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EFFECTIVENESS OF KINESIO TAPING FOR BACK PAIN IN PREGNANT WOMEN THIRD TRIMESTER: A SCOPING REVIEW

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ABSTRACT

Back pain is a common problem experienced by pregnant women, especially in the third trimester, which can affect their quality of life and limit their ability to carry out daily activities. Back pain can occur in the lumbosacral area, which can be overcome by using non-pharmacological therapy, one of which is kinesio taping. Kinesio taping is one of the tools health workers use to relieve lower back discomfort in patients. This study examined the effectiveness of kinesio taping in helping reduce back pain in pregnant women entering the final trimester of pregnancy. ***Methods:*** *A scoping review was compiled using the PICO framework and PRISMA guidelines.* ***Results:*** *Eight articles were extracted from the scoping review that discussed the effectiveness of kinesio taping for back pain during pregnancy in TM III (third trimester). The eight articles reached the same* ***conclusion:*** *kinesio taping can have a significant impact on reducing the level of discomfort experienced during TM III pregnancy due to back pain. Conclusion: Kinesio taping helps relieve discomfort in the backs of pregnant women in TM III.*

Keyword: Back Pain, Kinesio Taping, Pregnant Women, Third Trimester

ABSTRAK

Nyeri punggung adalah masalah yang sering dialami oleh ibu hamil, khususnya pada trimester ketiga, yang dapat memengaruhi kualitas hidup dan membatasi kemampuan untuk menjalani aktivitas sehari-hari. Nyeri punggung dapat terjadi diarea lumbosacral yang dapat diatasi dengan menggunakan terapi non-farmakologi salah satunya kinesio taping. Kinesio taping adalah salah satu alat yang digunakan tenaga kesehatan untuk meringankan ketidaknyamanan punggung bawah pasien. Studi ini dilakukan untuk mengkaji efektivitas kinesio taping dalam membantu mengurangi nyeri punggung pada wanita hamil yang memasuki trimester akhir kehamilan. **Metode**: Tinjauan literatur yang disusun berdasarkan kerangka PICO dan panduan PRISMA. **Hasil**: Delapan artikel diekstraksi dari tinjauan ruang lingkup yang membahas tentang efektivitas kinesio taping untuk nyeri punggung selama kehamilan ibu hamil TM III (trimester ketiga). Delapan artikel tersebut mencapai kesimpulan yang sama: kinesio taping dapat memberikan dampak yang signifikan dalam menurunkan tingkat ketidaknyamanan yang dialami selama kehamilan TM III karena nyeri punggung. **Kesimpulan**: Kinesio taping bermanfaat dalam meringankan ketidaknyamanan pada punggung ibu hamil TM III

Kata Kunci: Nyeri Punggung, Kinesio Taping, Ibu Hamil, Trimester III

INTRODUCTION

Pregnancy is a normal experience for women, starting from sexual intercourse to conception. Implantation and nidation took 280 days, 40 weeks, or 9 months, 7 days until delivery occurs (Rahmah *et al*., 2021). During pregnancy, pregnant women have various significant physiological and psychological changes. One of which is musculoskeletal system changes, which are caused by physiological changes in weight gain and postural adaptation, as well as the influence of hormones that cause back pain (Arummega et al., 2022).

Back pain is a common complaint by pregnant women during the third trimester of pregnancy. This complaint is usually felt in the lower back or lumbar spine and can appear continuously or occasionally (Herinawati et al., 2023). Epidemiological studies showed that this problem affects around 45-56% of pregnant women, usually in the second trimester of pregnancy and increasing in the third trimester (Kalinowski et al., 2017). Based on a survey conducted in England and Scandinavia, the incidence of back pain in pregnant women in the third trimester reached 50%, while in Indonesia, the incidence of back pain in pregnant women was reported to be higher, namely 70% (Rahmi, Hanifa, Arimurti, Handayani, et al., 2024). Around 65% of pregnant women in East Java said they had back pain (Sanjaya *et al*., 2023).

