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Neonatal Outcome of Vaginal Breech Delivery for Singleton Pregnancy

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ABSTRACT

Background: Vaginal breech delivery in singleton gestations is associated with an increased risk of neonatal complications. Knowledge about related risk factors is important for prevention and enhanced perinatal care, especially in low-resource environments. **Objective:** To determine the frequency of neonatal outcomes of vaginal breech delivery in singleton pregnancy. **Study Design:** Descriptive cross-sectional study. **Duration and Place of Study:** June 2024 to November 2024, Department of Obstetrics and Gynaecology, Mardan Medical Complex, Mardan. **Methodology:** A total of 130 women aged 18–40 years, with confirmed singleton breech pregnancies beyond 36 weeks' gestation, were enrolled. Detailed demographic data were collected, and all underwent continuous intrapartum monitoring. Breech deliveries were performed using controlled maneuvers. Neonatal outcomes assessed included asphyxia, fetal distress, brachial plexus injury, respiratory distress, hypoxic ischemic encephalopathy (HIE), and low Apgar score. **Results:** The mean maternal age was 27.32 ± 4.04 years, mean gestational age 38.95 ± 0.83 weeks, and mean BMI 23.96 ± 2.43 kg/m^2. Neonatal asphyxia occurred in 50.0%, fetal distress in 29.2%, brachial plexus injury in 6.9%, respiratory distress in 37.7%, HIE in 27.7%, and low Apgar scores in 25.4% of cases. Significant negative correlations were found between multiple maternal factors (age, parity, BMI, socioeconomic status, profession, education, and residence) and adverse neonatal outcomes. **Conclusion:** Vaginal breech delivery in singleton pregnancies is associated with substantial neonatal morbidity.

INTRODUCTION

Vaginal breech delivery in the case of singleton gestations is a challenging mode of birth, requiring cautious case selection, expert care from the obstetrician, and continuous intrapartum monitoring.[1] Whereas cesarean birth is increasingly favored in all medical settings to reduce potential morbidity, certain factors—such as labor advanced on presentation, maternal preference, non-availability of surgical facilities—make a planned or unplanned vaginal breech delivery essential.[2] Success is critically dependent on strict adherence to known guidelines, estimation of fetal size and lie, and a skilled birthing attendant who is proficient in dealing with usual and unexpected events.[3]

Neonatal outcome after vaginal breech birth are directly associated with intrapartum occurrences and the expertise of the caring team.[4] Neonatal asphyxia is a known risk from cord compression or prolonged delivery interval from head to body, and can cause immediate respiratory distress necessitating immediate resuscitation.[5] Fetal distress, commonly identified through abnormal fetal heart rate patterns during labor, can prompt expedited delivery to minimize hypoxic damage.[6] Injury to the brachial plexus, although less frequent, can result from excessive traction or problematic delivery of the arms, and can cause transient or permanent upper limb weakness.[7] The risk for respiratory distress is increased in these neonates, since oxygen compromise during labor can cause impairment of adaptation immediately postnatal, and may necessitate supplemental oxygen or ventilation support.[8]

Hypoxic ischemic encephalopathy may, on occasion, appear as a sequela to prolonged or significant oxygen deprivation and has implications for long-term neurodevelopmental results.[9] Low Apgar scores at one and five minutes are commonly found in vaginal breech presentations relative to those of cephalic presentations, a reflection of the heightened risk for perinatal compromise.[10] Early identification and treatment of these complications, together with judicious antepartum counseling, are essential to ensuring optimal neonatal results.[11] The choice for vaginal breech delivery should consequently balance maternal and neonatal dangers through respect for surgical considerations, exercising a focus on safety, planning, and ready availability for advanced neonatal treatment when needed.

Dohbit JS et al. reported that among neonates delivered vaginally in breech presentation, the incidence

of neonatal asphyxia was 47.2%, fetal distress occurred in 17%, and brachial plexus injury was observed in 5.7% of cases.[12] Similarly, Hashim M et al. documented respiratory distress in 41.1% of such neonates, hypoxic-ischemic encephalopathy in 21.3%, and low Apgar scores in 21.1%.[13]

Due to the healthcare setting of Mardan, region-specific data on neonatal outcomes during vaginal breech delivery is scarce. The majority of the existing evidence is from tertiary centers elsewhere, and these might not be generalizable to local clinical procedures, available resources, or skill levels of attending birth attendants. The study is carried out in Mardan to gain knowledge on the true burden of complications like neonatal asphyxia, respiratory distress, hypoxic-ischemic encephalopathy, and brachial plexus injury in this group, and hence inform evidence-based decision-making for safer maternal and neonatal outcomes, improve intrapartum care procedures, and facilitate targeted interventions.

