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The Intervention of Prenatal Gentle Yoga in Reducing Leg Swelling in Mother "I" G4P3A0 through the Utilization of a Digital Module

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ABSTRACT

The third trimester of pregnancy is often accompanied by physiological complaints such as leg swelling, which is caused by uterine pressure and hormonal changes. Non-pharmacological interventions like prenatal gentle yoga have the potential to reduce such discomforts. The use of digital modules can also enhance the effectiveness of education and the involvement of pregnant women. This research employed a descriptive case study with a comprehensive midwifery care approach. The subject was Mrs. "I" G4P3A0, who experienced lower extremity edema during her third trimester. The intervention consisted of prenatal gentle yoga conducted over four weeks, three times per week, guided by an educational digital module. After four weeks of prenatal gentle yoga, results showed the swelling had subsided, the mother experienced improved sleep quality, and she gained a better understanding of the importance of maintaining health during pregnancy through non-pharmacological approaches. Prenatal gentle yoga supported by a digital module proved effective as a complementary therapy to reduce edema in third-trimester pregnant women. This intervention not only provided physical benefits but also increased maternal awareness and participation in maintaining holistic health. It can be concluded that digital module-based prenatal gentle yoga is an effective and innovative approach to reducing third-trimester pregnancy edema. It is recommended to be widely implemented in healthcare facilities and educational institutions, and serve as a basis for developing other interactive digital modules.

Keywords: pregnancy, leg swelling, prenatal gentle yoga, digital module

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INTRODUCTION

During pregnancy, a woman's body undergoes significant physical, emotional, and hormonal changes. The process of adapting to these changes often causes discomfort, particularly in the third trimester. Common discomforts experienced include increased frequency of urination, vaginal discharge, constipation, leg cramps, lower back pain, headaches, and edema in the lower extremities.(Mutia Kirani et al.2021). This swelling commonly occurs around 34 weeks of gestation due to pressure from the uterus on the inferior vena cava, which hinders blood flow

back to the heart. It is also influenced by hormonal changes and fluid retention.(Saragih et al., 2020)

According to the World Health Organization (WHO, 2018), 70–80% of pregnant women experience leg swelling during the third trimester. In Indonesia, approximately 80% of pregnant women report similar complaints, with 45% attributed to comorbid conditions and 35% to other contributing factors. A preliminary study conducted at Cipeundeuy Public Health Center (PKM Cipeundeuy) showed that among 48 third-trimester pregnant women, 22.92% complained of leg swelling. Appropriate prevention and management are essential to maintaining the quality of life of pregnant women and preventing complications.(World Health Organization (WHO), 2018)

One of the complementary therapies proven to be effective is prenatal gentle yoga. Yoga during pregnancy is a modified form of Hatha yoga, adapted to the physical and physiological conditions of pregnant women.(Wulandari.E 2018) This practice not only alleviates back pain and swelling, but also reduces stress and nausea, while enhancing both physical and mental preparedness for childbirth. A study by Setiawati et al. (2019) demonstrated that eight weeks of prenatal yoga, conducted twice a week, reduced leg swelling by 35.7%, lower back pain by 30.4%, stress by 28.5%, and improved muscle flexibility by 25.1%. Similarly, Widyastuti (2020) reported that prenatal gentle yoga was effective in reducing leg swelling in pregnant women by 28.5%, lower back pain by 32.1%, and stress or anxiety by 25.9%. This study involved 60 pregnant women in their second and third trimesters, and the results showed a significant improvement in muscle flexibility and strength by 23.4%.

