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Perinatal Outcome in Women Complaining Reduced Fetal Movements

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ABSTRACT

Background: Reduced fetal movements is a very common complain in late pregnancy, and many women come to hospital when they feel the baby not moving like before. Sometimes this change is harmless, but sometimes it means placenta not working good and baby getting stress, so outcomes like low Apgar score, low birth weight and need of neonatal intensive care unit can happen. **Objective:** To determine the frequency of perinatal outcomes in women with reduced fetal movements at Ayub Teaching Hospital Abbottabad. **Study Design:** Cross sectional study. **Duration and Place of Study:** Study was done from September 2024 to March 2025 in Department of Obstetrics and Gynaecology, Ayub Teaching Hospital, Abbottabad. **Methodology:** There was 107 pregnant women, age 18–40 years, single pregnancy, more than 28 weeks, who came with reduced fetal movements. Reduced fetal movements mean less than 10 movements in 2 hours on two different days. All women were followed till delivery. Babies was checked for low Apgar score at 5 minutes, low birth weight, and need for neonatal intensive care unit admission. Chi square test and Fisher exact test was used for checking association, and $p \leq 0.05$ was taken important. **Results:** Mean age was 28.18 ± 6.51 years and mean gestational age was 33.72 ± 3.86 weeks. Mean parity was 2.87 ± 1.05 and mean body mass index was 28.65 ± 1.69. Most women were from rural area (59.8%) and from low socioeconomic group (54.2%). Low Apgar score was seen in 20 babies (18.70%). Low birth weight happened in 15 babies (14.00%). Neonatal intensive care unit admission was needed for 18 babies (16.80%). **Conclusion:** Women who come with reduced fetal movements had more chances of low Apgar score, low birth weight and need of neonatal intensive care unit.

INTRODUCTION

Reduced fetal movements is a common complain in late pregnancy and many women come to hospital because they feel baby is not moving like before.[1] It is usually describe as decrease in strength, number or pattern of kicks and rolls that mother feel in her abdomen, often after 28 weeks of gestation.[2] This change can be temporary and benign, but it can also be one of the first signs that placenta is not working well or that fetus is under stress, especially due to chronic hypoxia or growth restriction.[3] Many guidelines tell that mother should be educated about normal movement pattern and should report early any reduction, because delay in reporting may lead to worse outcome.[4] When a woman come with reduced fetal movements, doctor usually do history, physical exam, cardiotocography and ultrasound to check growth, amniotic fluid and blood flow, but still sometimes reduced movements happen before any abnormal test, so it is consider an important warning symptom that should not be ignore in antenatal care.[5]

Perinatal outcome in women complaining reduced fetal movements is often less favourable, and one of the main concern is low Apgar score at birth.[6] Reduced movements may reflect long-standing fetal compromise, so even when delivery is done on time, baby can come out with poor muscle tone, weak breathing effort and low heart rate, which give a low Apgar at 1 and 5 minute.[7] Many studies show higher proportion of babies with Apgar less than 7 among mothers who present with reduced movements compared with mothers who do not.[8] This is probably because fetus already experience hypoxia in uterus, leading to metabolic acidosis and depression of central nervous system at the time of birth.[9] In some cases emergency caesarean section is needed after non-reassuring fetal heart pattern, but despite this intervention, the Apgar may stay low and baby need resuscitation, oxygen, bag and mask ventilation or even intubation in delivery room, which increase early neonatal morbidity and anxiety for parents.[10]

Another important perinatal outcome in women presenting with reduced fetal movements is low birth weight and the need for neonatal intensive care unit admission.[11] Many of these fetuses are small for gestational age due to placental insufficiency, so they are

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born with weight below the 10th centile, sometimes even very low birth weight when pregnancy is end early because of abnormal fetal testing.[12] Low birth weight babies have more problem with temperature control, low blood sugar, feeding difficulty and infection, so they are more often admitted to NICU for close monitoring and support.[13] Also, babies with history of reduced movements and abnormal Doppler may need NICU care even if weight is normal, because they are at risk of respiratory distress, hypoxic ischemic encephalopathy and seizures.[14]

In a study by Bashir S, et al. has shown that frequency of low Apgar score was 11.2% in women with reduced fetal movements (RFM).[15] In another study by McCarthy CM, et al. has shown that frequency of neonatal intensive care unit admission was 28% in women with reduced fetal movements.[16] In a study by Rani H, et al. has shown that frequency of low birth weight was 20% and 38.12% went into neonatal intensive care unit, in women with reduced fetal movements.[17]

There is need to do this study in Abbottabad because many pregnant women here report reduced fetal movements but there is not enough local data to understand how serious the outcomes are. Hospitals in Abbottabad serve both urban and rural population, and many mothers come late or with limited awareness, so knowing the perinatal outcome can help doctors to make better plans for early detection and management. Also, the health system and antenatal care practices in this region are different from big cities, so findings from other places may not fit well here. By doing this study, we can know the real burden of low Apgar score, low birth weight and NICU admission in women complaining reduced fetal movements in Abbottabad and improve maternal and neonatal care.

