Section: Obstetrics and Gynaecology

Original Research Article

# ROLE OF ADMISSION CARDIOTOCOGRAPHY AND AMNIOTIC FLUID INDEX TOGETHER IN PREDICTING PERINATAL OUTCOME

**Alaka Banerjee[1], Md Rahmat Ali[2]**

[1]Associate Professor, Department of Obstetrics and gynaecology, Silchar Medical College and Hospital, Assam, India
[2]PGT, Department of Obstetrics and gynaecology, Silchar Medical College and Hospital, Assam, India

*Received* : 15/04/2026
*Received in revised form* : 23/05/2026
*Accepted* : 10/06/2026

*Keywords:*
*Admission cardiotocography, Amniotic fluid index, Perinatal outcome, Apgar score, Low-risk pregnancy, Fetal monitoring.*

Corresponding Author:
**Dr. Md Rahmat Ali**
Email: rahmatali14101994@gmail.com

DOI: 10.47009/jamp.2026.8.3.217

Source of Support: Nil,
Conflict of Interest: None declared

*Int J Acad Med Pharm*
2026; 8 (3); 1213-1219

## ABSTRACT

**Background:** Admission cardiotocography (CTG) and amniotic fluid index (AFI) are commonly used non-invasive tests for assessing fetal well-being. This study evaluated their combined role in predicting perinatal outcomes in low-risk term pregnancies. The aim and objective are to evaluate whether admission CTG and AFI assessment together can predict perinatal outcome and determine the need for obstetrical interventions. **Materials and Methods:** A prospective observational study was conducted on 385 low-risk pregnant women at term (37-40 weeks) with singleton pregnancy and intact membranes. Admission CTG was classified as reassuring or non-reassuring according to FIGO guidelines. AFI was categorized as oligohydramnios (<5 cm) or normal (>5 cm). Perinatal outcomes including mode of delivery, meconium-stained liquor, Apgar score, NICU admission, and perinatal mortality were recorded and analysed. **Result:** Among 385 participants, 63.1% had reassuring CTG and 78.7% had normal AFI. When analysed individually, neither admission CTG nor AFI showed significant association with mode of delivery, meconium-stained liquor, Apgar score at 1 and 5 minutes, or NICU admission (p> 0.05). However, combined assessment of non-reassuring CTG with AFI <5 cm showed a statistically significant association with low Apgar score (<7) at 1 minute (p=0.04). Other perinatal outcomes including meconium staining, LSCS rate, APGAR at 5 minutes, NICU admission, and perinatal mortality did not show significant correlation with the combined parameters. **Conclusion:** The combination of admission CTG and AFI shows improved predictive value of immediate neonatal outcome than either test alone, particularly for identifying neonates at risk of low Apgar score at 1 minute in low-risk term pregnancies.

## INTRODUCTION

The delivery of a healthy baby to a healthy mother remains the primary objective of modern obstetric care. Despite advances in antenatal and intrapartum monitoring, perinatal morbidity and mortality continue to pose major public health challenges, particularly in developing countries where intrapartum fetal hypoxia and birth asphyxia contribute significantly to neonatal complications and deaths. Early identification of fetal compromise during labour is therefore essential to ensure timely obstetric intervention and improve neonatal outcomes. Simple, non-invasive, and reliable fetal surveillance techniques are increasingly being utilized in labour rooms to assess fetal well-being and reduce adverse perinatal events.[1,2]

Cardiotocography (CTG) is one of the most commonly used methods for intrapartum fetal monitoring. It provides continuous information regarding fetal heart rate patterns and uterine contractions, thereby helping in the identification of fetal hypoxia and distress. Standardized interpretation systems, especially the FIGO guidelines, have improved the clinical applicability and uniformity of CTG interpretation.[3,4] However, although CTG is highly sensitive, it is associated with a relatively high false-positive rate, which may increase unnecessary operative interventions without significantly improving neonatal outcomes. Studies by Alfirevic et al. and Devane et al. demonstrated that admission CTG alone has limited predictive accuracy in low-risk labour because many abnormal tracings do not necessarily correlate with adverse neonatal outcome.[5,6]

