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Antepartum and Intrapartum Risk Factors Associated with Low One-minute Apgar Score: A Case-control Study

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ABSTRACT

Objective: To determine antepartum and intrapartum risk factors associated with low 1-minute Apgar score (≤ 7). A further aim was to develop a predictive model for low Apgar score at 1 minute based on significant risk factors.

Materials and Methods: A case-control study was conducted by including 600 newborns delivered at Vajira Hospital between January 2011 and October 2012. Cases were 200 newborns with 1-minute Apgar score of ≤ 7, while controls were 400 newborns with the score of > 7. Antepartum and intrapartum characteristics were compared between both groups. The independent risk factors were determined by multivariable analysis and were transformed into components of a risk model. The performance of this model was assessed through a receiver-operating characteristic curve analysis.

Results: Complete data of 600 newborns were obtained. By multivariable analysis, four antepartum and intrapartum variables were identified as independent factors associated with low 1-minute Apgar score. These included number of antenatal care, meconium stained amniotic fluid, mode of delivery and low birth weight. The independent variables were integrated into a predictive score which ranged from 0–7 points. The optimal cut-off score of ≥ 2 yielded high sensitivity of 74.5% but low specificity of 52.5% for the prediction of low 1-minute Apgar score.

Conclusions: Low 1-minute Apgar score was significantly associated with number of antenatal care, meconium stained amniotic fluid, operative obstetric deliveries, and low birth weight. The risk model based on antepartum and intrapartum characteristics yielded high sensitivity but low specificity to predict low 1-minute Apgar score.

Keywords: Apgar score, risk model

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Introduction

The Apgar score is used worldwide as a simple and rapid test to assess the health of a newborn at 1 and 5 minutes after birth[1]. This test comprises five parameters including skin color, heart rate, reflex irritability, muscle tone, and respiratory effort, resulting in a total score ranging from 0 to 10 points[2]. The 1-minute Apgar score is an indicator of the requirement for immediate resuscitation, while the 5-minute score reflects the effectiveness of resuscitative efforts[3,4]. Although a low Apgar score has been regarded as a poor marker of asphyxia, several studies have shown an association between a low Apgar score at 5 minutes after birth and the risk of neonatal death, cerebral palsy, epilepsy, and mental retardation[4-7].

From a study of Ondoa-onoma et al in Uganda population[3], the rate of neonates with an Apgar score ≤ 7 at 1 minute after birth who still had an Apgar score ≤ 7 at 5 minutes was 2.8%. The authors also observed that neonates whose both 1-minute and 5-minute Apgar score were ≤ 7 had a significantly higher risk of death than neonates whose 1-minute and 5-minute Apgar score were 8-10. One previous Thai population-based study found that the rates of newborns with an Apgar score ≤ 7 at 1 minute after birth were high at 90.20 to 100.76 per 1,000 live births[8]. However, there has been no report which evaluated the rate of low 5-minute Apgar score among Thai neonates whose 1-minute Apgar score was ≤ 7.

Bearing in mind the high rate of a low Apgar score at 1 minute after birth among Thai neonates, identification of women who are at risk of delivering a baby with such a condition might improve the perinatal outcome. Although some studies had used obstetric or clinical characteristics of the women to determine the risk of low 1-minute Apgar score, most of identifiable risk factors were intrapartum characteristics[8-10]. In addition, no risk model was developed. The purpose of this study was to evaluate both antepartum and intrapartum risk factors for an Apgar score ≤ 7 at 1 minute after birth. A further aim was to develop a risk model based on significant antepartum and intrapartum factors to predict the risk of low 1-minute Apgar score and to determine the diagnostic performance of this model.

Materials and Methods

This case-control study was approved by the Vajira Institutional Review Board (Registered Number 094/55). Medical records of all singleton pregnant women who attended our antenatal clinic and delivered in our institution between January 2011 and October 2012 were reviewed. Eligibility criteria were gravidas with certain gestational age (GA) by sure last menstrual period and by mid-trimester or first-visit ultrasound confirmation who delivered at GA ≥ 28 weeks. Exclusion criteria were those who had major fetal anomaly or chromosomal abnormality, stillbirth, and incomplete data record.

