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**Differences in the Intensity of Lower Back Pain in III Trimester  
Pregnant Women Before and After the Effleurage Massage  
Given**

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**ABSTRACT**

Background: Low back pain (LBP) is a physiological disorder in third trimester pregnant women in the musculoskeletal system. Non-pharmacological therapy in the form of effleurage massage can be given to third trimester pregnant women who experience lower back pain which is carried out for 5 days with the help of their husbands. This study aims to determine differences in the intensity of low back pain before and after being given an effleurage massage. Method: This type of research is pre-experimental with one group pretest and posttest design. This research was conducted in March-May 2023 with a total of 31 respondents who were taken using a purposive sampling technique. The instruments used in this study were videos and observation sheets with a numerical rating scale (NRS). Result: The results of the normality test with the Shapiro Wilk test showed that the data were not normally distributed so that the data analysis used the Wilcoxon test with a significance level of p-value <0.05. The results show that the median before being given massage effleurage is 5 and the median after being given massage effleurage is 2, so the conclusion in this study is that H<sub>0</sub> is rejected and H<sub>a</sub> is accepted. Conclusion: The researchers suggestions are that the UPTD Health Center I of the East Denpasar District Health Office will inform and apply non-pharmacological massage effleurage therapy to third-trimester pregnant women who complain of low back pain by providing video shows during class for pregnant women.

Keywords: Lower back pain, pregnant woman, effleurage massage



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## INTRODUCTION

Pregnancy is a physiological process that begins from conception until the birth of the fetus. Normal pregnancy lasts 280 days or the equivalent of 40 weeks or 9 months and 7 days calculated from the first day of the last menstruation. Pregnancy is divided into 3 trimesters, namely the first trimester which starts from the first menstrual day of the last menstruation until 3 months or 0-13 weeks, the second trimester which starts from the fourth month to 6 months (14-27 weeks) and the third trimester from the seventh month to 9 months (28-40 weeks) (Fatimah, 2017).

The pregnancy process will cause various changes in all body systems such as the cardiovascular system, respiratory system, hormonal system, gastrointestinal system and musculoskeletal system (Wahyuningsih, 2016). Changes and adaptations that occur during pregnancy will generally cause discomfort felt by pregnant women usually varies in each trimester of pregnancy and

often becomes a complaint for pregnant women, including nausea, vomiting in early pregnancy, constipation, varicose veins, urinary disorders, hemorrhoids and swelling of the legs and feet as well as back pain (Sukeksi dkk, 2018).

One of the physical changes that occur in the musculoskeletal system during pregnancy occurs gradually and is an increase in body weight which causes complaints of lower back pain, especially in the third trimester. High prevalence rates of back pain during pregnancy have been reported in Europe, America, Australia, China, including mountainous areas in Taiwan and rural areas of Africa as well as

among upper class women in Nigeria. Among women who experience back pain during pregnancy, approximately 16% have reported the location of back pain during the first 12 weeks of pregnancy, 67% at 24 weeks, and 93% at 36 weeks (Kristiansson, 2017). Based on research conducted on 869 pregnant women in the United States, England, Norway and Sweden, it shows that the prevalence of low back pain in pregnant women is around 70-86% (Gutke et al, 2018). The results of research by Ramachandra (2015) in India stated that the prevalence of lower back pain in third trimester pregnant women was 33.7%, occurring in 261 pregnant women.

The incidence of lower back pain in pregnant women in Indonesia, based on research by Hakiki (2015), was 47% experiencing back pain out of 180 pregnant women studied. In research conducted by Ulfa (2017) it was found that 58.1% of pregnant women complained of back pain with details of moderate pain at 29.0%, mild pain at 22.6%, and severe pain at 6.5%, whereas according to Purnamasari's research (2019) stated that 73.33% of pregnant women who experienced lower back pain experienced moderate pain, while 10% experienced mild pain and 16.67% experienced severe pain.