Amniotic fluid index (AFI), measured ultrasonographically, is another important parameter used to assess fetal well-being. AFI reflects long-


ISSN (O): 2687-5365; ISSN (P): 2753-6556

term uteroplacental perfusion and chronic fetal status. Oligohydramnios, commonly defined as AFI ≤5 cm, has been associated with fetal distress, meconium-stained liquor, operative delivery, low Apgar scores, and increased neonatal intensive care unit (NICU) admission.[7,8] Phelan et al. first described the AFI technique, while subsequent studies by Magann et al., Rossi et al., and Chauhan et al. demonstrated varying degrees of association between oligohydramnios and adverse perinatal outcomes.[7–9] Nevertheless, AFI alone has also shown limited predictive value because reduced liquor volume does not always indicate acute fetal compromise.

Several investigators have evaluated the usefulness of admission CTG and AFI in combination. Pattnaik et al. reported that abnormal admission CTG was significantly associated with fetal distress and low Apgar scores.[10] Kaur et al. observed increased rates of meconium-stained liquor, caesarean section, and NICU admission in fetuses with non-reassuring CTG patterns.[11] Choudhary et al. and Reddy et al. demonstrated that oligohydramnios was associated with increased operative delivery and neonatal complications.[12,13] Furthermore, studies by Mishra et al., Bhat et al., and Singh et al. showed that combined assessment of CTG and AFI had better predictive value for adverse perinatal outcomes compared to either modality alone.[14–16] The rationale behind the combined approach is that CTG reflects acute fetal hypoxia whereas AFI reflects chronic placental insufficiency; abnormalities in both parameters therefore increase the likelihood of true fetal compromise.[17]

Although several studies have evaluated CTG and AFI individually, evidence regarding their combined role in predicting perinatal outcome in low-risk term pregnancies remains limited and inconsistent. Since CTG reflects acute fetal hypoxia and AFI indicates chronic uteroplacental insufficiency, combined assessment may provide a more comprehensive evaluation of fetal well-being and help identify pregnancies at risk of adverse neonatal outcome. Therefore, the present study was undertaken to evaluate whether admission cardiotocography (CTG) and amniotic fluid index (AFI) assessment together can predict perinatal outcome and to determine the need for obstetrical interventions based on CTG and AFI findings.

## MATERIALS AND METHODS

This prospective observational study was conducted in the Department of Obstetrics and Gynaecology at Silchar Medical College and Hospital over a period of one year from November 2024 to September 2025 after obtaining approval from the Institutional Ethics Committee (IEC No. SMC/ETHICS/M3/2024/50). Pregnant women admitted in labour during the study period were screened consecutively, and those fulfilling the eligibility criteria were included after obtaining written informed consent. A total of 385 term pregnant women were enrolled in the study. Women with singleton pregnancy between 37 and 40 completed weeks of gestation, including both primigravida and multigravida with a live fetus without major congenital anomaly and intact membranes at admission, were included in the study. Women with preterm pregnancy (<37 weeks), premature rupture of membranes, intrauterine fetal demise, multiple gestation, malpresentation, previous caesarean section, antepartum haemorrhage, maternal medical disorders such as hypertensive disorders and diabetes mellitus, bad obstetric history, and maternal age below 19 years or above 40 years were excluded.

On admission, a detailed obstetric history and clinical examination were performed. Baseline demographic and obstetric variables including maternal age, parity, gestational age, and obstetric history were recorded in a structured proforma. All participants underwent admission cardiotocography (CTG) and ultrasonographic assessment of amniotic fluid index (AFI). CTG was performed for 20 minutes at admission to assess fetal well-being. The tracings were interpreted according to standard FIGO guidelines based on baseline fetal heart rate (110–160 beats/minute), variability, accelerations, and decelerations, and were categorized as reassuring or non-reassuring. AFI was measured using ultrasonography by the standard four-quadrant technique, wherein the uterus was divided into four quadrants and the deepest vertical pocket of amniotic fluid free of fetal parts and umbilical cord in each quadrant was measured in centimeters. The sum of these measurements was taken as the AFI. AFI values were classified as normal (>5 cm) and oligohydramnios (<5 cm).