The study population was divided into two groups: case and control groups. Cases referred to women who delivered an infant with an Apgar score ≤ 7 at 1 minute, while controls consisted of gravidas who gave birth to a baby whose 1-minute Apgar score was > 7. The assigned case-to-control ratio was 1:2. When one case subject was selected, two control subjects would then be chosen from two women who gave birth at the closest (either before or after) time to a delivery of each case.

According to the results of Amornkitbumrung et al[11], the rates of 1-minute Apgar score ≤ 7 were 9.1% and 3.1% in neonates who were delivered from women with and without meconium stained amniotic fluid, respectively. We performed sample size calculation based on these data along with 5% type I error and 20% type II error. We added 25% to the number calculated and total of 195 cases and 390 controls were required. However, since we aimed to evaluate 20 antepartum and intrapartum variables, we then increased the number of sample size to 600 women (200 cases and 400 controls) in order to have adequate power for data analysis. This number of sample size was derived from a general rule of one predictor per 10 neonates with 1-minute Apgar score ≤ 7[12].

Data collection consisted of antepartum demographic and clinical characteristics, intrapartum factors, and neonatal outcomes which included Apgar

score at 1 minute. Antepartum demographic and clinical characteristics were age, level of education, current smoking, alcohol drinking, drug abuse, parity, number of antenatal care (ANC), maternal medical or obstetric complications, body mass index (BMI), and antenatal anemia. Intrapartum factors included oxytocin and analgesic usages, history of meconium stained amniotic fluid, GA at delivery, mode and time of delivery, duration of second stage of labor, presence or absence of episiotomy, neonatal gender and birth weight.

Statistical analysis was performed with the SPSS software package version 11.5 (SPSS Inc., Chicago, IL, USA). Continuous variables were presented as mean with standard deviation and categorical variables as number with percentage. Student *t*-test and χ^2 test were used to compare continuous and categorical variables, respectively. The odds ratio (OR) with 95% confidence interval (CI) of each variable for the risk of low 1-minute Apgar score was assessed by logistic regression analysis adjusted for potential confounding factors. The coefficients of significant variables from this regression model were transformed into components of a risk score. A receiver-operating characteristic curve (ROC) was plotted to determine the optimal cut-off score with its sensitivity and specificity for the prediction of low 1-minute Apgar score. P<0.05 was considered statistically significant.

Results

Complete data on 600 pregnant women who gave birth during the study period were recruited. The mean ages of case and control subjects were 27.33 ± 6.9 years and 26.74 ± 6.4 years, respectively. Regarding their antenatal characteristic features (Table 1), we found that the case group had significantly higher rates of alcohol drinking, drug abuse, less frequent ANC (< 5 times), and medical or obstetric complications but lower rate of more frequent ANC (> 9 times) than the control group. Both groups had similar characteristics of proportion of either teenage or elderly mothers, rates of Bachelor degree or higher, smoking, nullipara, antenatal anemia, and mean BMI.

With respect to their intrapartum features, women from the case group were observed to have higher rates of meconium stained amniotic fluid, preterm delivery, operative vaginal delivery, both elective and emergency cesarean section, and low birth weight infant than women from the control group. Detail of intrapartum characteristics of both groups are shown in Table 2.

Since we found that eight antepartum and intrapartum characteristics including alcohol drinking, drug abuse, number of ANC, medical or obstetric complications, meconium stained amniotic fluid, GA at delivery, mode of delivery, and low birth weight were significantly different between the two groups, we then performed further analysis to determine whether these eight variables were independent risk factors for 1-minute Apgar score ≤ 7. When multivariable analysis with adjustment for potential confounding factors was performed (Table 3), four variables were identified as independent risk factors. These included number of ANC ≤ 4 times (OR = 1.98, 95% CI = 1.15 - 3.42), meconium stained amniotic fluid (OR = 3.53, 95% CI = 1.91 - 6.50), mode of delivery including operative vaginal delivery (OR = 5.12, 95% CI = 2.13 - 12.38), elective cesarean section (OR = 4.42, 95% CI = 1.54-12.72), and emergency cesarean section (OR = 5.51, 95% CI = 2.26-13.47), and low birth weight(OR = 2.75, 95% CI = 1.41-5.32).