METHODOLOGY

This descriptive study was carried out from June 2024 to November 2024 in the Department of Obstetrics and Gynaecology, Mardan Medical Complex, Mardan. A total of 130 participants were recruited. The sample size was determined using WHO sample size software with a 95% confidence level, a 4% margin of error, and an expected frequency of brachial plexus injury of 5.7% in singleton pregnancies undergoing vaginal breech delivery.[12]

Written informed consent was obtained after explaining the study's aim, potential benefits, and risks. Demographic details, including age, gestational age, parity, body mass index, socioeconomic status, education, occupation, and place of residence, were documented at the time of enrolment. Women were eligible if they were between 18 and 40 years of age, had a confirmed singleton pregnancy of more than 36 weeks' gestation on the basis of last menstrual period, and ultrasound confirmation of breech presentation. Both primigravida and multigravida were included. Vaginal delivery was the intended mode of birth. Women were excluded if they had a history of an inadequate maternal pelvis, placenta previa, major congenital malformations in the fetus, or intrauterine fetal demise.

All participants underwent continuous electronic fetal monitoring during labour. Abnormal fetal heart rate was considered present if the rate exceeded 160 beats per minute or dropped below 120 beats per minute, as determined by auscultation or electronic monitoring. Labour was allowed to progress spontaneously unless augmentation was necessary. The breech delivery was performed with controlled maneuvers—allowing the buttocks and trunk to be delivered first, followed by specific head extension techniques with minimal traction. Immediately after birth, newborns were assessed for breathing efforts and chest expansion. Neonatal asphyxia was identified if the newborn failed to initiate breathing within 90 seconds, displayed asymmetric chest movement with a respiratory rate above 30 breaths per minute, and had an umbilical artery pH below 7.1. Brachial plexus injury was recorded if paralysis of the shoulder girdle, arm, or forearm muscles was present and confirmed during the first neonatal examination within 24 hours. Respiratory distress was diagnosed if tachypnoea (respiratory rate >60 breaths per minute) was accompanied by nasal flaring and grunting. Hypoxic ischemic encephalopathy was defined by an Apgar score of 0–3 for more than 5 minutes along with neurological signs such as seizures lasting over one minute or hypotonia. A low Apgar score was recorded if the score at 5 minutes was 5 or below. Active management of the third stage of labour was undertaken for all patients. The mother and neonate were monitored for 2–4 hours postpartum.

Data were entered and analyzed using SPSS version 26. Categorical variables were reported as frequencies and percentages. Continuous variables were presented as mean ± standard deviation. Statistical analysis was performed using chi-square and Pearson's correlation, with significance set at $p \leq 0.05$.

RESULTS

The study included 130 patients with a mean age of 27.32±4.04 years and gestational age of 38.95±0.83 weeks. The average parity was 2.15±1.30 and mean BMI was 23.96±2.43 kg/m^2. Regarding socioeconomic status, 58 patients (44.6%) belonged to middle class, 43 (33.1%) were from poor backgrounds, and 29 (22.3%) were classified as rich. The majority of participants were housewives (107, 82.3%) while 23 (17.7%) were employed. Educational distribution showed 40 patients (30.8%) with primary education, 32 (24.6%) were uneducated, and 29 patients each (22.3%) had secondary and higher education. Rural residents comprised 70 patients (53.8%) compared to 60 urban residents (46.2%) (as shown in Table-I).

Table I

Patient Demographics (n = 130)

Demographics	Mean ± SD
Age (years)	27.32±4.04
Gestational Age (weeks)	38.95±0.83
Parity	2.15±1.30
BMI (kg/m^2)	23.96±2.43
Socioeconomic Status	
Poor n (%)	43 (33.1%)
Middle n (%)	58 (44.6%)
Rich n (%)	29 (22.3%)
Profession	
Housewife n (%)	107 (82.3%)
Job n (%)	23 (17.7%)
Education Level	
Uneducated n (%)	32 (24.6%)
Primary n (%)	40 (30.8%)
Secondary n (%)	29 (22.3%)
Higher n (%)	29 (22.3%)
Residential Status	
Rural n (%)	70 (53.8%)
Urban n (%)	60 (46.2%)

Neonatal outcomes revealed that asphyxia occurred in 65 cases (50.0%), while 65 cases (50.0%) had no asphyxia. Fetal distress was present in 38 patients (29.2%) and absent in 92 patients (70.8%). Brachial plexus injury occurred in only 9 cases (6.9%) with 121 cases (93.1%) showing no injury. Respiratory distress was observed in 49 patients (37.7%) while 81 patients (62.3%) did not experience respiratory distress. Hypoxic ischemic encephalopathy affected 36 patients (27.7%) with 94

patients (72.3%) remaining unaffected. Low Apgar scores were recorded in 33 patients (25.4%) while 97 patients (74.6%) had normal scores (as shown in Table-II).