All patients were monitored throughout labour as per institutional protocol. Maternal and neonatal outcome parameters including mode of delivery, presence of meconium-stained liquor, Apgar score at 1 and 5 minutes, need for neonatal intensive care unit (NICU) admission, and perinatal mortality were recorded. Data obtained were entered into Microsoft Excel and analysed using SPSS software. Categorical variables were expressed as frequencies and percentages. The association between admission CTG, AFI, and perinatal outcomes was analysed using the Chi-square test. A p-value of <0.05 was considered statistically significant. Confidentiality of patient information was strictly maintained throughout the study.


ISSN (O): 2687-5365; ISSN (P): 2753-6556

## RESULTS

**Table 1: Association of Admission CTG with Perinatal Outcomes**

| Outcome | Reassuring CTG | Non-reassuring | Total | Chi-square | p-value |
|---|---|---|---|---|---|
| Normal Vaginal Delivery | 126 | 76 | 202 | 0.36 | 0.83 |
| LSCS | 92 | 54 | 146 | | |
| Instrumental Delivery | 25 | 12 | 37 | | |
| Meconium Present | 63 | 32 | 95 | 0.39 | 0.53 |
| Meconium Absent | 180 | 110 | 290 | | |
| APGAR<7 (1 min) | 93 | 45 | 138 | 1.68 | 0.19 |
| APGAR ≥7 (1 min) | 150 | 97 | 247 | | |
| APGAR<7 (5 min) | 52 | 31 | 83 | 0.02 | 0.88 |
| APGAR ≥7 (5 min) | 191 | 111 | 302 | | |
| NICU Admission (Yes) | 52 | 31 | 83 | 0.02 | 0.89 |
| NICU Admission (No) | 191 | 111 | 302 | | |

**Association of Admission CTG with Perinatal Outcomes:** [Table 1] shows the association between admission cardiotocography (CTG) findings and various perinatal outcomes among the study participants. Of the 385 women included in the study, reassuring CTG was observed in the majority of cases. Normal vaginal delivery was the most common mode of delivery in both groups, occurring in 126 cases with reassuring CTG and 76 cases with non-reassuring CTG. Lower segment caesarean section (LSCS) was performed in 92 women with reassuring CTG and 54 women with non-reassuring CTG, while instrumental delivery was observed in 25 and 12 cases respectively. However, no statistically significant association was found between admission CTG findings and mode of delivery ($\chi^2$=0.36, p=0.83), suggesting that CTG status alone did not significantly influence obstetrical intervention in the present study.

Meconium-stained liquor was present in 63 cases with reassuring CTG and 32 cases with non-reassuring CTG, whereas meconium was absent in 180 and 110 cases respectively. This association was not statistically significant ($\chi^2$=0.39, p=0.53), indicating that admission CTG alone was not a reliable predictor of meconium-stained liquor.

Regarding neonatal outcome, Apgar score <7 at 1 minute was observed in 93 neonates with reassuring CTG and 45 neonates with non-reassuring CTG, while Apgar score ≥7 at 1 minute was seen in 150 and 97 neonates respectively. The association between CTG findings and 1-minute Apgar score was not statistically significant ($\chi^2$=1.68, p=0.19). Similarly, Apgar score <7 at 5 minutes was noted in 52 cases with reassuring CTG and 31 cases with non-reassuring CTG, with no significant association observed ($\chi^2$=0.02, p=0.88).

NICU admission was required in 52 neonates from the reassuring CTG group and 31 neonates from the non-reassuring CTG group, whereas 191 and 111 neonates respectively did not require NICU admission. The association between admission CTG and NICU admission was also statistically insignificant ($\chi^2$=0.02, p=0.89).

