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**Original Research**

# Factors That Affect Back Pain In Second And Third Trimester Pregnant Women

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***ABSTRACT***

***Background:*** *Back pain in pregnant women in the 2nd and 3rd trimesters, if not treated immediately, will greatly disturb the comfort of pregnant women and can cause complications such as moderate to severe anxiety due to pregnant women not being able to adapt to their back pain. Several factors are associated with the occurrence of back pain in pregnant women. This study aims to prove the factors that affect back pain in second and third trimester pregnant women.*

***Methods:*** *This research was a cross sectional design. The sample was 30 pregnant women in the 2nd and 3rd trimesters experiencing back pain determined by using the total population sampling technique with the following inclusion and exclusion criteria. Back pain felt by pregnant women was stated in filling out a questionnaire with a pain instrument, namely the Numeric Rating Scale. The data were analyzed by statistical Odds Ratio Test.*

***Results:*** *The result of data analysis between pregnancy back pain with several factors are as follows: the OR value of mother age factor was 0.464. The OR value of gestational age factor was 0.571. The occupation's OR value was 0.762. The parity's OR value was 0.242. The religion's OR value was 0.464. The OR value of gender was 1.000. The OR value of history of lifting heavy objects was 1.833. The OR value of history of excessive bending was 13.000. The yoga exercise's OR value was 0.143.*

***Conclusion:*** *History of excessive bending has the greatest risk of back pain in pregnant women.*

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## INTRODUCTION

Every pregnant woman will usually experience physiological discomfort as a result of the physical changes of pregnancy, one of which is back pain (Fitriani, 2018). Back pain in pregnancy is back pain that occurs in the lumbosacral area. Back pain will usually increase in intensity with increasing gestational age because this pain is a result of a shift in the center of gravity and body posture. Improper posture will force additional stretching and fatigue on the body, especially in the spine so that it will cause pain or pain in the back of pregnant women (Octavia & Ruliati, 2019).

If this back pain is not handled properly can cause poor quality of life of pregnant women. This problem will continue in the form of recurring or recurring injuries continuously in worse condition according to with the course of her pregnancy (Octavia & Ruliati, 2019). Stated that back pain in pregnant women in the 2nd and 3rd trimesters, if not treated immediately, will greatly disturb the comfort of pregnant women (Aryani et al., 2018).

Back pain, although actually physiological, can be a pathological complaint that can cause complications such as moderate to severe anxiety due to pregnant women not being able to adapt to their back pain. Anxiety experienced by pregnant women will be able to bring up physical symptoms such as fatigue, lethargic, irritable, restless, dizzy, nauseous and lazy. Changes that occur in the physical affect the psychological and physical aspects on the contrary, so that it is easy for mothers pregnant to experience trauma. Even the feelings or trauma felt by pregnant women can be felt by the fetus, namely by showing a reaction to stimulation that comes from outside the mother's body and causes a traumatic delivery (Aryani et al., 2018).

There are many factors which can relate to back pain in pregnancy, such as gestational age, mother age, occupation, parity, history of lifting heavy objects more than 10 kg and excessive bending (bend down making back tense) of the pregnant women including those who have applied Yoga as a physical exercise (Mu'alimah, 2021) (Cahyani et al., 2020) (Noviyanti et al., 2021)(Osinuga et al., 2021)(Wasilewska et al., 2021) (Caputo et al., 2021) (Manyozo et al., 2019).

Based on the results of research conducted by Noviyanti et al showed that respondents with the age category 35 years were 48 respondents (56.6%). From the result of the data analysis, it was found that there was a relationship between individual factor (age) with complaints of low back pain (p value = 0.000). At age, normally, severe pain conditions in young pregnant mother can be felt as a mild complaint than in older pregnant mother. Older pregnant mother experience neurophysiological changes and may experience decreased perception of sensory stimuli and increased pain threshold (Noviyanti et al., 2021).

