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Apgar scoring provides prognostic information also in preterm infants

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BACKGROUND

While gestational age is the major determinant of neonatal death in preterm infants, the value of Apgar score in preterm infants has been questioned. In this large national cohort study, we investigated the joint effect of gestational age and Apgar score on the risk of neonatal death.

METHODS

Using data from the Swedish Medical Birth Register, we identified 113,300 preterm infants (22 to 36 completed weeks of gestation) born from 1992 through 2016. In analyses stratified according to gestational age (22 to 24 weeks, 25 to 27 weeks, 28 to 31 weeks, 32 to 34 weeks, and 35 or 36 weeks), we estimated adjusted relative risks of neonatal death and absolute rate differences in neonatal mortality (i.e., the excess number of neonatal deaths per 100 births) according to the Apgar scores at 5 and 10 minutes and according to the change in the Apgar score between 5 minutes and 10 minutes.

RESULTS

There were 1986 neonatal deaths (1.8%). The incidence of neonatal death ranged from 0.2% (at 36 weeks of gestation) to 76.5% (at 22 weeks of gestation). Lower Apgar scores were associated with higher relative risks of neonatal death and greater absolute rate differences in neonatal mortality in all gestational-age strata. For example, among infants born at 28 to 31 weeks, the adjusted absolute rate differences (95% CI) according to the 5-minute Apgar score, with those who had a score of 9 or 10 serving as the reference group, were 51.7 (38.1 to 65.4) for a score of 0 or 1, 25.5 (18.3 to 32.8) for a score of 2 or 3, 7.1 (5.1 to 9.1) for a score of 4 to 6, and 1.2 (0.5 to 1.9) for a score of 7 or 8. An improved Apgar score between 5 minutes and 10 minutes was associated with lower neonatal mortality than a stable Apgar score.

CONCLUSIONS

In our study, Apgar scores at 5 and 10 minutes provided prognostic information about neonatal survival among preterm infants across gestational-age strata.

Stefan Johansson is founder of Neobiomics AB (EU VAT SE559072218601) working with niched food supplement solutions for neonatal intensive care.



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SKIN TO SKIN, SO BEAUTIFUL, SO USEFUL BUT SO DIFFICULT

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INTRODUCTION. Skin-to-skin has repercussions in the psycho-behavioral field¹, on the fetoneonatal transition, to favor a "positive" microbiota. The duration of the practice does not find a univocal classification, from up to the second hour of life, to a time of at least 60 minutes or the time needed for the first breastfeed. SUPC (Sudden Unexpected Postnatal Collapse) has been linked to the practice. However, other and different pathologies can also reveal themselves during skin to skin, and others can worsen if there is poor surveillance or underestimation. There is often a lack of staff necessary for all assistance functions. Operators perceive a difficulty due to the overlapping of care responsibilities in the delivery room (midwives, gynecologists, paediatricians, anesthetists and nurses). The newborn is entrusted to the midwife, who supervises him, but also carry out various procedures, and the pediatrician do not always have an agreement with the midwife on the state of health of the newborn. Furthermore, supervision functions cannot be delegated to parents.

MATERIAL AND METHODS. At the Vaio Hospital, a multidisciplinary protocol has been developed (year 2021), studied on the basis of the literature, the actual availability of personnel for assistance and the clinical-instrumental possibilities (see the figure), and hung this as information for parents in all delivery rooms. The primary selection of newborns candidates is based on the characteristics of the pregnancy and birth and the initial neonatal health conditions. Newborns who are not included in the selection are not precluded from skin-to-skin, but this is carried out after a primary specialist medical evaluation.

RESULTS. The development of a shared protocol led to the implementation of the practice from 32% to 69% of all spontaneous births and reduced conflicts. No serious adverse neonatal events were recorded.

CONCLUSIONS. During skin to skin, it is necessary to maintain surveillance by at least one operator, not only trained, but also directly responsible with procedures that allow the traceability of his work. Each center should develop a protocol based on its actual availability. Technological development and artificial intelligence applied to surveillance devices will probably allow a safer evolution of the practice.

