Is Multiparity in Adolescent Pregnancies Associated with Adverse Outcome?

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ABSTRACT

OBJECTIVE: Aim of this study was to compare the maternal and neonatal outcomes between adolescent multiparas and adults.

STUDY DESIGN: This retrospective cohort study included over 11 years and singleton multiparous pregnancies from women less than 29 years admitted for delivery after 22nd gestational weeks in tertiary educational hospital. All of patients were divided into two groups as adolescent multipara (under 18 years) and control (19-29 years). Pregnancy outcome and perinatal complications were evaluated. Mann-Whitney U-test, Independent sample t test, Pearson Chi-square test and Fisher Exact test were used for statistical analyses.

RESULTS: Gestational week at delivery was significantly lower in adolescent multipara group (38.37 ± 2.17) than control group (38.79 ±1.684) (p=0.014). Preterm birth rate (12.6%) and postpartum hemorrhage (5.7%) were higher in the adolescent multipara group than in controls as to be statistically significant. The cesarean delivery rate and other pregnancy complications such as diabetes mellitus, preeclampsia, intrauterine growth restriction, oligohydramnios, polyhydramnios, and placental abruption were similar with controls.

CONCLUSION: In conclusion, adolescent multipara pregnancies were associated with higher risks of adverse pregnancy outcomes, in particular preterm birth, lower birthweight and postpartum hemorrhage.

Keywords: Adolescent pregnancy, Caesarean section, Low birthweight, Perinatal mortality, Preterm birth

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Introduction

Adolescent pregnancy (AP) has virtually higher maternal and perinatal morbidity and mortality than adult pregnancy. Most of these pregnancies are seen in developing countries. The World Health Organization reported that about 16 million girls which are aged 15 to 19 years and two million girls under the age of 15 give birth every year. Ninety-five percent of APs that occur each year are in low- and middle-income countries (1). Adolescent pregnancies are associated with adverse pregnancy outcomes. Previous studies about adolescent pregnancy have reported several complications such as low birth weight, stillbirth, preterm delivery, maternal anemia, postpartum depression, eclampsia, maternal death and postnatal death (2-6).

Previous studies shown that multiparity in adult population seems to be also correlated with a lesser risk than primiparity, except the greater incidence of macrosomia among grand multiparas (7,8).

Several studies have evaluated the pregnancy outcomes and perinatal complications of first pregnancies in adolescents. However, there were few studies about the pregnancy outcomes of adolescent multipara. On the other hand, adolescent pregnancies are gradually increasing day by day in our country, especially in low income population group. Our hospital has intensively served this group. Hence, in this study, we aimed to compare pregnancy outcome and perinatal complications between adolescent multipara and adult multipara.

Material and Method

This was a retrospective cohort study over 11 years. All singleton multiparous pregnancies from women less than 29 years admitted for delivery after 22nd gestational weeks to our

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hospital from 1 January 2005 to 30 November June 2015 were eligible for the analysis. This variable was categorized by two groups: adolescent multipara (under 18 years) and control (19-29 years).

Data collection for the obstetric database from which the adolescent multipara and controls were drawn was under full ethical approval of the Local Ethics Committee (approval number: 2015-1009).

We collected 87 adolescent multiparous pregnancies attending our hospital from 2005 to 2015. Clinical characteristics including maternal age, gravida, parity, labor interval for last pregnancy, pregnancy outcome, and perinatal complications were evaluated. Labor characteristics and perinatal outcomes including gestational age, birthweight, and 1st and 5th minute Apgar scores were also assessed. Adequate pregnancy follow up was defined more than 7 visits at antenatal period.

Control group

Data regarding 1280 adult (19-29 years) multiparous women were matched from an obstetric database of women attending our hospital for routine clinical care in the period 2005-2015. Matching criteria included gravida, parity, and labor interval for the last two pregnancies (months).

Descriptive statistics were used to describe and compare the baseline characteristics of the patient groups. Continuous variables were compared using Student's t test and categorical variables were compared using the chi-square test. A p-value of <0.05 was accepted as statistically significant. All statistical analyses were performed using SPSS v.20.0 for Windows (SPSS, Inc., Chicago, IL).

Results

Between January 2005 and November 2015, 20,181 women gave birth in our obstetrics department. Mean maternal age at delivery among the adolescent multipara and controls were 17.70 ± 0.59 and 24.53 ± 3.82 years, respectively (p< 0.001). There were no significant statistical differences in terms of baseline characteristics of the study groups (except age) using the match process. Table 1 illustrates the comparison of these characteristics between two groups.