Most pregnant women have limited understanding of the causes and prevention of leg swelling. This digital educational module is designed to provide comprehensive knowledge on the prevention, management, and care of leg edema, while also aiming to raise awareness and improve maternal health. The use of digital media in health education has been proven effective. interactive e-modules that incorporate text, images, audio, and video can enhance public understanding, including among pregnant women.(Pratiwi, 2018; Pasili et al., 2020)

The author conducted an initial assessment of Mrs. "I", a 38-year-old housewife who was pregnant with her fourth child (G4P3A0). The mother's physical condition was generally good, with no history of hypertension, hereditary diseases, or infections. She complained of leg cramps and edema in the lower extremities, as well as difficulty sleeping due to pain. Her daily activities included household chores and assisting her husband with his business. Based on these complaints, the author was interested in providing continuous midwifery care and conducting a study titled "Prenatal Gentle Yoga Intervention to Reduce Leg Swelling in Mrs. 'I', G4P3A0, Using a Digital Module". The mother's limited knowledge about how to manage leg swelling became a key foundation for this research. Midwives play an important role in providing appropriate care based on the mother's needs, one of which is through prenatal gentle yoga accompanied by an e-module as an effective and easily accessible educational medium.

METHODS

This study employed a descriptive case study design with a midwifery care approach. The study was conducted at Cipeundeuy Public Health Center, West Bandung Regency, from November 13, 2024 to January 27, 2025. The subject of this study was Mrs. "I", a 38-year-old pregnant woman, gravida 4 para 3 abortus 0 (G4P3A0), in the third trimester of pregnancy, who experienced lower extremity edema and sleep disturbances.

The inclusion criteria were pregnant women in the third trimester experiencing leg swelling, willing to participate in the intervention, and able to follow prenatal gentle yoga sessions. The exclusion Pregnant women with complications requiring pharmacological treatment or contraindications to physical activity.

Data collection was conducted through interviews, direct observations, and physical examinations of the mother during antenatal, labor, postpartum, and family planning visits. The data collected included biodata, pregnancy history, supporting examinations (hemoglobin levels and triple elimination screening), as well as documentation of care development. Instruments used in data collection included assessment forms, the maternal and child health (MCH) handbook, pregnancy examination tools, and digital media in the form of a module.

A preliminary study was conducted with administrative preparations and approval from the health center. The researcher coordinated with the midwife in charge and provided explanations to the pregnant woman and her husband, and after receiving complete information and agreeing to participate, the mother signed the informed consent form.

The intervention was conducted in the form of prenatal gentle yoga, a modification of Hatha yoga adapted for third-trimester pregnant women, aimed at reducing lower extremity edema and promoting relaxation. Each session lasted approximately 30 minutes and was carried out three times per week for four consecutive weeks. The intervention included gentle and safe movements, such as breathing exercises, lower extremity movements, Janur Sirsasana (Head-to-Knee Pose), modified Table Top Pose, pelvic tilts, and legs-up-on-chair pose, which were designed to improve blood circulation, promote relaxation, and reduce leg swelling. All sessions were conducted directly by the researcher following the standardized operational procedure (SOP) provided in the digital module, and each session was observed and documented to ensure consistency, safety, and adherence to the intervention protocol.

This study received ethical clearance from the Health Research Ethics Committee under letter number 328/D/KEPK-STIKes/XII/2024. The researcher ensured the confidentiality of the subject's data, which was used solely for the purpose of this study. The study provided direct benefits in the form of care and comfort during pregnancy, and justice was upheld by offering equal opportunity for subjects who met the inclusion criteria and by respecting participant input throughout the research process.

RESULTS

Comprehensive midwifery care was provided to Mrs. "I", G4P3A0, aged 38 years, starting from the third trimester of pregnancy, labor, postpartum period, until newborn care. During the initial antenatal visit, the mother complained of leg swelling (edema) and difficulty sleeping due to lower extremity pain. The intervention given was prenatal gentle yoga for four weeks, three times per week, guided by a digital module as an educational medium.

Observations over the four-week period showed gradual improvement in the mother's condition. There was a progressive reduction in the degree of swelling from week to week, along with an increase in maternal comfort.

