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Musculoskeletal Pain and Exercise Habits in Pregnant Women at Timergara Teaching Hospital, Dir Lower

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ABSTRACT

Background: Musculoskeletal pain is a common issue during pregnancy, often affecting the lower back, pelvis, and limbs, with severity varying across trimesters. While exercise is commonly suggested for prevention and relief, its true effectiveness remains uncertain. **Objective:** To assess the relationship between exercise habits and the nature of musculoskeletal pain experienced by pregnant women during the three trimesters. **Methodology:** This cross-sectional study was conducted using data collected from 900 pregnant women who completed surveys about their demographics, exercise habits, and pain experiences. Participants had to be able to give verbal agreement and be pregnant at the time of the study to meet the inclusion requirements. To reduce confounding factors and guarantee that the findings applied to the intended audience, women who were not pregnant or who had health issues that affected their ability to perceive pain (apart from pregnancy-related discomfort) were not included. Participants were asked to report the type, location, and severity of pain they experienced during each trimester, as well as whether they engaged in regular exercise. Data on exercise habits, including frequency and type of physical activity, were also gathered. Statistical analyses were performed to compare the pain frequencies between the exercising and non-exercising groups. **Results:** The study found that lower back pain was the most prevalent type of pain, affecting 22.52% of participants in the first trimester, 28.46% in the second, and 27.03% in the third trimester. Lower limb and pelvic girdle pain were also commonly reported across the trimesters. Despite 36.67% of participants engaging in regular exercise, there was no significant difference in the frequency of pain between those who exercised and those who did not. The majority of participants (54%) reported experiencing cramping or dull pain, while sharp (6.33%) and stabbing pain (6.00%) were less frequent. These findings suggest that factors other than exercise might contribute to the musculoskeletal pain experienced during pregnancy. **Conclusion:** This study highlights common musculoskeletal pain in pregnancy, especially in the lower back, pelvis, and limbs. Although exercise showed limited impact on pain reduction, it provides other health benefits.

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INTRODUCTION

Pregnancy, which lasts roughly nine months from the last menstrual cycle to birth, is characterised by major physiological changes in a woman's body. Major physiological changes occur during this time, which is divided into three trimesters by healthcare providers. These changes impact not only the cardiovascular, endocrine, and renal systems, but also the musculoskeletal system, especially the axial skeleton.[1,2] According to Walters, Charlotte et al.[3], musculoskeletal discomfort during pregnancy can occur at any moment during the pregnancy and occasionally even after delivery, and it is not limited to any particular trimester. Lower back, pelvic, lower limb, and/or hip pain are common musculoskeletal pains experienced by pregnant women. Activities like standing for long periods, walking, or bending over frequently make these sensations worse.[4] The pain may be persistent, made worse by exercise, interfere with sleep, and impair everyday functioning. Pregnancy-related musculoskeletal pain is associated with fluid retention and variable hormone levels, both of which lead to joint laxity.

Pregnancy-related weight gain of 20% can result in a 100% increase in joint force.[5] The most prevalent forms of pain, which often manifest between the fifth and seventh months of pregnancy, are lower back and pelvic discomfort.[6] Women who suffer from lower back and pelvic girdle pain are less likely to be physically active, which lowers their likelihood of engaging in regular exercise.[7] Lower back pain and other musculoskeletal discomforts during pregnancy are positively correlated with the decline of muscular function caused by inactivity.[8] Additional health issues may result from this, especially regarding the musculoskeletal system.[7] Pregnancy-related falls are more likely when morphological changes, including hyperlordosis, alter the centre of gravity and put strain on the lumbar spine.

Alessandra Danna Dos Santos et al.,[9] Kary Dunning K et al.[10], and Walters Charlotte et al.[3] found that 27% of pregnant women had at least one fall throughout their pregnancy. Carpal tunnel syndrome (CTS), a common pregnancy condition with an incidence rate of up to 62%, is caused by a reduction in median nerve function during the third trimester, which is another prevalent musculoskeletal problem during pregnancy.[11] Muscle cramps, peripheral neuropathy, and discomfort in the upper and lower extremities are other common musculoskeletal problems.[12] The main pupose of the study was to assess the relationship between exercise habits and the nature of musculoskeletal pain experienced by pregnant women during the three trimesters.

METHODOLOGY

The primary objective of this cross-sectional study was to assess different factors associated with pregnant women's pain. To gather information from a wide and varied sample of participants and provide a thorough picture of the pain experiences during pregnancy, the study used a cross-sectional strategy. The characteristics of pain and its relationship to demographic and pregnancy-related factors at a particular moment in time were perfectly captured by this approach. The Maternity Teaching Hospital, which focuses on treating expectant mothers, and several public and private outpatient clinics that specialize in obstetrics and gynaecology were the two primary locations from which data were gathered. The results' external validity was improved by the inclusion of both inpatient and outpatient settings, which guaranteed that the sample was diverse and represented a range of medical backgrounds and experiences.