Each author declares that he or she has no commercial associations (e.g. consultancies, stock ownership, equity interest, patent/ licensing arrangement, etc.) that might pose a conflict of interest in connection with the submitted abstract.

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DELIVERY MODE CONSIDERATIONS IN PRETERM NEONATAL CARE: A SYSTEMATIC REVIEW AND META-ANALYSIS OF 18,197 INFANTS.

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Objective: To investigate the association between actual and planned modes of delivery, neonatal mortality, and short-term outcomes among low-risk preterm pregnancies.

Data sources: A systematic literature search was conducted in three main databases (PubMed, EMBASE, and the Cochrane Central Register of Controlled Trials (CENTRAL)) from inception to November 16, 2022. The protocol was registered in advance in the International Prospective Register of Systematic Reviews (CRD42022377870).

Study eligibility criteria: Eligible studies examined pregnancies, \leq 32nd gestational week or preterm infants, under 1500 g birth weight. All infants received active care, and the outcomes were reported separately by different modes of delivery. Singleton and twin pregnancies at vertex and breech presentations were included. Studies that included high-risk pregnancies (preeclampsia and placental abruption) were excluded. Primary outcomes were neonatal mortality and intraventricular hemorrhage.

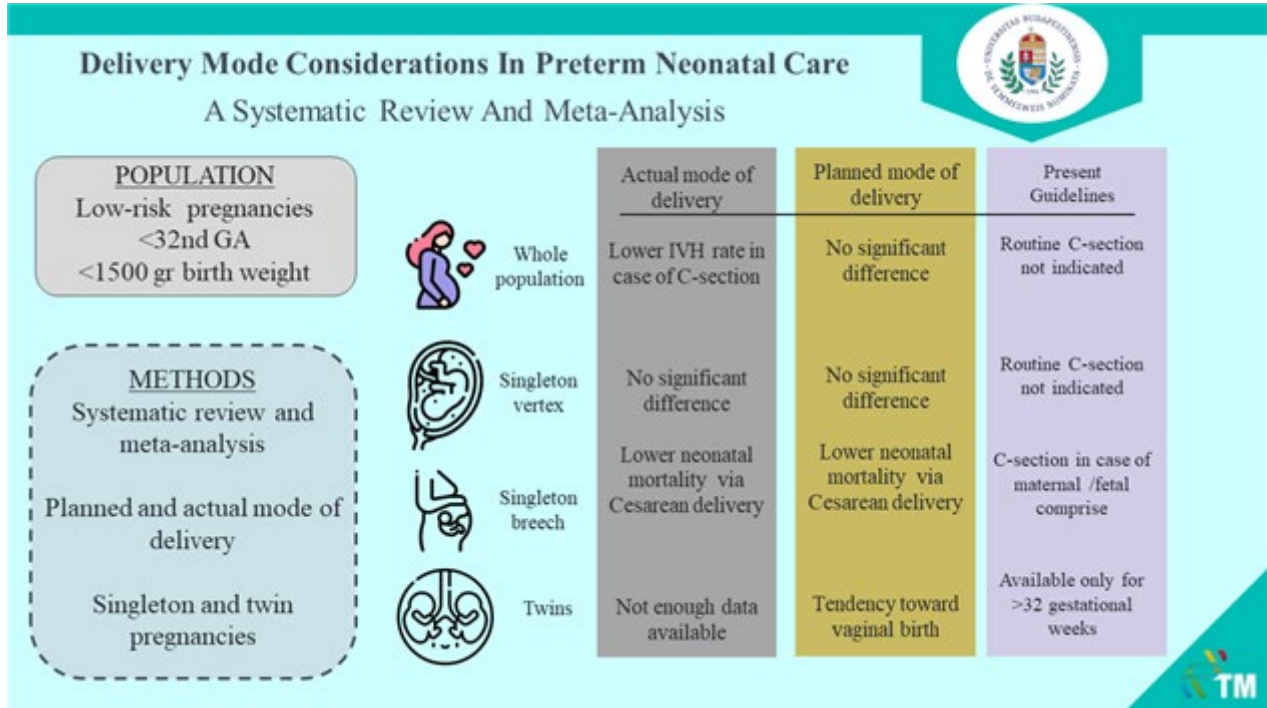
Study appraisal and synthesis methods: Articles were selected by title, abstract, and full text, and disagreements were resolved by consensus. Random effects model-based odds ratios with corresponding 95% confidence intervals were calculated for dichotomous outcomes.