Among the four independent risk factors identified, number of ANC, meconium stained amniotic fluid, and mode of delivery were the three factors that were known before the delivery of a baby. We incorporated these three variables in a multiple logistic regression model to derive a predictive score for low Apgar score at 1 minute. The risk score points are shown in Table 4. Each coefficient of the independent variables from this regression analysis was divided by 0.488 (the lowest coefficient value of the significant variable, corresponding to number of ANC of 5 - 9 times) and rounded to the nearest integer. The total predictive score ranged from 0 – 7 points. Fig. 1. depicts the ROC curve of this risk model, which showed a moderate area under the curve (AUC) of 0.686 (95% CI = 0.642 – 0.731). At the optimal cut-off score of ≥ 2, the sensitivity, specificity, and area under the ROC curve to predict low 1-minute Apgar score were 74.5%, 52.5%, and 0.635 (95% CI = 0.589 – 0.681), respectively (Table 5).

Table 1. Antepartum demographic and clinical characteristics

	Case group (n = 200)	Control group (n = 400)	P
Age(years)	27.33 ± 6.9	26.74 ± 6.4	0.529*
Education			0.669*
Bachelor degree or higher	17 (8.5)	38 (9.5)	
Lower than Bachelor	183 (91.5)	362 (90.5)	
Smoking			0.051*
Yes	9 (4.5)	7 (1.8)	
No	191 (95.5)	393 (98.2)	
Alcohol drinking			0.019*
Yes	11 (5.5)	9 (2.2)	
No	189 (94.5)	391 (97.8)	
Drug abuse			0.012**
Yes	6 (3.0)	2 (0.5)	
No	194 (97.0)	398 (99.5)	
Parity			0.776*
Nullipara	80 (40.0)	157 (39.2)	
Multipara	120 (60.0)	243 (60.8)	
Number of ANC(times)			0.007*
< 5	58 (29.0)	77 (19.2)	
5-9	92 (46.0)	184 (46.0)	
≥ 10	50 (25.0)	139 (34.8)	
Maternal medical/obstetric complications			0.001*
Yes	50 (25.0)	57 (14.2)	
No	150 (75.0)	343 (85.8)	
Prepregnancy BMI (kg/m2)			0.471**
< 20.0	6 (3.0)	7 (1.8)	
20.0 - 24.9	47 (23.5)	97 (24.2)	
25.0 – 29.9	87 (43.5)	193 (48.2)	
≥ 30.0	60 (30.0)	103 (25.8)	
Antenatal anemia			0.426*
Yes	92 (46.0)	169 (42.2)	
No	108 (54.0)	231 (57.8)	

Data are mean (SD) or n (%).

Abbreviation: ANC = antenatal care; BMI = body mass index; n = number; SD = standard deviation.

*Chi-square test; ** Fisher exact test.

