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Original Research Article

Maternal Perception of Fetal Movements and Its Impact on Perinatal Outcomes in Low-Risk Pregnancies

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Abstract

Maternal perception of fetal movements is widely recognized as a simple, cost-effective method for monitoring fetal well-being, and it may also strengthen maternal-fetal attachment. Although many pregnant women notice episodes of reduced fetal activity, only a small percentage seek medical attention, and data about decreased fetal movement (DFM) in low-risk pregnancies remain limited. This study investigates how maternal and fetal factors influence movement perception in normotensive, singleton pregnancies, aiming to improve early detection of fetal compromise. A cohort of 150 women was analyzed, with most aged 25–29 years and an even distribution of first-time and experienced mothers. Reduced fetal movements were associated with adverse perinatal outcomes. Specifically, 14.7% of neonates had low birth weight, 13.3% experienced stillbirth, 13.3% had intrauterine growth restriction (IUGR), and 6.6% suffered from hypoglycemia. Additionally, 15.3% of infants required Neonatal Intensive Care Unit (NICU) admission. Despite these concerns, most pregnancies ended with favorable APGAR scores and without complications (86.7% normal outcomes). The findings support maternal movement monitoring as a valuable tool, especially in low-risk pregnancies, while acknowledging limitations such as false-positive results. The results highlight the need for ongoing vigilance, individualized assessment, and prompt action when DFM is reported. Educating mothers about the significance of fetal movement and encouraging timely reporting can improve detection and management of compromised fetuses.

Keywords: Apgar score, Decreased fetal movement, intrauterine growth retardation, Neonatal Intensive Care Unit, Stillbirth.

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Introduction

Maternal perception of fetal movements serves as a simple, low-cost, and valuable screening method for assessing fetal well-being and is considered to play a role in enhancing maternal-fetal attachment [1]. Decreased fetal movement (DFM) is a common concern among pregnant women, with studies indicating that up to 51% of women, such as those in Norway, report at least one episode of perceived reduction in fetal activity during pregnancy [2-4]. Despite the prevalence, only 4–15% of these women seek medical attention when such concerns arise [5, 6]. Several studies have demonstrated that reported DFM is associated with an increased risk of adverse perinatal outcomes, including stillbirth, intrauterine growth restriction, fetal compromise, and preterm birth [2]. Evaluation of fetal well-being through movement monitoring has, in multiple studies, contributed to a reduction in perinatal morbidity and mortality, as maternal awareness and timely response to DFM can facilitate the early identification and management of fetuses at risk [2, 7, 8]. Conversely, some investigations have questioned the efficacy of DFM monitoring as a reliable screening modality, citing high false-positive rates and limited predictive value [4]. Fetal movement patterns are influenced by a range of physiological and anatomical factors [2, 9]. These include characteristics related to the fetus, such as amniotic fluid volume, placental location, presentation, and sex. In addition, maternal factors such as smoking, primiparity, elevated body mass index, and physical exertion have been associated with variations in perceived fetal activity [2, 10]. The existing literature lacks sufficient data regarding maternal perception of DFM in uncomplicated, low-risk pregnancies that result in healthy full-term neonates [2, 11, 12]. The incidence of DFM in this population, as well as the contributing maternal and fetal factors, remains inadequately studied [2, 3, 13, 14]. A better understanding of these influencing factors is essential for accurate interpretation of DFM reporting, optimizing clinical decision-making, and identifying potential sources of false-positive

findings in the application of this screening tool. Only a limited number of studies have evaluated the simultaneous impact of maternal and fetal factors on the perception of fetal movement [14-16]. Furthermore, the influence of variables such as maternal and fetal position remains poorly understood, and findings related to parity, maternal body habitus, placental location, and amniotic fluid volume remain inconsistent across studies [17]. This study was undertaken to investigate the maternal and fetal factors that influence maternal perception of fetal movements in normotensive, singleton, low-risk pregnancies culminating in the birth of healthy term neonates. The objective is to enhance the interpretative value of fetal movement monitoring as a tool for the early detection of fetal compromise.

Material and Methods

Study Design and Setting: This prospective cohort study titled "Maternal Perception of Decreased Fetal Movements and its Perinatal Outcome" was conducted over one and a half years at the Postgraduate Department of Gynaecology and Obstetrics, Lalla Ded Hospital, Government Medical College Srinagar. Institutional ethical approval was obtained and written informed consent was taken from each participant before enrolment.

Participants: The study included pregnant women at term gestation (37 to 42 weeks) who were certain of their last menstrual period dates. Women who reported a decrease in fetal movements after having previously perceived normal movements were enrolled as cases, while women with continuous perception of normal fetal movements served as controls.