Results: A total of twenty-one observational studies were included involving a total of 18,197 preterm infants in this systematic review and meta-analysis. Actual (odds ratio, 0.75; 95% confidence interval, 0.49 to 1.15) and planned (odds ratio, 0.95; 95% confidence interval, 0.62 to 1.47). Cesarean delivery did not significantly improve the survival of very preterm infants compared with vaginal delivery. The odds of intraventricular hemorrhage, however, were higher for vaginal delivery (odds ratio, 0.67; confidence interval, 0.60-0.75). Subset analysis found significantly lower odds of death for singleton breech premature deliveries born by both planned (odds ratio, 0.56; 95% confidence interval, 0.32 to 0.98) and actual (odds ratio, 0.34; 95% confidence interval, 0.13 to 0.88) cesarean delivery. ROBINS-I was used to assess the risk of bias.



Conclusion: Cesarean delivery should be the mode of delivery for very preterm breech births due to the higher mortality in preterm infants born via vaginal delivery.

None declared





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CURRENT PRACTICES AND ATTITUDES REGARDING UMBILICAL CORD CLAMPING AND CUTTING AMONG CROATIAN MIDWIVES

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INTRODUCTION: Delayed cord clamping has been shown to have significant beneficial effects on the neonate and its transition to extrauterine life, including improved cardiovascular and respiratory stability, potential long-term benefits for the infant's neurological development, and reduced risk of complications in preterm newborns. Despite strong evidence that suggest benefits of delayed cord clamping, policies and practises for the timing of cord clamping vary widely. Currently, little is known about cord clamping and cutting practises in Croatia. This study aimed to determine practises and attitudes regarding umbilical cord clamping and cutting among midwives in Croatia.

MATERIAL AND METHODS: Cross-sectional design was used in this study. An online questionnaire focusing on current practises of cord clamping and cutting was distributed to practising midwives in Croatia in March 2024 with the help of the Croatian Chamber of Midwives.

RESULTS: A total of 166 participants completed the questionnaire. Only 14% of respondents stated that their workplace had written protocols for cord clamping and cutting. The majority of respondents (61,5%) clamp umbilical cord after it ceases to pulsate. When it comes to preterm neonates, most midwives (38,9%) clamp and cut the cord immediately. 79,2% of respondents stated that they clamp the cord within 30 seconds during the caesarean section. 67,5 % of midwives clamp the cord while the neonate is lying on the mother. 70,5% of respondents stated that they clamp the cord earlier than usual if the newborn has an Apgar score of less than 7, and 27,7% of respondents cited the mother's negative blood group as a reason. There were significant differences in attitudes towards the benefits of early and delayed cord clamping depending on the midwife's level of education. Midwives with a higher level of education showed a more positive attitude towards the benefits of delayed cord clamping. Regional differences in the treatment of the umbilical cord stump have been identified.

CONCLUSION: The findings of this study emphasise the need for national guidelines on umbilical cord clamping that focus on the benefits of delayed cord clamping to ensure that all childbirth facilities incorporate the best scientific evidence into their routine practise.