Table 2. Intrapartum demographic and clinical characteristics

	Case group (n = 200)	Control group (n = 400)	P
Oxytocin usage			0.579*
Yes	104 (52.0)	216 (54.0)	
No	96 (48.0)	184 (46.0)	
Analgesic usage			0.155*
Yes	99 (49.5)	221 (55.2)	
No	101 (50.5)	179 (44.8)	
Meconium stained amniotic fluid			<0.001*
Yes	34 (17.0)	23 (5.8)	
No	166 (83.0)	377 (94.2)	
GA at delivery			<0.001*
Preterm	50 (25.0)	35 (8.8)	
Term	150 (75.0)	365 (91.2)	
Mode of delivery			<0.001*
Normal vaginal delivery	95 (47.5)	283 (70.7)	
Operative vaginal delivery	15 (7.5)	10 (2.5)	
Elective C/S	15 (7.5)	27 (6.8)	
Emergency C/S	75 (37.5)	80 (20.0)	
Time of delivery			0.432*
Office work hours	102 (51.0)	216 (54.0)	
Non-office work hours	98 (49.0)	184 (46.0)	
Duration of second stage of labor†	19.4 ± 27.7	21.7 ± 25.9	0.326**
Episiotomy†			0.144*
Yes	102 (82.3)	259 (80.7)	
No	22 (17.7)	62 (19.3)	
Neonatal gender			0.509*
Male	109 (54.5)	200 (50.0)	
Female	91 (45.5)	200 (50.0)	
Low birth weight			<0.001*
Yes	48 (24.0)	23 (5.8)	
No	152 (76.0)	377 (94.2)	

Data are mean (SD) or n (%).

† Collected in 403 women who delivered with normal vaginal delivery and operative vaginal delivery.

Abbreviation: GA = gestational age; C/S = cesarean section; n = number; SD = standard deviation.

* Chi-square test; ** Student t –test.

Table 3. Crude and adjusted odds ratios for risk factors associated with low 1-minute Apgar score in the case group

Factor	Crude OR	95% CI	Adjusted OR*	95% CI
Alcohol drinking				
Yes	2.75	1.14 - 6.64	2.20	0.78 - 6.24
No**	1.00	-	1.00	-
Drug abuse				
Yes	6.11	1.22 - 30.54	3.15	0.46 - 20.46
No**	1.00	-	1.00	-
Number of ANC (times)				
< 5	2.12	1.32 - 3.38	1.98	1.15 - 3.42
5-9	1.38	0.92 - 2.08	1.48	0.94 - 2.31
≥ 10**	1.00	-	1.00	-
Maternal medical/obstetric complications				
Yes	1.99	1.30 - 3.04	1.38	0.85 - 2.26
No**	1.00	-	1.00	-
Meconium stained amniotic fluid				
Yes	3.33	1.90 - 5.81	3.53	1.91 - 6.50
No**	1.00	-	1.00	-
GA at delivery				
Preterm	3.44	2.15 - 5.52	1.82	0.98 - 3.38
Term**	1.00	-	1.00	-
Mode of delivery				
Operative vaginal delivery	4.47	1.94 - 10.28	5.14	2.13 - 12.38
Elective C/S	1.66	0.85 - 3.24	4.42	1.54 - 12.72
Emergency C/S	2.87	1.94 - 4.24	5.51	2.26 - 13.47
Normal vaginal delivery**	1.00	-	1.00	-
Low birth weight(< 2500 g)				
Yes	5.10	3.00 - 8.68	2.75	1.41 - 5.32
No**	1.00	-	1.00	-

Abbreviation: ANC = antenatal care; GA = gestational age; C/S = cesarean section; OR = odds ratio; CI = confidence interval.

*Adjusted for the other variables in the table.

**Reference group.

Table 4. Risk score based on antepartum and intrapartum factors for the prediction of low 1-minute Apgar score.

Factor	Coefficient	Point*
Number of ANC (times)		
< 5	1.028	2
5-9	0.488	1
≥ 10**	-	0
Meconium stained amniotic fluid		
Yes	1.207	2
No**	-	0
Mode of delivery		
Operative vaginal delivery	1.613	3
Elective C/S	0.743	2
Emergency C/S	1.089	2
Normal vaginal delivery**	-	0

Abbreviation: ANC = antenatal care; C/S = cesarean section.

*Point was assigned to each factor based on its coefficient value. Each coefficient was divided by 0.488 (the lowest value of the significant factor) and rounded to the nearest integer; **Reference group.

