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Research Article

Risk factors of poor outcome of pregnancy and delivery in adolescents: a case-control study at the Yaounde Gynaeco-Obstetric and Pediatric Hospital

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ABSTRACT

Background: Adolescence is a period of life between 10 and 19 years, marked by a state of psychological imbalance and immaturity of organs. The occurrence of pregnancy at this age group can cause social, psychological or obstetric problems (prematurity, unsafe abortion, obstructed labor). The objective of this study was to identify the risk factors of poor outcome of pregnancy and delivery in adolescents.

Methods: It was a case-control study with a retrospective data collection from January 1st, 2004 to December 31st, 2013 in the Yaounde Gynaeco-Obstetric and Pediatric Hospital. We included adolescent girls of 11 to 19 years old who delivered in the study site. We compared 128 adolescents of the case group who encountered poor outcome with 128 ones of the control groups with favorable outcome.

Results: At univariate analysis, the number of antenatal care consultations less than four OR: Odds Ratio (OR= 2.44 [1.41-4.22]; P=0.000), the antenatal care consultations done out of our study site (OR= 1.65(95%CI: 1.00-2.70); p=0.003) and the uterine fundal height less than 33 cm at the time of childbirth (OR=1.80(95%CI:1.08-2.98); p=0.015) were identified as risk factors of poor outcome. After linear logistic regression analysis, the number of antenatal care less than four (OR=1.92(1.0-3.56); p=0.037) remained as independent risk factor of poor outcome.

Conclusions: The number of antenatal visits less than four is an important risk factor of poor outcome of pregnancy and childbirth in adolescents at the Yaoundé gynaeco-obstetric and pediatric hospital.

Keywords: Risk factor, Poor outcome, Pregnancy, Delivery, Adolescent, Cameroon

INTRODUCTION

Adolescence is a period of life between 10 and 19 years, marked by a state of psychological imbalance and immaturity of organs. The occurrence of pregnancy at this age group can cause social, psychological or obstetric problems (prematurity, unsafe abortion, obstructed labour).¹

According to WHO, 16 million girls aged between 15 to 19 years give birth each year worldwide, representing 11% of all births. Ninety five percent of these births

occur in developing countries.^{2,3} The occurrence of pregnancy in adolescence is a source of major social, economic and medical problems both in developed countries and in developing countries.⁴ Poor outcome in pregnancy and childbirth are among the leading cause of death in the girls aged 15 to 19 years in many low income countries.^{2,3}

Hence, in order to improve maternal health in adolescents, we aimed to identify the risk factors of poor outcome in pregnancy and childbirth in adolescents

delivering at the Yaounde Gynaeco-Obstetric and Pediatric Hospital (YGOPH).

METHODS

It was a case-control study with a retrospective data collection from January 1st, 2004 to December 31st, 2013 at the Yaounde gynaeco-obstetric and pediatric hospital. We included adolescent girls of 11 to 19 years of age who delivered in the study site. We compared 128 adolescents of the case group who encountered poor outcome with 128 of the control group with favourable outcome. Data were collected using a data sheet, after obtaining ethical clearance from the institution's ethics committee. Parameters of interest were sociodemographic characteristics (age groups, profession, level of education, religion, marital status and Region of origin); obstetric history (gravidity, parity, living or dead children); types of antenatal care (number, site, quality); type of labor (spontaneous or induced, duration, mode and duration of membranes rupture, uterine fundal height); mode of delivery (vaginal or caesarean section,

vaginal delivery with or without episiotomy, operative or not, type of instrument); poor outcomes during pregnancy (anemia, threatened abortion, intercurrent Infections, preeclampsia, vaginal bleeding, preterm labor, intrauterine fetal death) poor outcomes at delivery (dystocia, perineal tear, preeclampsia, eclampsia, maternal fever, severe bleeding); poor outcomes in the immediate and early post-partum (post-partum hemorrhage, endometritis, anemia) and newborn characteristics (sex, weight, apgar score at 1 and 5 minutes). The data collected were analyzed using Epi Info Version 3.5.4 2012. In assessing the degree of association between the variables studied and the risk of poor outcome in adolescents we calculated the Odds ratio and its 95% confidence interval. The Fisher exact test and Chi square test were used for comparison of two groups with statistical significance accepted when P value <0.05.

RESULTS

The two groups were comparable for socio-demographic and obstetric history aspects.

Table 1: Significant variables in pregnancy and childbirth between the cases.