The increasing gestational age, rapid fetal growth, hormonal changes, shifts in the body's center of gravity, and increased load on the musculoskeletal system can cause back pain that can hinder the daily activities of pregnant women, such as difficulty standing after sitting, moving from bed, sitting for a long time, putting on or taking off clothes, and lifting or moving objects around (Suryani *et al*., 2021). Besides that, Back pain during pregnancy not only negatively impacts the quality of life and well-being of the mother but also affects the process of the pregnancy (Herinawati et al., 2023).

UU No. 4 of 2019 Article 47 stated that midwives' roles include providing and managing midwifery services, providing education and counseling, acting as educators and mentors, and acting as clinical facilitators. As mentors and educators, midwives can help relieve back pain in pregnant women with relaxation techniques, massage, and warm water baths. Pregnancy exercises can help women relax muscles, reduce excessive physical activity, and maintain good posture by keeping the spine straight (Artal, 2016). Back pain in pregnant women can be reduced with therapeutic approaches, including pharmacological and non-pharmacological methods. Pharmacological therapy involves the use of drugs such as paracetamol, NSAIDs, and ibuprofen. Meanwhile, non-pharmacological therapy uses massage, mobilization exercises, acupuncture, relaxation techniques, warm water therapy, and kinesio taping (Knezevic et al., 2021).

Kinesio taping is a physical therapy method that uses special elastic tape without any drug. This therapy is designed to help reduce various complaints related to the musculoskeletal system, such as muscle injuries, joint pain, movement disorders, and other dysfunctional conditions. This elastic tape is attached to some regions according to therapeutic needs to support muscle and joint structures without limiting the body's natural movement. In addition, kinesio taping is also believed to improve blood circulation and lymphatic fluid, reduce pressure on stressed tissues, and accelerate the healing process. This technique is widely used in physiotherapy, rehabilitation, and sports because of its non-invasive and flexible nature in supporting the patient's recovery process (Maria Menda, 2023).

METHOD

This research used the Scoping Review method, a systematic approach to synthesizing exploratory and iterative knowledge to identify, evaluate, and summarize published and recent literature relevant based on specific research topics (Khalil et al., 2019). This approach not only focuses on finding empirical evidence but also maps key concepts, related theories, and research trends in a particular field and research trends in a particular field of science. In other words, a scoping review provides a comprehensive overview of the current state of an area of study. It identifies research gaps that can be a basis for further studies.

In this context, a scoping literature review is viewed as a scientific exploratory project that systematically explores, collects and analyzes relevant sources of information. This approach is used to build a strong knowledge base on a particular issue and assist researchers in formulating the direction and focus of future research by considering the various perspectives and findings already available in the academic literature. The scoping review in this study followed the framework from (Arksey & O'Malley, 2005). The stages include: (1) formulating a clear and focused research question as the basis for exploration; (2) selecting research articles on relevant studies from various sources and scientific databases; (3) selecting studies based on predetermined inclusion and exclusion criteria; (4) extracting and organizing data into tables or charts to facilitate analysis; and (5) compiling, summarizing, and presenting findings in the form of a systematic and structured narrative. This method was chosen because it can provide a broad, comprehensive

understanding of the research issue while allowing researchers to find new directions in developing knowledge in related fields.

Step 1: Formulating the research question

Formulating the research questions that will guide the literature search and selection process. To ensure a focused and systematic research question, this study utilized the PICO framework (Population, Intervention, Comparison, Outcome). This framework helped clarify the main components of the topic under review and narrow the scope of the information search.

Table 1. Framework Table

Framework	Information
Population	TM III Pregnant Women
Intervention	Kinesio Taping
Comparison	Other non-pharmacological interventions
Outcomes	Kinesio tapping helps ease back discomfort for TM III expectant mothers.

