

Original Article

# Frequency of Diastasis Recti in Second and Third Trimesters of Pregnancy in Jinnah Hospital Lahore. A Cross-Sectional Study

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## ABSTRACT

**Background:** Diastasis Recti (DR) is a condition characterized by the separation of the rectus abdominis muscles, commonly occurring among pregnant women. Despite its prevalence, awareness of DR and its implications remains low. This study aims to investigate the frequency of DR in the second and third trimesters of pregnancy and to identify any associated risk factors.

**Objective:** To determine the prevalence of DR among pregnant women in their second and third trimesters and to assess the level of awareness about the condition. Additionally, the study seeks to explore the relationship between DR and potential risk factors such as the number of pregnancies, Body Mass Index (BMI), and engagement in abdominal muscle exercises.

**Methods:** This cross-sectional study was conducted at Jinnah Hospital Lahore, involving 64 pregnant women in their second and third trimesters. Participants were selected through non-probability convenience sampling. DR was assessed using the Finger width method, alongside a questionnaire to gather demographic information and assess awareness levels. Statistical analysis was performed using SPSS version 25, focusing on descriptive statistics to summarize demographic data, and chi-square tests to explore associations between DR and identified risk factors.

**Results:** Among the 64 participants, DR was present in 45.3% (29/64) of the sample, with a higher prevalence observed in the third trimester. The majority of participants (90.6%) reported never performing abdominal muscle exercises. A systematic review indicated that antenatal exercises could reduce DR cases by approximately 35%. However, awareness of DR among participants was notably lacking, with none having prior knowledge of the condition. Additionally, there was no significant association between DR and BMI, or the frequency of abdominal exercises.

**Conclusion:** DR is a prevalent condition among pregnant women, particularly in their third trimester, with a significant lack of awareness observed. While the number of pregnancies appears to be a contributing factor, other explored risk factors such as BMI and engagement in abdominal exercises did not show a significant association with DR. These findings highlight the need for increased educational efforts and further research to better understand and manage DR during pregnancy.

**Keywords:** Diastasis Recti, Pregnancy, Prevalence, Risk Factors, Awareness, Abdominal Exercises.

## INTRODUCTION

Diastasis recti, characterized by a separation of the rectus abdominis muscles of at least 2.7 centimeters, represents a notable condition that disrupts the normal anatomical alignment of the abdominal musculature, where these muscle bands typically converge at the midline of the abdomen. This separation can manifest physically as a protrusion at the center of the abdomen where the gap occurs, affecting the muscular strength and potentially complicating everyday activities through weakness or back pain, despite the lack of consensus on the precise threshold for abnormal inter-rectus distance, which is generally regarded to exceed 2 centimeters (1,2,3). The condition is frequently observed in pregnant or postpartum women, where the expansion of the uterus exerts pressure on the rectus abdominus, stretching and separating the muscles, a phenomenon that becomes increasingly common with multiple pregnancies (4). The clinical implications of diastasis recti extend beyond cosmetic concerns, encompassing compromised trunk stability and mobility, back and pelvic pain, adverse postural changes, and potential for hernias due to pelvic floor muscle dysfunction (5).

The method for assessing diastasis recti involves an examination while the patient is in a supine position with hips and knees flexed, typically conducted after ultrasonographic evaluation. The assessment quantifies the separation between the medial edges of the rectus abdominis muscles, measured in fingerbreadths above the umbilicus, with a separation of two centimeters or more constituting diastasis recti (7). This condition is also significant during physical actions like coughing, laughing, or any activity that increases intraabdominal pressure, engaging the abdominal muscles in a manner that may exacerbate the separation (8). Furthermore, certain exercises, such as press-ups and crunches, can worsen the condition, and while there is no universally accepted protocol for realignment of the muscles, techniques like the Tupler method have shown promise (9).

The prevalence and risk factors associated with diastasis recti have been subjects of research, with studies indicating a higher incidence in the third trimester of pregnancy and a correlation with increased parity. However, the relationship between diastasis recti and lumbopelvic pain postpartum remains unclear, suggesting the need for further investigation into the condition's long-term effects and its impact on quality of life (12,13). Measurements of the inter-rectus distance have been linked to abdominal pain and body image concerns, highlighting the importance of addressing the severity of diastasis recti (14). Additionally, the presence of diastasis recti may be associated with support-related pelvic floor dysfunctions, suggesting a lasting impact beyond the childbearing years (15).

