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Original Research Article

Fetal Outcome in Pregnant Women with Decreased Fetal Movement at Term Pregnancies

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Abstract: *Decreased fetal movement (DFM) in term pregnancies is an essential clinical warning sign that may be associated with adverse perinatal outcomes, including fetal compromise and stillbirth. Early identification and evaluation of fetal outcomes in women presenting with DFM are crucial for optimizing maternal and neonatal care.* ***Objective:*** *To determine fetal outcomes in women presenting with decreased fetal movement in term pregnancies at Mardan Medical Complex, Peshawar.* ***Methods:*** *This cross-sectional study was conducted in the Department of Obstetrics and Gynecology, Mardan Medical Complex, Mardan, from August 15, 2024, to February 15, 2025. A total of 142 women aged 18–40 years, with gestational age greater than 37 weeks, presenting with decreased fetal movement were included. Decreased fetal movement was defined as the perception of fewer than 10 fetal movements over two hours on two separate occasions. Fetal outcomes assessed included stillbirth and a one-minute Apgar score <5. Data were analyzed using SPSS version 25, and outcomes were expressed as frequencies and percentages. Associations were evaluated using appropriate statistical tests, with a p-value <0.05 considered statistically significant.* ***Results:*** *The mean maternal age was 29.44 ± 6.72 years. A low one-minute Apgar score (<5) was observed in 24 neonates (16.9%), while stillbirth occurred in 7 cases (4.9%). A statistically significant association was found between maternal body mass index (BMI) >25.9 kg/m² and low Apgar score (p < 0.001), with 21 (87.5%) neonates with low Apgar scores born to mothers in this BMI category.* ***Conclusion:*** *Low Apgar score was the most common adverse fetal outcome among women presenting with decreased fetal movement at term, followed by stillbirth. An increased maternal BMI was significantly associated with low Apgar scores. Careful monitoring and timely intervention in women presenting with DFM, particularly those with elevated BMI, may help reduce adverse fetal outcomes.*

Keywords: Decreased Fetal Movements, Stillbirth, Apgar Score, Body Mass Index, Perinatal Outcome, Term Pregnancy

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Introduction

The systematic recording of foetal movements during gestation provides a woman with a means to independently evaluate foetal wellbeing, without requiring a clinician (1, 2). During the 16th to 20th weeks of pregnancy, women begin to feel their baby's movements. As the pregnancy progresses, characteristics of foetal movements can change due to neurological development and foetal maturation (3-5). A study included 33 cases of DFM, with the following comorbidities: diabetes, hypothyroidism, and hypertension, with occurrences of 6.1%, 3.1% and 3.1% respectively. Complications identified included anaemia, preeclampsia, and PROM, with occurrences of 6.7%, 7.9% and 6.7%, respectively. In 34.4% of cases, the first episode of DFM was observed prior to 28 weeks of pregnancy. Expected vaginal delivery took place in 48.4% of cases, while IUFD occurred in 53.3% of instances. Low APGAR scores were observed in 77.8% of neonates with stillbirths, making up 12.1% (6).

Another study indicated that the foetal outcomes in women who experienced DFMs during term pregnancies included a low Apgar score in 48.42% of cases and a stillbirth rate of 38% 7. Tracking foetal movement counts enables healthcare providers to take timely action, which improves perinatal outcomes (8, 9). The efficacy of monitoring foetal movements as a means of protecting against adverse pregnancy outcomes remains a contentious issue. A recent investigation raised doubts about the effectiveness of this approach, suggesting it may lead to an increase in treatments that offer no significant benefits (10-12).

DFM at term is a common clinical complaint and an essential indicator of potential fetal compromise, often associated with adverse perinatal outcomes. Early identification and timely evaluation of DFM can significantly reduce preventable perinatal morbidity and mortality. Understanding the fetal outcomes in pregnant women presenting with DFM at term is therefore crucial to guide clinical decision-making and enhance fetal wellbeing through prompt obstetric management. This study aims to evaluate the relationship between DFM and perinatal outcomes to contribute evidence for improving maternal and neonatal care practices.

Methodology

The present cross-sectional study was conducted in the Department of Obstetrics & Gynecology, Mardan Medical Complex, Mardan. Before commencing the study, ethical approval was obtained from the hospital's IRB.

The sample size calculated for this study was 142, determined using the WHO sample size calculator with 95% confidence and an 8% margin of error, based on an 8% incidence of stillbirth among women with decreased fetal movements at term (6). Consecutive non-probability sampling was used to select participants.

Pregnant women (aged 18 to 40 years) with gestational age >37 weeks and who reported decreased fetal movements were included in the study. Decreased fetal movement was perceived as fewer < 10 fetal movements (rolls, flutters, or kicks) over two hours while lying in the left lateral position. This pattern needed to be reported on two separate occasions, two days apart. Women with multiple gestations, pre-existing diabetes, hypertension, and pregnancies complicated by congenital fetal anomalies were excluded.

After taking consent from the patients, their demographic data was noted. Patients were assessed for fetal outcomes such as stillbirth, the delivery of a fetus with no signs of life, such as a heartbeat or movement, and a low APGAR score, which was a score of less than 5 at one minute after birth, as assessed by the standard Apgar scoring system. All the assessments were conducted under the supervision of a consultant.

Data were entered and analyzed using SPSS 25. Age, BMI, and gestational age were calculated using the mean and standard deviation.

Fetal outcomes, education, employment, socioeconomic status, and residence were evaluated using frequencies and percentages. The chi-square test was applied to stratify fetal outcomes by BMI, with p-values ≤ 0.05 considered statistically significant.