The cause of low back pain from a biomedical perspective is the result of shifting the center of gravity forward, the gravitational pressure of the uterus on the large vessels reduces blood flow to the spine and causes back pain, especially in late pregnancy (Carvalho et al, 2015). Joint looseness caused by an increase in the hormone relaxin which gradually increases and persists at the end of pregnancy



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is considered one of the etiologies of low back pain and hip pain in pregnant patients (Casagrande et al, 2015).

Complaints of lower back pain will be bad if not treated properly. Pregnant women who experience lower back pain will find it difficult to stand, sit and even move from bed, this causes disruption to daily routines and affects the quality of life of pregnant women (Katonis et al, 2011). The bad impact is difficulty walking if the pain has spread to the pelvic and lumbar areas (Association of Chartered Physiotherapists In Woman Health, 2011 in Aswitami and Mastiningsih (2018) states that with the various impacts that can occur, the problem of lower back pain in pregnant women must receive treatment .

During childbirth, the impact that will occur if lower back pain during pregnancy is not treated is that it will increase the pain felt by the mother during contractions and cause fear and anxiety, which can make the mother in labor stressed and cause fetal distress. Back pain that is not treated immediately can result in long-term back pain, increasing the tendency for postpartum (postpartum) back pain and chronic back pain which will be more difficult to treat or cure (Wulandari and Andryani, 2019).

Treatment for lower back pain during pregnancy is very necessary to reduce this discomfort, including pharmacological therapy and non-pharmacological therapy. It is necessary to pay attention to side effects when using pharmacological therapy for pregnant women due to the use of analgesics to reduce lower back pain. According to a study from the Norwegian Institute of Public Health, long-term

use of analgesics such as paracetamol during pregnancy can increase the risk and have detrimental effects on the child's development (Brandlistuen et al, 2013).

Considering the impact caused by pharmacological therapy, non-pharmacological therapy needs to be carried out to reduce complaints of lower back pain experienced by pregnant women in the third trimester, which includes contaneous stimulation (massage, hot and cold applications, acupressure, contralateral stimulation), Transcutaneous Electrical Nerve Stimulation (TENS), acupuncture, relaxation, imagination, meditation, hypnosis, aromatherapy, yoga and reflexology (Resmi et al, 2017).

The effleurage massage technique is a non-pharmacological therapy that is safe, does not cause side effects, does not cost money and can be done by the husband himself or other people, so the researchers chose non-pharmacological therapy in the form of effleurage massage. There are several effleurage massage techniques that can be given, one of which is the light rubbing method which relaxes the body (Sari and Farida, 2021). Quoted from research according to Fitriana and Vidayanti (2019) stated that lower back pain when given effleurage massage reduces the intensity of pain more than when given breathing relaxation techniques. This research is also supported by research conducted by Aini (2016) entitled The difference between effleurage massage and warm compresses on reducing back pain in pregnant women in the third trimester at BPS Furida Azis, Gemekan Sooko Village, Mojokerto, showing that there is an effect of giving effleurage massage and warm



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compresses to reduce back pain. 3rd trimester pregnant women. The results of this study were obtained from 13 respondents who were given the effleurage massage technique, experiencing an average reduction in pain of 5 points. Of the 10 patients who were given warm compresses, their pain decreased by an average of 2-3 points (Aini, 2016).

Experimental research related to the effleurage massage technique has been proven to reduce back pain in third trimester pregnant women. According to research conducted by Wulandari and Andryani (2019) regarding the effectiveness of effleurage massage to reduce back pain in third trimester pregnant women at

RB CI Semarang which was carried out for 10 minutes once a day, shows that there is an influence of effleurage massage on back pain in pregnant women third trimester.