Table II

Frequency of Neonatal Outcomes Among Patients with Vaginal Breech Delivery for Singleton Pregnancy (n = 130)

Neonatal Outcomes	Frequency	% age
Neonatal Asphyxia		
Yes	65	50.00%
No	65	50.00%
Fetal Distress		
Yes	38	29.20%
No	92	70.80%
Brachial Plexus Injury		
Yes	9	6.90%
No	121	93.10%
Respiratory Distress		
Yes	49	37.70%
No	81	62.30%
Hypoxic Ischemic Encephalopathy		
Yes	36	27.70%
No	94	72.30%
Low Apgar Score		
Yes	33	25.40%
No	97	74.60%
Total	130	100%

Correlation analysis demonstrated significant negative associations between maternal age and multiple neonatal outcomes including fetal distress (r=-0.223, p<0.05), brachial plexus injury (r=-0.385, p<0.01), respiratory distress (r=-0.321, p<0.01), hypoxic ischemic encephalopathy (r=-0.728, p<0.01), and low Apgar scores (r=-0.358, p<0.01). Gestational age showed significant negative correlations with respiratory distress (r=-0.205, p<0.05) and low Apgar scores (r=-0.209, p<0.05). Parity demonstrated significant negative correlations with fetal distress (r=-0.237, p<0.01), brachial plexus injury (r=-0.341, p<0.01), respiratory distress (r=-0.397, p<0.01), hypoxic ischemic encephalopathy (r=-0.721, p<0.01), and low Apgar scores (r=-0.353, p<0.01). BMI showed significant negative associations with fetal distress (r=-0.209, p<0.05), brachial plexus injury (r=-0.316, p<0.01), respiratory distress (r=-0.302, p<0.01), hypoxic ischemic encephalopathy (r=-0.670, p<0.01), and low Apgar scores (r=-0.321, p<0.01). Socioeconomic status exhibited significant negative correlations with neonatal asphyxia (r=-0.209, p<0.05), fetal distress (r=-0.232, p<0.01), brachial plexus injury (r=-0.410, p<0.01), respiratory distress (r=-0.394, p<0.01), hypoxic ischemic encephalopathy (r=-0.721, p<0.01), and low Apgar scores (r=-0.229, p<0.01). Maternal profession showed significant negative correlations with neonatal asphyxia (r=-0.222, p<0.05), fetal distress (r=-0.278, p<0.01), brachial plexus injury (r=-0.588, p<0.01), respiratory distress (r=-0.263, p<0.01), hypoxic ischemic encephalopathy (r=-0.749, p<0.01), and low Apgar scores (r=-0.239, p<0.01). Education level demonstrated significant negative associations with fetal distress (r=-0.248, p<0.01), brachial plexus injury (r=-0.395, p<0.01), respiratory distress (r=-0.369, p<0.01), hypoxic ischemic encephalopathy (r=-0.755, p<0.01), and low Apgar scores (r=-0.407, p<0.01). Residential status showed significant negative correlations with fetal distress (r=-0.321, p<0.01), brachial plexus injury (r=-0.295, p<0.01), respiratory distress (r=-0.394, p<0.01), hypoxic ischemic encephalopathy (r=-0.668, p<0.01), and low Apgar scores (r=-0.382, p<0.01), while showing a non-significant positive correlation with neonatal asphyxia (r=0.062) (as shown in Table-III).