Participants were chosen at random, and the data collection took place over three months, from January to March 2025. This time frame was picked to include a wide variety of people and reduce any possible seasonal biases that might have an impact on the study's findings. The representativeness of the sample was preserved through the randomisation of the data gathering procedure. Nine hundred pregnant women in all were chosen at random to take part in the study. Participants had to be able to give verbal agreement and be pregnant at the time of the study to meet the inclusion requirements. To reduce confounding factors and guarantee that the findings applied to the intended audience, women who were not pregnant or who had health issues that affected their ability to perceive pain (apart from pregnancy-related discomfort) were not included.

A standardised questionnaire created by the study team was used to gather data. A thorough pain evaluation, pregnancy-related information (number of trimesters, parity, and exercise

history), and demographic data (age, BMI, educational attainment, occupation, and social standing) were all included in the questionnaire. The existence, location, onset, features, duration, intensity, and effect of pain on day-to-day activities were all covered in the pain-related questions. Microsoft Excel and GraphPad version 20 were used for statistical analysis, making it easier to apply both descriptive and inferential statistics to investigate connections between pregnant women's pain experiences and demographic factors.

RESULTS

Pregnant women's musculoskeletal pain over the three trimesters was evaluated, as were their exercise routines and pain thresholds. The main conclusions are as follows: Throughout pregnancy, the distribution of discomfort varies across various bodily parts. With 22.52% of participants experiencing lower back pain in the first trimester, 28.46% in the second, and 27.03% in the third, it was the most prevalent type of pain. Similar to this, 16.91% of individuals reported having pelvic girdle pain in the first trimester, 20.33% in the second, and 18.02% in the third. Other noteworthy pain sites include shoulder pain, which varied from 6.76% in the first trimester to 6.50% in the second trimester and then dropped to 4.50% in the third, and lower limb pain, which decreased in frequency from 13.51% in the first trimester to 8.13% in the second trimester but slightly increased to 12.00% in the third. Similar trends were seen in thigh discomfort, which was 5.63% during the first trimester, 3.25% during the second, and 6.00% during the third. The predominance of other pain points, including the hands/wrist, knees, upper back, feet, and calves, varied throughout the trimesters, with some areas becoming more noticeable.

The effect of exercise on pregnant women's perceptions of pain was also investigated. Out of the 900 participants, 330 women (36.67%) said they exercised regularly while pregnant, and 270 of them (81.82%) reported feeling pain. However, 450 women (78.95%) reported pain, while 570 women (63.33%) did not exercise. The frequency of pain was comparatively constant in both the exercise and non-exercise groups, suggesting that pain during pregnancy may be caused by reasons other than exercise, even though exercise is linked to a larger percentage of women suffering pain. It's interesting to note that compared to 21.05% of women who did not exercise, 18.18% of women who exercised reported no pain. Pregnant women in the study reported a variety of pain characteristics, with cramping or dull pain being the most prevalent, as reported by 54% of participants. With 6.33% of women reporting sharp or abrupt pain, stabbing pain came in second with 6%. Stretch pain (2.33%), stiff pain (3%), and fracture pain (3.67%) were among the other forms of pain. It's interesting to note that a lower percentage of women felt tingling (0.67%), tightness (0.67%), burning sensation (1%), and numbness (2.67%), suggesting that more severe or specialised pain features were less common.

The forms of musculoskeletal discomfort that pregnant women experience during the several trimesters are better understood according to this study. Lower back pain, pelvic girdle discomfort, and lower limb pain are the most frequently reported complaints, and they demonstrate the profound effects pregnancy has on the musculoskeletal system. The study of the association between exercise and pain revealed that, although it did not appear to significantly lower the incidence of pain, physical activity may have additional health advantages. According to the distribution of pain characteristics, cramping or dull pain was the most common type of pain,

Table 1: Pain character distribution

Pain Character	Scaled Frequency	Percentage
No Pain	180	20.00%
Cramping/Dull	486	54.00%
Stabbing	54	6.00%
Numbness	24	2.67%
Tingling	6	0.67%
Fracture	33	3.67%
Stretch Pain	21	2.33%
Sharp/Sudden Pain	57	6.33%
Stiff Pain	27	3.00%
Burning Sensation	6	1.00%
Tightness Sensation	6	0.67%
Total	**900**	**100.00%**