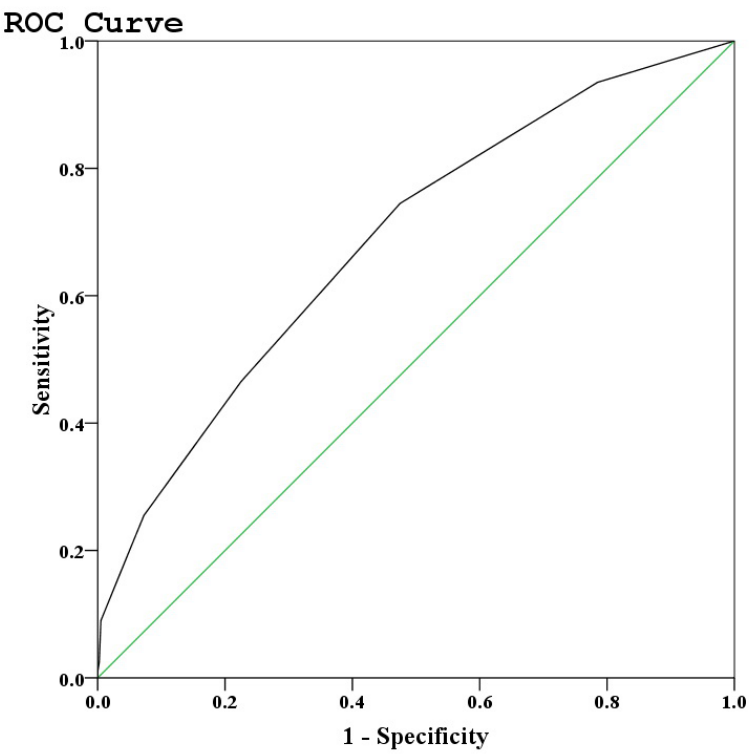

Fig. 1. A receiver-operating characteristic curve of the predictive model for low 1-minute Apgar score.

Table 5. Diagnostic performance of the risk model at each cut-off point for the prediction of low 1-minute Apgar score

Cut-off point	Specificity (%) [95% CI]	Sensitivity (%) [95% CI]	AUC [95% CI]
≥ 1	21.5 (17.6 – 25.9)	93.5 (88.9 – 96.3)	0.575 (0.528 – 0.622)
≥ 2	52.5 (47.5 – 57.5)	74.5 (67.7 – 80.3)	0.635 (0.589 – 0.681)
≥ 3	77.5 (73.0 – 81.4)	46.5 (39.5 – 53.7)	0.620 (0.571 – 0.669)
≥ 4	92.8 (89.6 – 95.0)	25.5 (19.7 – 32.2)	0.591 (0.541 – 0.641)
≥ 5	99.5 (98.0 – 99.9)	9.0 (5.6 – 14.1)	0.542 (0.492 – 0.593)
≥ 6	99.8 (98.4 – 99.9)	2.5 (0.9 – 6.1)	0.511 (0.462 – 0.561)

Abbreviation: AUC = area under the curve; CI = confidence interval

Discussion

The Apgar score is well-accepted as the best tool for the identification of infants who require resuscitation at birth. In Thailand, an Apgar score at 1 minute is listed as one of the important indicators used to monitor the status of neonatal health, and the rate of 1-minute Apgar score ≤ 7 has been suggested to be less than 30 per 1000 live births. The results of previous Thai population-based studies demonstrated a wide extent of the rates of low 1-minute Apgar score, ranging from 28.2 per 1,000 live births to 100.8 per 1,000 live births[8,13,14]. During the study period, the prevalence rate in our population was 42.4 per 1,000 live births. This prevalence fell within the range of previously observed findings, but was still higher than the suggested rate of 30 per 1,000 live births. From the practical point of view, the ability to identify those who are likely to have low 1-minute Apgar score would be useful because proper team, equipments, and interventions could be prepared and applied to the high risk cases during the intrapartum period and immediately after birth. This may help improve the pregnancy outcome.

