum.

Based on the background description explained above, researchers are interested in conducting a review of perineal massage to prevent perineal lacerations in mothers giving birth. In this case, midwives have an important role, midwives can participate in promotive and preventive efforts, so that midwives can help mothers who are about to give birth to reduce the incidence of mothers experiencing perineal lacerations and also overcome mothers' anxiety about perineal tears occurring during the normal delivery process (Damarini et al., 2013; Stianto et al., 2018). so that the prevalence of mothers giving birth using the normal method is increasing.

OBJECTIVE

This study aims to determine perineal massage on the prevention of perineal lacerations in maternity mothers.

METHODS

The method used in writing this article is narrative literature review. This literature study was conducted from July 2023 to February 2024. Search for journals in Indonesian and English accessed from internet searches from databases, namely PubMed, Google Scholar, Semantic Scholar, Science Direct, and Garuda Portal. The keywords used in the digital database are perineal massage, perineal massage, perineal laceration, perineal tears, perineal tears by combining 2 or more of these keywords. In PubMed and Science Direct keywords are searched using English, in Semantic Scholar, Google Scholar and Garuda Portal Indonesian and English keywords are used. The keywords used in the journal search are “perineal massage” AND “perineal laceration” OR “perineal tears” in English and Bahasa.

The literature study began by collecting data and information by searching relevant literature regarding theories from scientific work on perineal massage on the prevention of perineal lacerations in mothers giving birth, whether published or not yet published in the form of online journals on a national and international scale. This literature technique is used to test the quality and whether or not the theory found from the results of research on perineal massage to prevent perineal lacerations in mothers giving birth is correct. After the data sources in the form of relevant journals are found, the sources will be selected using inclusion and exclusion criteria, then the author will analyze the data.

To carry out data analysis, the abstract and full-text of the journal are read and carefully studied. An analysis of the research objectives and research findings was carried out. The data that has been collected from several journals is then looked for for similarities and differences and then discussed to draw conclusions,

The inclusion criteria for journal searches are full text journals that discuss the topic of perineal massage on the prevention of perineal lacerations in maternity mothers, national journals indexed by SINTA 1-4 and internationally reputable Scopus published in the period 2017-2023 relating to research variables. Meanwhile, the inclusion criteria for journal searches are secondary journals or tertiary research journals.

The framework used is the PICOS framework in the journal search strategy.

1. Population/problem: the population used in analyzing the problem is pregnant and giving birth women.
2. intervention: Perineal massage for pregnant women.
3. Comparison: There are comparisons used, namely the control group and the intervention group.
4. Outcome: Prevention of perineal lacerations among mothers giving birth.
5. Study design: the research model used for the review is a method other than a literature review, namely A quasi-experiment, static group comparison, Randomized controlled trials, and A prospective cohort study