Overall, the findings of the present study demonstrate that admission CTG alone did not show a statistically significant association with mode of delivery, meconium-stained liquor, Apgar score, or NICU admission. These results suggest that admission CTG by itself may have limited predictive value for adverse perinatal outcomes in low-risk term pregnancies.

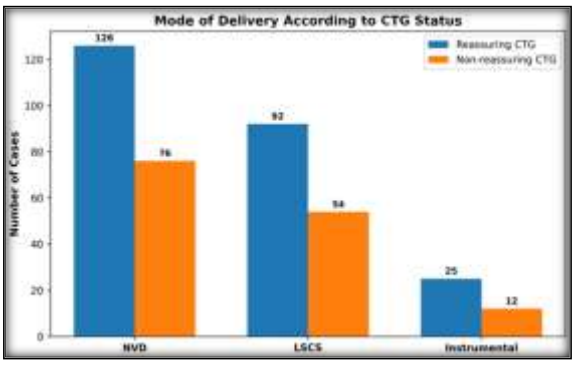


**Figure 1: Distribution of mode of delivery according to admission cardiotocography (CTG) status among study participants. Normal vaginal delivery was the most common mode of delivery in both reassuring and non-reassuring CTG groups.**

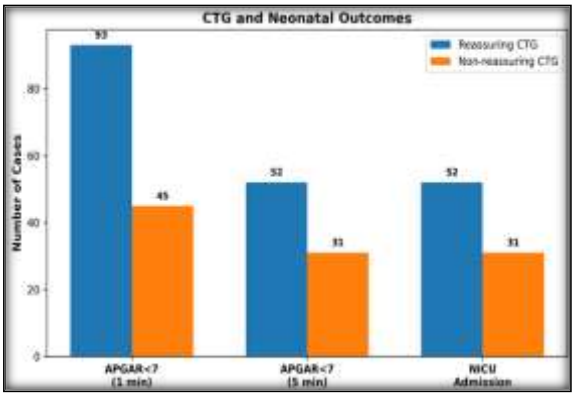


**Figure 2: Association of admission cardiotocography (CTG) findings with neonatal outcomes including Apgar score and NICU admission. No statistically significant association was observed between CTG findings and adverse neonatal outcomes.**


ISSN (O): 2687-5365; ISSN (P): 2753-6556

**Table 2: Association of AFI with Perinatal Outcomes**

| Outcome | AFI <5 cm | AFI >5 cm | Total | Chi-square | p-value |
|---|---|---|---|---|---|
| Normal Vaginal Delivery | 41 | 161 | 202 | 2.16 | 0.707 |
| LSCS | 30 | 116 | 146 | | |
| Instrumental Delivery | 11 | 26 | 37 | | |
| Meconium Present | 24 | 71 | 95 | 1.31 | 0.52 |
| Meconium Absent | 58 | 232 | 290 | | |
| APGAR<7 (1 min) | 28 | 110 | 138 | 0.14 | 0.70 |
| APGAR ≥7 (1 min) | 54 | 193 | 247 | | |
| APGAR<7 (5 min) | 20 | 63 | 83 | 3.01 | 0.22 |
| APGAR ≥7 (5 min) | 62 | 240 | 302 | | |
| NICU Admission (yes) | 26 | 56 | 82 | 3.7 | 0.054 |
| NICU Admission (No) | 57 | 246 | 303 | | |

**Association of AFI with Perinatal Outcomes**

[Table 2] depicts the association between amniotic fluid index (AFI) and various perinatal outcomes among the study participants. Among the 385 women included in the study, the majority had normal AFI (>5 cm), while oligohydramnios (AFI <5 cm) was observed in a smaller proportion of cases. Normal vaginal delivery was the most common mode of delivery in both groups, occurring in 41 women with AFI <5 cm and 161 women with AFI >5 cm. Lower segment caesarean section (LSCS) was performed in 30 women with oligohydramnios and 116 women with normal AFI, whereas instrumental delivery was observed in 11 and 26 cases respectively. However, no statistically significant association was found between AFI and mode of delivery ($\chi^2$=2.16, p=0.707), indicating that reduced amniotic fluid volume alone did not significantly influence the mode of delivery in the present study.