## METODE

The design of this research is pre-experimental with a one group pretest and posttest group design. The total sample was 31 third trimester pregnant women using purposive sampling technique. The analysis used is the Wilcoxon test because the data is not normally distributed

## RESULTS

### 1. Respondent Characteristics

Table 1. Frequency Distribution of Respondent Characteristics Based on Age, gestational age and employment at UPTD Puskesmas I East Denpasar District Health Service

| Characteristics   | Median/QR (min-max) | n (%)      |
|-------------------|---------------------|------------|
| Age               | 26 ± 12 (20-32)     |            |
| Gestational Age   | 34 ± 7 (30-37)      |            |
| Work              |                     |            |
| IRT               |                     | 13 (41,9%) |
| Swasta Wiraswasta |                     | 15 (48,4%) |
|                   |                     | 3 (9,7%)   |

Based on the table above, the characteristics of research subjects at UPTD Community Health Center I, East Denpasar District Health Service. Based on the table above, the median age of the respondents is 26 and the

age range is 20-32 years, with the characteristics of gestational age being a median of 34 and the gestational age range is 30-37 weeks. Regarding job characteristics, the majority of respondents work in the private sector (48.4%).



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## 2. Level of lower back pain in third trimester pregnant women before being given effleurage massage

Table 2. Intensity of Lower Back Pain in Third Trimester Pregnant Women Before Being Given Effleurage Massage

| Low Back Pain Intensity | Frequency (f) | Percentage (%) | Median | Min | Max |
|-------------------------|---------------|----------------|--------|-----|-----|
| 4                       | 4             | 12,9           |        |     |     |
| 5                       | 18            | 58,1           | 5      | 6   | 4   |
| 6                       | 9             | 29             |        |     |     |

Based on the data presentation in table 2, it is known that before intervention was given in the form of massage effleurage, the intensity of lower back pain in pregnant women in the third

trimester was mostly at pain level 5, namely 18 people (58.1%), pain level 6, namely 9 people (29%) and the lowest pain level was 4, namely 4 people (12.9%).

## 3. Level of lower back pain in third trimester pregnant women after being given effleurage massage

Table 3 Intensity of Lower Back Pain in Third Trimester Pregnant Women After Being Given Effleurage Massage

| Intensitas Nyeri Punggung Bawah | (f) | (%)  | Median | Min | Max |
|---------------------------------|-----|------|--------|-----|-----|
| 1                               | 1   | 3,2  |        |     |     |
| 2                               | 17  | 54,8 | 2      | 3   | 1   |
| 3                               | 13  | 42   |        |     |     |

Based on the data presentation in table 3, it can be seen that after being given effleurage massage for 5 days with the help of the husband, the intensity of lower back pain in pregnant

women in the third trimester at UPTD Puskesmas I East Denpasar District Health Service was highest at pain level 2, with 17 people (54, 8%), the lowest level of pain was at pain level 1 as



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<https://ejournal.poltekkes-denpasar.ac.id/index.php/icmahs>

many as 1 person (3.2%) and the highest level of pain was at pain level 3 as many as 13 people (42%).

4. Differences in the intensity of lower back pain in third trimester pregnant women before and after being given effleurage massage

Table 4. Differences in the Intensity of Lower Back Pain in Third Trimester Pregnant Women Before and After Effleurage Massage

| <b>Massage<br/>Effleurage</b> | <b>Median</b> | <b>Max</b> | <b>Min</b> | <b>Z</b> | <b>P<br/>value</b> |
|-------------------------------|---------------|------------|------------|----------|--------------------|
| Before                        | 5             | 6          | 4          | -        | 0,000              |
| After                         | 2             | 3          | 1          | 4,934    |                    |

Based on table 4, the results of the analysis obtained were that there was a decrease in the intensity of lower back pain in third trimester pregnant women who were carried out with effleurage massage for 5 days assisted by their husbands. The median value before the intervention was higher, namely 5 and decreased after the intervention was given to 2 with a difference in the median value of 3. Differences were also seen in the minimum and maximum pain intensity.