METHODOLOGY

This study had been carried out in the Department of Obstetrics and Gynaecology of Ayub Teaching Hospital Abbottabad, and it continued from 15-09-2024 till 15-03-2025. Approval for conducting the study had already been granted by the hospital's ethical review authority before starting patient recruitment (Approval Code / Ref. No. RC-EA-2024/026). The number of participants were 107, which was obtained through the WHO-based statistical calculator by using 95% confidence level, 6% margin of error, and an estimated presence of low Apgar score of 11.2% among women having reduced fetal movements.[15] Patients had been approached by a non-probability consecutive method as they reported to the unit. Women had been included of age 18 to 40 years, had singleton pregnancy on ultrasound, gestational age more than 28 weeks based on LMP any parity, and those presenting with Reduced fetal movements according to the given criteria. Women were excluded if they had any earlier record of diabetes, hypertension, congenital malformation seen on scan, or history suggesting PROM. Reduced fetal movements referred to fewer than 10 fetal movements felt by the woman in 2 hours while lying on the left side with a hand placed on her abdomen, observed on two separate times spaced by 2 days. Before any information was taken and written consent was taken from every woman after the study aim was briefly explained and assurance was given about privacy and no added risk. Basic demographics were gathered for each woman, which involved Age, gestational age, parity, residential status, socioeconomic status and BMI.

A short obstetric history had been recorded, after which blood pressure was checked and the antenatal appearance at presentation was noted. Later a complete Biophysical Profile was conducted. During this profile the mother own feeling of fetal movements had been recorded by asking her to report any kick, roll, flutter or similar sensation. Every participant had been monitored until after delivery. Following childbirth information regarding Low Apgar score, Low Birth Weight, and neonatal intensive care unit admission had been written down by the researcher on the prepared Performa. Low Apgar score meant a 5-minute Apgar value ≤5. Low birth weight meant a recorded baby weight of <2500 g measured on a weighing scale. Neonatal intensive care unit admission meant shifting of the baby to NICU due to fetal distress as identified post-delivery.

The collected data was entered to IBM-SPSS version 28 for analysis. Categorical variables such as residential status, profession, education level, socioeconomic status, Low Apgar score, Low Birth Weight and neonatal intensive care unit admission were presented as frequencies and percentages. Continuous variables including age, gestational age, BMI, monthly income and parity were expressed as mean ± SD or as median (IQR) depending on normality as checked by the Shapiro-Wilk test. Perinatal outcomes were then separated by categories of age, gestational age, BMI, and parity, and chi-square test or Fisher's exact test was applied with p ≤0.05 considered meaningful.

RESULTS

The mean age of participants were 28.18 ± 6.51 years, while the average gestational age at presentation was found to be 33.72 ± 3.86 weeks. The parity among study population showed mean value of 2.87 ± 1.05, and body mass index was recorded as 28.65 ± 1.69. When residential distribution was analyzed, majority of women belongs to rural areas with 64 patients (59.8%), whereas 43 patients (40.2%) was from urban settings. Regarding socioeconomic status, more than half of participants falls in low socioeconomic category with 58 cases (54.2%), followed by middle socioeconomic status comprising 38 cases (35.5%), while only 11 patients (10.3%) was belonging to high socioeconomic category (as shown in Table-I).

Table I

Patient Demographics

Demographics	Mean ± SD
Age (years)	28.18 ± 6.51
Gestational Age (weeks)	33.72 ± 3.86
Parity	2.87 ± 1.05
BMI	28.65 ± 1.69
Residential Status	
Rural n (%)	64 (59.8%)
Urban n (%)	43 (40.2%)
Socioeconomic Status	
Low n (%)	58 (54.2%)
Middle n (%)	38 (35.5%)
High n (%)	11 (10.3%)

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Low Apgar scores was observed in 20 neonates which represents 18.70% of total cases, while 87 newborns (81.30%) had normal Apgar scores. Low birth weight was documented in 15 cases constituting 14.00% of deliveries, whereas 92 neonates (86.00%) was having normal birth weight. Admission to neonatal intensive care unit was required for 18 babies (16.80%), while remaining 89 neonates (83.20%) did not requires NICU admission (as shown in Table-II).