Meconium-stained liquor was present in 24 cases with AFI <5 cm and 71 cases with AFI >5 cm, while meconium was absent in 58 and 232 cases respectively. The association between AFI and meconium-stained liquor was not statistically significant ($\chi^2$=1.31, p=0.52), suggesting that oligohydramnios alone was not a reliable predictor of intrapartum fetal distress in this population.

With regard to neonatal outcome, Apgar score <7 at 1 minute was observed in 28 neonates with AFI <5 cm and 110 neonates with AFI >5 cm, whereas Apgar score ≥7 at 1 minute was seen in 54 and 193 neonates respectively. This association was not statistically significant ($\chi^2$=0.14, p=0.70). Similarly, Apgar score <7 at 5 minutes was noted in 20 cases with oligohydramnios and 63 cases with normal AFI, while Apgar score ≥7 at 5 minutes was observed in 62 and 240 cases respectively, with no statistically significant association ($\chi^2$=3.01, p=0.22).

NICU admission was required in 26 neonates with AFI <5 cm compared to 56 neonates with AFI >5 cm, whereas 57 and 246 neonates respectively did not require NICU admission. Although NICU admission was proportionally more frequent among cases with oligohydramnios, the association showed only borderline statistical significance ($\chi^2$=3.7, p=0.054).

Overall, the findings suggest that AFI alone did not show a statistically significant association with most adverse perinatal outcomes, including mode of delivery, meconium-stained liquor, and low Apgar scores. However, oligohydramnios demonstrated a trend toward increased NICU admission, indicating that reduced amniotic fluid volume may still have some clinical relevance in predicting neonatal compromise.

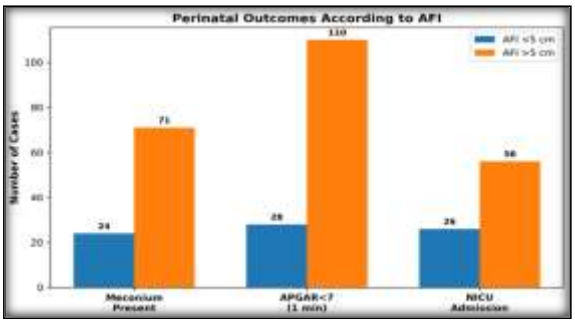


**Figure 3: Perinatal outcomes according to amniotic fluid index (AFI). Oligohydramnios (AFI <5 cm) showed relatively higher NICU admission compared to normal AFI, although the association was not statistically significant.**

**Table 3: Correlation of perinatal outcomes with respect to AFI+CTG and P-value (Total Sample N=385)**

| | Reassuring CTG+AFI>5 | Non-Reassuring CTG+AFI<5 | P value |
|---|---|---|---|
| Meconium stained | 44 | 7 | 0.18 |
| MOD of delivery(LSCS) | 47 | 10 | 0.21 |
| Perinatal mortality | 2 | 1 | 0.62 |
| Apgar<7 at 1 mins | 107 | 14 | 0.04 |
| Apgar<7 at 5mins | 36 | 5 | 0.28 |
| NICU Admission | 41 | 9 | 0.09 |

**Association of AFI and CTG with Perinatal Outcomes:** [Table 3] depicts the association between amniotic fluid index (AFI) and various perinatal outcomes among the study participants. Among the 385 women included in the study, the majority had normal AFI (>5 cm), while


ISSN (O): 2687-5365; ISSN (P): 2753-6556

oligohydramnios (AFI <5 cm) was observed in a smaller proportion of cases. Normal vaginal delivery was the most common mode of delivery in both groups, occurring in 41 women with AFI <5 cm and 161 women with AFI >5 cm. Lower segment caesarean section (LSCS) was performed in 30 women with oligohydramnios and 116 women with normal AFI, whereas instrumental delivery was observed in 11 and 26 cases respectively. However, no statistically significant association was found between AFI and mode of delivery ($\chi^2$=2.16, p=0.707), indicating that reduced amniotic fluid volume alone did not significantly influence the mode of delivery in the present study.

