Journal of Midwifery and Nursing, 7 (1) (2025) pp. 52-58

Published by:IOCSCIENCE

Journal of Midwifery and Nursing

Journal homepage:www.iocscience.org/ejournal/index.php/JMN

The Effect Of Prenatal Yoga On Back Pain In Pregnant Women In The Third Trimester

Vittria Meilinda[1], Nurhayati[2], and Sri Handayani[3]

[1,3] Midwifery Study Program, Fort De kock University , West Sumatera, Indonesia

[2] Public Health Study Program, Fort De kock University , West Sumatera, Indonesia

ARTICLE INFO

Article history:

Received Dec 06, 2024
Revised Dec 14, 2024
Accepted Dec 26, 2024

Keywords:

Back Pain;
Pregnant;
Prenatal Yoga;
Third Trimester;
Women.

ABSTRACT

As pregnancy progresses, physical changes in the mother often lead to various complaints, one of which is back pain. According to data from the Ministry of Health in 2022, approximately 70% of pregnant women experience back pain due to changes in back muscles. This study aims to analyze the effect of prenatal yoga on back pain in pregnant women during the second trimester. The study employed a quasi-experimental design with a pre-test and post-test structure involving a control group. The instrument used to measure pain levels was the Visual Analog Scale. Data collection was conducted from August to September 2024, involving 32 respondents. Data analysis was performed using univariate and bivariate methods, specifically the Wilcoxon and Mann-Whitney tests. The study results showed that the average back pain score before the intervention in the intervention group was 4.75, while in the control group, it was 4.44. After the intervention, the average back pain score in the intervention group decreased to 2.31, whereas the control group only showed a slight decrease to 4.0, with a standard deviation of 0.816. Statistical tests indicated a significant effect of prenatal yoga on back pain in pregnant women during the second trimester (p-value 0.000). In conclusion, prenatal yoga positively impacts reducing back pain in pregnant women during the second trimester. It is recommended that prenatal yoga be widely implemented as an effort to alleviate back pain complaints in pregnant women.

This is an open access article under the CC BY-NC license.

Corresponding Author:

Vittria Meilinda,
Midwifery Study Program,
Fort De kock University,
Soekarno Hatta Number 11, 26121, Bukittinggi City, West Sumatera
Email: vittriameilinda@fdk.ac.id

1. Introduction

Pregnancy brings about various physical and psychological changes, particularly during the second and third trimesters. These changes often cause discomfort for pregnant women and include symptoms such as increased urination, insomnia, leg cramps, constipation, shortness of breath, varicose veins, non-pitting edema, fatigue, gingivitis, anxiety, Braxton Hicks contractions, and mood swings (Romauli, 2023)

During the third trimester, the physical changes in the mother become more pronounced as this stage marks the final phase of pregnancy. These adaptations can lead to significant discomfort, necessitating both preventive measures and treatment. Common discomforts in the third trimester include back pain in 70% of cases, shortness of breath in 60%, hemorrhoids in 60%, increased urination in 50%, striae gravidarum in 50%, constipation in 40%, swollen feet in 20%, and leg cramps in 10%. Among

these, back pain is the most frequently reported issue, occurring in the majority of pregnant women. This type of pain can persist from pregnancy through the postpartum period (Maisah, et al., 2022) .

Lower back pain is caused by gravitational shifts as the body's center of gravity moves forward. Several factors contribute to back pain, including uterine growth leading to postural changes, weight gain, the hormone relaxin's effect on ligaments, previous back pain history, parity, and physical activity. Uterine growth stretches the supporting ligaments, often resulting in sharp, stabbing pains known as ligament pain, which contributes to the back pain experienced by pregnant women (Irmawati.S, et al, 2024) .