Variables Cases Controls	Control groups.			
	OR n (%)	P value n=128	n=128 (95% CI)	Or n (%)
Number of *ANC				
< 4	52 (40.6)	28 (21.9)	2.44 (1.41-0.22)	0.000
≥ 4	76 (59.4)	100 (78.1)	0.40 (0.23-0.70)	0.000
Sites of ANC				
In the study site	51 (39.8)	68 (53.1)	0.58 (0.35-0.95)	0.022
Out of the study site	73 (57)	57 (44.5)	1.65 (1.00-2.70)	0.030
None	4 (3.1)	3 (2.3)	1.34 (0.29-6.12)	0.5
Term labour /delivery				
Yes	86 (67.2)	121 (94.5)	0.11 (0.05 -0.27)	0.000
No	42 (32.8)	7 (5.5)	8.44 (3.62-19.68)	0.000
Uterine height				
<33cm	61 (47.7)	43 (33.6)	1.8 (1.08-2.98)	0.015
(33 cm-38 cm)	63 (49.2)	77 (60.2)	0.64 (0.391-0.5)	0.051
>38 cm	4 (3.1)	8 (6.3)	0.480.14-1.64)	0.188
Episiotomy				
Yes	15 (11.7)	34 (26.6)	0.36 (0.18-0.71)	0.001
No	113 (88.3)	94 (73.4)	2.72 (1.39-5.30)	0.001
Operative delivery				
Yes	3 (2.3)	10 (7.8)	0.28 (0.07-1.05)	0.042
No	125 (97.7)	118 (92.2)	3.53 (0.94-13.14)	0.042
Vacuum extraction				
Yes	1 (0.8)	8 (6.3)	0.11 (0.01-0.95)	0.017
No	127 (99.2)	120 (93.8)	8.46 (1.04-68.71)	0.017

*ANC: Antenatal care consultations

In the analysis of variables (Table 1), the number of antenatal care consultations less than four multiplied by 2.4 the risk of poor outcome [p = 0.000; OR = 2.44 (CI = 1.41 to 4.22)]. Having done antenatal care consultations elsewhere out of the Yaounde gynaeco-obstetrics and pediatric hospital increased by 1.65 folds the risk of poor outcome [p = 0.030; OR = 1.65 (1.00-2.70)] and uterine fundal height less than 33 cm at the time of delivery multiplied by 1.8 the risk of poor outcome [p = 0.015; OR=1.8 (1.08-2.98)]. In contrary, the two groups were comparable for quality of antenatal care consultations, type, duration of membrane rupture and duration of labour. There was 6 folds more risk of low birth weight in the poor outcome group [p=0.000 OR = 6.10 (CI = 2.59-14.38)].

Childbirth Features among adolescents

In analysing delivery characteristics ((Table 2), the following were noticed: delivering at term increased by about 8.5 folds the chance of favourable outcome in the control group [p = 0.000; OR = 8.44 (3.62-19.68)]. As protective factors we had: the use of episiotomy [p = 0.001; OR = 0.36 (CI = 0.18-0.71)] and vacuum extraction [p = 0.042; OR = 0.28 (CI = 0.07 1.05)].

Table 2: Risk factors in univariate logistic regression analysis.

Variables	OR	95% CI	P value
*ANC <4	2.44	(1.41-4.22)	0.000
*ANC elsewhere out of study site	1.65	(1.00-2.70)	0.030
Uterine fundal height <33cm	1.79	(1.08-2.98)	0.015
Delivery at term	0.11	(0.05-0.27)	0.000
Episiotomy	0.36	(0.18-0.71)	0.001
vacuum extraction	0.11	(0.01-0.95)	0.017
Low birth weight	6.10	(2.59-14.38)	0.000

*ANC: Antenatal care consultations

Table 3: Independant risk factors after logistic regression.

Variables	OR	95% CI	P value
*ANC < 4	1.92	(1.03-3.56)	0.037
*ANC out of study site	1.35	(0.77-2.34)	0.285
**UH < 33cm	1.39	(0.77-2.49)	0.265
Term delivery	0.16	(0.06-0.41)	0.000
Vacuum extraction	0.18	(0.02-1.59)	0.124
Episiotomy	0.37	(0.17-0.78)	0.009

*ANC: Antenatal care consultations ; **UH : Uterine Fundal Height

After logistic linear regression, confounding factors were eliminated (Table 3). The significant risk factor of poor outcome in pregnancy and childbirth of adolescents mother was the number of antenatal care visits below four (or =1.92 [1.03-3.56]; P = 0.037). It was found that delivery at term (or = 0.16 [0.06-0.41]; P=0.000) and episiotomy at childbirth (or=0.37 [0.17-0.78]; P = 0.009) were protective factors against poor outcome.

Types of poor outcome

These were mainly (Table 4) intercurrent infections 23 (57.50%) malaria being the leading infection (95.70%) and anemia 8 (20%) during pregnancy; Perineal tears 47 (64.40%), preeclampsia/eclampsia 18(24,60%) at delivery; postpartum hemorrhage 6(40%) and endometritis 5 (33.30%) in the immediate and early postpartum.

Table 4: Significant poor outcome in pregnancy and delivery.