Table II

Perinatal Outcomes in Women Complaining Reduced Fetal Movements

Outcome	Frequency	%age
Low Apgar Score		
Yes	20	18.70%
No	87	81.30%
Low Birth Weight		
Yes	15	14.00%
No	92	86.00%
NICU Admission		
Yes	18	16.80%
No	89	83.20%

When age was considered, among women aged ≤30 years, low Apgar scores was present in 12 cases (17.6%) compared to 56 cases (82.4%) without low scores, while in women >30 years, 8 cases (20.5%) had low Apgar scores versus 31 cases (79.5%) without, showing no statistically significant association with p-value of 0.714. For low birth weight outcome, 9 cases (13.2%) in ≤30 years group had this complication compared to 59 cases (86.8%) without, and 6 cases (15.4%) in >30 years group versus 33 cases (84.6%) without, with p-value being 0.758. NICU admission in ≤30 years group was needed in 12 cases (17.6%) against 56 cases (82.4%) not needing admission, while >30 years group showed 6 cases (15.4%) requiring admission versus 33 cases (84.6%) not requiring, with p-value of 0.763 (as shown in Table-III). Gestational age stratification demonstrates that in women with ≤36 weeks gestation, 12 cases (15.8%) had low Apgar scores while 64 cases (84.2%) did not, whereas in >36 weeks group, 8 cases (25.8%) had low scores versus 23 cases (74.2%) without, yielding p-value of 0.228. Low birth weight in ≤36 weeks group was seen in 8 cases (10.5%) compared to 68 cases (89.5%) without, and in >36 weeks group 7 cases (22.6%) versus 24 cases (77.4%) without, with p-value of 0.103. NICU admission was required by 12 neonates (15.8%) in ≤36 weeks group against 64 (84.2%) not requiring, while >36 weeks group had 6 cases (19.4%) requiring admission versus 25 cases (80.6%) not requiring, showing p-value of 0.655 (as shown in Table-III). Parity-based analysis reveals that women with parity ≤2 had 4 cases (10.0%) with low Apgar scores compared to 36 cases (90.0%) without, while parity >2 group showed 16 cases (23.9%) with low scores versus 51 cases (76.1%) without, with p-value of 0.122 using Fischer Exact Test. For low birth weight, parity ≤2 group had 6 cases (15.0%) affected and 34 cases (85.0%) unaffected, whereas parity >2 group showed 9 cases (13.4%) affected versus 58 cases (86.6%) unaffected, with p-value being 0.821. NICU admission in parity ≤2 was needed by 7 neonates (17.5%) while 33 (82.5%) did not need admission, and in parity >2 group, 11 cases (16.4%) required admission against 56 cases (83.6%) not requiring, with p-value of 0.885 (as shown in Table-III).

Table III

Association of Perinatal Outcomes with Maternal Factors

Maternal Factors		Low Apgar Score		p-value	Low Birth Weight		p-value	NICU Admission		p-value
		Yes n(%)	No n(%)		Yes n(%)	No n(%)		Yes n(%)	No n(%)	
Age (years)	≤30	12 (17.6%)	56 (82.4%)	0.714	9 (13.2%)	59 (86.8%)	0.758	12 (17.6%)	56 (82.4%)	0.763
	>30	8 (20.5%)	31 (79.5%)		6 (15.4%)	33 (84.6%)		6 (15.4%)	33 (84.6%)	
Gestational Age (weeks)	≤36	12 (15.8%)	64 (84.2%)	0.228	8 (10.5%)	68 (89.5%)	0.103	12 (15.8%)	64 (84.2%)	0.655
	>36	8 (25.8%)	23 (74.2%)		7 (22.6%)	24 (77.4%)		6 (19.4%)	25 (80.6%)	
Parity	≤2	4 (10.0%)	36 (90.0%)	0.122*	6 (15.0%)	34 (85.0%)	0.821	7 (17.5%)	33 (82.5%)	0.885
	>2	16 (23.9%)	51 (76.1%)		9 (13.4%)	58 (86.6%)		11 (16.4%)	56 (83.6%)	