Women with polyhydramnios, obesity, gross congenital fetal malformations, diagnosed intrauterine fetal demise, or those in active labour at the time of enrolment were excluded.

Sample Size and Grouping: A total of 300 pregnant women were enrolled in the study, with 150 women constituting the case group and 150 women forming the control group.

Assessment of Fetal Movements: Decreased fetal movements were defined as a maternal perception of reduced frequency of fetal movements compared to previous experience. The Cardiff "Count-to-Ten" method was used to quantify fetal movements, where mothers tracked fetal movements until they counted ten within a specified period.

Follow-up and Outcome Measures: All participants were followed from enrolment until hospital discharge after delivery. The mode of delivery was recorded and categorized as normal vaginal delivery, assisted vaginal delivery, or cesarean section. Perinatal outcomes documented included live birth, stillbirth, low Apgar score (less than 7 at five minutes), perinatal asphyxia, and neonatal hypoglycemia, admission to the neonatal intensive care unit (NICU), neonatal death, or absence of complications.

Statistical Analysis: Data were entered into Microsoft Excel and analyzed using SPSS version 20.0. Categorical variables were compared using the Chi-square test. Logistic regression analysis was used to evaluate the association between maternal perception of decreased fetal movements and perinatal outcomes. A p-value of less than 0.05 was considered statistically significant.

Results

The present study analyzed 150 normotensive, singleton, low-risk pregnancies culminating in the birth of healthy term neonates. The demographic and clinical characteristics of the study population are detailed below.

Maternal Age and Parity Distribution: The age distribution of the cohort revealed a predominant representation of women aged 25 to 29 years, accounting for 53.7% (n=81) of the sample. Subjects aged 30 to 34 years comprised 34.3% (n=51), while those aged 35 years or older constituted the smallest subgroup at 11.9% (n=18). The overall mean maternal age was 30.3 years with a standard deviation of 3.64 years, spanning a range from 21 to 40 years.

Regarding obstetric history, the parity distribution indicated that 55.3% (n=83) of the participants were primigravidae, whereas multiparous women constituted 44.7% (n=67) of the sample.

Age and Gravidity Distribution: The study included 150 pregnant women who reported decreased fetal movements. Their ages ranged from 21 to 40 years, with a mean age of 30.3 ± 3.64 years. Majority of patient's age ranged between 25-29 years 53.7% (n=81). The majority of women (53.7%) were aged between 25 and 29 years. Regarding gravidity, 55.3% of the participants were primigravida, while 44.7% were multigravida.

Table 1: Age distribution of patients under study

Age (Years)	Number	Percentage
25-29	81	53.7
30-34	51	34.3
≥35	18	11.9
Total	150	100
Mean ± S.D. (Range)= 30.3 ± 3.64 (21-40)		

Table 2: Distribution of patients under study based on gravidity

Parity	Number	Percentage
Primi gravida	83.0	55.3
Multi gravida	67.0	44.7
Total	150.00	100

Fetal Heart Sound Assessment: Auscultation findings demonstrated normal fetal heart sounds in the majority of cases (86.7%, n=130). Abnormal fetal heart sounds, suggestive of potential fetal compromise, were detected in 13.3% (n=20) of pregnancies, emphasizing the importance of fetal monitoring in the context of maternal perception of decreased fetal movements.

Table 4: Auscultation (%)

Auscultation	Frequency	Percent
Normal fetal heart sound	130	86.7
Abnormal fetal heart sound	20	13.3
Total	150	100

Mode of Delivery

The mode of delivery distribution revealed a slight predominance of vaginal births, occurring in 52.0% (n=78) of cases. Cesarean delivery was performed in 48.0% (n=72) of the cohort, particularly among women reporting decreased fetal movements, which may reflect clinical decisions influenced by antenatal concerns.

Table 5: Mode of Delivery among study patients

Mode of delivery	Frequency	Percent
Vaginal Delivery	78	52.0
Cesarean Delivery	72	48.0
Total	150	100.00

Perinatal Outcomes:

Analysis of neonatal birth weight indicated that 14.7% (n=22) were classified as low birth weight, reinforcing the association between decreased fetal movements and compromised fetal growth. Similarly, stillbirth occurred in 13.3% (n=20) of cases, highlighting the critical need for vigilant fetal movement monitoring.

Intrauterine growth retardation (IUGR) was identified in 13.3% (n=20) of neonates, signifying a notable prevalence within this population, which may correlate with maternal reports of decreased fetal movements. Neonatal hypoglycemia was documented in 6.6% (n=10) of newborns, a complication that can have immediate and long-term sequelae.