Meanwhile, gender characteristics and their relationship to the nature of exposure and the level of susceptibility to pain play a separate role. Certain diseases are closely related to gender, with certain characteristics. Added, in some religions, individuals consider pain and suffering as a way to cleanse sin. This understanding helps individuals deal with pain and makes it a source of strength (Wasilewska et al., 2021).

According to Osinuga et al., factors related to the incidence of back pain are demographic characteristics, personal health habits, type of work, psychological conditions including the values of beliefs held such as religious values and history of illness. For the type of work that requires a lot of energy (heavy work), non-neutral work postures (bent and twisting, repetitive movements, and long working hours) will greatly affect the occurrence of back pain amongst occupational populations, including back pain in pregnant women.

Biological intercourse and gender also are hazard elements; women have a higher occurrence of low back pain within side the trendy populace than men. A worldwide burden of sickness look at discovered that the age-standardized occurrence of low back pain is likewise higher amongst woman than men. Pregnant women, of course, belong to the group of women who will have a higher incidence of back pain than men (Osinuga et al., 2021).

In Osinuga's research result, it was presented that subgrouping studies based on definitions of exposure (hours/week of domestic labor, frequency, or intensity of domestic task per week, and presence of biomechanical factors such as lifting, carrying and awkward postures), resulted in variation of the pooled odds ratio across groups (1.29–2.30). The test for between-group heterogeneity was statistically significant (Q = 7.48, p value = 0.02.

Within-group heterogeneity was reduced for studies that defined exposure as a function of time (OR = 1.59; 95% CI 1.16–2.18; I2 = 0%; N = 3 studies) or by biomechanical exposure (OR = 2.30; 95% CI 1.75–3.04; I2 = 0%; N = 4studies), compared to studies that defined exposure based on work intensity or frequency (OR = 1.29; 95% CI 0.94– 1.79; I2 = 82%; N = 4 studies) (Osinuga et al., 2021).

The other Osinuga's research result was that when studies were sub-grouped by gender specificity, studies with samples of only women had a stronger association between the physical demands of domestic labor (PDDL) and back pain (OR = 1.72; 95% CI 1.41– 2.11; I2 = 30%; N = 8 studies) than studies with samples of both men and women (OR = 1.44; 95% CI 0.922.23; I2 = 72%; N = 3 studies) (Osinuga et al., 2021).

One of the factors that influence back pain in pregnant women is yoga exercise as a physical activity. According to Situmorang et al, in their research results, prenatal yoga was very effective in reducing physical complaints such as back pain in third trimester pregnant women (Situmorang et al., 2020). In addition, based on the results of research by Wulandari et al that on 18 pregnant women who were taken by purposive sampling, after doing yoga exercises, showed p value = 0.000 which means that there was an effect of prenatal yoga on back pain in pregnant women third trimester (Wulandari et al., 2020).

Preliminary studies conducted at Kasreman Public Health Center on September 2020 by distributing questionnaires to 5 pregnant women in the second and third trimesters, it was found that 2 pregnant women said that they had complaints of lower back pain in the very painful category, 1 pregnant woman with a little pain category and 2 pregnant women did not feel back pain. Based on the preliminary study result, it was important to know about the factors associated with back pain during pregnancy so that pregnant women can prevent severe back pain.

The aim of this research was to prove the factors that affect back pain in second and third trimester pregnant women.

## MATERIALS AND METHOD

This research was conducted on September 2020 at Kasreman Public Health Center. This type of research was quantitative research with correlation method. The research population was 30 pregnant women in the 2nd and 3rd trimesters at Kasreman Public Health Center.

The sample was 30 pregnant women in the 2nd and 3rd trimesters experiencing back pain which was determined by using the total population sampling technique with the following inclusion criteria: pregnant women in the 2nd and 3rd trimesters, experiencing back pain during pregnancy, willing to be a research respondent and doing yoga exercise during pregnancy because yoga is an example of a physical activity factor which will be one of the factors to be studied. And also with the exclusion criteria: pregnant women who experienced complications during pregnancy, especially during the 2nd and 3rd trimesters.