In this study, we found four out of 20 studied risk factors were independently associated with low 1-minute Apgar score. Of these 4 factors, three were derived from the intrapartum and one from the antepartum factors. Meconium stained amniotic fluid was one of the independent intrapartum risk factors related to low 1-minute Apgar score. Our result was in accordance with the findings of previous studies which found that the presence of meconium stained amniotic fluid, especially thick meconium stained liquor, was associated with low Apgar score in neonates[10,11]. The explanation for this association is likely due to meconium aspiration syndrome, which happens when a baby breathe meconium into the lungs leading to an acute airway obstruction right after birth[10,11]. This was supported by an evidence that early detection of meconium stained amniotic fluid and immediate endotracheal intubation and suction in these cases could reduce the occurrence of low Apgar score in relation to meconium aspiration syndrome[15,16].

The other independent intrapartum risk factor was method of delivery. Our findings of associations between low 1-minute Apgar score and operative vaginal delivery, elective cesarean section, or emergency cesarean section were in agreement with the findings from previous studies of Ondoa-Onama[3]and Amornkitbumrung[11]. The reasons behind these results are probably the pre-existing risk factors of the mothers and the neonates who needed operative delivery, such as severe pre-eclampsia, placenta previa, prolonged second stage of labor, or fetal distress which have an effect on the obstetricians' decision for an operative delivery. Aside from meconium stained amniotic fluid and method of delivery, we also identified low birth weight as an independent risk factors for low Apgar score at 1 minute. This finding confirmed the results of Praditsathawong et al and Amornkitbumrung et al who conducted studies in Thai population[10,11]. Indeed, there are two etiologic factors for low birth weight: preterm birth and intrauterine growth restriction (IUGR). In

respect of prematurity, immature organ systems could result in several disorders including pulmonary hypoplasia, hypoglycemia, and infection, leading to low Apgar score[17]. On the other hand, the mechanism by which IUGR contributes to low Apgar score could be explained by an effect of intrauterine hypoxia[18].

With regard to antepartum factor, we observed that women who attended our antenatal clinic less than five times throughout pregnancy had a significantly increased risk of delivering an infant with low 1-minute Apgar score. Our finding was contradictory to the results of Ondoa-onoma et al, Praditsathawong et al and Amornkitbumrung et al[3,10,11]. The differences between these studies might be that we assigned those who attended the antenatal clinic ≥ 10 times as the reference group while previous studies compared between antenatal clinic ≥ 4 times and less than.

In this study, we developed a predictive model for low 1-minute Apgar score based on significant antepartum and intrapartum variables obtained from multivariable analysis. This risk model included only three characteristic features so it was simple and convenient to apply to general pregnant women. In addition, it comprised the factors that were known prior to the delivery of a baby. Hence, a multidisciplinary team approach including an obstetrician, neonatologist, and skilled nurses as well as proper equipment could readily be applied in order to improve the efficacy of neonatal resuscitation. With its high sensitvity of 74.5% at the optimal cutoff score of ≥ 2, this risk model would be suitable for detecting cases (with score ≥ 2) who were at increased risk of delivering an infant with low 1-minute Apgar score. Nevertheless, due to its low specificity of 52.5%, it might not be good at identifying negative condition in women with score < 2.

The strength of our study was performed using 1:2 pair matching of subjects with controls to minimize a selection bias. The limitations of our study was a retrospective study, some demographic or clinical data might not be available.

In conclusion, our study demonstrated that the number of ANC, meconium stained amniotic fluid, mode of delivery, and low birth weight were independent risk factors for low Apgar score at 1 minute. When the independent variables were integrated into a risk model, it yielded a good diagnostic performance to predict women who were likely to have an infant with low 1-minute Apgar score. However, since our data were limited to a homogeneous population in only one institution, future research is warranted to confirm our results in other settings where population backgrounds are different. Further studies are also required to determine whether applying more stringent monitoring and interventions to those with risk score ≥ 2 would reduce the prevalence of low 1-minute Apgar score.

