



PREVALENCE OF MEDIAL LONGITUDINAL ARCH IN THIRD TRIMESTER OF PREGNANT WOMEN

Assessing foot structure changes for better maternal comfort and care



AUTHORS

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THE MEDIAL LONGITUDINAL ARCH



The medial longitudinal arch helps absorb shock, supports body weight and aids balance. Changes in this arch during pregnancy may lead to pain and functional difficulties.



INTRODUCTION

Pregnancy causes significant hormonal and physical changes, especially in the third trimester. Increased body weight and forward shift in center of gravity lead to postural adaptations and increased stress on the musculoskeletal system. The foot, as the primary weight-bearing structure, is highly vulnerable to these changes.

Flattening of the Medial Longitudinal Arch (MLA) during pregnancy reduces foot support and stability. Alterations in foot structure can lead to:

- Increased risk of foot and lower limb pain
- Higher incidence of tendinitis
- Fatigue and discomfort during standing or walking

Research shows changes in foot dimensions (length, width, plantar area, arch height) during and after pregnancy. Reduced arch support negatively affects balance, posture, and joint stability.

Providing proper MLA support can help reduce discomfort, especially in multiparous women. Early podiatric assessment is crucial to identify problems early, prevent long-term complications and improve quality of life during pregnancy.

There is a lack of local research in Pakistan (Karachi) on foot biomechanics in pregnant women. Important influencing factors remain underexplored including footwear choices, occupational demands, Body Mass Index (BMI) and physical activity levels. Understanding these changes will help in developing guidelines for proper foot support and care during pregnancy.



OBJECTIVES

- To assess medial longitudinal arch changes using Navicular Drop Test, Foot Posture Index (FPI-6) and footprint analysis.
- To determine the prevalence of MLA flattening among third trimester pregnant women.
- To evaluate pain intensity using Visual Analog Scale (VAS).



RESEARCH QUESTION

What is the prevalence of medial longitudinal arch flattening among third-trimester pregnant women in Karachi?



HYPOTHESIS

Alternate Hypothesis: There is a significant association between maternal factors and MLA changes.

Null Hypothesis: There is no significant association between maternal factors and MLA changes.



RATIONALE

Pregnancy-related changes in foot structure are common but underrecognized. This study will provide local data on MLA changes and associated factors, aiding early identification and better podiatric care for pregnant women in Karachi.



OPERATIONAL DEFINITIONS

Third Trimester

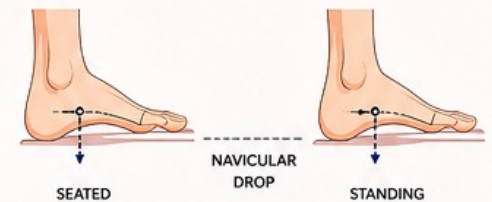
The third trimester refers to the period of pregnancy from 28 to 40 weeks of gestation.

Medial Longitudinal Arch (MLA)

The MLA consists of five bones: the calcaneus, talus, navicular, three cuneiform bones, and the first three metatarsals.

Navicular Drop Test

This test assesses the change in height of the navicular tuberosity when moving from a seated to a standing position.



METHODOLOGY

Study Design: Cross-sectional observational study

Sampling Technique: Non-probability convenience sampling

Sample Size: 383 participants (calculated using OpenEpi based on prevalence 47.3%, 95% CI, 5% margin of error)

Study Duration: 2-3 months

INCLUSION CRITERIA

- Pregnant women in their third trimester (28-40 weeks)
- No prior history of foot deformities (e.g., congenital flatfoot, high arch, structural abnormalities)
- Women who provided written informed consent

EXCLUSION CRITERIA

- Women in the first or second trimester of pregnancy
- Women with pre-existing or congenital foot deformities
- Women with significant obstetric complications (e.g., preeclampsia, severe edema, high-risk pregnancy)
- Women with conditions affecting gait or mobility (e.g., neurological or musculoskeletal disorders)



DATA COLLECTION TOOLS



Navicular Drop Test

Assesses the flexibility of the medial longitudinal arch.



Foot Posture Index (FPI-6)

Evaluates foot alignment and postural characteristics.



Footprint Analysis

Calculates Arch Index to categorize arch type.



Visual Analog Scale (VAS)

Measures pain intensity.



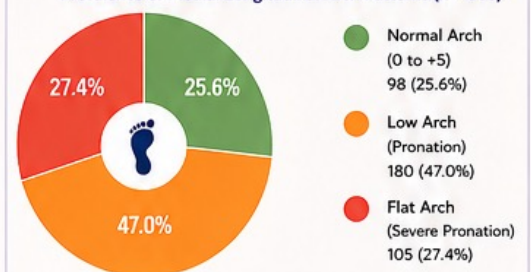
Foot Function Index (FFI)

Assesses functional limitations related to foot problems.



RESULTS (SUMMARY)

Prevalence of Medial Longitudinal Arch Patterns (n = 383)



Low arch (pronation) was the most common pattern among third trimester pregnant women.



ASSOCIATED FINDINGS

- Increased foot pain and fatigue were commonly reported.
- Discomfort increased with prolonged standing and walking.
- Significant association noted with increased body weight and advanced gestational age.

INFOGRAPHIC: WHY ARCH CHANGES HAPPEN IN PREGNANCY



KEY POINTS

- ✓ Pregnancy significantly affects foot biomechanics.
- ✓ The medial longitudinal arch tends to lower in late pregnancy.
- ✓ These changes may lead to pain and reduced functional ability.
- ✓ Early assessment can prevent long-term complications.



IMPLICATIONS

- ✓ Include foot assessment in routine antenatal care.
- ✓ Recommend supportive footwear and arch supports.
- ✓ Educate patients about posture and foot care.
- ✓ Helps improve comfort, balance and quality of life.



CONCLUSION

A significant number of third trimester pregnant women experience flattening of the medial longitudinal arch, most commonly presenting as a low arch (pronation). Early identification and proper management are essential to reduce discomfort well-being.



Healthy Feet,
Healthy Mother, Healthy Future