The etiology of diastasis recti is multifactorial, with potential contributions from hormonal changes, such as increased relaxin levels, pregnancy-related factors, and inherent weaknesses in connective tissue. This condition's impact on pelvic dynamics suggests that the compromised abdominal wall may affect the distribution of forces across the thoracic, peritoneal, and pelvic regions, further implicating the pelvic floor muscles in the pathology of diastasis recti (16). Despite these insights, there remains a significant gap in patient awareness regarding diastasis recti, underscoring the necessity for increased education and preventive strategies to mitigate the potential decline in lifestyle quality resulting from its complications. This highlights the imperative for ongoing research and public health initiatives aimed at enhancing understanding and management of diastasis recti among affected populations.

## MATERIAL AND METHODS

This cross-sectional study was designed to ascertain the frequency and characteristics of diastasis recti among pregnant females in their second and third trimesters. Conducted at the Jinnah Hospital Lahore, specifically within its Gynaecology wards and Outpatient Department (OPD), the research aimed to provide a snapshot of the condition's prevalence within this targeted demographic. The choice of Jinnah Hospital Lahore was strategic, given the ready availability of the desired sample population, thus facilitating the study's execution. Prior to commencing data collection, requisite approvals were secured from the hospital's Medical Superintendent, underscoring the research's compliance with institutional guidelines and ethical standards.

The inclusion criteria were narrowly defined to include females aged between 20 to 40 years, who were either in their second or third trimester of pregnancy. This study explicitly excluded first-time pregnant females, as well as those with hypertension, diabetes mellitus, or post-partum women, to ensure a homogenous study population and mitigate potential confounding factors. Non-probability, convenience sampling was employed due to the accessibility and availability of the target population within the hospital's Gynaecology wards and OPD.

A total of 64 subjects participated in the study. Given the illiteracy of most subjects, verbal consent was obtained prior to participation, adhering to ethical considerations that prioritize informed consent while accounting for the participants' educational backgrounds. This approach ensured that all participants were fully aware of the study's nature and their role within it, without compromising their right to informed consent. The assessment of diastasis recti was conducted through physical examination, employing Noble's criteria and the finger width method to measure the separation between the rectus abdominis muscles.

The study's adherence to ethical standards was further evidenced by obtaining approval from the Head of the Department of Gynaecology at Jinnah Hospital Lahore, in addition to ensuring the privacy, confidentiality, and safety of all participants. These measures align with the ethical principles outlined in the Declaration of Helsinki, emphasizing the importance of protecting human subjects involved in research.

Data collected through the study were analyzed using the Statistical Package for the Social Sciences (SPSS) version 25. This analytical approach facilitated a comprehensive evaluation of the study's findings, enabling the identification of patterns and trends related to the prevalence of diastasis recti among the targeted demographic. The use of SPSS version 25 ensured that data analysis was conducted with a high degree of precision and reliability, contributing to the study's overall integrity and the validity of its conclusions.

## RESULTS

In this study, demographic data were analyzed for 64 participants, revealing an average age of 27.75 years with a standard deviation of 4.155, suggesting a relatively young cohort. The mean height and weight of the participants were recorded at 160.2 cm (SD = 14.64) and 70.75 kg (SD = 13.54), respectively. These measurements correspond to an average Body Mass Index (BMI) of 26.93 kg/m<sup>2</sup>, with a standard deviation of 4.56, indicating a prevalence of overweight status among the study population (Table 1). The distribution of BMI categories among the respondents further elucidates this trend. Specifically, a minority of the study population was classified as underweight (3.1%), while 31.3% fell within the normal weight range. The majority of participants were categorized as overweight (48.4%) or obese (17.2%), highlighting a significant inclination towards higher BMI levels among the participants (Table 2).