Figure 1: Prevalence of musculoskeletal pain in trimesters

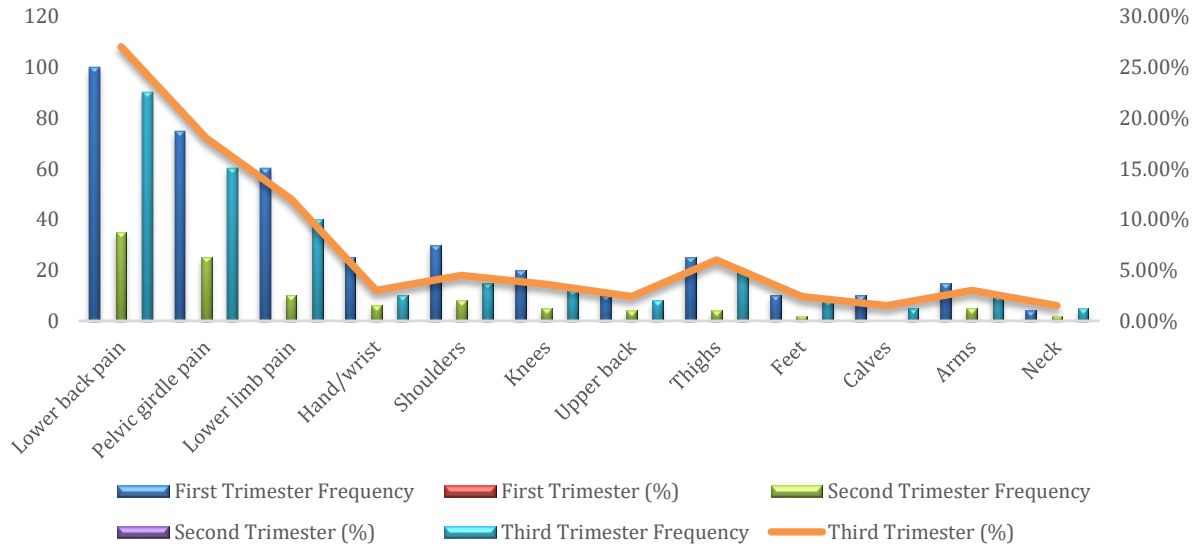
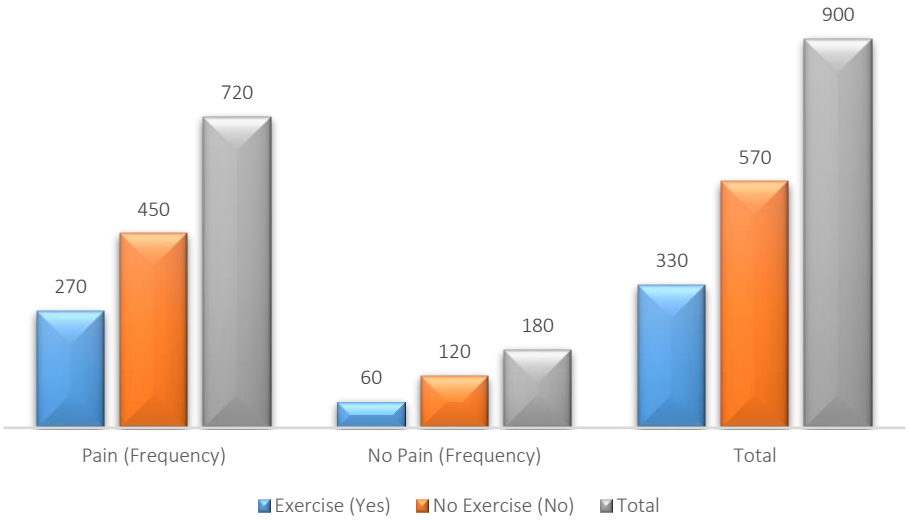


Figure 2: Frequency of pregnant women doing exercises



while acute or stabbing pain was less common. Healthcare professionals can more effectively manage and treat the pain that many pregnant women endure by having a better understanding of these pain characteristics and how they change throughout pregnancy.

DISCUSSION

According to the study's findings, musculoskeletal Discomfort is common during each of the pregnancy's trimesters, albeit the intensity of the pain varies. Our results indicate that lower back pain, lower limb pain, and pelvic girdle pain were most common in the third trimester, which contrasts with earlier research, which found that pelvic girdle pain was most common in the second trimester.[13] This might be due to the uterus growing larger and the body's centre of gravity shifting, putting strain on the musculoskeletal system. The most prevalent musculoskeletal pain was lower back pain due to the growing uterus putting strain on the lower back muscles, pelvic ligaments, and abdominal muscles. Pelvic girdle pain was the second most prevalent in our study.