According to data from the Indonesian Ministry of Health in 2022, back pain is a significant health issue during pregnancy. Although precise national data is unavailable, it is estimated that around 70% of pregnant women experience back pain caused by changes in back muscles. Weak back muscles can exacerbate ligament injuries, worsening posture, while 30% of back pain cases during pregnancy are attributed to pre-existing spinal conditions (Beno, Silen and Yanti, 2022) . Signs of lower back discomfort in pregnant women are associated with musculoskeletal changes (Beno, Silen and Yanti, 2022) . These adaptations include increased body weight, a shift in the center of gravity due to uterine growth, and the need for relaxation and mobility. The instability of the sacroiliac joint and heightened lumbar lordosis contribute to pain. These factors shorten certain muscles as abdominal muscles stretch, creating an imbalance in the pelvic and lower back muscles, leading to discomfort around the ligaments (Arummega, et al., 2022) .

Back pain during pregnancy can be influenced by various factors, including the gestational age at which the pain begins. Research by Katonis et al. indicates that back pain commonly starts around the 27th week of pregnancy, with reports showing the initial onset typically occurring between 20 and 28 weeks (Hiliati and Hastuti, 2023) . Maternal age is another factor, with women aged 20–24 years commonly experiencing lower back pain, which tends to peak after the age of 40 (Aini and Purwasari, 2020) . . Parity also plays a role; multiparous and grand multiparous women are at greater risk due to weakened muscles that struggle to support the increasingly large uterus, resulting in frequent back pain. Daily activities can exacerbate lower back pain and negatively impact a pregnant woman's ability to perform routine tasks such as personal care, walking, sitting, and participating in sexual activities. Relaxation techniques and increased physical activity are beneficial, especially during pregnancy, as they can promote fetal health by maintaining placental vascular function. Additionally, smoking has been identified as a factor influencing back pain, though its impact is not highly significant. Nicotine in cigarettes affects the central nervous system and can alter pain perception, potentially causing musculoskeletal discomfort in various areas of the body (Arummega, et al., 2022) .

To address back pain in pregnant women, especially in the third trimester, preventive measures can be taken. These include maintaining an ideal body weight, adopting proper posture during activities such as lifting objects, and engaging in regular exercise to strengthen back muscles (Trisnawati, Anita and Silaban, 2023) . Yoga is a particularly effective exercise for reducing back pain during pregnancy. Yoga offers numerous benefits, particularly in the third trimester, such as optimizing the fetal position, strengthening pelvic floor muscles, expediting the pregnancy process, and preparing the body for childbirth. However, pregnant women must consider several factors before practicing yoga, such as checking for contraindications, wearing safe and comfortable clothing, consulting an obstetrician beforehand, staying hydrated during exercise breaks, and resting if any pain or discomfort arises (Hasmawati, et al., 2022) .

Yoga influences the hypothalamus by suppressing the secretion of corticotropin-releasing hormone (CRH), which subsequently reduces the release of the adrenocorticotropic hormone (ACTH) by the anterior pituitary gland. This suppression decreases the production of adrenal hormones and cortisol while stimulating the release of endorphins by the anterior pituitary gland. Yoga also inhibits the activation of the sympathetic nervous system, reducing the hormones responsible for bodily dysregulation. The parasympathetic nervous system is stimulated to regulate the release of catecholamines, leading to a decrease in heart rate, breathing rate, blood pressure, muscle tension, metabolic rate, and the production of stress-related hormones (Widiyarti, et al., 2024) . The practice of

yoga positively affects the central nervous system, particularly the brain. During pregnancy, back pain often results from spinal stretching. It can also occur due to hormonal changes that cause the pelvic joints to loosen, shifting the body's support mechanism and altering how the back supports the growing abdomen (Elina, et al., 2024) Prenatal yoga is expected to help alleviate discomfort during pregnancy, especially in the third trimester, by creating a calmer atmosphere for the mother and preparing her body physically for childbirth (Wariyah, 2023) .