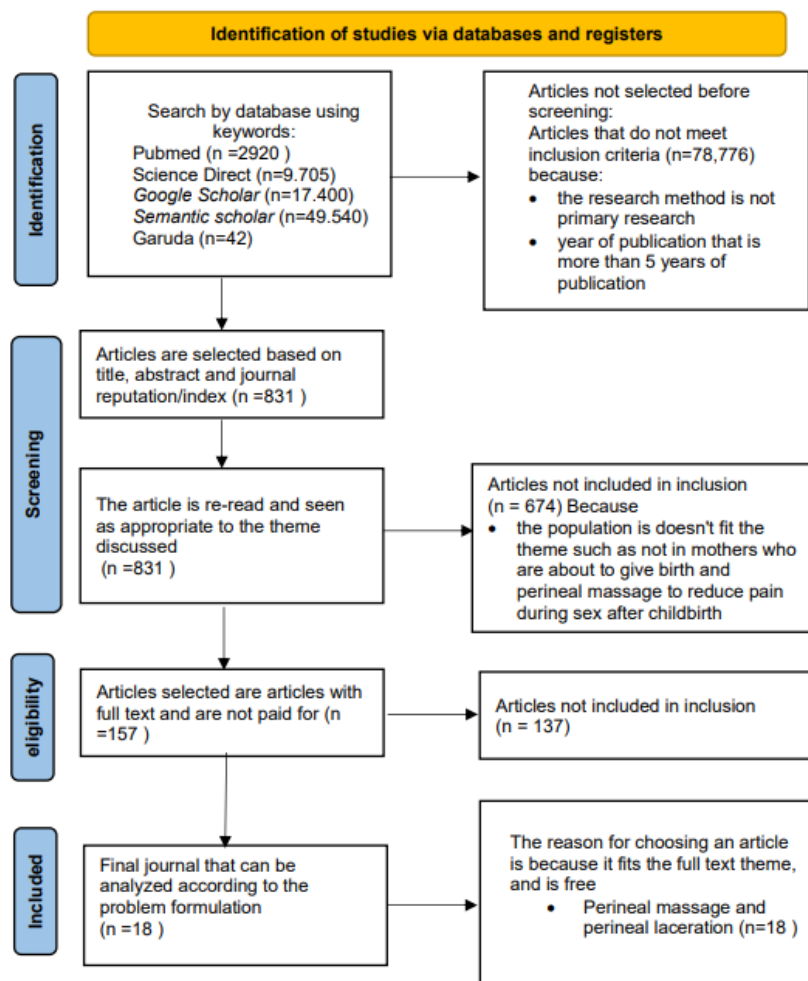


Figure 1. prism diagram of journal selection step

RESULTS

Journal searches are carried out through a database by selecting journals based on the criteria for inclusion and exclusion of established literature studies.

After being identified, it turned out that all journals had been indexed and met Sinta's requirements. Then the journals found will be read in their entire text content and look at the relationship between perineal massage and the prevention of perineal lacerations as one of the criteria for this literature study, resulting in the findings of 18 articles. So a total of 18 articles met the inclusion criteria that were relevant to the problem formulation and research objectives of this literature review.

No	Title/Author /Year	Country	Objective	Method	Result
1.	Effect of Prenatal Perineal Massage on Postpartum Perineal Injury and Postpartum Complications/ Qiuxia Chen/2022	China	To comparing the effects of perineal massage on perineal injury and complications.	Randomized controlled trial	<ul style="list-style-type: none"> • Perineal massage can reduce the risk of perineal lacerations, especially the risk of grade 3-4 perineal lacerations • Perineal massage can reduce the risk of perineal incision during childbirth and perineal pain (episiotomy) during labor compared to the control group
2.	Effectiveness of antenatal perineal massage in reducing perineal trauma and post-partum morbidities: A randomized controlled trial/ Emmanuel/2018	Nigeria	To evaluate the effectiveness of antenatal perineal massage (APM) in reducing perineal trauma and post-partum morbidities.	Randomized controlled trials	<ul style="list-style-type: none"> • Perineal massage can prevent perineal trauma during childbirth and reduce the incidence of episiotomy in nulliparous women. • in the last weeks of pregnancy reduces the likelihood of episiotomy, thereby increasing the incidence of intact perineum after delivery.
3.	Perineal massage and training reduce perineal trauma in pregnant women older than 35 years: a randomized controlled trial/Amira/2019	Egypt	To evaluate the effectiveness of perineal massage in pregnant women	Randomized controlled trials	Perineal massage can reduce the rate of episiotomy and perineal laceration, postpartum perineal pain and analgesia dose. This is especially beneficial for women over the age of 35, as it helps them choose vaginal delivery if there are indications that it is safe
4.	Effects of perineal preparation techniques on tissue extensibility and muscle strength:	Brazil	To evaluate the effect of stretching with perineal massage on the extensibility and strength of the perineal muscles	Randomized controlled trials	Perineal massage can increase the extensibility of the perineum, this intervention aims to increase the extensibility of the area so that the fetus can pass through the vaginal canal and minimize perineal tears.