This study combined the PICO framework with the PRISMA-ScR (Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews) approach to strengthen the methodological foundation. The combination of these approaches ensured that the study was conducted with a high level of quality and was reproducible by other researchers. The literature search was conducted thoroughly on databases such as PubMed, Science Direct, EBSCO, WILEY, and Google Scholar. The keywords used were "*birth ball therapy AND low back pain AND third-trimester pregnancy" and "(birth ball OR gym ball) AND kinesio taping AND back pain AND pregnancy".*

Step 2: Selecting research articles

The article selection process in this study was systematic and structured to ensure the quality and relevance of the data used. The inclusion criteria include several aspects: national and international research articles related to the research problem to be studied, articles using Indonesian and English published within 10 years, original articles, and full access (full text). Exclusion criteria include opinion articles, literature reviews, and theses.

Eight articles successfully qualified for inclusion in the study after going through the screening process. The assessment ensured that the selected articles were relevant to the research topic and had sufficient methodological strength to support reliable findings and contribute to the overall research objectives.

Step 3: Article selection

The literature search process was conducted using several databases, such as PubMed, Science Direct, EBSCO, WILEY, and Google Scholar, which resulted in 287 articles. PubMed 228, Science Direct 4, EBSCO 15, WILEY 20, Google Scholar 14. To ensure efficiency and accuracy in the screening process, the Mendeley reference manager and Coviden software carried out the initial screening stage. At this stage, articles were screened based on their titles. A total of 189 articles were irrelevant to the research focus, and 83 were identified as duplicates, so both were excluded from the selection process. After the initial screening, 15 articles were further

examined based on the predetermined inclusion criteria. From the selection process, only eight articles met all criteria and were relevant for inclusion in this scoping review. The next step is for the articles to be analyzed in depth using the Joanna Briggs Institute (JBI) Critical Appraisal Tools, a standardized assessment tool used to evaluate each study's methodological quality and strength of evidence. The search steps were documented in detail using a PRISMA-ScR (Preferred Reporting Item for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews) flow chart to provide a clear and transparent selection process.