This practice is increasingly embraced by pregnant women, including those from Muslim communities(Pankrasia et al., 2022). Although yoga has its origins in Buddhist traditions, its benefits continue to be promoted across diverse cultural and religious groups(Mcgrath, 2017). Modern prenatal yoga, which originates from Buddhist traditions, has evolved and been embraced by various communities with diverse cultural and religious backgrounds, including Muslims. This reflects the universal benefits of yoga in promoting harmony between body and mind. Moreover, this practice can be adapted to align with different belief systems, thereby supporting the overall health and well-being of expectant mothers.

In West Sumatra Province, data indicate that 80% of 100 pregnant women experience discomfort in the third trimester, primarily in the form of back pain caused by the enlargement of the uterus. Similarly, in Lima Puluh Kota Regency, around 69.75% of pregnant women report back pain during pregnancy, particularly in the third trimester (West Sumatra Provincial Health Office, 2023). Based on data obtained from field observations, it was found that in one working area of Lima Puluh Kota Regency, an average of 40 pregnant women experienced back pain during pregnancy. Therefore, it can be concluded that the prevalence of this discomfort affects 40% of the total population of pregnant women in the area.

2. Methods

This study employed a quasi-experimental design (pre-experimental design) with a pretest-posttest format and a control group for comparison. Observations were conducted twice: once before the intervention (pretest) and once after the intervention (posttest). The study population consisted of all third-trimester pregnant women, with a sample size of 32 participants divided evenly into two groups—16 in the intervention group and 16 in the control group. The sampling method used was purposive sampling, meaning the selected participants met specific criteria set by the researchers until the required sample size was achieved. The inclusion criteria included: (1) third-trimester pregnant women who were willing to participate and complete the study procedures, (2) primigravida pregnant women, and (3) third-trimester pregnant women who were present during yoga sessions and reported experiencing back pain. The intervention was conducted six times over three weeks, with sessions held twice a week and spaced three days apart. The level of back pain was measured using the Visual Analog Scale (VAS). This study also takes into account confounding factors, such as the psychological aspects of pregnant women, activities performed during pregnancy, family support, and the nutritional intake of pregnant women.The ethical considerations of this research adhered to established standards of appropriateness and consent. Participants were required to provide informed consent after being thoroughly briefed on the study's procedures, potential benefits, and limitations. Participants were also given the option to withdraw at any stage without any risk or negative implications. Approval for the study was obtained following this process. This study was conducted by an instructor certified in prenatal yoga training with over 2 years of experience in yoga therapy. Informed consent was obtained from the subjects prior to the intervention. The implementation was also monitored by healthcare services to ensure that the care provided followed the guidelines set by the Ministry of Health. This step was taken to ensure that the treatment provided to the intervention group adhered to the standards and standard operating procedures of prenatal yoga practice.

3. Results and Discussion

Table 1. Average back pain before prenatal yoga in pregnant women in the third trimester

Group	N	Mean	SD	Min - Max	95% CI
Intervention	16	4.75	0.683	4-6	4.39-5.11
Control	16	4.44	0.814	3-6	4.0-4.87

Based on Table 1, the analysis revealed that among the 16 respondents in the intervention group, the average back pain score before undergoing prenatal yoga was 4.75, with a standard deviation of 0.683. The scores ranged from a minimum of 4 to a maximum of 6. From the confidence interval estimation, it can be inferred with 95% certainty that the average back pain score in the intervention group before prenatal yoga falls between 4.39 and 5.11. In the control group, which also consisted of 16 respondents, the average back pain score before the intervention was 4.44, with a standard deviation of 0.814. The scores in this group ranged from a minimum of 3 to a maximum of 6. The confidence interval estimation indicates with 95% certainty that the average back pain score in the control group prior to the intervention ranges between 4.0 and 4.87.