	a pilot study/Sissi/2018				
5.	Antenatal perineal massage benefits in reducing perineal trauma and postpartum morbidities/ Ahmed/2020	Egypt	To evaluate the relationship of perineal massage with morbidity associated with Perineal trauma. especially when causing third and fourth degree perineal tears	Randomized controlled trials	Perineal massage significantly reduced the risk of perineal tears compared with the control group (RR = 0.79, 95% CI [0.67, 0.94], p = 0.007), Antenatal perineal massage was associated with a significant reduction in the incidence of third and fourth degree perineal tears compared with the control group. controls (RR = 0.36, 95% CI [0.14, 0.89], p = 0.03)
6.	Effectiveness Of Perineal Massage During Pregnant Women On Perineal Laseration/Ratna /2019	Indonesia	To determine the effectiveness of perineal massage in late trimester pregnancy against perineal laceration	analytic study with a quasi experimental design and prospective investigation direction	When the mother is given perineal massage intervention, it will put pressure on the ligaments/muscles of the mother's perineum which will improve circulation in the perineal area thereby creating relaxation in the mother's perineal muscles.
7.	The Effect of Perineal Massage on Perineal Tear Case on Primigravida Pregnant Mothers In Their Third Trimester In Public Health Center Care of Morokay 2018/Triana/ 2020	Indonesia	To find out the effect of perineal massage on the perineal tear in primigravida pregnant women trimester III in Morokay Public Health Center in 2018. The	a Quasi-experimental	obtained results that 78.6% who received perineal massage did not experience perineal tears and 72.2% who did not receive perineal massage experienced perineal tears. Perineal massage helps soften the perineal tissue so that it opens without resistance during the birth process, making it easier for the baby to come out.
8.	The Effectiveness of Perineal Massage in Preventing Perineal Laceration and Episiotomy in Normal Childbirth at BPM Sri	Indonesia	Analyzing the effectiveness of perineal massage in preventing perineal lacerations and episiotomies in normal childbirth	Pra experimental design Static-Group Comparison	In this study, the results obtained were that in the control group, 19 people (95.0%) experienced perineal lacerations, and perineal lacerations caused by episiotomy (94.7%) and 1 person (5.3%) experienced spontaneous perineal lacerations. . Meanwhile, in the intervention group there were no lacerations

	Wahyuni Surabaya/Umi/ 2017				caused by episiotomy, but there were 4 people (20%) who experienced spontaneous lacerations, namely 3 people with grade 1 lacerations and 1 person with grade 2 lacerations. The control group received episiotomy, mostly with indication of a stiff perineum
9.	Effectiveness of Perineal Massage Against Perineal Rupture in Primigravid Mothers in Bpm Tanjung Redeb, Berau Regency/Nur/2023	Indonesia	To determine the effectiveness of perineal massage on the incidence of perineal rupture in mothers giving birth	Quasi eksperimental design	The results of this study found that in the control group, 9 people (90%) experienced perineal lacerations and 1 person (10%) did not experience perineal lacerations. Meanwhile, in the intervention group there were cases of perineal laceration in 6 mothers (60%) and 4 mothers (40%) did not experience perineal lacerations.
10.	The Effect of Perineal Massage in Reducing Perineal Rupture during Labor/Nurhamida/2022	Nigeria	To determine the effect of perineal massage in reducing perineal rupture during labor	Quasi eksperimental design	In this study, the results showed that there were 11 mothers out of 16 (68.7%) mothers who experienced perineal lacerations in the control group. Meanwhile, in the intervention group, only 1 mother (6.3%) experienced a perineal laceration.
11.	The effect of perineal massage during pregnancy on perineal rupture in PMB Ida Iriani, S.sit and Pmb Erniati, Am.keb North Aceh Regency/Reva/2021	Indonesia	To determine the effect of perineal massage during pregnancy on the incidence of perineal rupture in PMB Ida Iriani, S.Sit and PMB Erniati, Am.Keb, North Aceh Regency	Quasi eksperimental design	After being given the perineal massage intervention, it was found that 26 respondents (72.2%) did not experience cases of perineal laceration in the intervention group, whereas in the control group, 14 (44.4%) mothers encountered cases of perineal laceration. Perineal massage can increase softness in the connective tissue, blood circulation in the perineal area is smoother, so that nutrition in the perineal area can be fulfilled.
12.	The effect of perineal massage on the degree of perineal tearing in primigravida pregnant women	Indonesia	To analyze the effect of perineal massage on the degree of perineal tearing in primigravida	Pre-experimental research with a static	In this study, it was found that mothers who had perineal massage had lower laceration rates than mothers who did not have perineal massage. In primigravida mothers, grade 2