Sampling in this study used the total population, that is, all populations were used as research samples because all of the population met the study inclusion criteria. All of sample was pregnant women in the 2nd and 3rd trimesters experiencing back pain and applying yoga exercise by following the yoga exercise guidelines from videos at each other's homes accompanied by online yoga instructors to monitor whether the movements that are being done are correct or not. All of the pregnant women have been advised to do yoga exercise three times for a week, 30-60 minutes each. Throughout the study, anonymity and confidentiality were maintained.

Back pain felt by pregnant women was stated in filling out a questionnaire with a pain instrument, namely the Numeric Rating Scale (NRS) with pain ranging from 0 to 10 (Lazaridau et al., 2018). In general, this is usually concludes as follows a score of 0 means "no pain", 1-3 means "mild pain", 4-6 means "moderate pain" and 7-10 means "severe pain". While data on gestational age, maternal age, parity, occupation, religion, gender, history of lifting heavy objects and history of excessive bending were collected using open-ended questions.

After collecting data, these were analyzed using *Odds ratio test* to find out how many risk factors such as maternal age, gestational age, parity, occupation, religion, gender, history of lifting heavy objects, history of excessive bending and physical exercise specifically yoga exercise for the incidence of back pain in pregnant women.

## RESULTS

According to table 1, the average mother age of the respondents was 27.3 (SD=4.88) with the OR value was 0.464. The average gestational age of the respondents was 27.8 (SD=7.66) with the OR value was 0.571. The average parity of the respondents was 1.43 (SD=0.50) with the OR value was 0.242. The average occupation of the respondents was 1.96 (SD=1.18) with the OR value was 0.762. The average religion of the respondents was 1.10 (SD=0.30) with the OR value was 0.464. The average gender of the respondents was 1 (SD=0.00) with the OR value was 1.000.

The average history of lifting heavy objects (more than 10 Kg) of the respondents was 1.33 (SD=0.47) with the OR value was 1.833. The average history of excessive bending (bend down making back tense) of the respondents was 1.4 (SD=0.49) with the OR value was 13.000. And the last one, the average yoga exercise of the respondents was 1.8 (SD=0.41) with the OR value was 0.143.

**Tabel 1.** Profile of respondents

| Profile | M | SD | f | % | OR |
|---|---|---|---|---|---|
| **Mother Age** | 27.3 | 4.88 | | | 0.464 |
| 20-35 year | | | 27 | 90.0 | |
| > 35 year | | | 3 | 10.0 | |
| **Gestational Age** | 27.8 | 7.66 | | | 0.571 |
| 2nd Trimester (14-27 week) | | | 11 | 36.7 | |
| 3rd Trimester (28-40 week) | | | 19 | 63.3 | |
| **Parity** | 1.43 | 0.50 | | | 0.242 |
| Primigravida | | | 17 | 56.7 | |
| Multigravida | | | 13 | 43.3 | |
| **Occupation** | 1.96 | 1.18 | | | 0.762 |
| Un work (housewife) | | | 16 | 53.3 | |
| Work (entrepreneur, private | | | 14 | 46.7 | |

| Profile | M | SD | f | % | OR |
|---|---|---|---|---|---|
| civil Servant) | | | | | |
| **Religion** | 1.10 | 0.30 | | | 0.464 |
| Majority (Islam) | | | 27 | 90 | |
| Minority (Kristen) | | | 3 | 30 | |
| **Gender** | 1 | 0.00 | | | 1.000 |
| Female | | | 30 | 100 | |
| Male | | | 0 | - | |
| **History of lifting heavy objects (>10 kg)** | 1.33 | 0.47 | | | 1.833 |
| Ever | | | 10 | 33.3 | |
| Never | | | 20 | 66.7 | |
| **History of excessive bending (bend down making back tense)** | 1.4 | 0.49 | | | 13.000 |
| Ever | | | 12 | 40 | |
| Never | | | 18 | 60 | |
| **Yoga exercise** | 1.8 | 0.41 | | | 0.143 |
| Regularly (≥ 3 x/week) | | | 24 | 80 | |
| Irregularly (< 3 x/week) | | | 6 | 20 | |