Musculoskeletal adaptations in pregnancy, such as increasing body weight, a shifting center of gravity due to uterine enlargement, and the need for relaxation and mobility, play a significant role in back pain. Increased instability of the sacroiliac joint and heightened lumbar lordosis are key contributors to pain. This often results in muscle shortening when abdominal muscles stretch, leading to muscle imbalances around the pelvis and lower back. Such imbalances are particularly noticeable at the upper ligament areas (Yulianto *et al.* , 2023) . Back pain can originate from the sacroiliac joint or lumbar region, potentially causing prolonged disruptions in muscle and pelvic stability if not addressed postpartum. Women with a history of lower back pain in prior pregnancies are at a significantly higher risk of experiencing it in subsequent pregnancies (Arummega, et al., 2022) . The causes of back pain in pregnancy include the mother's increased weight, joint instability due to ligament relaxation, altered spinal curvature, and abdominal muscle stretching. As the uterus grows larger, the pregnant woman's center of gravity shifts forward, resulting in a forward tilt or lordosis. This shift requires the pregnant mother to find a new balance point to maintain stability while standing.

With advancing gestational age and fetal growth, the increasing load in the uterus causes the organ to expand, placing additional strain on ligaments, muscles, nerve fibers, and the back. This stretch amplifies the forward pull on the spine, further intensifying physiological lordosis and resulting in back pain (Marsanda *et al.* , 2023)

Table 2. Average back pain in pregnant women in the third trimester

Group	N	Mean	SD	Min - Max	95% CI
Intervention	16	2.31	0.479	2-3	2.06-2.57
Control	16	4.0	0.816	3-5	3.56-4.44

Based on Table 2, the analysis showed that among the 16 respondents in the intervention group, the average pain level after prenatal yoga in third-trimester pregnant women was 2.31, with a standard deviation of 0.479. The minimum recorded value was 2, and the maximum was 3. From the confidence interval estimation, it can be concluded with 95% certainty that the average pain level after prenatal yoga in the intervention group falls between 2.06 and 2.57. In the control group, which also consisted of 16 respondents, the average back pain score after prenatal yoga was 4.0, with a standard deviation of 0.816. The minimum recorded value was 3, and the maximum was 6. The confidence interval estimation suggests with 95% certainty that the average back pain level in the control group falls between 3.56 and 4.44.

One effective method to alleviate back pain during the third trimester of pregnancy is through prenatal yoga. Prenatal yoga is a gentle form of exercise suitable for pregnant women. Beyond serving as a relaxation technique to prepare for childbirth and reduce anxiety, yoga also helps alleviate back

pain, which is a common complaint among pregnant women, often beginning towards the end of the second trimester. These discomforts are primarily due to the physical changes experienced during pregnancy (Widhayanti, 2019) . The analysis observed a reduction in back pain before and after prenatal yoga, with a notable difference of 2.44. This decrease in pain is attributed to the benefits of prenatal yoga, which includes specific yoga postures designed to improve maternal health and ease the labor process. One such posture is *Utthita Parsvakonasana* or the Extended Side Angle Pose. This movement involves standing with the right leg extended to the side at a 90° angle, straightening the right leg outward, resting the left elbow on the left knee, and lifting the right hand upward. The pose stretches the waist and abdominal muscles, held briefly before switching directions. This posture is particularly beneficial in relieving back pain.

According to the theory, back pain in pregnant women is influenced by several factors, including age, poor health conditions, psychological and psychosocial issues, degenerative arthritis, smoking, prolonged sitting or standing, and obesity. Methods to manage back pain include exercise, the application of hot or cold compresses, maintaining good posture, and seeking professional consultation (Mayunita, 2024) . This study highlights that yoga is well-received by younger pregnant women. Participants who attended yoga sessions reported reduced stress levels and increased confidence in their ability to manage labor and childbirth. Therefore, offering accessible yoga programs for young pregnant women is highly recommended (Styles et al., 2019). Additionally, prenatal yoga may help alleviate maternal depressive symptoms, benefiting both depressed and non-depressed pregnant women (Gong et al., 2015).

In the control group, there was no significant change in back pain between the first and second assessments. This was because the control group did not receive any intervention aimed at reducing back pain. Back pain in pregnant women can result from excessive bending, engaging in strenuous physical activities such as heavy housework, fatigue, insufficient rest, and the growing size of the mother's abdomen. These factors contribute to discomfort, leading to varying levels of back pain intensity.