Table 2 shows the pregnancy outcome of the groups. No statistically significant difference was found between adolescent multipara and control groups in terms of adequate antenatal follow up. When compared live birth rates between both groups, there was no significant difference. Gestational week at

Table 1: *Baseline characteristics of the study groups, who adolescent multipara (n = 87) or controls (n = 384).*

	Adolescent multipara (n: 87)	Control group (n: 384)	*p* value
Age (years)	17.7 ± 0.6	24.5 ± 3.8	<0.01*
Gravida (min-max)	2 (2-4)	2 (2-6)	0.41*
Parity (min-max)	1 (1-3)	1 (1-5)	0.07*
Labor interval (months)	17.5 ± 4.8	17.4 ± 4.3	0.89*

**Mann-Whitney U-test.*
Data are expressed as mean ± SD or median (minimum-maximum).

Table 2: *Pregnancy outcomes in both groups.*

	Adolescent multipara (n: 87)	Control group (n: 384)	*p* value
Gestational age at delivery (weeks)	38.4 ± 2.2	38.8 ± 1.7	0.01*
Adequate antenatal follow-up (%)	60.9%	62.0%	0.85≠
Birth weight (gr)	2974 ± 542	3184 ± 504	0.01†
Live birth rate (%)	100%	99.5%	0.50≠
Delivery week <32	2.3%	1.6%	0.63≠
Delivery week <34	4.5%	2.6%	0.32≠
Delivery week <37	12.6%	6.0%	0.03≠
Cesarean section rate (%)	41.4% (36/87)	50.5% (195/384)	0.12≠
Episiotomy (%)	66.7% (34/51)	62.1% (118/189)	0.55≠
Instrumental vaginal delivery	0% (0/51)	2.1% (4/189)	0.58≠
Apgar score 1st min (min-max)	8 (4-10)	8 (1-10)	<0.00†
Apgar score 5th min (min-max)	9 (5-10)	9 (4-10)	0.01†
Low Apgar score (<7) 5th min ((n) %))	(6/87) 6.8%	(13/384) 3.3%	0.13
Postpartum hemoglobin (gr/dL)	11.1 ± 1.3	11.2 ± 1.5	0.78†

Data are expressed as mean ± SD or median (minimum-maximum).
**Mann-Whitney U-test. †: Independent sample t test. ≠: Pearson Chi-square test or Fisher Exact test.*

delivery was significantly lower in adolescent multipara group than control group (p=0.014). Birth weight was lower in adolescent multipara than controls (2974.1 ± 542.0 gr vs 3184.5 ± 504.9 gr, p= 0.001). Likewise, both Apgar score 1st minute and 5th minute showed a statistically significant difference between the two groups, p<0.001 and p=0.005, respectively. Cesarean section rate and postpartum hemoglobin levels were similar.

Analysis of perinatal complications is given table 3. Preterm birth rates were significantly higher in adolescent multipara group than controls (12.6% vs 6.0%, p=0.030), but delivery at <32nd gestational weeks were similar in both groups (p=0.630). Diabetes mellitus, preeclampsia, intrauterine growth restriction, oligohydramnios, polyhydramnios, placental abruption were similar between the adolescent multipara and control group. However, postpartum hemorrhage rate was significantly higher adolescent multipara than control group, 5.7% and 1.8%, respectively (p=0.036). All of the patients were managed with medical approach. There was no surgical control of bleeding or postpartum hysterectomy cases.

Discussion

Adolescent pregnancy and its adverse perinatal outcomes are a global health care problem. Several factors including substance abuse, alcohol consumption, low income, and socioeconomic problems may associate with adverse perinatal outcomes. Additionally, younger age seems to be most important factor for poor pregnancy outcome (9). On the other hand, when compared with low multiparity (1-3 pregnancies), mothers and babies of nulliparity and grand multipara (4 or higher previous pregnancies) have higher risk for perinatal complications in adult population (10). However, there are not adequate analyses for adolescent multipara pregnancies in current literature.