## DISCUSSION

This study measured the back pain felt by pregnant women associated with risk factors that may cause back pain in pregnancy. Those several risk factors were mother age, gender, religion and experience, which in this case is associated with parity of pregnant women in addition to other variables, gestational age, occupation, history of lifting heavy objects more than 10 kg and excessive bending (bend down making back tense) of the pregnant women including those who have applied yoga as a physical exercise (Mu'alimah, 2021) (Cahyani et al., 2020) (Noviyanti et al., 2021)(Osinuga et al., 2021)(Wasilewska et al., 2021) (Caputo et al., 2021) (Manyozo et al., 2019).

Back pain is one of the most common complaints by pregnant women. This happens because healthy pregnant women will experience weight gain. The spine which is in charge of supporting the body will be burdened by this weight gain. This causes pain in the pelvis and back, especially the lower back. Usually to carry out daily activities, such as walking, wearing clothes, lifting things, pregnant women will experience difficulties due to the back pain that they suffer.

Entering the 2nd trimester, pregnant women will experience these symptoms significantly (Anggasari & Mardiyanti, 2021). Stated that back pain is one of the discomfort during the third trimester of pregnancy. Painful this lower back usually will increase the intensity often with increasing gestational age because of this pain is the result of a shift in the center of gravity woman and her posture. Change caused by the weight of the enlarged uterus, excessive bending, walking without rest and lift weights (Mu'alimah, 2021).

According to (Manyozo et al., 2019), low back pain (LBP) is a common musculoskeletal problem during pregnancy. The exact cause of LBP in pregnancy is poorly understood, often considered multifactorial in nature, and associated with biomechanical, vascular and hormonal changes during pregnancy. One third of the

population suffering from LBP report severe pain which is often associated with limitations on a woman's ability to work effectively, leading to poor quality of life.

Consequently, the woman's individual productivity in their daily routine activities is reduced. Many of the women with LBP experience their first episode of LBP during pregnancy. Despite the disabling effects of LBP in pregnancy, LBP is often untreated and considered normal and inevitable part of pregnancy among women (Manyozo et al., 2019).

In Rahmadona and Batubara's research it was explained that the symptoms of back pain were caused by an increase in the hormones estrogen and progesterone affects joints, bones and muscles hips so that the pelvis rotates forward and change posture to hyperlordosis. This hyperlordosis postures increased the strain on the pelvis and lower lumbar causing pain lower back. Rahmadona and Batubara also added that back pain could be very disturbing daily activities of pregnant women and if not handled could cause the quality of life of pregnant women to be bad. This problem would continue in the form of injuries recurrence or appear continuously with the condition worse according to the course of age pregnancy (Rahmadona & Batubara, 2019).

The data show the incidence of low back pain in pregnant women was found to reach 57.3% (Y. Astuti & Afsah, 2019). In addition, (Astuti & Afsah, 2019) said that as many as 68% of pregnant women experienced low back pain. Low back pain was pain that could interfere with the activities of pregnant women, insomnia, and work leave for working mothers (Y. Astuti & Afsah, 2019). There was even some evidence of socioeconomic losses, especially as a result of absenteeism from work by pregnant women with back pain (Purnamayanti & Utarini, 2020). Therefore, if low back pain in pregnancy is not treated properly, it will have an adverse effect on the well-being of the mother and her baby.

Maternal age is one of the factors associated with back pain. Based on the result of this study, the average mother age of the respondents was 27.3 (SD=4.88) with the OR value was 0.464. The OR value of mother age factor was 0.464, which means that the age of the mother may cause a 0.464 times risk for back pain in pregnant women. As evidenced in the research results of Noviyanti et al that there was a relationship between individual factors (age) with complaints of low back pain. This happens because in general the elderly consider pain as a natural component of the aging process and can be ignored or not handled by health workers (Noviyanti et al., 2021).

