

INTRODUCTION

Relation Between Circadian Rhythm And Fetal Back Position

Circadian rhythms are biological processes that follow a roughly 24-hour cycle, influenced primarily by light and darkness in the environment. These rhythms are crucial for regulating various physiological functions, including hormone secretion, sleep-wake cycles, and even fetal development. The relationship between circadian rhythms and fetal back position is an emerging area of research that highlights how maternal circadian signals may influence fetal positioning during pregnancy⁽²⁹⁾.

Maternal Circadian Rhythms and Hormonal Influence

The maternal circadian system plays a significant role in regulating hormonal profiles throughout pregnancy. Hormones such as melatonin and cortisol exhibit daily fluctuations that can affect fetal development. Melatonin, which is secreted in higher amounts during the night, has been shown to influence fetal growth and development. This hormone can cross the placental barrier, potentially affecting the fetus’s own circadian rhythms.

Research indicates that the synchronization of maternal and fetal circadian rhythms may impact various aspects of fetal positioning. For instance, certain positions may be favored at specific times of day when maternal hormone levels are optimal for promoting movement or growth in the fetus.

AIM OF THE WORK

This study aims to explore the circadian rhythm of foetal position detected by ultrasound throughout the day between 20 and 26 gestational weeks.

PATIENTS AND METHODS

Patients:
120 Pregnant women between **20 and 26 weeks of gestation** were recruited for the study, and fetal positions were monitored throughout the day using ultrasound imaging. Patients were divided into 3 groups according to time of examination in which:
-**Group A** (8 am-12 pm).
-**Group B** (12 pm–4 pm).
-**Group C** (4 pm–8 pm).

Methods:
Fetal Position Documentation:
The fetal position was recorded in **each ultrasound scan** to observe potential circadian variations throughout the day. The following parameters were documented:
a) Fetal Head Position
-Cephalic (head down position)
- Breech (head up position)
- Transverse (head positioned sideways in the uterus)
- Oblique (diagonal fetal position in the uterus)
b) Fetal Spine Orientation
- Anterior (spine facing the mother's abdomen)
- Posterior (spine facing the mother's back)
- Left lateral (spine facing the maternal left side)
- Right lateral (spine facing the maternal right side)
Time Zone Allocation for Observations:
To evaluate the circadian rhythm of fetal positioning, each participant underwent ultrasound scans during three predefined time zones:
- **Morning session:8:00 AM – 12:00 PM**
- **Afternoon session:12:00 PM – 4:00 PM**
- **Evening session:4:00 PM – 8:00 PM**

RESULTS

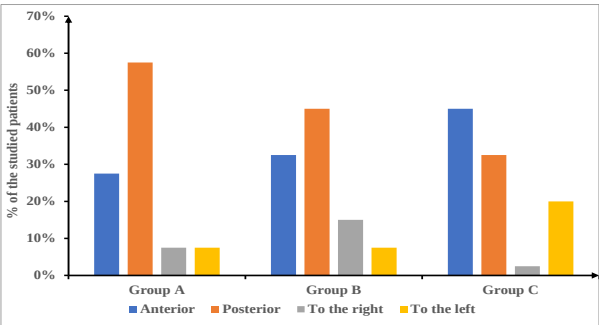
Table 1: Fetal back position of the studied groups

	Group A (n=40)	Group B (n=40)	Group C (n=40)	P value
Anterior	4 (10%)	12 (30%)	9 (22.5%)	0.084
Posterior	15 (37.5%)	12 (30%)	10 (25%)	0.476
To the right	3 (7.5%)	6 (15%)	1 (2.5%)	0.126
To the left	3 (7.5%)	3 (7.5%)	8 (20%)	0.132
Anterior to the right	3 (7.5%)	1 (2.5%)	4 (10%)	0.392
Anterior to the left	4 (10%)	0 (0%)	5 (12.5%)	0.122
Posterior to the left	2 (5%)	4 (10%)	2 (5%)	0.585
Posterior to the right	6 (15%)	2 (5%)	1 (2.5%)	0.08

The fetal back position was insignificantly different among the three groups.

Table 2: Fetal back position of the studied groups

	Group A (n=40)	Group B (n=40)	Group C (n=40)	P value
Anterior	11 (27.5%)	13 (32.5%)	18 (45%)	0.240
Posterior	23 (57.5%)	18 (45%)	13 (32.5%)	0.080
To the right	3 (7.5%)	6 (15%)	1 (2.5%)	0.126
To the left	3 (7.5%)	3 (7.5%)	8 (20%)	0.132



CONCLUSION

This study sought to explore the fetal back position during ultrasound examination in different periods of the day, although **group A** had the highest percent of fetuses with posterior back positions, favoring cardiac examination
Yet these findings were not statistically significant. Although **group C** had the highest percent of fetuses with anterior back positions, favoring spine examination and hindering cardiac examination, yet these findings were not statistically significant
Thus, to conclude there is no statistical significance seen in fetal back positions, at least not in a manner detectable within the timeframe and sample size of the study