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ปัจจัยเสี่ยงในระยะก่อนคลอดและระยะคลอดที่สัมพันธ์กับการมีคะแนนแอปการ์ต่ำที่ 1 นาที: การศึกษาแบบเคส-คอนโทรล

สิทธิคมน์ สัตยารักษ์, สมนิมิตร เหลืองรัศมีรุ่ง, บุษบา วิริยะสิริเวช, ชาดากานต์ ผโลประการ

วัตถุประสงค์ *: เพื่อหาปัจจัยเสี่ยงในระยะก่อนคลอดและระยะคลอดที่สัมพันธ์กับคะแนนแอปการ์ที่ 1 นาทีเท่ากับหรือน้อยกว่า 7 คะแนนในทารกแรกเกิด เพื่อใช้พัฒนาระบบวิเคราะห์การคาดการณ์สำหรับการทำนายต่อการเกิดภาวะคะแนนแอปการ์ที่ 1 นาทีเท่ากับหรือน้อยกว่า 7 คะแนน*

วัสดุและวิธีการ *: ทำการศึกษาแบบ เคส-คอนโทรลในทารกแรกเกิดจำนวน 600 ราย ที่คลอดในคณะแพทยศาสตร์วชิรพยาบาลระหว่างเดือนมกราคม พ.ศ. 2554 ถึงเดือนตุลาคม พ.ศ. 2555 โดยคัดเลือกกลุ่มศึกษาหรือกลุ่มทารกแรกเกิดที่มีคะแนนแอปการ์ที่ 1 นาที เท่ากับหรือน้อยกว่า 7 จำนวน 200 ราย กับกลุ่มควบคุมหรือกลุ่มทารกแรกเกิดที่มีคะแนนแอปการ์ที่ 1 นาทีมากกว่า 7 จำนวน 400 ราย ทำการเปรียบเทียบปัจจัยเสี่ยงทั้งในระยะก่อนคลอดและระยะคลอด โดยใช้การวิเคราะห์ความสัมพันธ์แบบตัวแปรเดี่ยวและพหุตัวแปร หลังจากนั้นนำปัจจัยที่มีผลมาสร้างเป็นคะแนนในการทำนายการเกิดภาวะคะแนนแอปการ์ที่ 1 นาทีเท่ากับหรือน้อยกว่า 7 และหาจุดตัดที่เหมาะสม*

ผลการศึกษา *: ทารกแรกเกิดทั้ง 600 ราย มีข้อมูลในเวชระเบียนสมบูรณ์และถูกนำมาวิเคราะห์ทางสถิติ หลังจากการวิเคราะห์ความสัมพันธ์พหุตัวแปรพบปัจจัยเสี่ยงที่มีผล 4 ปัจจัยคือ จำนวนครั้งของการฝากครรภ์, ขี้เทาปนในน้ำคร่ำก่อนคลอด, วิธีการคลอด และทารกแรกเกิดน้ำหนักตัวน้อยภายหลังการสร้างเป็นคะแนนในการทำนาย (ค่าคะแนนตั้งแต่ 0-7) พบว่าคะแนนที่เหมาะสมในการทำนายแอปการ์ที่ 1 นาทีต่ำ คือ ≥ 2 โดยมีความไวสูง (ร้อยละ 74.5) แต่มีความจำเพาะต่ำ (ร้อยละ 52.5)*

สรุป *: ปัจจัยเสี่ยงในระยะก่อนคลอดและระยะคลอดที่สัมพันธ์กับคะแนนแอปการ์ที่ 1 นาทีต่ำในทารกแรกเกิด คือ จำนวนการฝากครรภ์, ขี้เทาปนในน้ำคร่ำก่อนคลอด, การช่วยคลอดทางสูติศาสตร์ และทารกแรกเกิดน้ำหนักตัวน้อย โดยแบบจำลองปัจจัยเสี่ยงในระยะก่อนคลอดและระยะคลอดต่อคะแนนแอปการ์ที่ 1 นาทีต่ำมีความไวสูงแต่มีความจำเพาะต่ำ*