The results of the bivariate analysis test using the Wilcoxon Test showed a Z value of -4.934 and a p value of 0.000 ( $\alpha < 0.005$ ). This shows that there is a significant difference in the intensity of lower back pain in third trimester pregnant women before and after being given effleurage massage. So  $H_0$  is rejected and  $H_a$  is accepted, which means that there is a difference in the intensity of lower back pain in third trimester pregnant women before and after being given effleurage massage and thus effleurage massage is useful for reducing the

intensity of lower back pain in third trimester pregnant women.

## DISCUSSION

1. Intensity of lower back pain in third trimester pregnant women before being given effleurage massage

The results of research and data analysis show that the level of lower back pain felt by pregnant women in the third trimester before being given effleurage massage was pain level 5 for 18 respondents with a percentage of 58.1%. Similar research also showed that 45% of respondents from third trimester pregnant women at RB CI Semarang complained of lower back pain (Wulandari and Andryani, 2919). The cause of low back pain from a biomechanical perspective is due to the shift of gravity forward, thereby increasing knee hyperextension and pelvic instability (Emilia et al, 2017). These changes increase stress on the lumbar vertebrae and stress on the paraspinal muscles. The gravitational pressure of the uterus



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on the large vessels reduces blood flow to the spine and causes back pain, especially in late pregnancy. The enlarging uterus and increasing weight cause the muscles to work harder, which can cause pressure on the muscles and joints.

One of the causes of lower back pain is hormonal changes which cause changes in the supporting and connecting soft tissue resulting in decreased muscle elasticity and flexibility so that the muscles become stiffer and tense more easily (Prabowo, 2011). The etiology of lower back pain in pregnancy is drastic weight gain, uterine growth which causes changes in body posture, repetitive stretching, increased levels of the hormone estrogen in the ligaments which causes changes in the supporting and connecting soft tissue (connective tissue) resulting in decreased elasticity and muscle flexibility. Lower back pain in pregnancy is an uncomfortable condition due to the enlarging uterus and increasing body weight causing the muscles to work harder which can cause stress on the muscles and joints which is influenced by several factors, namely the mother's age, gestational age and work (Linden, 2012).

Based on table 2, the results showed that the majority of respondents who experienced lower back pain were 5 respondents aged 30 years with a percentage of 16.1%. In this study, the age of respondents was limited to 20 to 35 years. 20-35 years is the right age for pregnancy because the muscles and reproductive organs are ready to face changes during pregnancy. The readiness of these muscles will influence the complaints experienced by the mother during pregnancy, including complaints of lower back pain. If the pregnant woman is too young and her muscles are still weak, she will be at risk of

experiencing lower back pain, as well as if the mother is too old. The muscles of mothers who are too old will experience weakened muscle function making it easier to experience lower back pain.

In table 2 the gestational age is 30-37 weeks. Gestational age is one of the factors that influences lower back pain because the greater the gestational age, the size and weight of the uterus will increase. The increasing size of the uterus will put pressure on the muscles and joints of the spine, resulting in lower back pain. Research from Ulfah (2017), most pregnant women's back pain complaints occur in the third trimester. The increase in gestational age causes changes in posture during pregnancy, resulting in a shift in the body's center of gravity forward, so that if the abdominal muscles are weak, it causes curvature of the bones in the lumbar area and causes back pain.

Apart from gestational age, the factor that influences lower back pain in pregnant women in the third trimester is the mother's work during pregnancy. Most of the respondents have jobs in the private sector, namely 15 respondents with a percentage of 48.4%. This is because all respondents are third trimester pregnant women who work outside the home. According to Yanti (2010) fatigue can indirectly worsen the perception of pain experienced by each person. Fatigue also causes the sensation of pain to become more intense, while stress can increase the response to pain.

In this study, based on the intensity of lower back pain in third trimester pregnant women before receiving intervention in the form of massage effleurage, it was found that the median intensity of pain experienced was on a



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scale of 5 (moderate pain). The lowest pain intensity is on a pain scale of 4 (moderate pain) and the highest pain intensity is on a pain scale of 6 (moderate pain).