	> 34 weeks in the UPTD DTP Maja health center working area in 2019/Lina/2019		pregnant women > 34 weeks	group comparison design	lacerations are usually found, whereas in mothers who were given perineal massage, more than half of the mothers involved only experienced grade 1 lacerations.
13.	Prevention of Perineal Rupture in Maternity Women with Perineal Massage/ Hera/2019	Indonesia	To determine the effect of perineal massage on preventing perineal rupture in mothers giving birth at BPS Dwi Lestari Natar, South Lampung in 2018	Pre-experimental research with a static group comparison design	<ul style="list-style-type: none"> • Perineal tears can be prevented when the mother is given perineal massage intervention, because when given perineal massage the mother's muscles will become more relaxed because the elasticity in the mother's perineal area increases so that the baby is born more easily • Providing perineal massage intervention will reduce feelings of fear and anxiety for mothers who are about to give birth because mothers have been given perineal massage intervention during pregnancy.
14.	The Effect of Perineal Massage on Perineal Rupture in Primigravida Mothers at the Rosita Maternity Home/Rini/2021	Indonesia	To determine the effect of perineal massage on perineal rupture in mothers in the third trimester	a cohort/prospective approach	Based on the results of the effect test, almost all of the 30 respondents in the treatment group did not experience perineal tearing (90%), where perineal massage was > 3x a day.
15.	Prevalence of Perineal Tear Peripartum after Two Antepartum Perineal Massage Techniques: A Non-Randomised Controlled Trial/Maria/2021	Switzerland	To determine the efficiency of massage in perineal tear prevention and identification of possible differences in massage application	A non-randomised controlled trial	Women who received massage were four times less likely to suffer a minor tear. The prevalence of perineal tears was found to be 40% in control group women, 30% in the self-massage group and 26.6% in the massage group
16.	Effect of Perineal Massage on the Rate of Episiotomy/ Farideh/2019	Iran	To investigate the effect of perineal massage (PM) during labor on the need for episiotomies	A double-blind randomized control trial	Providing perineal massage to the mother can reduce the need to perform an episiotomy on the mother during the birth process. This is because when performing perineal massage, vasodilation occurs in the blood vessels as a result of which blood flow to the

perineum increases so that the perineal area becomes more elastic, and episiotomy can be avoided.

17.	The Effect of Perineal Massage On Perineal Rupture Incidence On Primipara Mothers' Labor In Kasih Ibu Clinic In 2020/Cholisah/2021	Indonesia	To determine the effect of perineal massage on perineal rupture in primiparous postpartum mothers at the Kasih Ibu clinic in 2020	A quasi-experiment	In this study, only 3 mothers (20%) experienced perineal lacerations in the group given intervention. Meanwhile, in the control group, it was found that 10 mothers (66.7%) experienced perineal lacerations
18.	Effect of Perineal Massage on Perineal Traumas for Nulliparous Women during Labor/Asmaa/2021	Egypt	To evaluate the effect of perineal massage on perineal traumas for nulliparous women during labor.	Comparative quasi experimental design	The perineum was intact in 20 mothers (54.05%) in the group given perineal massage intervention, compared to 11 mothers (29.73%) in the control group.

DISCUSSION

1. Incidence of Lacerations in Maternal Mothers Who Are Given Perineal Massage Intervention

Lacerations/tears in the mother's perineum often occur when the mother gives birth. Perineal lacerations can occur in as many as 80% of cases of vaginal delivery. The incidence of perineal tears can be minimized with perineal massage because during massage of the mother's perineum, the muscles around the mother's perineum will relax, which will increase the elasticity of the birth canal, and can facilitate and reduce the length of the birth process (Purnami & Noviyanti, 2019).

In the articles reviewed, the same results were found that lacerations could be prevented by perineal massage intervention. However, in some cases there are differences in the degree of laceration that can be prevented. Measurement of effectiveness can be seen from the incidence of lacerations and the degree of perineal laceration after perineal massage intervention. The mother is given perineal massage intervention which will put pressure on the ligaments/muscles of the mother's perineum which will improve circulation in the perineal area thereby creating relaxation in the mother's perineal muscles (Faadhilah & Y, 2022). Perineal massage can improve blood flow, increase the elasticity of the perineum and provide relaxation to the pelvic muscles. Massage can prevent perineal lacerations or interventions such as episiotomy, but it also reduces the degree of perineal laceration and helps laceration wounds heal more quickly (Indrayani & Tuasikal, 2020).