Meconium-stained liquor was present in 24 cases with AFI <5 cm and 71 cases with AFI >5 cm, while meconium was absent in 58 and 232 cases respectively. The association between AFI and meconium-stained liquor was not statistically significant ($\chi^2$=1.31, p=0.52), suggesting that oligohydramnios alone was not a reliable predictor of intrapartum fetal distress in this population.

With regard to neonatal outcome, Apgar score <7 at 1 minute was observed in 28 neonates with AFI <5 cm and 110 neonates with AFI >5 cm, whereas Apgar score ≥7 at 1 minute was seen in 54 and 193 neonates respectively. This association was not statistically significant ($\chi^2$=0.14, p=0.70). Similarly, Apgar score <7 at 5 minutes was noted in 20 cases with oligohydramnios and 63 cases with normal AFI, while Apgar score ≥7 at 5 minutes was observed in 62 and 240 cases respectively, with no statistically significant association ($\chi^2$=3.01, p=0.22).

NICU admission was required in 26 neonates with AFI <5 cm compared to 56 neonates with AFI >5 cm, whereas 57 and 246 neonates respectively did not require NICU admission. Although NICU admission was proportionally more frequent among cases with oligohydramnios, the association showed only borderline statistical significance ($\chi^2$=3.7, p=0.054).

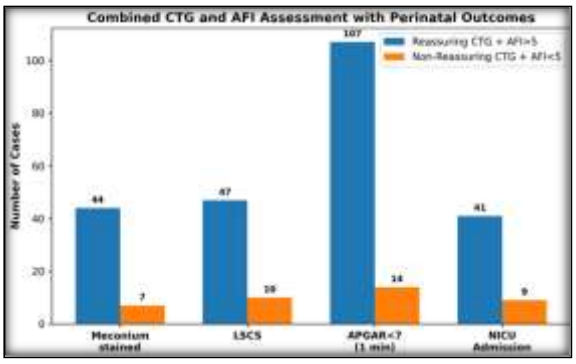


**Figure 4: Combined assessment of cardiotocography (CTG) and amniotic fluid index (AFI) with perinatal outcomes. A statistically significant association was observed only with low Apgar score at 1 minute (p=0.04).**

Overall, the findings suggest that AFI alone did not show a statistically significant association with most adverse perinatal outcomes, including mode of delivery, meconium-stained liquor, and low Apgar scores. However, oligohydramnios demonstrated a trend toward increased NICU admission, indicating that reduced amniotic fluid volume may still have some clinical relevance in predicting neonatal compromise.

## DISCUSSION

Assessment of fetal well-being at the time of admission in labour is an important component of intrapartum care because early identification of fetal compromise allows timely obstetrical intervention and may reduce adverse neonatal outcomes. Cardiotocography (CTG) and amniotic fluid index (AFI) are widely used non-invasive methods of fetal surveillance that reflect acute and chronic aspects of fetal status, respectively.[17] In the present study, the majority of women demonstrated reassuring CTG patterns and normal AFI values, which is expected in a predominantly low-risk obstetric population. However, a considerable proportion of cases showed non-reassuring CTG patterns or oligohydramnios, emphasizing the importance of routine admission screening even in apparently uncomplicated pregnancies.

The present study demonstrated that admission CTG alone was not significantly associated with mode of delivery, meconium-stained liquor, Apgar score, or NICU admission. Similar observations were reported by Alfirevic et al., who found that continuous CTG monitoring increased operative intervention without significant improvement in perinatal outcome.[5] Devane et al. also reported that admission CTG in low-risk labour had limited predictive value because of its high false-positive rate.[6] In the current study, although non-reassuring CTG patterns were numerically associated with higher rates of LSCS and adverse neonatal outcomes, these associations did not achieve statistical significance. This finding suggests that CTG alone may not be an ideal standalone predictor of fetal compromise in low-risk pregnancies.