In this study, we conclude that gestational week at delivery was significantly lower in adolescent multipara group than control group, 38.4 ± 2.2 weeks and 38.8± 1.7 weeks, respectively (p=0.014). Additionally, we detected statistically higher preterm birth rates (<37 weeks) in adolescent multipara group than controls (12.6% vs 6.0%, p=0.03). Our results are consistent with literature. In a retrospective cohort study, Iacobelli et al compared singleton adolescent (<18 years) and adult pregnancies (18-29 years) and found that adolescent pregnancy had higher preterm birth rate compared adult pregnancies (Odds ratio= 1.27 (1.10-1.47), p= 0.0008) (11). Similarly, in an observational study, preterm birth rates were higher in teenager (11.6%) than controls (8.5%) but difference was not statistically significant (12). The marked high incidence of preterm birth among adolescents in our study could not be explained by the poor antenatal care because achieve to adequate antenatal follow-up was similar in both study groups. The higher rate may be associated with the late recognition of pregnancy complications and nutritional problems.

We found statistically insignificant lower cesarean section rate in adolescent multipara. The decreased cesarean section rate in adolescent multipara mothers is consistent with results of several reports and meta-analyses (3,9,11,13-15). However, in this study, the decreased rate of cesarean delivery was not associated with a higher rate of episiotomy or instrumental vaginal delivery (p=0.548 and 0.581, respectively). These findings have already been evaluated for adolescent primiparous pregnancies (11,14,16), but never in adolescent multipara mothers. The studies by de Vienne et al. and Torvie et al. reported lower risks for operative vaginal delivery, whereas that by Konje et al. reported a 2-fold. Conversely, we did not detect finding in favor of adolescent multipara in our study.

To our knowledge, few studies have been reported about perinatal outcomes in adolescent multipara. A recent study, Timur et al. found that the second pregnancies of adolescents were associated with fewer adverse perinatal outcomes than their first pregnancies. They described that neonatal intensive care unit admission rate, preeclampsia rate, low neonatal birth weight rate, and 5-minute Apgar scores <7 were significantly higher in the first than in the second pregnancy (17). In another retrospective cohort study included 110,233 pregnancies

Table 3: *Analysis of perinatal complications.*

	Adolescent multipara (n: 87)	Control group (n: 384)	χ^2 statistic	p value
Preterm birth <32	2 (2.3%)	62 (1.6%)	0.230	0.63≠
Preterm birth <37	11 (12.6%)	23 (6.0%)	4.869	**0.03≠**
Diabetes mellitus	3 (3.4%)	9 (2.3%)	0.349	0.55≠
Preeclampsia	1 (1.1%)	3 (0.8%)	0.114	0.56*
IUGR	2 (2.3%)	3 (0.8%)	1.555	0.23*
Oligohydramnios	1 (1.1%)	14 (3.6%)	1.434	0.33*
Polyhydramnios	0 (0%)	3 (0.8%)	0.684	1.00*
Placental abruption	0 (0%)	1 (0.3%)	0.227	1.00*
Postpartum hemorrhage	5 (5.7%)	7 (1.8%)	4.399	**0.04≠**

*≠: Pearson Chi-square test. *Fisher exact test.*

between 1992 and 1998, researchers found that first deliveries in adolescents are not independently associated with an increased risk of adverse pregnancy outcome, but the seconds in these population are associated with an almost threefold risk of preterm delivery and stillbirth. We detected similar rates in terms of preterm birth (<32 weeks), diabetes mellitus, preeclampsia, intrauterine growth restriction, oligohydramnios, polyhydramnios, and placental abruption in study groups which are matched for gravida, parity, and labor interval for two pregnancies. These findings may be explained by a good interaction with increased delivery number (except grand multiparity) and favorable pregnancy outcome.

Postpartum hemorrhage is an important cause for maternal mortality. There is no consensus for whether adolescent pregnancies have an increased risk for postpartum hemorrhage. In a retrospective cohort study including 15,892 adolescents (age <19.9) and 27,645 young adults (age 20-24.9) between 2002 and 2008, Kawakita et al. described that adolescents had increased risk of postpartum hemorrhage (adjusted odds ratio=1.46; 95% CI=1.10-1.95) (18). On the contrary, in the World Health Organization multi-country study, postpartum hemorrhage rate was similar in study groups. These rate was 0.8% at <15 years, 1.4% at 15-17 years, 1.1% at 18-19 years, and 1.2% at 20-24 years (p=0.134) (19). We detected higher rates for postpartum hemorrhage both AP and control group, 5.7% and 1.8%, respectively. Difference between both groups was statistically significant (p=0.036).

In conclusion, adolescent multipara pregnancies were associated with higher risks of adverse pregnancy outcomes, in particular preterm birth, low birthweight, and postpartum hemorrhage. The other pregnancy complications and cesarean delivery rate were similar compared adult multiparas. But then, adolescent mothers should seek and receive adequate antenatal care by the appropriate multidisciplinary approach to minimize the risk for perinatal complication.

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