Table III

Correlation Matrix Between Maternal Demographics and Neonatal Outcomes (n = 130)

Variables	Neonatal Asphyxia	Fetal Distress	Brachial Plexus Injury	Respiratory Distress	Hypoxic Ischemic Encephalopathy	Low Apgar Score
Age (years)	-0.124	-.223*	-.385**	-.321**	-.728**	-.358**
Gestational Age (weeks)	-0.028	-0.165	-0.054	-.205*	-0.144	-.209*
Parity	-0.142	-.237**	-.341**	-.397**	-.721**	-.353**
BMI (kg/m^2)	-0.11	-.209*	-.316**	-.302**	-.670**	-.321**
Socioeconomic Status	-.209*	-.232**	-.410**	-.394**	-.721**	-.229**
Profession	-.222*	-.278**	-.588**	-.263**	-.749**	-.239**
Education Level	-0.12	-.248**	-.395**	-.369**	-.755**	-.407**
Residential Status	0.062	-.321**	-.295**	-.394**	-.668**	-.382**

Pearson correlation coefficients shown *p < 0.05, **p < 0.01

DISCUSSION

Our results illustrate that neonatal complications continue to predominate in breech delivery at significant rates, with asphyxia and other severe complications occurring in significant proportions of neonates. The high prevalence of neonatal asphyxia (50.0%) is plausibly related to the inherent mechanical obstruction in breech presentation, where delayed fetal head delivery after extraction of the fetal body introduces a time at risk for umbilical cord compression and hypoxic compromise. Fetal distress in 29.2% cases is mechanistically related to elevated intrauterine pressure and compromised placental perfusion typically present in breech positioning during labor advance. Respiratory distress in 37.7% of neonates is explainable mechanically by thoracic compression dynamics during breech delivery where the chest is delivered before the head with resultant compromise of fetal lung clearance and adaptative respiration. Brachial plexus trauma in 6.9% cases, though low, indicates mechanical trauma related to arm extraction maneuvers and lateral traction forces used during labor assistance for breech delivery. Hypoxic-ischemic encephalopathy in 27.7% of neonates highlights fetal brain susceptibility to prolonged hypoxic episodes that characteristically occur during entrapment of the fetal head during breech delivery. Prevalence of low Apgar scores (25.4%) indicates cumulative physiological compromise from complex delivery process and delayed establishment of effective

spontaneous breathing. Significant negative correlations between adverse outcome and increasing age illustrate that favorable physiological adaptative advances in pregnant women, as they occur at increasing age through multiparity as parity advances, provide prophylactic benefit favoring enhanced placental perfusion and better-orchestrated contractions at term. Correspondingly, benefit from higher socioeconomic level, employment, and educational level is likely from enhanced prenatally care, nutrition, and practice seeking for enhanced maternal-foetal preconditioning at term before birth occurs.

The mean maternal age of 27.32±4.04 years aligns closely with findings from Kalyankar VY, et al.[14] (26.5±4.1 years), Naz S [15] (27.2±4.5 years), and Jadoon S, et al. [16] (28.6±5.7 years), suggesting consistent demographic patterns across different populations. Similarly, our mean gestational age of 38.95±0.83 weeks corresponds well with Naz S [15] (38.5±1.1 weeks) and approximates the 39-week range reported by Toivonen E, et al. [17] and Paul B, et al. [18] indicating appropriate timing for term breech deliveries across studies. The neonatal asphyxia rate of 50.0% in our cohort substantially exceeds rates reported in comparable studies, with Dohbit JS, et al. [12] reporting 47% birth asphyxia and other studies showing considerably lower rates. This discrepancy may reflect differences in diagnostic criteria, population characteristics, or healthcare infrastructure. However, our fetal distress rate of 29.2% falls within the range of existing literature, with Dohbit JS, et al. [12] reporting 17% fetal distress and Rauf B & Ayub T [19] noting 35.8% fetal distress among emergency caesarean cases, suggesting our population experienced intermediate levels of intrapartum complications.

Regarding brachial plexus injury, our rate of 6.9% appears elevated compared to most studies, with Partab P, et al. [20] reporting 12.4%, Dohbit JS, et al. [12] documenting 5.7%, and Jadoon S, et al.[16] noting only 1% Erb's palsy. This variation likely reflects differences in delivery techniques, operator experience, and case selection criteria. The respiratory distress rate of 37.7% in our study exceeds typical expectations but aligns with the higher overall morbidity pattern observed in our population. Our finding of 25.4% low Apgar scores contrasts markedly with several studies reporting lower rates of 5-minute Apgar <7, including Toivonen E, et al. [17] (6.0% for planned vaginal breech delivery), Naz S [15] (1.48%), and Partab P, et al. [20] (11.2%). This substantial difference may indicate more challenging deliveries in our population or different scoring practices, warranting further investigation into contributing factors such as staff training, case complexity, or patient selection protocols.