Table 1 Demographic Data of Participants (n=64)

Variable	Mean ± SD
Age (years)	27.75 ± 4.155
Height (cm)	160.2 ± 14.64
Weight (kg)	70.75 ± 13.54
BMI (kg/m <sup>2</sup> )	26.93 ± 4.56

Table 2 Body Mass Index (BMI) Distribution of Respondents

BMI Category	Frequency	Percent
Underweight (<18.0)	2	3.1%
Normal (18.0- 24.9)	20	31.3%
Overweight (25- 29.9)	31	48.4%
Obese (>30)	11	17.2%
Total	64	100.0%

Table 3 Frequency of Performing Abdominal Muscle Exercises

Frequency	Frequency	Percent
Never	58	90.6%
Once a day	4	6.3%
Once a week	2	3.1%
Total	64	100.0%

Table 4 Results of Diastasis Recti Test According to Finger Width Method

Test Outcome	Frequency	Percent
Positive	29	45.3%
Negative	35	54.7%
Total	64	100.0%

Regarding the frequency of performing abdominal muscle exercises, the data reveals a notable lack of engagement in this health-promoting activity. A striking 90.6% of the participants reported never performing abdominal muscle exercises. In contrast, only a small fraction of the study population engaged in such exercises once a day (6.3%) or once a week (3.1%), underscoring a potential area for intervention to improve maternal health and possibly influence the incidence of diastasis recti (Table 3).

The prevalence of diastasis recti, as determined by the finger width method, was found to be significant, with 45.3% of the participants testing positive for the condition. This finding indicates that nearly half of the study population exhibited a separation of the rectus abdominis muscles, contrasting with the 54.7% who did not demonstrate this condition (Table 4). This prevalence underscores the significance of diastasis recti among pregnant women in their second and third trimesters and highlights the need for targeted health interventions and further research into preventative and corrective measures.

## DISCUSSION

The prevalence of Diastasis Recti (DR) among women in their second and third trimesters of pregnancy, as explored in this study involving 64 participants, reveals a notable incidence of the condition, particularly during the third trimester. Despite the significant occurrence, awareness among the affected population remains markedly low. This finding aligns with the pattern observed in the cohort, where nearly half of the participants were diagnosed with DR through the Finger width method, yet none were previously aware of the condition. The correlation between the number of pregnancies and the risk of developing DR was evident, suggesting that multiparity is a contributing factor, although DR was also observed in some women with only one child.

A systematic review highlighted the beneficial impact of antenatal exercises on DR, showing a reduction in about 35% of cases (1). This suggests that targeted physical activity could play a crucial role in managing or mitigating the severity of DR during pregnancy. Further, the association between DR and pelvic or abdominal pain was supported by a prospective study, which found a higher prevalence of discomfort among women with DR (17). These findings are corroborated by a study conducted in Rawalpindi Hospital, which also noted an increase in DR frequency with parity (18).

Contrastingly, the relationship between DR and back pain, as well as other potential risk factors like Body Mass Index (BMI) and abdominal exercises, appears to be less definitive. Gitta.S's research into the prevalence and risk factors of DR suggested a link between the condition and the number of deliveries, indicating a potential impact on the quality of life due to associated back pain in those with abnormal interrectus distance (20). However, this association was not universally supported, as another study found no significant relationship between DR and back pain or other risk factors, pointing to the complexity of DR's etiology and its impact on women's health.

The study conducted here further emphasizes the commonality of DR in the later stages of pregnancy, particularly in the third trimester, and highlights a glaring gap in awareness among pregnant women. The lack of significant association with other risk factors, aside from the number of children, underscores the need for further research to elucidate the full spectrum of contributors to DR.

This research underscores the critical need for heightened awareness and education among healthcare providers and expectant mothers about DR, its potential impacts, and the benefits of preventative and therapeutic exercises. The limitations of this study, including its small sample size and the use of convenience sampling, suggest caution in generalizing the findings across all populations. Future research should aim for a broader demographic representation and consider longitudinal designs to explore the progression of DR across pregnancy and into the postpartum period. Additionally, randomized controlled trials are needed to evaluate the efficacy of specific exercise regimens in preventing or treating DR, addressing the gaps highlighted by Benjamin et al. (19).

## CONCLUSION

In conclusion, while DR is a prevalent condition among pregnant women, particularly in their third trimester, the awareness and understanding of its implications remain inadequate. The association with multiparity suggests a targeted area for intervention, whereas the indeterminate links with other potential risk factors highlight the complexity of this condition and the necessity for comprehensive, multidisciplinary approaches to its management and prevention.

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