Table 1. Observation Results of *Prenatal Gentle Yoga* Over 4 Weeks

Week	Pain Scale	Degree of Swelling	Observation Results
1	5-4	Grade 2+	The legs appeared swollen, with stabbing pain and disturbed sleep. The mother began to feel slightly better after several yoga sessions.
2	4-2	Grade 2+	Swelling began to reduce, pain decreased, and sleep became more comfortable, although occasional disturbances were still present.
3	1	Grade 1+	Mild edema, pain was almost unnoticeable. Sleep became more regular, and the mother became more active with light activities.

4	0	Grade 0	No more swelling, undisturbed sleep, and the mother felt comfortable both physically and emotionally.

After four weeks of intervention, the leg swelling had completely resolved and the pain scale decreased from 5 to 0. The mother reported improved sleep quality, increased comfort, and a better understanding of pregnancy care through a non-pharmacological approach. *Prenatal gentle yoga*, supported by a digital module, proved effective as a complementary intervention to reduce edema during the third trimester of pregnancy.

Labor occurred spontaneously without complications, and the baby was born in good condition (birth weight: 3200 grams, length: 50 cm, with a strong cry). The postpartum period proceeded physiologically; the mother experienced no infections or bleeding, was able to breastfeed exclusively, and received education on newborn care, wound care, and family planning counseling. This intervention not only effectively reduced edema but also supported the success of comprehensive midwifery care from pregnancy through the postpartum period.

DISCUSSION

The findings of this study indicate that prenatal gentle yoga using a digital module was effective in reducing lower extremity edema in a third-trimester pregnant woman. After four weeks of regular intervention, a gradual decrease in leg swelling was observed until no visible edema remained. This finding suggests that gentle physical activity combined with relaxation techniques can support venous circulation and fluid redistribution during pregnancy.(Hayati, 2025)

The results of this study demonstrated that prenatal gentle yoga, combined with a digital e-module, was effective in reducing complaints of leg swelling (edema) in third-trimester pregnant women, as experienced by Mrs. "I". The intervention was carried out over a four-week period, with a frequency of three sessions per week, guided by a digital e-module. The digital module used in this study contained not only written information about the benefits and procedures of prenatal gentle yoga, but also included video demonstrations of the yoga movements. Thus, Mrs. "I" was able to access two forms of learning media simultaneously,(Pratiwi, 2018) Text and audiovisual materials have been shown to be more effective in enhancing mothers' understanding and engagement in self-care during pregnancy.(Alfiani, 2024) The ease of accessing videos within the e-module allows pregnant women to repeat the movements at any time, according to their convenience and availability, without the need for continuous direct supervision from healthcare providers. This highlights the advantages of e-modules as flexible and responsive learning media tailored to the needs of pregnant women.(Juriani, 2019)

Physiologically, prenatal gentle yoga has a positive effect on the circulatory and lymphatic systems, particularly in improving venous blood circulation from the lower extremities back to the heart.(Yuliani, 2021) This plays an important role in reducing fluid retention, which is a primary cause of edema. Movements such as *legs-up-on-chair* and *pelvic tilt* stimulate venous return, while breathing exercises help improve oxygenation and muscle relaxation. Observational results showed a progressive decrease in pain scale from 5 to 0, along with complete resolution of swelling by the fourth week. These findings support the results of the study.(Setiawati, 2019) which demonstrated that prenatal yoga was able to reduce leg swelling by 35.7%, and also found significant improvements in back pain and muscle flexibility. (Widyastutik, 2020)**.** The consistency of performing these movements three times per week for four consecutive weeks may have enhanced the physiological adaptation and contributed to the observed outcomes.(Kusnaningsih, 2023)

The digital module used in this study also demonstrated its important role as an efficient, flexible, and interactive educational tool, particularly for pregnant women with limited time or access to direct counseling. According to Pratiwi (2018) and Pasili et al., e-modules that

incorporate text, images, and videos have a high feasibility score as health education media, with ratings above 80%. In this case, Mrs. "I" not only experienced physical improvement but also gained increased understanding and awareness of the importance of maintaining health during pregnancy through a non-pharmacological approach.(Widyastuti, 2020)