## 2. Intensity of lower back pain in third trimester pregnant women after being given effleurage massage

The results of research and data analysis show that the level of lower back pain felt by third trimester pregnant women before being given effleurage massage for 5 days is pain level 5 as many as 18 respondents with a percentage of 58.1%, pain level 4 as many as 4 respondents with a percentage of 12.9% while Pain level 6 was 9 respondents with a percentage of 29%. After being given intervention in the form of effleurage massage which was carried out for 5 days with the help of the husband, the results showed that 17 respondents had lower back pain with a pain intensity of 2 with a percentage of 54.8%. This shows that there is a decrease in the average pain scale after administration intervention in the form of effleurage massage. According to research by Fitriana and Vidayanti (2019), third trimester pregnant women who experienced lower back pain after being given effleurage massage experienced a decrease in pain because the touch given during the massage caused the process of inhibiting pain impulses. The effleurage massage technique is in the form of gentle, continuous strokes, causing a relaxing and comfortable effect. Based on research conducted by Wulandari and Andryani (2019), it is stated that effleurage massage performed on the back can reduce pain during the third trimester of pregnancy. relax yourself. This happens because the effleurage massage

technique has the benefit of providing a feeling of comfort, causing relaxation and stimulating the endorphin hormone which scientifically relieves pain.

According to the theory of Gate Control, using the effleurage massage technique can inhibit painful uterine contractions because the A delta fibers will close the synaptic gate so that the cerebral cortex does not receive pain messages that have been blocked by counterstimulation massage so that the perception of pain can change.

## 3. Intensity of lower back pain in third trimester pregnant women after being given effleurage massage

Before carrying out data analysis, a normality test was carried out with Shapiro-Wilk based on the results of data analysis. The results of the data normality test in this study showed that the data was not normally distributed, so the next analysis used the Wilcoxon test. The results of data analysis of differences in the intensity of lower back pain in third trimester pregnant women before and after being given effleurage massage show that effleurage massage can reduce the intensity of lower back pain with a p value of 0.000 ( $\alpha < 0.005$ ). This shows that there is a significant difference in the intensity of lower back pain in third trimester pregnant women before and after being given effleurage massage. So  $H_0$  is rejected and  $H_a$  is accepted, which means that there is a difference in the intensity of lower back pain in third trimester pregnant women before and after being given effleurage massage and thus effleurage massage is useful for reducing the



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<https://ejournal.poltekkes-denpasar.ac.id/index.php/icmahs>

intensity of lower back pain in third trimester pregnant women.

## CONCLUSION

Based on data analysis, it was found that effleurage massage for pregnant women in the third trimester was useful for reducing the intensity of lower back pain, which can be proven by a decrease in the intensity of lower back pain for pregnant women in the third trimester before being given effleurage massage, namely with a pain score of 4-6 with a median value of 5 while the intensity of back pain The lower back of pregnant women in the third trimester after being given effleurage massage decreased with a pain score of 1-3 with a median value of 2. There was a significant difference in the intensity of lower back pain for pregnant women in the third trimester before and after being given effleurage massage.

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# INTERNASIONAL CONFERENCE ON MULTIDISCIPLINARY APPROACHES IN HEALTH SCIENCE

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Luh Putu Nita Febiartini, et all : Differences in the Intensity of Lower Back Pain in III Trimester Pregnant Women Before and After the Effleurage Massage Given



# INTERNASIONAL CONFERENCE ON MULTIDISCIPLINARY APPROACHES IN HEALTH SCIENCE

VOLUME 1 TAHUN 2023, ISSN 3032-4408 (Online)  
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# INTERNASIONAL CONFERENCE ON MULTIDISCIPLINARY APPROACHES IN HEALTH SCIENCE

VOLUME 1 TAHUN 2023, ISSN 3032-4408 (Online)

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