Perineal massage increases the elasticity of myofascial perineal tissue and reduces perineal burning and pain during labor, thereby reducing the level of lacerations in the perineum and optimizing the birth of the child properly. In this study, it was found that mothers who received perineal massage were four times less likely to suffer a minor tear.

On the other hand, mothers were 2.94 times less likely to suffer moderate or severe tears (Álvarez-González et al., 2021).

Prenatal perineal massage can significantly reduce the incidence of perineal tears at grade 3-4. This can also reduce the risk of episiotomy during childbirth and perineal pain. This is because during massage the blood in the perineum becomes smooth and causes flexibility in the mother's perineal muscles. The pain felt by the mother during labor is caused by contractions and stretching of the cervix and lower uterine segment. Perineal massage performed in the last 4 weeks of pregnancy will cause an increase in the tone and flexibility of the perineum, which can reduce the possibility of perineal lacerations during vaginal delivery and protect the integrity of the perineum and if an episiotomy is performed, the healing of the episiotomy wound will be faster (Dieb et al., 2020).

Perineal massage can increase softness in the connective tissue, blood circulation in the perineal area is smoother, so that nutrition in the perineal area can be fulfilled, thereby increasing suppleness and elasticity as well as maintaining the softness of the tissue in the mother's perineal area and strengthening all the muscles associated with all stages of childbirth including also on the mother's vaginal skin (Bohren et al., 2019; Janni et al., 2002). Perineal massage can stimulate the flow of hormones which play a role in relaxing the pelvic floor muscles so that the mother can give birth easily by minimizing perineal lacerations. Apart from that, perineal massage can also result in faster recovery of muscle tissue in the perineal area. Providing perineal massage intervention also has an effect on good preparation of the perineum of the mother who is about to give birth, so that the mother can control the strength of pushing during the birthing process so as to prevent lacerations in the mother's perineum (Çalik et al., 2018).

Based on all the articles analyzed by researchers, it can be concluded that the incidence of lacerations in women giving birth who are given perineal massage intervention can be prevented because The massage given can increase the elasticity of the birth canal, and can facilitate and reduce the length of the birth process. Perineal massage can also reduce the burning sensation and pain of the perineum during labor, so that it can optimize the birth of the child properly. By providing perineal massage intervention, it will provide good preparation for the perineum of the mother who is about to give birth, so that the mother can control her pushing strength during the birthing process so as to prevent lacerations in the mother's perineum.

2. Time and Frequency of Perineal Massage to Prevent Perineal Lacerations

In all the articles reviewed, perineal massage interventions are given using the same technique, namely by giving massage before labor starting from the pregnancy period, but with varying frequencies. Massage can be performed on mothers at 34 weeks of gestation until before entering labor. Massage is effective if given more than 3 times a week .

Perineal massage can begin to be done when the mother enters the third trimester. Massage carried out in this trimester can help soften the perineal tissue so that it can stretch easily during the birth process, making it easier for the baby to pass through the birth canal (Damarini et al., 2013; Eghdampour et al., 2013). Massage given at 34-36 weeks of gestation is effective in preventing perineal lacerations in pregnant women. During massage, the blood in the perineum becomes smooth and causes flexibility in the mother's perineal muscles so that it can prevent perineal lacerations in pregnant women. Research conducted by Rini 2019, Perineal massage can be started in the third trimester of pregnancy. Massage is effective if done more than 3 times a day. In this study, it was

found that 90% of mothers who received perineal massage intervention did not experience lacerations more than 3 times a day. Meanwhile, in mothers who massage less than 3 times a day, 60% of cases of perineal lacerations in mothers giving birth are found. Massage given with this frequency and given regularly will provide maximum benefits to the mother when giving birth (Faadhilah & Y, 2022).