Results

This study included 142 women. The mean maternal age was 29.44 ± 6.72 years. Mean gestational age was 40.03±1.41 weeks, and the average Body Mass Index (BMI) was 24.69 ± 1.69 kg/m².

Demographic characteristics of the patients are shown in Table 1.

Table 1: Demographics

Demographics		n	%
Age groups (Years)	18 to 30	75	52.8%
	> 30	67	47.2%
Socioeconomic status	Lower class	56	39.4%
	Middle class	65	45.8%
	Upper class	21	14.8%
Residence	Rural	65	45.8%
	Urban	77	54.2%
Education status	Literate	60	42.3%
	Illiterate	82	57.7%
Employment status	Employed	42	29.6%
	Unemployed	100	70.4%

Concerning fetal outcomes, a low Apgar score was observed in 24 neonates (16.9%). Around 118 (83.1%) neonates had no low Apgar score. There were seven stillbirths (4.9%), while 135 (95.1%) resulted in a live birth (Table II).

An analysis of fetal outcomes with maternal BMI showed that 21 of the 24 cases (87.5%) occurred in women with a BMI greater than 25.9 (P < 0.001). For stillbirth, 4 of the 7 cases (57.1%) were in the higher BMI category, but this association was not statistically significant (P = 0.07) (Table III).

Table 2: Fetal outcomes

Fetal outcomes		n	%
Low APGAR score	Yes	24	16.9%
	No	118	83.1%
Still birth	Yes	7	4.9%
	No	135	95.1%

Table 3: Association of fetal outcomes with BMI

Fetal outcomes		BMI (Kg/m2)				*P value
		< = 25.9		> 25.9		
		n	%	n	%	
Low APGAR score	Yes	3	12.5%	21	87.5%	< 0.001
	No	100	84.7%	18	15.3%	
Still birth	Yes	3	42.9%	4	57.1%	0.07
	No	100	74.1%	35	25.9%	
***Chi-Square**						

Discussion

In the present study, the mean age of the patients was 29.44 years, which aligns closely with the mean age of 28.16 years reported by Bashir et al. and falls within the typical childbearing age observed in other studies (13, 14). The mean BMI of 24.69 kg/m² indicates a population on the tip of the overweight category. This is somewhat lower than the mean BMI of 27.44 reported by Bashir et al., but higher than the 21.4 kg/m² noted in the control group of Ryo et al. (13, 15). This suggests that pre-pregnancy or early-pregnancy nutritional status may be an essential background factor.

Socioeconomically, the study population mostly belonged to the middle and lower classes, with a significant majority of women being illiterate and unemployed. Financial constraints and lower health literacy could delay seeking medical attention for DFM, a concern highlighted by Nama et al., who noted that delayed reporting is a critical factor in adverse outcomes (16). The high rate of illiteracy further emphasises the need for clear, non-written communication strategies when educating pregnant women about fetal movement monitoring.

Regarding fetal outcomes, the incidence of a low Apgar score in this study was 16.9%. This finding is consistent with Bashir et al., who observed low Apgar scores in 19% of neonates at one minute and 11.2% at five minutes, while Ghani et al. reported a rate of 19.9% (13, 17). Qadir et al. also noted a 15% rate of low Apgar scores in the study group (18). This consistency across multiple studies, including the present one, affirms that DFM is a significant clinical marker for adverse fetal outcome around the time of birth.

The stillbirth rate of 4.9% in this cohort is higher than the 0.9% reported by Sahhaf et al (14). However, it is consistent with the evidence from the systematic review by Carroll et al., which found that DFM is associated with a more than threefold increase in the odds of stillbirth (19). Another study reported that RFM is associated with an insufficient placenta, which eventually leads to stillbirth (20).

It was observed that 87.5% of neonates with a low Apgar score were born to mothers with higher BMI. This finding is supported by Ryo et al., who also reported a higher BMI in women having DFM.[15] Bradford et al. documented that maternal BMI was a notable factor associated with adverse outcomes of DFM (21). A higher BMI could serve as a potential red flag, prompting a lower threshold for intensive fetal surveillance and consideration for timely delivery.

This study has a few limitations. This study had a small sample size, which may have limited the generalisability of the findings. The definition of DFM in this study was based on maternal perception, which is subjective and can be influenced by several factors. The study did not assess detailed information on the timing between the perception of DFM

and presentation to the hospital, nor and the presence of specific obstetric comorbidities such as preeclampsia or gestational diabetes.

Conclusion

In conclusion, in this study, low APGAR score was the most prevalent fetal outcome in patients with decreased fetal movement at term pregnancies, followed by stillbirth. A statistically significant relation was observed between low APGAR score and increased BMI.

Declarations

Data Availability statement

All data generated or analysed during the study are included in the manuscript.

Ethics approval and consent to participate

Approved by the department concerned. (IRB-528/BKMC)

Consent for publication

Approved

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Conflict of interest

The authors declared no conflict of interest.

Author Contribution

FS (TMO)

Contributed To Study Design, Data Collection, and Initial Manuscript Drafting, Literature Review, and Manuscript Editing, Performed Statistical Analysis and Contributed to the Interpretation of Results

NA (Professor)

Helped in Methodology Development, Critical guidance, Data Organization, Results Compilation, Proofreading, and Final Revisions of the Manuscript

All authors reviewed the results and approved the final version of the manuscript. They are also accountable for the study's integrity.

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