On the other hand, it is normal for severe pain conditions in young adults to be felt as mild complaints than in older adults. Older adults, including pregnant women, experience neurophysiological changes and may experience decreased perception of sensory stimuli and increased pain threshold. In addition, chronic disease processes that are more common in older adults such as disorders, cardiovascular disease or diabetes mellitus can interfere with normal nerve impulse transmission (Noviyanti et al., 2021) (Manyozo et al., 2019).

The way older people react to pain can be different from how younger people react. Because elderly individuals have slower metabolisms and a greater ratio of body fat to muscle mass than younger individuals, small doses of analgesics may be sufficient for pain relief in the elderly. Pain perception in the elderly may be reduced as a result of pathological changes associated with some disease, but in healthy elderly individuals the perception of pain may not change (Manyozo et al., 2019). So it can be concluded that the older a person is, the lower the pain threshold. On the other hand, the younger a

person is, the higher the pain threshold. Pregnant women with old age may feel less back pain than younger pregnant women (Noviyanti et al., 2021)(Manyozo et al., 2019).

Gestational age is also one of the factors associated with back pain. Based on the result of this study, the average gestational age of the respondents was 27.8 (SD=7.66) with the OR value was 0.571. The OR value of gestational age factor was 0.571 which means that the gestational age may cause a 0.571 times risk for back pain in pregnant women. In addition, parity, occupation and religion are also the risk factors associated with the incidence of back pain in pregnant women.

Based on the result of this study, the average parity of the respondents was 1.43 (SD=0.50) with the OR value was 0.242. The parity's OR value was 0.242, it means that the parity may cause a 0.242 times risk for back pain in pregnant women. The average occupation of the respondents was 1.96 (SD=1.18) with the OR value was 0.762. The occupation's OR value was 0.762, that means that the occupation may cause a 0.762 times risk for back pain in pregnant women. The average religion of the respondents was 1.10 (SD=0.30) with the OR value was 0.464. The religion's OR value was 0.464, it means that the religion may cause a 0.464 times risk for back pain in pregnant women.

Gestational age, parity, occupation and religion are related to self-coping. Coping affects a person's ability to treat painful. A person who controls pain with an internal locus feels that the self they themselves have the ability to cope with pain. Someone who controls pain with an external locus is more likely to feel that other factors in his life such as health workers are people who responsible for the pain they feel.

Therefore, coping patient is very important to be noted. Gestational age, parity, occupation and religion will affect the formation of pregnant women's self-coping to the back pain they feel (Potter & Perry, 2012) (Manyozo et al., 2019) (Osinuga et al., 2021) (Wasilewska et al., 2021) (Caputo et al., 2021).

In addition, gestational age, parity, occupation and religion are related to meaning of pain. A person's meaning associated with pain affects the experience pain and how a person adapts to pain. This is also related close to the individual's cultural background. Individuals will perceive pain in different ways, if the pain gives the impression of a threat, a loss, punishment, and challenge. Degree and quality the pain perceived by the patient is related to the meaning of pain (Potter & Perry, 2012) (Manyozo et al., 2019) (Osinuga et al., 2021) (Wasilewska et al., 2021) (Caputo et al., 2021).

According to result research from (Manyozo et al., 2019) low back pain (LBP) prevalence was increasing with increasing gestational age in trimesters, increasing gravidity, and decreasing maternal age. Women who were in their second (adjusted OR 1.83, p=.12) and third trimesters (adjusted OR 2.35, p=.03) were more likely to report LBP compared to those in first trimester.

However, only gestational age in trimesters was significantly associated with LBP and maternal age also gravidity were not significantly associated with the occurrence of low back pain in the study population when tested at 5% significant level. This observation explains LBP as an effect of alterations in the musculoskeletal system including postural changes, increasing load on the spine due to the growing fetus and the exaggerated lordosis that exert physical force over the spinal joints and causing dysfunction (Manyozo et al., 2019).

Gender was one of the factors that affect a person's pain intensity. Based on the result of this study, the average gender of the respondents was 1 (SD=0.00) with the OR

value was 1.000. The OR value of gender was 1.000, it means that the gender may cause a 1.000 times risk for back pain in pregnant women. This observation explains that gender characteristics and their relationship to the nature of exposure and the level of vulnerability play a separate role.