Similarly, AFI alone did not show statistically significant association with most adverse perinatal outcomes in the present study. Although NICU admission was proportionally higher in women with oligohydramnios, the association showed only borderline significance. These findings are consistent with those of Nabhan et al., who concluded that isolated AFI has limited value in predicting adverse pregnancy outcomes.[17] Magann et al. also observed that AFI and single deepest pocket measurements are weak indicators of abnormal fetal outcome when used independently.[18] However, several investigators including Rossi et al. and Choudhary et al. have demonstrated increased incidence of fetal distress,


ISSN (O): 2687-5365; ISSN (P): 2753-6556

operative delivery, and low Apgar scores in pregnancies complicated by oligohydramnios.[8,12] The variation among studies may be related to differences in study population, inclusion criteria, and definition of adverse outcomes.

An important finding of the present study was that combined assessment of CTG and AFI demonstrated improved predictive value compared to either modality alone. A statistically significant association was observed between combined abnormal CTG with oligohydramnios and low Apgar score at 1 minute. Similar findings were reported by Singh et al., who demonstrated that the combined use of admission CTG and AFI improves identification of fetuses at risk of adverse perinatal outcome compared to either test alone.[16] Patnaik et al. also reported that abnormal CTG associated with reduced AFI was significantly related to fetal distress and NICU admission.[19] The improved predictive ability of the combined approach may be explained by the complementary physiological basis of the two investigations. CTG reflects acute fetal hypoxia and autonomic nervous system response, whereas AFI indicates chronic uteroplacental insufficiency; therefore, abnormalities in both parameters together increase the likelihood of true fetal compromise.[17]

Despite improved prediction of immediate neonatal outcome, combined CTG and AFI assessment did not show significant association with Apgar score at 5 minutes, NICU admission, or perinatal mortality in the present study. This suggests that although combined assessment may help identify neonates requiring immediate resuscitative measures at birth, its role in predicting sustained neonatal morbidity remains limited. Overall, the findings of the present study indicate that admission CTG and AFI, when used individually, have limited predictive accuracy in low-risk term pregnancies. However, their combined use provides better clinical insight and may aid in early identification of fetuses at risk, although these investigations should always be interpreted in conjunction with clinical assessment and other obstetric parameters rather than as standalone predictors of perinatal outcome.

## CONCLUSION

The present study evaluated the role of admission cardiotocography (CTG) and amniotic fluid index (AFI), both individually and in combination, in predicting perinatal outcomes in low-risk term pregnancies.

Most participants demonstrated reassuring CTG patterns and normal AFI at admission, indicating generally favorable fetal status in this population. However, a proportion of cases showed non-reassuring CTG or oligohydramnios, highlighting the importance of routine admission assessment.

In this study, neither admission CTG nor AFI alone showed a significant association with major perinatal outcomes, including mode of delivery, meconium-stained liquor, Apgar score, and NICU admission. When used in combination, CTG and AFI demonstrated limited predictive value, with a significant association observed only for low Apgar score at 1 minute.

Overall, admission CTG and AFI have limited predictive accuracy when used independently in low-risk pregnancies. Their combined use may help in identifying neonates requiring immediate attention at birth. These tools should therefore be used as adjuncts to clinical assessment rather than as standalone predictors of perinatal outcome.