Perineal massage can be done by lubricating the index finger and thumb with lubricant and inserting these two fingers 2-3cm into the mother's vagina. Massage with pressure on the edges of the mother's vagina, and continue massaging with pressure to the sides and bottom at the same time. The next step in perineal massage is to massage the outside of the vagina, by massaging the outside area in a u shape to the right, left and up and down. The perineum that stretches during the birth process can experience positive changes if the perineum is elastic, flexible and pliable so that perineal lacerations can be avoided (Damarini et al., 2013).

Based on all the articles analyzed by researchers, it was concluded that perineal massage is effective in preventing perineal lacerations when performed on mothers who have entered their third trimester. Massage can be performed on mothers who are 34 weeks pregnant until before entering the birthing process. Massage is effective if given more than 3 times a week.

CONCLUSION

Based on the discussion from this literature study, it can be concluded The incidence of lacerations in mothers who were given perineal massage intervention was less than in the control group, because the perineal massage intervention would improve circulation in the perineal area thereby creating relaxation in the mother's perineal muscles. Perineal massage can increase the elasticity of the birth canal, and can facilitate and reduce the length of the birth process and reduce the burning sensation and pain of the perineum during labor, so that it can optimize the birth of the child well. The timing and frequency of perineal massage to prevent perineal lacerations is effective if it is done on mothers who have entered their third trimester. Massage can be done on mothers who are 34 weeks pregnant until before they enter the labor process. Massage is effective if given more than 3 times a week.

ACKNOWLEDGMENTS:

On this occasion, the author thanked the University of Andalas, Faculty of Medicine, and Department of Midwifery who have supported and directed students to continue active and contribute in a variety of academic and non-academic activities and have facilitated the research activities carried out by student.

REFERENCES

- Álvarez-González, M., Leirós-Rodríguez, R., Álvarez-Barrio, L., & López-Rodríguez, A. F. (2021). Prevalence of perineal tear peripartum after two antepartum perineal massage techniques: A non-randomised controlled trial. *Journal of Clinical Medicine, 10*(21). <https://doi.org/10.3390/jcm10214934>
- Beyable, Bayable, & Ashebir. (2022). *Pharmacologic and non-pharmacologic labor pain management techniques in a resource-limited setting: A systematic review*.
- Bohren, M. A., Mehrtash, H., Fawole, B., Maung, T. M., Balde, M. D., Maya, E., Thwin, S. S., Aderoba, A. K., Vogel, J. P., Irinyenikan, T. A., Adeyanju, A. O., Mon, N. O.,