The significant negative correlations between maternal age, parity, and adverse neonatal outcomes in our study provide novel insights not extensively explored in the reviewed literature. These findings suggest that younger, less experienced mothers may face higher risks during vaginal breech delivery, contrasting with conventional obstetric wisdom that typically associates multiparity with improved outcomes. Similarly, our observation that higher socioeconomic status, maternal education, and urban residence correlate with better neonatal outcomes underscores the importance of social determinants of health in obstetric care, a dimension not systematically examined in studies by Kalyankar VY, et al. [14] Toivonen E, et al. [17] or other cited authors. The overall pattern of outcomes in our study suggests higher morbidity rates compared to most published series, potentially reflecting the challenges of vaginal breech delivery in resource-constrained settings or different patient populations. While studies like Naz S [15] and Rauf B & Ayub T [19] demonstrated favorable outcomes with careful selection and skilled management, our results indicate that even with appropriate precautions, vaginal breech delivery carries substantial risks that vary significantly based on maternal and socioeconomic factors. This emphasizes the critical importance of individualized risk assessment and the need for robust healthcare systems to support safe vaginal breech delivery programs.

This study also has several limitations that must be considered in interpreting the results. Since it is a single-center study, results may not generalize to other health care settings or populations that are characterized differently. The modest sample size of 130 patients may reduce statistical power to detect some associations and may impair precision of effect estimates. Finally, because it is a cross-sectional study, causal relationships between variables cannot be determined, and retrospective data were used, which may suffer from documentation bias. Lack of control group of cesarean sections diminishes our ability to make direct comparisons between relative safety from various modes of delivery. We did not measure long-term neonatal outcome and did not control for possible confounding factors like specific operator expertise or institutional policies that may impact delivery outcome.

CONCLUSION

Vaginal breech delivery has been found to associate with significant neonatal morbidity, including high asphyxia rates, fetal distress, brachial plexus injury, and respiratory distress from our study. And correlation between adverse neonatal effects and robust sociodemographic variables among mothers were apparent from the results, indicating marked increase in complication risk with young age, low parity, low socioeconomic status, low education level, and rurality.

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REFERENCES

1. Kekki, M., Koukkula, T., Salonen, A., Gissler, M., Laivuori, H., Huttunen, T. T., & Tihtonen, K. (2022). Birth injury in breech delivery: A nationwide population-based cohort study in Finland. *Archives of Gynecology and Obstetrics*, *308*(4), 1139-1150. https://doi.org/10.1007/s00404-022-06772-1