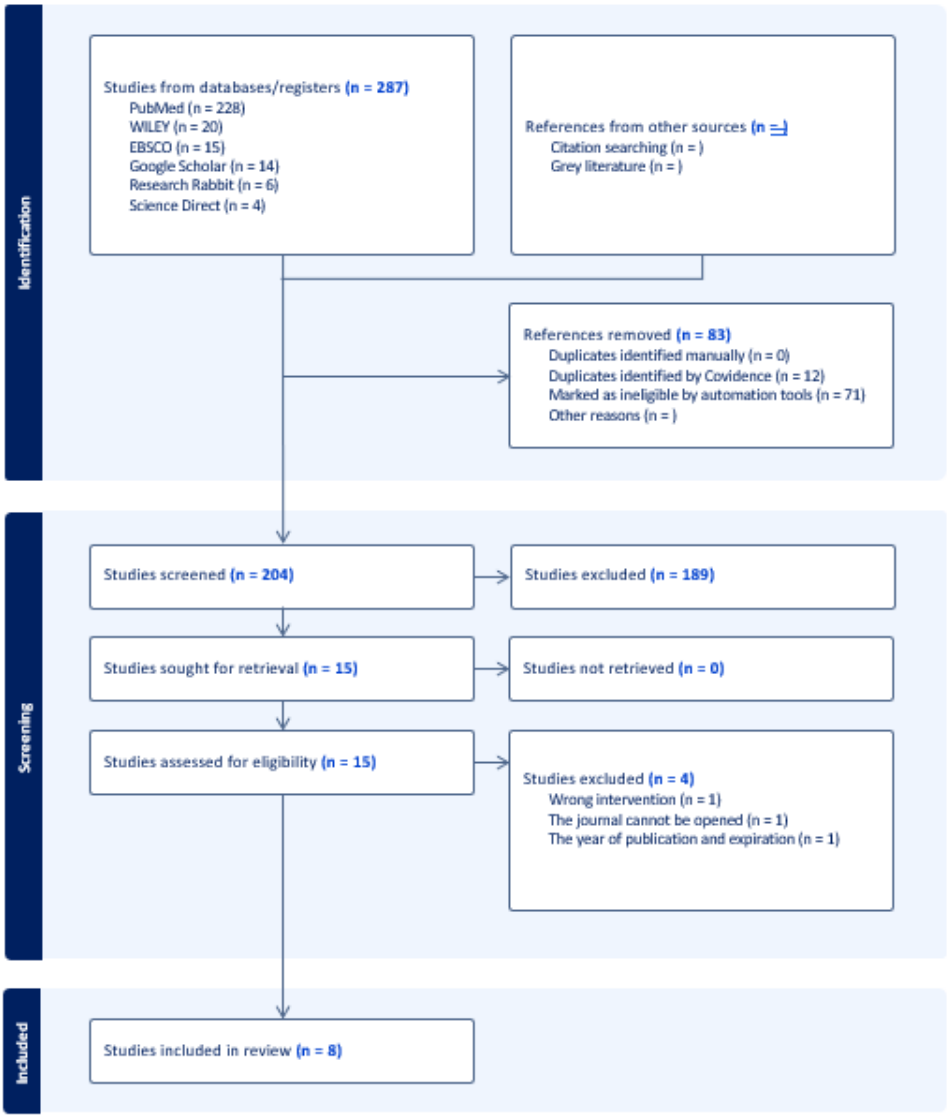

Figure 1. PRISMA-ScR Flowchart

Step 4: Critical Appraisal

The tool used to evaluate the quality of the articles in this study was the Joanna Briggs Institute (JBI) checklist. All articles analyzed in this study adopted a quantitative design, with eight articles reviewed using various methods, four with experimental designs and four with randomized controlled trial (RCT) designs. JBI provides critical appraisal checklists specific to each type of

study design, allowing for an evaluation that matches the methodological characteristics of each article. JBI's critical evaluation approach was chosen for its ability to cover a wide range of study types, ensuring a comprehensive and standardized quality assessment.

Table 2. ***Quality Assessment of JBI*** **Quasi-Experimental Studies**

Grades	Scale
A = Very Good (18-27)	0 = No
B = Good (10-18)	1 = Not Applicable
C = Poor (0-9)	2 = Unclear
	3 = Yes

Table 3. ***Quality Assessment of JBI Randomized Controlled Trial (RCT) Study***

Grades	Measurement
A = Exellent (27-39)	0 = No
B = Good (14-26)	1 = Not Relevant
C = Not Good (0-13)	2 = Uncertain
	3 = Yes

Table 4 . J BI Critical Evaluation of Semi-Experimental Research

No	Items for Question	Item No			
		A 1	A2	A3	A4
1	Does the study make it obvious which variable is the "cause" and which is the "effect" that is, whether there is any doubt as to which comes first)?	3	3	3	3
2	Did the individuals included in the comparisons share any similarities?	2	3	2	2
3	Did the participants in any comparisons receive comparable care or treatment outside of the relevant exposure or intervention?	2	3	3	3
4	Existed a control group?	3	3	3	3
5	Were the results measured in more than one way before and after the exposure or intervention?	3	3	3	3
6	Was follow-up done to the end, and if not, were the variations in follow-up across the groups well explained and examined?	2	2	2	2
7	Were the subjects' results in any comparisons measured using same methods?	3	3	3	3
8	Are results evaluated in a trustworthy manner?	3	3	3	3
9	Was the proper statistical analysis applied?	3	3	3	3
	Score	24 /A	26/ A	25/ A	23/ A

Table 5. JBI Critical Evaluation Randomized Controlled Trial (RCT)