## REFERENCES


1. World Health Organization. Newborns: Improving survival and well-being Geneva: World Health Organisation; 2020 [Internet]. 2021
2. Lawn JE, Blencowe H, Oza S, You D, Lee AC, Waiswa P, et al. Every Newborn: progress, priorities, and potential beyond survival. Lancet. 2014;384(9938):189-205.
3. Freeman RK, Garite TJ, Nageotte MP, Miller LA. Fetal Heart Rate Monitoring. 4th ed. Philadelphia: Lippincott Williams & Wilkins; 2012.
4. Ayres-de-Campos D, Spong CY, Chandraharan E; FIGO Intrapartum Fetal Monitoring Expert Consensus Panel. FIGO consensus guidelines on intrapartum fetal monitoring: Cardiotocography. Int J Gynaecol Obstet. 2015;131(1):13-24.
5. Alfirevic Z, Devane D, Gyte GML, Cuthbert A. Continuous cardiotocography (CTG) as a form of electronic fetal monitoring (EFM) for fetal assessment during labour. Cochrane Database Syst Rev. 2017;2:CD006066.
6. Devane D, Lalor JG, Daly S, McGuire W, Cuthbert A, Smith V. Cardiotocography versus intermittent auscultation of fetal heart on admission to labour ward for assessment of fetal wellbeing. Cochrane Database Syst Rev. 2017;1:CD005122.
7. Phelan JP, Ahn MO, Smith CV, Rutherford SE, Anderson E. Amniotic fluid index measurements during pregnancy. J Reprod Med. 1987;32(8):601-604.
8. Rossi AC, Prefumo F. Perinatal outcomes of isolated oligohydramnios at term and post-term pregnancy: a systematic review of literature with meta-analysis. Eur J Obstet Gynecol Reprod Biol. 2013;169(2):149-154.
9. Chauhan SP, Sanderson M, Hendrix NW, Magann EF, Devoe LD. Perinatal outcome and amniotic fluid index in the antepartum and intrapartum periods: a meta-analysis. Am J Obstet Gynecol. 1999;181(6):1473-1478.
10. Pattnaik T, Pati S, Khilar D. Admission cardiotocography and its correlation with neonatal outcome in high-risk pregnancies. J Obstet Gynecol India. 2015;65(4):234-238.
11. Kaur H, Kaur R, Sood M. Role of admission cardiotocography in predicting perinatal outcome. Int J Reprod Contracept Obstet Gynecol. 2016;5(4):1028-1032.
12. Choudhary R, Rohilla M, Chopra S. Perinatal outcome in oligohydramnios at term pregnancy. Int J Reprod Contracept Obstet Gynecol. 2017;6(11):4985-4989.
13. Reddy L, Prasanna B, Kumar S. Role of amniotic fluid index in predicting perinatal outcome in term pregnancy. Int J Clin Obstet Gynaecol. 2019;3(2):45-49.
14. Mishra S, Mishra N, Mahapatra PC. Combined role of admission test and amniotic fluid index in predicting perinatal outcome. Int J Reprod Contracept Obstet Gynecol. 2018;7(5):1823-1828.
15. Bhat R, Parveen S, Bashir S. Combined assessment of admission cardiotocography and amniotic fluid index in predicting adverse perinatal outcome. Int J Obstet Gynaecol Res. 2020;7(3):112-117.
16. Singh S, Gupta M, Soni A. Combined role of admission cardiotocography and amniotic fluid index in predicting perinatal outcome. Int J Reprod Contracept Obstet Gynecol. 2018;7(9):3568-3573.




ISSN (O): 2687-5365; ISSN (P): 2753-6556

17. Nabhan AF, Abdelmoula YA. Amniotic fluid index versus single deepest vertical pocket for predicting adverse pregnancy outcome. Cochrane Database Syst Rev. 2008;(3):CD006593
18. Magann EF, Chauhan SP, Barrilleaux PS, Whitworth NS, Martin JN Jr. Amniotic fluid index and single deepest pocket: weak indicators of abnormal fetal outcome. Aust N Z J Obstet Gynaecol. 2000;40(3):281-286.
19. Patnaik S, Pradhan P, Mohapatra J. Role of admission cardiotocography and amniotic fluid index in predicting perinatal outcome in term pregnancy. J Obstet Gynaecol India. 2021;71(4):382-388.


ISSN (O): 2687-5365; ISSN (P): 2753-6556