Variables	Number	%
During pregnancy		
Intercurrent infections	23	57.50
Anemia	8	20.00
Intrauterine fetal death	6	15.00
Preterm labour	6	15.00
Preeclampsia	3	7.50
Threatened abortion	1	2.50
Vaginal bleeding	1	2.50
At delivery		
Perineal tear	47	64.40
Preeclampsia/eclampsia	18	24,65
Dystocia	10	13.70
Maternal Fever	2	2.74
Placenta abruptio	1	1.40
Post-partum complications		
Post-Partum haemorrhage	6	40.00
Endometrits	5	33.30
Anemia	4	26.70
Preeclampsia/eclampsia	1	6.70

DISCUSSION

The WHO recommends four antenatal care visits during pregnancy with specific activities whose effectiveness is scientifically proven.⁵ Our findings were in complete agreement with these recommendations. Indeed, in our study, the number of antenatal care consultations less than four was associated with an increase of about 2.5 times the risk of poor outcome (or = 2.44; [1.41-4.22]). It is during antenatal care consultations that pregnant women are educated about the warning signs and dangers of complications. They are offered screening and early treatment of pathologies. Care during childbirth is

therefore improved.⁶ Our results were consistent with those of Kongnyuy et al.⁷ Who studied in perinatal outcomes among adolescents, they found that in addition to the number of antenatal care consultations less than four, maternal age and lack of employment were risk factors of adverse perinatal outcomes. Chiabi et al.⁸ identified the maternal age below 20 years, primiparity and the number of antenatal care consultations less than four as risk factors of low birth weight. Unlike these two studies, we have not found maternal age nor lack of employment as risk factor of poor outcome. Some authors have compared the evolution of pregnancy among adolescents and adults. According to Mahfouz et al, having made as many antenatal care consultations as women aged 20-35 years (6.6±1.1 against 6.7±1.2 on average) the adolescent no longer represents a group at risk of adverse neonatal outcomes, especially if adequate antenatal care were provided.⁹ Our results point out the number of consultations visit as a significant risk factor of poor outcome. Again, for Kurth et al, when performing fewer antenatal care consultations compared to adult mothers adolescents were at risk of having babies with a small birth weight (3.3±1.9 against 4.4±1.9 on average; $P < 0.01$).¹⁰ Our study showed a 6 folds increased risk of low birth weight in the poor outcome group. Bulkumez et al. emphasized on the need of sufficient antenatal care consultations which reduces the occurrence of poor outcome.¹¹ According to Léticée et al, women with little or no follow up have a high risk of poor outcome of the pregnancy, particularly perinatal death (OR adjusted = 7.85; [2.80-22.02]) and prematurity (OR adjusted = 7.85; [2.80-22.02]).¹² In our study, more than half (57%) did their antenatal care consultations elsewhere out of the study site (OR = 1.65; [1.00-2.70]; $P = 0.030$). After linear logistic regression, this factor was not retained as a significant risk factor of poor outcome. According to Mburano, the quality of antenatal care consultations is different from a health facility to another, from a health district to another and from public to private.¹³ Antenatal services in public health facilities do not provide optimum satisfaction while the informal clinics focus on the profit not in accordance with the competence and the quality of care.^{14,15} It would therefore be desirable to do antenatal care visits at the place of delivery for the guarantee of care and prevention of poor outcomes. Uterine size less than 33 cm at the time of delivery was associated with an increased risk of poor outcome (or = 1.8; [1.08-2.98]; $P = 0.015$). These results corroborate with those of Adjahoto et al who stated that low gestational weight may be suspected if the uterine height at admission in the labor ward is less than or equal to 32 cm.¹⁶ Births occurred between 37 to 42 weeks (80.9%) of which 94.5% in the control group and 67.1%, in the case group (or = 0.11; [0.05-0.27]; $P = 0.000$). These results corroborate with those of Iloki et al; Jérôme; Geist et al stating that childbearing in adolescent girls is mostly at term (17-19) in contrary with authors like Mukhopadhyay et al; Omole-Ohosi et al; Thaithae et al, who have found more risk of premature birth in adolescent mothers.²⁰⁻²²

The practice of episiotomy during vaginal birth prevented poor outcomes (or = 0.36; [0.180-0.71]; $P = 0.001$) as it was shown by Enyindah et al to prevent third degree and complete perineal tears.²³ According to Räisänen et al, episiotomy decreases the risk of rupture of the anal sphincter in primiparous women or=0.83[0.75-0.92].²⁴ Our results showed an association with a favourable outcome in operative vaginal delivery (or = 0.28; [0.07-1.05]; $P = 0.042$), particularly the use of vacuum extraction (or = 0.11 [0.01- 0.95]; $P = 0.017$). According to Anate in Nigeria, the use of vacuum extraction is associated with less maternal birth canal trauma and less neonatal mortality compared to when the forceps is used.²⁵ According to Räisänen et al, vacuum extraction plus episiotomy in primiparous women at expulsion reduced the risk of rupture of the anal sphincter (or = 0.70 [0.57-0.85]).²⁴ Nkwabong et al, did not find any influence of type of the instrument used, on the Apgar scores of newborns be it vacuum extraction or forceps. Their poor maternal outcomes were minor, represented by vaginal and perineal tears.²⁶

CONCLUSION

After univariate analysis, the number of antenatal care consultations fewer than four, the antenatal care consultations done out of the Yaounde gynaeco-obstetric and pediatric hospital and the uterine height less than 33 cm at the labour room were identified as risk factors of poor obstetrical outcome. After linear logistic regression, the only significant risk factor of poor outcome was the antenatal care consultations less than four.

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