No	Question Items	Item No			
		A5	A6	A7	A8
1	Was participants assigned to treatment groups using genuine randomization?	3	3	3	3
2	Was the assignment to treatment groups hidden?	3	3	3	3
3	At first, were the therapy groups comparable?	3	2	3	2
4	Were participants unaware of their assigned treatment?	2	0	3	2
5	Were those administering the treatment unaware of the assignment?	2	0	2	2
6	Are oblivious to the assignment of treatment, outcome assessors?	3	2	2	3
7	Are treatment groups that received the same care except for the relevant intervention?	2	3	3	3
8	Was the follow-up thorough, and if not, were there variations between the groups in terms of their subsequent thoroughly outlined and examined?	3	3	3	2
9	Were the individuals examined within the groups they were assigned at random?	3	3	3	3
10	Are results evaluated using the same methodology as treatment groups?	3	3	3	3
11	Are results evaluated in a trustworthy manner?	3	3	3	3
12	Was the proper statistical analysis applied?	3	3	3	3
13	Was the trial's design suitable, and were any modifications to the conventional RCT design—such as individual randomization and parallel groups—accounted for during the trial's conduct and analysis?	3	3	3	3
	Score	36 /A	31/A	37/A	35/A

Step 5. Data Charting

Table 6. Data Charting

No	Title	Country	Method	Population and Sample	Data Analysis	Result	Grade
1	Efektivitas Kinesio taping dan Pelvic rocking exercise terhadap Penurunan Nyeri Punggung Ibu Hamil Trimester III (Nuraidah et al., 2025)V	Indonesia	Quasi-experimental	Third-trimester pregnant women is 181, with a sample of 46 respondents selected using the purposive sampling method	Univariate and bivariate analysis with the application of the T-Test test	Kinesio taping has an advantage with a faster decrease in pain, from a score of 2.8 to 1.7, compared to pelvic rocking exercises, which reduce pain from 2.3 to 2.1 but require a longer duration to obtain significant results	A
2	Efektivitas Kinesiotaping Dalam Meredakan Nyeri Punggung Pada Ibu Hamil Trimester III (Rahmi, Hanifa, Arimurti, Setyaningsih, et al., 2024)	Indonesia	Quasi-experiment, using a two-group pretest-posttest design	Third trimester pregnant women, sample consisted of 30 respondents	Wilcoxon test to evaluate the relationship between pretest and posttest variables in the intervention group and control group	Kinesiotaping successfully relieved low back pain in third trimester pregnant women. Pain scores dropped from 6 to 2 after 24 hours of intervention (p=0.001), proving the effectiveness of kinesiotaping as a non-pharmacological method to relieve back pain during pregnancy	A
3	Pengaruh Kinesio Taping terhadap Intensitas Low Back Pain pada Kehamilan Trimester III (Dewi et al., 2019)	Indonesia	Using an experimental approach, this quantitative study applies a clinical trial	This study included all third-trimester pregnant women who experienced back pain. The	Inferential analysis, such as the independent t-test, dependent t-test, Mann-Whitney test,	The study showed a significant decrease in pain intensity (NRS) by 33.3% (control) and 60% (intervention) and activity limitation	A

			design and a pretest-posttest control group design	sample consisted of individuals who met the inclusion and exclusion criteria and were selected from the population using the consecutive sampling method	and Wilcoxon test, is used to test the difference and relationship between variables before and after treatment.	(RMDQ) by 25% (control) and 55.6% (intervention) with $p<0.001$. The kinesio-taping group experienced a more significant decrease in lower back pain and activity limitations than the control group.	
4	The Effect of Using Kinesio Tapping on the Intensity of Third-Trimester Pregnant Women's Back Pain (Suyani & Umami, 2019)	Indonesia	Experimental	Sample are 30 respondents	Data analysis includes a normality test to ensure a normal distribution of back pain intensity, followed by a Paired t-test and a t-test	Kinesio taping helped reduce the severity of back pain experienced by pregnant women, resulting in less pain. Both treatment and control groups experienced substantial improvements in back pain severity after incorporating kinesio into their routine. This further proves that Kinesio tapping can be beneficial as an alternative method to reduce back pain during pregnancy.	A
5	Effects of elastic tape in pregnant women with low back pain: A randomized controlled trial	Thailand	RCT (*Randomized control Trial*)	The population in this study consisted of pregnant women	ANOVA test	The use of elastic bands significantly reduced low back pain by 29.4% ($p=0.003$) immediately after insertion and	A