Table 3. Data Normality Test

Variables	*P value*	Information
Before intervention	0.002	Not normally distributed
After the intervention	0,000	Not normally distributed
Before control	0.030	Not normally distributed
After control	0.004	Not normally distributed

Based on table 3, all data is not normally distributed because the probability value (sig) or *p value is* < 0.05, so bivariate data analysis is continued using the *Wilcoxon* and *Mann Whitney tests*

Table 4. Effect of Prenatal Yoga on Back Pain in Pregnant Women in the Third Trimester

Back Pain	N	Mean	SD	MD	Pvalue
Before	16	4.75	0.683	2.44	0.000
After	16	2.31	0.479		

Based on Table 4, the average back pain experienced by pregnant women in their third trimester before engaging in prenatal yoga was 4.75 with a standard deviation of 0.683, while the average pain level after prenatal yoga was 2.31 with a standard deviation of 0.479. The reduction in back pain before and after the intervention showed a difference of 2.44. Analysis of the effect of prenatal yoga on back pain in third-trimester pregnant women, using the Wilcoxon test, revealed a significant effect with a p-value of 0.000 ($p < 0.05$).

Prenatal yoga is a form of exercise or physical activity designed to help pregnant women manage back pain. This practice involves relaxation movements that are gentle and suitable for women in their second or third trimester of pregnancy. These yoga exercises enhance joint flexibility and calm the mind, especially in preparation for childbirth. Prenatal yoga can be practiced at home or in

specialized classes and offers various benefits for both mother and fetus, such as strengthening the body during pregnancy, preventing back pain, improving breathing techniques, and alleviating sleep disturbances caused by anxiety about childbirth. Prenatal yoga includes five key components: physical postures, breathing exercises (pranayama), specific positions (mudra), meditation, and deep relaxation, which collectively support a healthy pregnancy and childbirth (Suarni *et al.* , 2023) .

Furthermore, prenatal yoga aligns the body, mind, and soul, contributing to physical strength, flexibility, and the purification of the central spinal nerves. Practicing yoga during the third trimester can help alleviate discomfort, including back pain, commonly experienced during this period (Elina, et al., 2024) . Research has shown that yoga significantly reduces depression and anxiety levels in pregnant women with depression (Lin et al., 2022). The observed reduction in back pain before and after prenatal yoga, with a difference of 2.44, highlights the significant impact of this practice. Regular participation and adherence to yoga sessions, coupled with the duration and intensity of practice, further enhance its effectiveness. Sessions lasting 30-60 minutes, conducted twice a week over three weeks, have been found to yield optimal results in reducing back pain. Prenatal yoga is a highly effective approach for alleviating back pain and improving sleep quality in pregnant women (Heriyanti et al., 2024).

4. Conclusion

The average level of back pain in the third trimester before engaging in prenatal yoga for the intervention group was 4.75, with a standard deviation of 0.683, while in the control group, it was 4.44, with a standard deviation of 0.814. After participating in prenatal yoga, the average back pain in the intervention group decreased to 2.31, with a standard deviation of 0.479, while the control group reported an average pain level of 4.0, with a standard deviation of 0.816. The results indicate a significant effect of prenatal yoga on reducing back pain in third-trimester pregnant women within the Health Center's working area, with a p-value of 0.000. The discomfort experienced by pregnant women during their third trimester can be alleviated through gentle exercises like prenatal yoga, which has proven to effectively reduce back pain, allowing women to perform daily activities more comfortably during pregnancy. Based on the results of this study, it is recommended to implement prenatal yoga for pregnant women, as it helps with breathing exercises and provides relaxation, making it easier for mothers to adapt to the physical changes during pregnancy. Prenatal yoga can be practiced anywhere; however, to achieve optimal results, it is best to follow the guidance of an instructor. Midwives and instructors usually offer tips and guidance tailored to the individual needs of pregnant women, making it suitable for all pregnant women, as long as there are no health issues during the pregnancy. The prenatal yoga program can be integrated into maternal healthcare services at health centers (1) Training for Healthcare Personnel, (2) Education and Socialization, (3) Integration into Routine Visits, (4) Providing Materials and Guidelines, (5) Monitoring and Evaluation, and (6) Collaboration with Other Facilities. By following these steps, prenatal yoga can become an integral part of a comprehensive healthcare program for pregnant women at the health centers, providing physical and mental health benefits for expectant mothers.