The success of this intervention was also supported by the mother's stable physiological condition and strong family support. In addition to the reduction of leg swelling, the mother experienced improved sleep quality, smoother daily activities, and felt more comfortable and confident throughout her pregnancy. Gentle movements and breathing exercises performed during prenatal yoga may activate the parasympathetic nervous system, reducing stress and improving autonomic regulation, which in turn supports better sleep quality. This intervention also showed positive impacts during the labor and postpartum periods, in which the mother was able to deliver spontaneously, breastfeed exclusively, and receive comprehensive education regarding contraception. These findings indicate that prenatal gentle yoga using a digital e-module is not only effective as a physical intervention, but also serves as part of holistic midwifery care that can enhance the overall quality of life of pregnant women. (Rahmatun Saleha, 2024)

This study has several strengths that enhance the credibility of its findings. First, the intervention applied was structured and clearly defined, including specific prenatal gentle yoga movements, duration, frequency, and intervention period, which supports reproducibility. Second, the use of a digital module as an educational medium allowed consistent delivery of information and facilitated independent practice by the participant, increasing adherence to the intervention. Third, the study employed a comprehensive midwifery care approach, enabling continuous observation from pregnancy through the postpartum period. Additionally, the outcomes were assessed using observable clinical indicators such as pain scale and degree of edema, allowing for clear documentation of changes over time.(Purnamasari, 2025)

Despite these strengths, several limitations should be acknowledged. This study was conducted as a single-subject case study, which limits the generalizability of the findings to a broader population. The absence of a control group makes it difficult to attribute improvements solely to the intervention without the influence of external factors. Furthermore, the duration of follow-up was relatively short, focusing primarily on the intervention period and immediate outcomes. Daily physical activity, dietary intake, and other lifestyle factors that may influence edema and sleep quality were not fully controlled. Therefore, future studies with larger sample sizes, controlled designs, and longer follow-up periods are recommended to strengthen the evidence regarding the effectiveness of prenatal gentle yoga supported by digital modules.

CONCLUSION

Based on the case study conducted on Mrs. "I", it can be concluded that prenatal gentle yoga utilizing a digital module proved effective in reducing lower extremity edema in third-trimester pregnant women. The intervention was carried out regularly, three times per week for four weeks, and resulted in significant improvements, including a reduction in pain scale, resolution of swelling, and better sleep quality. The mother reported feeling more comfortable, relaxed, and better able to manage her pregnancy in preparation for childbirth.

Mrs. "I" experienced a physiological labor process without complications or the need for special interventions. She delivered spontaneously within the normal duration expected for multiparous women. The baby was born in good condition, cried vigorously, was active, and received immediate Early Initiation of Breastfeeding (EIB). The postpartum period progressed normally, with no signs of infection or excessive bleeding, and uterine involution occurred within the expected timeframe. Postnatal visits were conducted in accordance with standard care, accompanied by comprehensive education and monitoring.

Mrs. "I"'s baby remained in good condition from birth through the monitoring period, received exclusive breastfeeding, and roomed-in with the mother. After the postpartum period ended, Mrs. "I" chose a 3-month injectable contraceptive following thorough counseling on contraceptive options. This decision reflected the implementation of the informed choice principle, in which the mother made a decision based on complete and clear information in accordance with reproductive health service standards.

RECOMMENDATION

This study indicates that prenatal gentle yoga supported by a digital module is effective in reducing leg swelling in third-trimester pregnant women, making it a promising non-pharmacological approach in midwifery care. In the future, it is recommended that prenatal gentle yoga not be limited to the management of edema, but also be further explored as an intervention for other pregnancy discomforts such as leg cramps, lower back pain, and sleep disturbances. Additionally, the development of more interactive and accessible digital modules is necessary to enhance pregnant women's engagement in self-care practices at home, while also supporting the digital transformation of maternal health education and promotion.

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