	(Chamnankrom et al., 2021)			who experienced low back pain. The study consisted of 40 participants divided into 20 elastic and 20 placebo groups.		75.4% after a week, compared to placebo ($p<0.001$). The disability score (RMDQ) also decreased significantly after a week ($p=0.018$). Walking speed increased in both the elastic and placebo groups ($p<0.001$; $p=0.001$), but the effect on posture change was minimal.	
6	The Effects of Kinesio Tape on Low Back Pain and Disability in Pregnant Women (Aalishahi et al., 2022)	Rafsanjan	RCT (*Randomized control Trial*)	A sample of 80 pregnant women who were divided into two groups	Data were analyzed using statistical tests such as ANOVA	The study showed that Kinesio taping and control groups significantly reduced low back pain and disability up to days 7 and 14.	A
7	Effectiveness of kinesiotaping in pregnant women with sacroiliac joint pain: A randomised controlled study (Ordahan & Eriç Horasanlı, 2021)	Turkey	RCT (*Randomized control Trial*)	Population 50 pregnant women who have complaints of back pain	Kolmogorov-Smirnov test	The study showed that Kinesiotaping significantly reduced sacroiliac joint pain and improved function and quality of life of pregnant women with sacroiliac dysfunction, while the placebo group showed no significant changes. Kinesiotaping proved to be easy, safe,	A

						and effective for treating pregnant women.	
8	Short-Term Effects of Kinesio Taping in Women with Pregnancy-Related Low Back Pain: A Randomized Controlled Clinical Trial (Ş. Kaplan et al., 2016)	Turkey	RCT (*Randomized control Trial*)	The population was 120 women, and 71 women met the inclusion criteria. They were then randomly divided into two groups.	Data analysis used statistical tests according to distribution: the T-test for normally distributed data and the Wilcoxon test for non-normally distributed data.	The group receiving kinesio taping showed a significant advantage over the control group in all outcome parameters measured (all with P values < 0.001).	A

RESULT AND DISCUSSION

A. Result

This Scoping review showed that eight were graded A after undergoing critical evaluation by the Joana Brigs Institute (JBI). Four articles used experimental research methods, while four used RCT (Randomized Control Trial).

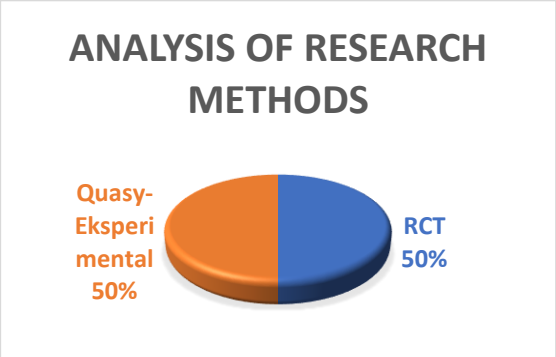

Figure 2: Characteristics of Research Methods

The scoping review articles came from both developed and developing countries. From developed countries, there were four articles: two from Turkey, one from Rafsanjan, and one from Thailand. From developing countries, there were four articles, namely from Indonesia.

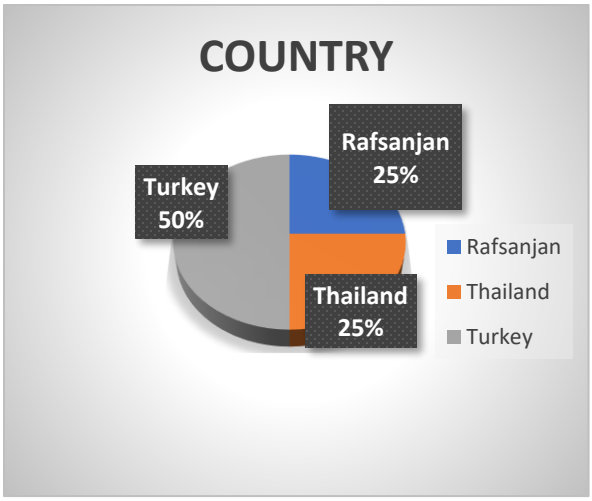

Figure 3. Country Characteristics

Based on quality assessment using the Joana Briggs Institute (JBI) tool, as many as eight articles met the high-quality criteria. They received an A, reflecting good reliability and validity in the research.