Regarding the requirement for advanced neonatal care, 15.3% (n=23) of infants necessitated admission to the Neonatal Intensive Care Unit (NICU), indicating substantial perinatal morbidity associated with the observed clinical parameters.

Low Birth Weight: Low birth weight (<2500 grams) was observed in 14.7% of neonates among the cases.

Table 6: Low birth weight among study patients

Low Birth	Frequency	Percent
No	128	85.3
Yes	22	14.7
Total	150	100.0

Stillbirth: There were 13.3% stillbirths in the study group.

Table 7: Stillbirth weight among study patients

Stillbirth	Frequency	Percent
No	130	86.7
Yes	20	13.3
Total	150	100.0

Table 8: Intrauterine growth retardation (IUGR) among study patients

IUGR	Frequency	Percent
No	130	86.7
Yes	20	13.3
Total	150	100.0

Table 9: Hypoglycemia among study patients

IUGR	Frequency	Percent
No	140	93.4
Yes	10	6.6
Total	150	100.0

Table 10: NICU Admission among study patients

IUGR	Frequency	Percent
No	127	84.7
Yes	23	15.3
Total	150	100.0

Apgar Scores: The immediate postnatal condition evaluated via the APGAR score showed that 43.4% (n=65) of neonates achieved an optimal score of 8/10, while 42.0% (n=63) recorded an APGAR score of 7/10.

Table 11: APGAR score among the study patients

APGAR Score	Count	Percent
8/10	65	43.4
7/10	63	42
2/10	20	13.3
6/10	2	1.3
Total	150	100

Pregnancy Outcomes: Out of the 150 pregnancies studied, 86.7% resulted in normal outcomes without complications, whereas 13.3% experienced abnormal outcomes, including perinatal death and complications requiring intervention.

Table 12: Pregnancy outcomes of study patients

Pregnancy outcome	Frequency	Percent
Abnormal	20	13.3
Normal	130	86.7
Total	150	100.0

Discussion

This study offers valuable insights into the maternal and fetal determinants affecting the perception of fetal movements in normotensive, singleton, low-risk pregnancies resulting in healthy term neonates. Recognizing fetal movement is a simple and effective way for mothers and healthcare providers to monitor a baby's well-being. Most women in this study were between 25 and 29 years old, and both first-time and experienced mothers were included, so the findings apply to a broad group of expectant women. The predominance of normal fetal heart sounds and vaginal deliveries indicates generally favorable perinatal outcomes. Nonetheless, the occurrence of abnormal fetal heart sounds in 13.3% of cases, along with similar proportions of low birth weight, stillbirth, and intrauterine growth retardation, supports prior evidence linking decreased fetal movements with adverse perinatal events [18-20].

These findings corroborate earlier studies demonstrating that self-reported reductions in fetal movements serve as a warning sign for fetal compromise and underscore the necessity of prompt clinical evaluation [4, 21]. Notably, a portion of the babies experienced complications

such as hypoglycemia, and a considerable number (15.3%) required care in the Neonatal Intensive Care Unit (NICU). These outcomes underline the importance of mothers reporting changes such as less movement, as these can signal potential problems and help doctors respond quickly to keep both mother and baby safe [22, 23].

These data emphasize the critical role of timely detection and intervention following reports of diminished fetal movement. Still, most of the babies had good APGAR scores, and most of the pregnancies ended without any issues. This shows that paying attention to baby movements is useful, especially in pregnancies with no obvious risks [24-26]. However, the study also points out that relying on movement alone isn't perfect—it can sometimes give false alarms.

That's why monitoring movement should be combined with other checks and education for mothers to ensure babies at risk are spotted early and get the help they need [27, 28]. By looking at both maternal and fetal influences on movement, this research adds valuable information to the field and encourages doctors and nurses to be attentive to mothers' concerns. This approach can lead to better detection and care of any problems, helping ensure healthy outcomes for newborns.

Conclusion

This study shows that paying attention to how mothers perceive their baby's movements can help detect possible problems early, even in pregnancies that are considered low risk. Most mothers had normal outcomes, but a notable number of babies had complications like hypoglycemia or required NICU care, which highlights the need for prompt action when decreased movements are reported. While counting movements is not a flawless method—and sometimes gives false alarms—it remains a practical and helpful tool when combined with clinical follow-up and clear communication with mothers. Encouraging mothers to report any concerns and following up with appropriate checks can improve care and outcomes for both mother and child.

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