- Adu-Bonsaffoh, K., Landoulsi, S., Guure, C., Adanu, R., Diallo, B. A., Gülmezoglu, A. M., Soumah, A. M., ... Tunçalp, Ö. (2019). How women are treated during facility-based childbirth in four countries: a cross-sectional study with labour observations and community-based surveys. *The Lancet*, 394(10210), 1750–1763. [https://doi.org/10.1016/S0140-6736\(19\)31992-0](https://doi.org/10.1016/S0140-6736(19)31992-0)
- Çalik, K. Y., Karabulutlu, Ö., & Yavuz, C. (2018). First do no harm - Interventions during labor and maternal satisfaction: A descriptive cross-sectional study. *BMC Pregnancy and Childbirth*, 18(1), 1–10. <https://doi.org/10.1186/s12884-018-2054-0>
- Chen, Q., Qiu, X., Fu, A., & Han, Y. (2022). Effect of Prenatal Perineal Massage on Postpartum Perineal Injury and Postpartum Complications: A Meta-Analysis. *Computational and Mathematical Methods in Medicine*, 2022. <https://doi.org/10.1155/2022/3315638>
- Damarini, S., Eliana, E., & Mariati, M. (2013). The Effectiveness of Red Betel in Healing Perineal Wound in Independent Practitioner Midwife. *Kesmas: National Public Health Journal*, 8(1), 39. <https://doi.org/10.21109/kesmas.v8i1.340>
- Dieb, A. S., Shoab, A. Y., Nabil, H., Gabr, A., Abdallah, A. A., Shaban, M. M., & Attia, A. H. (2020). Perineal massage and training reduce perineal trauma in pregnant women older than 35 years: a randomized controlled trial. *International Urogynecology Journal*, 31(3), 613–619. <https://doi.org/10.1007/s00192-019-03937-6>
- Eghdampour, F., Jahdie, F., Kheyrikhah, M., Taghizadeh, M., Naghizadeh, S., & Hagani, H. (2013). The Impact of Aloe vera and Calendula on Perineal Healing after Episiotomy in Primiparous Women: A Randomized Clinical Trial. *Journal of Caring Sciences*, 2(4), 279–27986. <https://doi.org/10.5681/jcs.2013.033>
- Faadhilah, N., & Y, D. A. (2022). Perineal Massage During Pregnancy to Prevent Severe Perineum Laceration in Labor for Mrs. N. *Proceedings Series on Health & Medical Sciences*, 3, 125–127. <https://doi.org/10.30595/pshms.v3i.632>
- Haylen, bernard t., & et al. (2022). *Surgical anatomy of the vaginal introitus*. May, 1240–1247. <https://doi.org/10.1002/nau.24961>
- Hoyert, D. L. (2021). World Health Organization. Maternal mortality rates in the United States, 2020. *National Center Health Statistics*, 3, 1.
- Indrayani, & Tuasikal. (2020). The Effect of Perineal Massage on Perineal Tear Case on Primigravida Pregnant Mothers In Their Third Trimester In Public Health Center Care of Morokay 2018. *STRADA Jurnal Ilmiah Kesehatan*, 9(2), 588–592. <https://doi.org/10.30994/sjik.v9i2.346>
- Janni, W., Schiessl, B., Peschers, U., Huber, S., Strobl, B., Hantschmann, P., Uhlmann, N., Dimpfl, T., Rammel, G., & Kainer, F. (2002). The prognostic impact of a prolonged second stage of labor on maternal and fetal outcome. *Acta Obstetrica et Gynecologica Scandinavica*, 81(3), 214–221. <https://doi.org/10.1034/j.1600-0412.2002.810305.x>
- Magoga, G., Saccone, G., Al-Kouatly, H. B., Dahlen G, H., Thornton, C., Akbarzadeh, M., Ozcan, T., & Berghella, V. (2019). Warm perineal compresses during the second stage of labor for reducing perineal trauma: A meta-analysis. *European Journal of Obstetrics and Gynecology and Reproductive Biology*, 240, 93–98. <https://doi.org/10.1016/j.ejogrb.2019.06.011>
- Manuaba SpOG(K), P. dr. I. B. G. D. (2017). *Introduction to Obstetrics Lectures*. https://www.google.co.id/books/edition/Pengantar_Kuliah_Bstertetri/KSu9cUd-cxwC?hl=en&gbpv=1&dq=penjahitan+luka+perineum&pg=PA795&printsec=fron

tcover

- Mosallam, M., Rizk, D. E. E., Thomas, L., & Ezimokhai, M. (2004). Women's attitudes towards psychosocial support in labour in United Arab Emirates. *Archives of Gynecology and Obstetrics*, 269(3), 181–187. <https://doi.org/10.1007/s00404-002-0448-7>
- Purnami, R. W., & Noviyanti, R. (2019). Effectiveness of Perineal Massage During Pregnant Women on Perineal Laseration. *Jurnal Kesehatan Madani Medika*, 10(2), 61–68. <https://doi.org/10.36569/jmm.v10i2.41>
- Sinaga, A. (2022). The Effect of Primigravida Mother's Perineal Massage on Perineal Rupture in Tutun Sehati Pratama Clinic, Tanjung Morawa District Deli Serdang Year 2021. *Science Midwifery*, 10(4), 3348–3351. <https://doi.org/10.35335/midwifery.v10i4.811>
- Stianto, M., Peristiowati, Y., & Farida, S. (2018). The Benefits of Red Betel Leaf Extract for Perineal Wound Healing in BPM Rini District Kediri. *Journal for Quality in Public Health*, 1(2), 58–66. <https://doi.org/10.30994/jqph.v1i2.18>
- World Health Organization. (2018). *Intrapartum care for a positive childbirth experience*.
- Zubaidah. (2021). Postpartum Nursing Care. In *deependublish*. https://www.google.co.id/books/edition/Asuhan_Keperawatan_Nifas/GN4IEAAAQBAJ?hl=en&gbpv=1&dq=impact+not+do+perawatan+injury+perineum&pg=PA42&printsec=frontcover