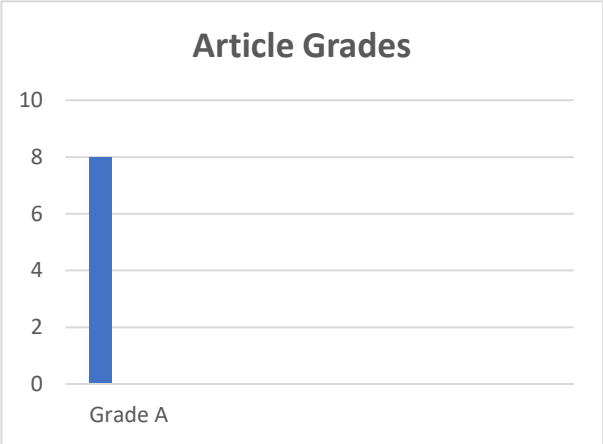

Figure 4. Characteristics Based on Article Grades

B. Discussion

1. Effectiveness of Kinesio Taping in Reducing Back Pain

a. Benefits of Kinesio Taping

The benefits of Kinesio taping are pain reduction, improved muscle and joint function, and an accelerated recovery process. In addition, Kinesio taping can help recover muscle tone, improve body posture, and increase lymphatic circulation and blood flow in the treated area (Aalishahi et al., 2022). Kinesio taping has significant benefits for patients with musculoskeletal disorders, including pregnant women with back pain and pain in the sacroiliac joints. In addition, Kinesio taping also helps improve circulation and speed up the recovery process without causing pain or significant side effects (Ordahan & Eriç Horasanlı, 2021).

b. Reduction in Pain Intensity

Kinesio taping performs better than pelvic rocking exercises. Kinesio taping provides mechanical support to the lumbosacral muscles without restricting body movement. In addition, this method also supports increased blood flow while reducing excessive muscle contractions to accelerate the process of reducing pain effectively (Herinawati *et al*., 2023). Kinesio taping reduces pain intensity in individuals with low back pain. Pain reduction occurs because kinesio taping is designed to support low back muscles, improve postural alignment, and reduce pressure on the spine during activity. Taped Kinesio taping applies pressure or stretch to the skin, thus stimulating skin mechanoreceptors that help reduce pain perception (Rahmi *et al*., 2024). Kinesio taping reduces back pain in third-trimester pregnant women. Because it can relax the muscles of the lower back and maintain the range of motion so that there is a decrease in pain. Similar findings were obtained from Alpayci's research (2016), which states that kinesio taping has a good effect in reducing back pain complaints often experienced by pregnant women in the third trimester (Ş. Kaplan et al., 2016).

c. Duration and Technique

Kinesio taping is a long piece of I-shaped tape applied with 80% tension across the patient's pain area and bilateral SIJ region (Ordahan & Eriç Horasanlı, 2021). Kinesio taping was applied twice a week for four weeks, with each session lasting about 30-45 minutes. The application method involves cleaning the skin from oil and dirt, drying the area to be covered, and applying the elastic tape appropriately according to the recommended technique to reduce pain and improve muscle or joint function. The tape should be attached by stretching certain parts as needed and following a pattern that matches the treated area (Aalishahi et al., 2022). Previous researchers stated that using kinesio taping every 2 times a week for 2 weeks can relax the muscles of the lower back and maintain the range of motion of the pelvic and lumbosacral joints to reduce pain (Handariati et al., 2022).