***Fischer Exact Test**

DISCUSSION

Low Apgar scores was observed in 20 neonates (18.70%). This occurs because reduced fetal movements indicates fetal hypoxia and compromise. When fetus experiences oxygen deficiency, it decreases movements to conserve energy, and this chronic hypoxic state leads to poor adaptation at birth resulting in low Apgar scores. Low birth weight was documented in 15 cases (14.00%). Reduced fetal movements often indicates placental dysfunction affecting nutrient transfer to fetus. The inadequate placental perfusion results in growth restriction where fetus does not achieves optimal growth, leading to low birth weight at delivery. NICU admission was required in 18 neonates (16.80%). This increased rate reflects underlying fetal distress associated with decreased movements. Neonates experiencing intrauterine compromise requires intensive care after birth due to poor physiological reserves and respiratory distress. The stratified analysis shows no statistically significant association between maternal factors and perinatal outcomes (p>0.05). However, women with parity >2 had higher frequency of low Apgar scores (23.9%) compared to parity ≤2 (10.0%) with p-value of 0.122. This may be due to grand multiparity complications including uterine dysfunction and placental abnormalities affecting fetal oxygenation at birth.

The current study findings regarding low Apgar scores in 20 neonates (18.70%) shows consistency with several

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previous investigations. Qadir M *et al.* reported similar frequency of low Apgar scores in 15% of cases [18], while Koirala P *et al.* documented 15.8% incidence.[19] However, Bhuvaneshwari KM *et al.* observed higher rate of 35.5%,[20] and Ali MSA *et al.* reported 77.8%.[21] This variation may be attributed to differences in study populations and timing of intervention allowing progression of fetal compromise.

Low birth weight was documented in 15 cases (14.00%) in present study, which demonstrates lower incidence compared to Rani H *et al.* who reported 20%.[17] The variation may be explained by differences in maternal nutritional status and prevalence of chronic placental insufficiency across populations.[22]

NICU admission was required in 18 neonates (16.80%) in current study. This finding shows similarity with Qadir M *et al.* who documented 20%,[18] and Koirala P *et al.* who reported 21.9%.[19] However, higher rates was observed by Bhuvaneshwari KM *et al.* with 40%,[20] Rani H *et al.* with 38.12%,[17] and Raju AR *et al.* reporting 27.7%.[23] The lower NICU admission rate possibly indicates better fetal surveillance and timely interventions.

The stratified analysis reveals no significant association between maternal age and perinatal outcomes (p=0.714). This may be explained by relatively young mean age of 28.18 ± 6.51 years in study population with lower prevalence of age-related complications. Parity analysis demonstrates trend where women with parity >2 had higher frequency of low Apgar scores (23.9%) compared to parity ≤2 (10.0%), though not significant (p=0.122). This partially aligns with Hameed BH who reported 71% multigravidas,[24] and Rani H *et al.* who found 51.25% primigravida.[17] However, Qadir M *et al.* reported 79% primiparous women [18] and Nama N *et al.* documented 72.7% primigravida,[25] suggesting nulliparity itself represents risk factor due to inadequate recognition of normal fetal movement patterns.

The overall lower rates of adverse outcomes compared to Ali MSA *et al.* who reported 53.3% intrauterine fetal death [21] and Raju AR *et al.* with 12.2% IUD,[23] may reflects differences in healthcare access and quality of antenatal surveillance. Bhatia M *et al.* reported only 0.5% stillbirths in UK study,[26] indicating well-resourced healthcare systems achieves better outcomes.

The present study has several limitations that needs to be acknowledged. First, this was single center study conducted at one institution which may limits generalizability of findings to broader populations with different demographic characteristics and healthcare settings. The sample size of 107 patients was relatively small which may have affected statistical power to detect significant associations between maternal factors and perinatal outcomes. Additionally, the study did not includes control group of women without reduced fetal movements for comparison, which would have strengthened the conclusions regarding adverse outcomes. Furthermore, long-term neonatal outcomes were not assessed as follow-up was limited to immediate perinatal period only. Future multicenter studies with larger sample sizes and prospective designs is recommended to validates these findings and establishes more robust evidence for clinical practice guidelines.

CONCLUSION

The present study has concluded that reduced fetal movements in pregnant women is associated with adverse perinatal outcomes including low Apgar scores, low birth weight, and increased NICU admissions. Although maternal factors such as age, gestational age, and parity did not shows statistically significant associations with perinatal outcomes, the overall findings emphasizes that complaints of reduced fetal movements should be taken seriously and requires prompt evaluation and close monitoring.

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