2. Londero, A., Massarotti, C., Xholli, A., Fruscalzo, A., & Cagnacci, A. (2023). Assisted reproductive technology and breech delivery: A nationwide cohort study in Singleton pregnancies. *Journal of Personalized Medicine*, *13*(7), 1144. https://doi.org/10.3390/jpm13071144
3. Spillane, E., Walker, S., & McCourt, C. (2022). Optimal time intervals for vaginal breech births: A case-control study. *NIHR Open Research*, *2*, 45. https://doi.org/10.3310/nihropenres.13297.2
4. Maschke, S. K., Steinkasserer, L., Renz, D., Von Kaisenberg, C., Hillemanns, P., & Brodowski, L. (2024). Maternal and neonatal short-term outcome after vaginal breech delivery >36 weeks of gestation with and without MRI-based pelvimetric measurements: A Hannover retrospective cohort study. *Journal of Perinatal Medicine*, *53*(3), 316-326. https://doi.org/10.1515/jpm-2024-0173
5. Yu, Y., Gao, J., Liu, J., Tang, Y., Zhong, M., He, J., Liao, S., Wang, X., Liu, X., Cao, Y., Liu, C., & Sun, J. (2022). Perinatal maternal characteristics predict a high risk of neonatal asphyxia: A multi-center retrospective cohort study in China. *Frontiers in Medicine*, *9*. https://doi.org/10.3389/fmed.2022.944272
6. Paladugu, V., Sreedhar, S., Chitra, R., Mannava, S. T., Sreekumar, S., & Mangalakanthi, J. (2022). Association of CTG diagnosis of intrapartum fetal distress and immediate postpartum Acidemia in foetal umbilical artery. *The Journal of Obstetrics and Gynecology of India*, *73*(1), 28-35. https://doi.org/10.1007/s13224-022-01702-2
7. Li, H., Chen, J., Wang, J., Zhang, T., & Chen, Z. (2023). Review of rehabilitation protocols for brachial plexus injury. *Frontiers in Neurology*, *14*. https://doi.org/10.3389/fneur.2023.1084223
8. Karen, T., Wolf, M., Nef, R., Haensse, D., Bucher, H. U., Schulz, G., & Fauchère, J. (2014). Changes in cerebral oxygenation during early postnatal adaptation in newborns delivered by vacuum extraction measured by near-infrared spectroscopy. *BMC Pediatrics*, *14*(1). https://doi.org/10.1186/1471-2431-14-21
9. Olsson, N. Y., Bartfai, E. D., Åmark, H., & Wallström, T. (2024). Outcomes in term breech birth according to intended mode of delivery—A Swedish prospective single-center experience of a dedicated breech birth team. *Acta Obstetricia et Gynecologica Scandinavica*, *103*(11), 2296-2305. https://doi.org/10.1111/aogs.14945
10. Toijonen, A., Heinonen, S., Gissler, M., & Macharey, G. (2022). Neonatal outcome in vaginal breech labor at 32 + 0—36 + 0 weeks of gestation: A nationwide, population-based record linkage study. *BMC Pregnancy and Childbirth*, *22*(1). https://doi.org/10.1186/s12884-022-04547-9
11. Ekéus, C., Norman, M., Åberg, K., Winberg, S., Stolt, K., & Aronsson, A. (2017). Vaginal breech delivery at term and neonatal morbidity and mortality – a population-based cohort study in Sweden. *The Journal of Maternal-Fetal & Neonatal Medicine*, *32*(2), 265-270. https://doi.org/10.1080/14767058.2017.1378328
12. Dohbit, J. S., Foumane, P., Tochie, J. N., Mamoudou, F., Temgoua, M. N., Tankeu, R., Aletum, V., & Mboudou, E. (2017). Maternal and neonatal outcomes of vaginal breech delivery for Singleton term pregnancies in a carefully selected Cameroonian population: A cohort study. *BMJ Open*, *7*(11), e017198. https://doi.org/10.1136/bmjopen-2017-017198
13. Hashim M, Abdalla K, Alamin AAM, Kheiri SA, Elnour S. (2016). Early neonatal outcome of vaginal breech delivery at El Sheikh Fadul Maternity Hospital, Khartoum State. *Sch Bull, 2*(5), 239-244.
14. Kalyankar, V, Y., Kalyankar, B, V., Gadappa, S, N., Kandalkar, P, V., Kadke, A. A. (2025). Maternal and fetal outcome in singleton term breech delivery. *New Indian J OBGYN, 11*(1), 1. https://journal.barpetaogs.co.in/pdf/9925303.pdf
15. Naz, S. (2015). Vaginal breech delivery. *The Professional Medical Journal*, *22*(08), 1024-1028. https://doi.org/10.29309/tpmj/2015.22.08.1149
16. Jadoon, S., Jadoon, S. M. K., & Shah, R. (2008). Maternal and neonatal complications in term breech delivered vaginally. *J Coll Physicians Surg Pak*, *18*(9), 555-8. https://www.jcpsp.pk/archive/2008/Sep2008/07.pdf
17. Toivonen, E., Palomäki, O., Huhtala, H., & Uotila, J. (2012). Selective vaginal breech delivery at term - still an option. *Acta obstetricia et gynecologica Scandinavica*, *91*(10), 1177–1183. https://doi.org/10.1111/j.1600-0412.2012.01488.x
18. Paul, B., Möllmann, C., Kielland-Kaisen, U., Schulze, S., Schaarschmidt, W., Bock, N., Brüggmann, D., Louwen, F., & Jennewein, L. (2020). Maternal and neonatal outcome after vaginal breech delivery at term after cesarean section – a prospective cohort study of the Frankfurt breech at term cohort (FRABAT). *European Journal of Obstetrics & Gynecology and Reproductive Biology*, *252*, 594–598. https://doi.org/10.1016/j.ejogrb.2020.04.030
19. Rauf, B., & Ayub, T. (2004). Maternal and perinatal outcome in term singleton breech presentation. *Journal of Postgraduate Medical Institute*, *18*(3). https://jpmi.org.pk/index.php/jpmi/article/view/1190
20. Partab, P., Habib, A., Tariq, G., Naz, U., Shameer, S., & Kazi, S. (2022). The Outcome of Planned Breech Vaginal Delivery among Obstetrics Patients Presenting at Tertiary Care Hospital, Karachi. *Age (years)*, *31*(2.81), 20-40.