Certain diseases are closely related to sex, with certain characteristics. Diseases that are only found in certain sexes, especially those that are closely related to the reproductive organs or that genetically play a role in sex differences. In some cultures it is said that a boy should be brave and not cry, while a girl should cry in the same situation.

Pain tolerance is influenced by biochemical factors and is unique to each individual regardless of gender (Osinuga et al., 2021). Although the study found no difference between men and women in expressing pain, treatment was found to be less in women. Women prefer to communicate their pain, whereas men receive opioid analgesics more frequently as a treatment for pain (Osinuga et al., 2021).

The gendered difference in back pain has been attributed to several occupational factors, such as differential exposures to work-related physical and physiological factors, male-oriented tool and workstation designs, and gendered variation in the perception of pain. Generally, women tend to be clustered in specific occupations with different pattern of employment and exposures from those of men. However, several occupational studies and reviews have shown that women-dominated jobs may be just as physically taxing as male-dominated jobs.

Thus, women's unique occupational exposures may place them at risk for back pain. Additionally, millions of women experience strenuous daily work conditions in domestic labor, often in addition to a formal job. Women's domestic labor, which involves tasks such as cleaning, cooking, water fetching, manual washing of clothes, and family care duties, may be as physically, emotionally and time demanding as structured paid work (Osinuga et al., 2021).

Other risk factors associated with the incidence of back pain in pregnant women is history of lifting heavy objects more than 10 kg and history of excessive bending which bend down making back tense. Based on this result's study, the average history of lifting heavy objects of the respondents was 1.33 (SD=0.47) with the OR value was 1.833. The OR value of history of lifting heavy objects more than 10 kg was 1.833, it means that the history of lifting heavy objects more than 10 kg may cause a 1.833 times risk for back pain in pregnant women.

Whereas, the average history of excessive bending of the respondents was 1.4 (SD=0.49) with the OR value was 13.000. The OR value of history of excessive bending (bend down making back tense) was 13.000, it means that the history of excessive bending (bend down making back tense) may cause a 13.000 times risk for back pain in pregnant women.

History of lifting heavy objects and history of excessive bending are related to occupation, environment and family support. For the type of work that requires a lot of energy (heavy work), non-neutral work postures (bent and twisting, repetitive movements, and long working hours) will greatly affect the occurrence of back pain amongst occupational populations, including back pain in pregnant women (Osinuga et al., 2021). Unfamiliar environment, high noise level, lighting and high activity in the environment can also exacerbate pain.

Other than that, support from family and closest people is one of the important factors that affect individual pain perception. For example, a single individual, without

family or friends who support it, tend to feel more severe pain than those who received support from family and close people (Potter & Perry, 2012). Especially during the pregnancy, social support for pregnant woman is very much needed. Not only physical support in completing daily work but also psychological support so that pregnant women do not experience fatigue and anxiety which can exacerbate the back pain they experience.

Pregnant women who are alone doing household activities will have a tendency to lift heavy objects and or often bend over when picking up an object that is located below (Osinuga et al., 2021). It is better if pregnant women may be able to do good body mechanics with the correct position when taking the items below, namely by first bending the knees and using the leg muscles to straighten again and also to avoid slouching which can strain the back, including even taking something light (Puspitasari & Ernawati, 2020).

To reduce and to prevent back pain complaints and establish safe daily activities during pregnancy, pregnant women need correct body mechanics. Body mechanics in pregnant women is a good body position to adjust body changes in pregnant women, especially the lordosis of the spine. Body mechanics in pregnant women includes the correct way of standing, sleeping position, lifting weights, and squatting positions.

Mechanical body will facilitate movement that body allows physical mobilization without muscle strain and excessive use of muscle strength. Therefore, proper body mechanics reduces the risk of musculoskeletal injuries including the vertebral region which will cause back pain or spinal pain (Puspitasari & Ernawati, 2020). Based on the results of research which was conducted by Puspitasari and Ernawati, it was obtained p value of 0.000 where the value is below the critical limit of the study or a significance point of 0.05 (5%) so it can be concluded that there are benefits of body mechanics exercise on reducing low back pain in third trimester pregnant women (Puspitasari & Ernawati, 2020).