References

Aini, N., & Purwasari, F. M. D. (2020). Jurnal Kesehatan Jurnal Kesehatan. *Jurnal Kesehatan*, *VIII*(Ii), 117–177.

Arummega, M. N., Rahmawati, A., & Meiranny, A. (2022). Faktor-Faktor yang Mempengaruhi Nyeri Punggung Ibu Hamil Trimester III: Literatur Review. *Oksitosin : Jurnal Ilmiah Kebidanan*, *9*(1), 14–30. https://doi.org/10.35316/oksitosin.v9i1.1506

Beno, J., Silen, A. ., & Yanti, M. (2022). Gambaran Ketidaknyamanan Ibu Hamil Trimester III. *Braz Dent J.*, *33*(1), 1–12.

Dinas Kesehatan Provinsi. (2023). *Laporan Akuntabilitas kinerja Pemerintah Dinas Kesehatan Provinsi Sumatera Barat*.

Elina, E., Sugesti, R., & Yolandia, R. A. (2024). Efektifitas Kelas Prenatal Yoga terhadap Nyeri Punggung pada Ibu Hamil Trimester III. *Indonesia Journal of Midwifery Sciences*, *3*(2), 415–421. https://doi.org/10.53801/ijms.v3i2.157

Gong, H., Ni, C., Shen, X., Wu, T., & Jiang, C. (2015). Yoga for prenatal depression: A systematic review and meta-analysis. *BMC Psychiatry*, *15*(1), 1–8. https://doi.org/10.1186/s12888-015-0393-1

Hasmawati, Kristiningrum, W., & Permayanti, H. (2022). *Senam Yoga untuk Mengatasi Nyeri Punggung Ibu Hamil*. *1*(2),