d. Kinesio Taping Mechanism

Pressure on the skin during kinesio taping will send a message to the brain, stimulate mechanoreceptors, and close the "pain gate" so it can block the pain and reduce back pain(Suyani, 2019). Previous research showed that the mechanism of kinesio taping includes several physiological effects that support each other to reduce pain and improve musculoskeletal function. Applying kinesio taping helps stabilize muscles and joints through external support mechanisms that are injured or strained and improves the function and position of connective tissue that connects muscles by minimizing adhesions or excessive tension. Besides that, kinesio taping also increases the stability of joint segments, such as the lumbosacral or sacroiliac joints, by providing a supporting effect and lifting the skin layer microscopically, expanding the space under the skin to increase blood flow. Based on control theory, Kinesio taping deactivates the pain sensation in the skin and soft tissue by utilizing sensory stimulation that interferes with pain signals to the brain (Handariati et al., 2022).

2. Impact of Kinesio Taping

1. Increased Mobility

If pregnant women in the third trimester have lower back pain that is not treated correctly, the impact can be significant and interfere with various aspects of daily life. Continuous pain can limit the ability of pregnant women in daily activities, such as walking, sitting for long periods, or completing daily household tasks, thereby reducing comfort and productivity (Suyani, 2019). According to previous research, the impact of this pain can be reduced by applying kinesio taping. Kinesio taping effectively reduces the intensity of lower back pain in pregnant women, especially in the last trimester, which contributes to increasing mobility. By reducing pain, kinesio taping allows pregnant women to move more freely, do daily activities more comfortably, and maintain their independence during pregnancy. This intervention supports physical function by providing structural support for muscles and joints without restricting movement so that pregnant women can remain active without fear of worsening pain (Xue et al., 2023).

2. Quality of Life of Pregnant Women

In the third trimester of pregnancy, low back pain is one of the most common musculoskeletal problems. This condition has a significant impact on the overall well-being of pregnant women, where the impact does not only include physical aspects, such as limited movement or daily activities, but also includes psychological aspects, such as increased stress, sleep disturbances, and feelings of anxiety that can worsen the perception of pregnancy (Chamnankrom et al., 2021).

3. Safety of Intervention

Kinesio taping intervention in pregnant women is generally considered safe and tolerable, with few reported side effects. Studies have shown that the risk of serious side effects is very low as long as the application uses the correct technique and the tape does not cause irritation or allergies. Some women may have local allergic reactions or skin irritation, but this is usually mild and can be resolved by discontinuing the tape or topical treatment. Therefore, Kinesio taping can be used as a safe complementary therapy during pregnancy, as long as it is performed by trained personnel and with attention to the patient's skin condition and reactions(V. Kaplan, 2023). Kinesio taping is waterproof and can be used for 24 hours depending on the skin condition, so the risk of irritation or allergic reactions is minimal if the materials used are safe and the patient's skin is healthy. If irritation or allergic reactions occur, the procedure should be discontinued, and appropriate treatment should be done (Rahmi, Hanifa, Arimurti, Handayani, et al., 2024)

C. CONCLUSION AND SUGGESTION

1. Conclusion

This study concludes that Kinesio taping is a very effective and safe approach to reducing lower back pain and improving the physical function and quality of life for pregnant women in the third trimester. This intervention has been proven to be able to relieve discomfort caused by back pain, which is often the primary complaint during the final stages of pregnancy. By reducing pain intensity, kinesio taping allows pregnant women to do daily activities more comfortably, increase mobility, and support their independence. In addition, this intervention contributes to improving psychological and social well-being, such as improving sleep patterns. As a non-pharmacological method, Kinesio taping is a safe alternative without the risk of significant side effects, making it an ideal choice for pregnant women who want to avoid the use of drugs. Thus, Kinesio taping is a holistic and effective therapeutic solution to support musculoskeletal health and maternal and fetal well-being.

2. Suggestion

Further researchers should conduct clinical test methodology studies to ensure more consistent and generalizable results. In addition, it is necessary to explore the dosage, duration, and application techniques of kinesio taping and consider other variables, such as pain severity and psychosocial factors, to gain a more comprehensive understanding.

D. ACKNOWLEDGEMENT

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