One of the factors related to the incidence of back pain in pregnancy is physical activity such as yoga exercise. Based on the result of this study, the average yoga exercise of the respondents was 1.8 (SD=0.41) with the OR value was 0.143. The yoga exercise's OR value = 0.143, it means that the yoga exercise may cause a 0.143 times risk for back pain in pregnant women. The OR value is very low, almost close to zero, which indicates that it is precisely by doing yoga regularly, the incidence of back pain in pregnant women may be able to be prevented. But if pregnant women do yoga irregularly, they may have a small risk of experiencing back pain during pregnancy (Situmorang et al., 2020).

According to Situmorang et al, in their research results, prenatal yoga was very effective in reducing physical complaints such as back pain in third trimester pregnant women (Situmorang et al., 2020). In addition, based on the results of research by Wulandari et al that on 18 pregnant women who were taken by purposive sampling, after doing yoga exercises, showed p value = 0.000 which means that there was an effect of prenatal yoga on back pain in pregnant women third trimester (Wulandari et al., 2020).

Yoga exercise is a method powerful healing positive on physical health, psychology, feelings, and reactions to life which is being carried out. A series of yoga exercises aims to create balance of body and soul, strength body, serenity, peace, prepare pregnant women physically, mental and spiritual included in the preparation for childbirth. Yoga practice has no negative effect for mother and on the fetus

development (Situmorang et al., 2020). Prenatal Yoga exercises can be done at home, in the ante natal class or at the midwife's practice (H. P. Astuti et al., 2021)

Meanwhile, in her research, (Wulandari et al., 2020) stated that prenatal yoga exercise was a modification of customized basic yoga gymnastics movement with the condition of pregnant women. Yoga was an exercise of body, mind and mental which was very helpful for pregnant women in flexes joints and soothes thoughts, especially in the second and third trimester of pregnant women. Movement in prenatal yoga was made with a slower tempo and adjust to the space capacity pregnant mother (Wulandari et al., 2020).

In fact, yoga exercises can not only reduce back pain during pregnancy, but also reduce anxiety for pregnant women. Based on Aryani et al's research that p value was 0.000 which means that there was an effect of prenatal yoga on the anxiety of third trimester pregnant women in waiting for delivery (Aryani et al., 2018). In addition, research by Situmorang et al, proved that after being given intervention in the form of prenatal yoga, most primigravida pregnant women do not experiencing anxiety (72.2%).

So that yoga exercises do have many benefits for pregnant women (Situmorang et al., 2020). As stated (Aryani et al., 2018) that anxiety experienced by pregnant women will be able to bring up physical symptoms such as fatigue, lethargic, irritable, restless, dizzy, nauseous and lazy. Changes that occur in the physical affect the psychological and physical aspects on the contrary, so that it is easy for mothers pregnant to experience trauma.

Even the feelings or trauma felt by pregnant women can be felt by the fetus, namely by showing a reaction to stimulation that comes from outside the mother's body and causes a traumatic delivery (Aryani et al., 2018). Therefore, it is important to prevent back pain experienced by pregnant women from getting worse by knowing the risk factors associated with the incidence of back pain in pregnant women and applying them in daily life during pregnancy.

## CONCLUSION

It can be concluded that a history of excessive bending that causes the muscles in the back to become tense has the greatest risk (thirteen times) of back pain in pregnant women with an OR value = 13,000. This is recommended that pregnant women may be able to do good body mechanics with the correct position when taking the items below, namely by first bending the knees and using the leg muscles to straighten again. It is also recommended to avoid slouching which can strain the back, including even taking something light.

The implication of the results of this study is that as health workers, they have to provide good health education to pregnant women regarding the factors that can cause back pain so that back pain for pregnant women can be minimized, not causing complications.

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