752–757.
Heriyanti, S. W., Estiningtyas, Q., Adnani, S., Rohmah, S., & Fatimah, S. (2024). *Scoping Review: The Impact of Prenatal Yoga on Back Pain and Sleep Quality in Pregnant Women ARTICLE INFO*. *6*(2), 66–81. https://doi.org/10.33860/jbc.v6i2.3447
Hiliati, & Hastuti, M. (2023). Asuhan Kebidanan Pada Ibu Hamil Trimester I Di PMB Nurwati Wilayah Kerja Puskesmas Air Tiris. *Evidance Midwifery Journal*, *2*(April), 30–32. https://journal.universitaspahlawan.ac.id/%0AAsuhan
Irmawati.S, Rosdiana Rosdiana, & Yuniarti Ibrahim. (2024). Pengaruh Relaksasi Otot Progresif Terhadap Penurunan Nyeri Punggung Bagian Bawah Ibu Hamil Trimester III di Wilayah Kerja Puskesmas Malifut Kabupaten Halmahera Utara. *NAJ : Nursing Applied Journal*, *2*(3), 33–40. https://doi.org/10.57213/naj.v2i3.300
Lin, I. H., Huang, C. Y., Chou, S. H., & Shih, C. L. (2022). Efficacy of Prenatal Yoga in the Treatment of Depression and Anxiety during Pregnancy: A Systematic Review and Meta-Analysis. *International Journal of Environmental Research and Public Health*, *19*(9). https://doi.org/10.3390/ijerph19095368
Maisah, M., Nugraheny, E., & Margiyati, M. (2022). Perubahan Fisik Dan Psikologis Ibu Hamil Trimester Iii Dalam Kesiapan Menghadapi Persalinan Di Masa Pandemi Covid-19. *Jurnal Ilmu Kebidanan*, *8*(1), 34–41. https://doi.org/10.48092/jik.v8i1.148
Marsanda, N., Dg Maroa, N., Hardiana, D., indriani, I., Lutviah Ridwan, P., Muhammadiyah Makassar, U., Sultan Alauddin No, J., Sari, G., Rappocini, K., Makassar, K., & Selatan, S. (2023). Pentingnya Endhorphin Massage terhadap Nyeri Punggung Ibu Hamil Trimeser III. *Journal on Education*, *5*(4), 11696–11701. https://www.jonedu.org/index.php/joe/article/view/2124
Mayunita, A., & Febriani, A. (2024). Efektifitas Prenatal Yoga Terhadap Nyeri Punggung Pada Ibu Hamil Trimester III di PMB A Cibinong-Depok. *Malahayati Nursing Journal*, *6*(6), 2324–2337. https://doi.org/10.33024/mnj.v6i6.11334
Mcgrath, W. A. (2017). *Buddhism and Medicine in Tibet : Origins , Ethics , and Tradition*.
Pankrasia, M., Khayati, Y. N., & Andinda, R. (2022). Prenatal Yoga dalam Mengurangi Ketidaknyamanan Saat Hamil. *Prosiding Seminar Nasional Dan CFP Kebidanan Universitas Ngudi Waluyo*, *1*(1), 327–333.
Romauli. (2023). Buku Ajar Asuhan Kebidanan I. *Yogyakarta: Nuha Medika*, 20–20.
Styles, A., Loftus, V., Nicolson, S., & Harms, L. (2019). Prenatal yoga for young women a mixed methods study of acceptability and benefits. *BMC Pregnancy and Childbirth*, *19*(1), 1–12. https://doi.org/10.1186/s12884-019-2564-4
Suarni, S., Asmara, K., Hutahaean, H., Sofiyanti, I., & Waluyo, U. N. (2023). Prenatal Yoga sebagai Upaya Mengurangi Ketidaknyamanan pada Ibu Hamil Trimester II dan III Awal. *Jurnal Kebidanan*, *2*(1), 97–104.
Trisnawati, H., Anita, M. N., & Silaban, E. S. (2023). Yoga untuk Mengatasi Nyeri Punggung pada Ibu Hamil di UPTD Puskesmas Temindung Samarinda. *Seminar Nasional Dan Call for Paper Kebidanan*, *2*(1), 47–55.
Wariyah. (2023). Efektivitas Prenatal Yoga terhadap Nyeri Punggung pada Ibu Hamil Trimester III di Wilayah Kerja Puskesmas Telagasari, Kabupaten Karawang, Tahun 2023. *Health Information : Jurnal Penelitian*, *15*(2), 1–5. https://myjurnal.poltekkes-kdi.ac.id/index.php/hijp/article/view/1018/998
Widhayanti, R. (2019). KELAS PRENATAL YOGA MENGATASI NYERI PUNGGUNG DAN KRAM : PERSEPSI IBU HAMIL TRIMESTER 3 PENDAHULUAN Kehamilan adalah salah satu dari tiga periode dalam kehidupan wanita saat mengalami perubahan hormonal yang penting . Periode pertama adalah menarche , kedu. *Jurnal Publikasi Kebidanan*, *10*(1), 1–12.
WIDIYARTI, N., SITUMORANG, R. B., & SARI, L. Y. (2024). Pengaruh Senam Prenatal Yoga Terhadap Kecemasan Pada Ibu Hamil Dalam Menghadapi Proses Persalinan Di Puskesmas Perawatan Lubuk Pinang. *Journal Of Midwifery*, *12*(1), 23–30. https://doi.org/10.37676/jm.v12i1.6185
Yulianto, A. B., Sartoyo, Wardoyo, P., & Fariz, A. (2023). Jurnal Keperawatan Muhammadiyah Bengkulu. *Sereal Untuk*, *8*(1), 51.