As pregnancy progresses, the body requires more support from the lower back to maintain an upright posture, leading to increased lower back discomfort. Pregnancy hormones cause the pelvic joints to become more flexible in preparation for childbirth, which might result in pain in the sacrum or pubic bone.[14] While pelvic girdle discomfort was predicted to peak in the second trimester, our study suggests it was more prevalent in the third trimester. Variations in sample size might explain this disparity, as we had fewer participants in the second trimester than in the third. Leg cramps, affecting 15% to 30% of women, were the third most prevalent

musculoskeletal problem, with an increased incidence in the latter stages of pregnancy. The mechanical strain on the hips during late pregnancy may contribute to these pains, as noted by earlier research.[15] A p-value of 0.71, above the 0.05 cutoff, indicated that the association between trimesters and musculoskeletal discomfort was positive but not statistically significant. This implies that while there is a general pattern of increasing pain in the latter half of pregnancy, it is not exclusive to a particular trimester. The unbalanced distribution of participants, with most cases in the third trimester, may have influenced this result. Despite the commonality of musculoskeletal pain, 20% of participants reported no discomfort, suggesting that not all pregnant women experience pain.

Further research is necessary to explore the causes of this absence of pain, focusing on factors like heredity, lifestyle, and overall physical health. A noteworthy finding of the study was the positive correlation between maternal age, BMI, and the intensity of musculoskeletal pain. This shows that older women and those with higher BMIs experienced more severe pain, consistent with previous studies indicating that ageing and excess weight can exacerbate musculoskeletal pain.[16] Additionally, women who exercised during pregnancy reported less discomfort compared to those who did not, supporting the idea that physical activity may alleviate pregnancy-related pain. This was demonstrated in the study results, where 36.6% of participants who exercised reported experiencing less musculoskeletal pain. Cramping or dull pain was the most common discomfort, reported by 54% of participants, while sharp or abrupt pain was the second most common, affecting 6.33% of participants. This finding is consistent with previous research[17,23-25], which also identified dull and cramping pain as the most prevalent types during pregnancy. Given the findings that exercise may not significantly reduce the frequency of musculoskeletal pain during pregnancy, healthcare providers should focus on exercise interventions aimed at maintaining overall health and reducing discomfort, rather than solely targeting pain relief.

Tailored exercise programs emphasising posture and strengthening exercises may alleviate some physical strain caused by pregnancy. Additionally, the study revealed a significant correlation between BMI, maternal age, and pain intensity, suggesting that managing BMI before and during pregnancy is crucial, especially for women at higher risk due to age or excess weight. Pre-pregnancy physical fitness and weight management should be prioritised as part of routine prenatal care to potentially reduce the severity of musculoskeletal pain. Since not all pregnant women experience musculoskeletal pain, future studies should explore factors like genetics, lifestyle, and pre-existing conditions that contribute to the absence of pain, allowing for more personalised pain management strategies.

Healthcare professionals should also educate pregnant women about common pain issues, such as musculoskeletal discomfort, carpal tunnel syndrome, and leg cramps, and encourage regular physical activity as a method to reduce discomfort. Finally, further research is needed to better understand the causes of musculoskeletal pain during pregnancy and the role of exercise, genetics, and physical health, particularly through longitudinal studies. Postpartum, healthcare providers should continue to monitor and support women experiencing pain, extending physical therapy services for those with significant pain or complications during pregnancy.

CONCLUSION

This study has shown that musculoskeletal discomfort during pregnancy is prevalent throughout all three trimesters, with the intensity and type of pain varying between individuals. The most common types of pain reported were lower back pain, lower limb pain, and pelvic girdle pain, which were most prevalent in the third trimester. These results contrast with previous studies, such as those by Walters et al. (2018), which reported pelvic girdle pain as most common in the second trimester.[13] As pregnancy progresses, the growing uterus and shifting centre of gravity increase strain on the musculoskeletal system, particularly on the lower back and pelvic regions. The study also found that maternal age and BMI were positively correlated with the severity of musculoskeletal pain, with older women and those with higher BMIs reporting more intense discomfort.[16]

Although exercise was found to be associated with lower pain intensity in some participants, the overall findings suggest that regular physical activity does not significantly reduce the incidence of musculoskeletal pain during pregnancy. Instead, it may contribute to general health

benefits. Interestingly, 20% of participants reported no pain, suggesting that factors such as heredity, lifestyle, and overall physical health may play significant roles in the experience of pregnancy-related musculoskeletal pain.[14] The study also observed that leg cramps, which affect a significant portion of pregnant women, were more common in the later stages of pregnancy. This study's findings highlight the significant impact of pregnancy on the musculoskeletal system, necessitating a greater understanding of pain management strategies during pregnancy, particularly as women's body mechanics shift throughout the trimesters. The positive correlation between maternal age, BMI, and pain intensity also underscores the importance of considering these factors in pain management and prevention during pregnancy.[17]

DECLARATIONS

Consent to participate: Written consent had been obtained from patients. All methods were performed following the relevant guidelines and regulations.

Availability of data and materials: Data will be available on request. The corresponding author will submit all dataset files.

Competing interests: None

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