None declared



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UMBILICAL CORD MANAGEMENT IN NEWBORN RESUSCITATION: A SYSTEMATIC REVIEW AND META-ANALYSIS

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INTRODUCTION The first minutes after birth are crucial for newborn health, but protocols for delivery room resuscitation are variable in some aspects due to heterogeneous infant populations and evolving guidelines. Numerous beneficial effects of delayed cord clamping have been proven on infants such as improved transitional circulation and reduced neonatal complications, but its timing in relation to resuscitation remains uncertain. The aim of this study was to explore the effects of newborn resuscitation initiated with intact umbilical cord.

MATERIAL AND METHODS A systematic search was performed in MEDLINE, Embase, CENTRAL and Web of Science from inception to March 1, 2024. Eligible articles compared neonatal outcomes in newborns receiving initial stabilization steps before and after cord clamping.

RESULTS Of the 12 studies that met our inclusion criteria, 6 RCTs were included in the quantitative analysis. In this study, no statistically significant differences were found in delivery room parameters, in-hospital mortality and neonatal outcomes between the examined groups. Higher SpO₂ at 5 minutes after birth in the intact cord resuscitation group compared to the cord clamping prior to resuscitation group (MD 6.67%, 95% CI [-1.16%, 14.50%]) was observed. There were no significant differences in the early complications of prematurity (NEC \geq grade 2: RR 2.05, 95% CI [0.34, 12.30], ROP requiring treatment: RR 1.60, 95% CI [0.50, 5.13], all grades of IVH: RR 1.25 [95% CI 0.77, 2.00]). Separate analysis of studies that used specialized resuscitation trolleys resulted in a RR of 0.75, 95% CI [0.06, 10.11] for severe IVH.

CONCLUSIONS Intact cord management during resuscitation appears to be safe and may improve initial oxygenation, although this is in conflict with current standards for delivery room resuscitation. The early complications of prematurity remain unclear. The use of specialized resuscitation trolleys seems promising to reduce the risk of IVH. There is an urgent need for further high-quality RCTs with larger patient numbers, especially with specialized resuscitation trolleys and physiological-based cord clamping.

None declared



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Relationship Between Chemokine Levels of Cord Blood in Preterm Babies With Antenatal Oxidative Stress-Associated Morbidities

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Introduction: Oxidative stress occurs when free radicals increase and exceed the levels of antioxidant mechanisms that can neutralize them. It causes tissue damage by causing protein, lipid and polysaccharide oxidation, DNA fragmentation, base modifications and breaks in the DNA chain. Oxidative stress exposed during pregnancy causes an increase in the risk of morbidity and mortality in newborns. This study aimed to determine oxidative stress, which begins in the antenatal period in preterm babies, by measuring chemokine levels in cord blood and to show the correlation between chemokine levels and morbidities of prematurity.

MATERIAL AND METHODS: Babies born at 32 weeks' gestation and below in two centers were included. IL-8, IP-10, eotaksin, TARC, MCP-1, MIP-1alpha, MIG, ENA-78, MIP-3alpha, GROalpha, I-TAC, MIP-1beta levels in plasma obtained from cord blood of patients measured. The relationship between premature morbidities detected during the follow-up of the patients and cord blood chemokine levels was examined. This thesis study was supported by TÜBİTAK.

RESULTS: Total 55 patients with an average birth week of 29.1 weeks (± 2.8) and an average birth weight of 1263 (± 467.8) grams were included in the study. When the participants were divided into three groups according to gestational week, an increase in IL-8 level was observed as the gestational week decreased ($p = 0.008$). IL-8 levels in those with bronchopulmonary dysplasia ($p=0.0022$), IP-10 levels in those with intraventricular hemorrhage ($p=0.031$), IL-8 in those with preintraventricular leukomalacia ($p= 0.039$) levels, MIP-3beta ($p=0.031$) levels in those treated for retinopathy of prematurity, and IL-8 ($p=0.048$) levels in those with death were found to be significantly higher.

CONCLUSIONS: Our findings support that oxidative stress and inflammation, which begin in the antenatal period, play a role in the pathogenesis of morbidities of prematurity. Chemokine measurements from cord blood will be valuable in identifying risky babies.

None declared