

### **Summary Baseline Fetal Heart Rate (LB):**

- Found to be moderately correlated with variables such as Fetal Movements (FM) and Accelerations (AC).
- Higher values of LB were occasionally associated with more accelerations and movements, which may indicate healthy fetal activity.

### **2. Uterine Contractions (UC) and Decelerations (DL, DS, DP):**

- Showed interesting patterns, where increased uterine contractions were sometimes linked with more deceleration activity—could be critical in identifying fetal distress.

### **3. Variability Measures (ASTV, MSTV, ALTV, MLTV):**

- ASTV and MSTV showed variability across patients and were useful in identifying abnormal heart rate variability.
- These features also had weak but noticeable correlations with outcome variables, hinting at their diagnostic relevance.

### **Patterns Observed:**

- Outliers were detected in variables like LB and FM, which may represent high-risk cases that require clinical attention.
- No significant missing values after imputation, and most features followed a reasonably normal distribution or slight skewness.
- Correlation Heatmap and Pair Plots revealed relationships worth exploring in predictive modeling tasks.

## **Conclusion**

This exploratory data analysis provided a solid foundation for understanding the cardiotocographic dataset and its associated variables. These insights could support healthcare professionals in identifying patterns of normal and abnormal fetal activity and guide the development of diagnostic tools.