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Obstetric and Perinatal Outcomes of Teenage Pregnant Women Attending a Tertiary Teaching Hospital in Oman

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ABSTRACT

Objective: To study the obstetrical and perinatal outcomes of teenage Omani girls with singleton pregnancies at a tertiary teaching hospital. ***Methods:*** This is a retrospective case control study. We reviewed obstetric and perinatal outcomes of teenage nulliparous pregnant Omani girls with singleton pregnancies aged 14 to 19 years, delivered at Sultan Qaboos University Hospital, between 1 July 2006 and 30 June 2013. We compared their outcomes with outcomes of pregnant nulliparous Omani women with singleton pregnancies aged 20 to 25 years old delivered at the same hospital during the same period. ***Results:*** When compared with pregnant women (n=307), teenage pregnant girls (n=307) were found to have higher proportion of preterm delivery <32 weeks (7% vs. 3%, p=0.040), preterm pre-labor rupture of membranes (PPROM) (19% vs. 11%, p=0.005) and anemia (58% vs. 44%, p=0.005). Cesarean section rate was higher in women than teenager girls (20% vs. 10%, p=0.001). Teenager girls had lighter babies (mean weight ± standard deviation 2,750±690 vs. 2,890±480, p=0.020), incidence of very low birth weight babies (<1,500g) was higher in teenagers (3.9% vs. 0.3%, p=0.003), but perinatal mortality rate was similar in the two groups. ***Conclusion:*** Teenage pregnant Omani women are at increased risk of preterm delivery before 32 weeks gestation, PPROM, anemia, and delivering very low birth weight babies.

Teenage pregnancy is defined as pregnancy in a girl aged 13–19 years. Worldwide around 16 million women aged 15–19 years give birth annually, this represent about 11% of total births, 95% of which occur in under developed countries.[1] The proportion of teenage pregnancies ranges from 2% in China to approximately 18% in Latin America and the Caribbean.[2] Teenage birth rates in under developed countries can be 20-times higher than that in developed countries and ranges from under 1% in Japan to over 20% in The Republic of the Congo.[3]

In the last 20 years, teenage pregnancy rates have dropped in most countries.[2] In Kuwait, 8.4% of all women giving birth in hospitals were teenagers.[4] Customs, traditions and poverty are the main factors contributing to teenage marriages in developed countries, one in seven girls in the Arab region marries before her 18th birthday. The highest rates of child marriage are found in the poorest countries such as Yemen, Sudan, and Somalia.[5] Teenage mothers are at high risk of developing health problems such as eclampsia, anemia, and very preterm delivery.[6]

The proportion of low birth weight (LBW) or very low birth weight babies (VLBW) is high among teenage mothers compared to older mothers; this low birth weight may have an adverse long-term effect on their health and development.[4] Maternal mortality rate is five-times higher for teenage girls compared to women aged between 20–25 years.[7]

Since studies addressing teenage pregnancies in Oman are lacking, our study aimed to evaluate the obstetric and perinatal outcomes in teenage pregnant Omani girls cared for at Sultan Qaboos University Hospital.

METHODS

This retrospective, case control study used data collected from the Sultan Qaboos University Hospital electronic data base and labor room register for all teenage girls that delivered at the

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hospital between 1 July 2006 and 30 June 2013. Teenage girls who had multiple gestations, chronic diseases like thalassemia, sickle cell anemia, heart disease, diabetes mellitus and renal disorders (which may affect the perinatal outcome), were excluded from the study. The same exclusion criteria was also applied to the control group which included nulliparous pregnant Omani women with singleton pregnancies aged 20–25 years. The control group consisted of women delivering immediately after the teenage girls, as shown in the delivery register. The average number of antenatal visits was six for both groups.

Maternal parameters reviewed were maternal age at delivery, mode of delivery, and antenatal complications. Antenatal complications included preterm pre-labor rupture of membrane (PPROM), polyhydramnios (amniotic fluid index (AFI) >250mm), oligohydramnios (AFI<50mm), gestational hypertension (GH, blood pressure ≥140/90mmHg in women who were normotensive at booking, with proteinuria <0.3g/24 hours urine collection), pre-eclampsia (PE, blood pressure ≥140/90mmHg and proteinuria ≥0.30g/24 hours urine collection in women who were normotensive at booking), and anemia (hemoglobin concentration <11g/dL). Perinatal outcomes studied were birth weight and gestational age. Pregnancies with LBW babies (1,500–2,500g) and VLBW babies (<1,500g) were identified. Preterm delivery (delivery before 37 completed weeks of gestation and ≥24 weeks of gestation) and very preterm delivery (delivery before 32 completed weeks of gestation and ≥24 weeks of gestation) were reviewed. Other variables reviewed were Apgar scores at five-minutes, admission to neonatal intensive care unit (NICU), stillbirths, early neonatal deaths, and congenital malformations.

Statistical analysis was performed using Chi-square test, Mann-Whitney test and Fisher's exact test as appropriate, the difference between values was considered significant when $p \leq 0.050$. The GraphPad InStat 3 statistical package was used.

RESULTS

During the study period there were 21,424 deliveries, 391 by teenage Omani girls aged 14 to 19 years (1.8%). Eighty-four girls were excluded from the study, the remaining 307 girls aged between 14–19 years were eligible for the study and comprised the study group. Girls aged 17 to 19 years represented 94% of the total number, while only 6% of girls were aged between 14–16 years. The control group consisted of 307 nulliparous pregnant Omani women.

Table 1 shows that there were no significant differences in the number of deliveries between 32–36 weeks (15% vs.10%, p=0.090), polyhydramnios (3% vs. 1%, p=0.260), GH (13% vs. 8%, p=0.060) and PE (8% vs. 6%, p=0.340) between the two groups. When compared with older women, the proportion of very preterm (<32 weeks) deliveries (7% vs. 3%), PPROM (19% vs. 11%), oligohydramnios (6% vs. 1%) and anemia (58% vs. 44%) were significantly higher

Table 1: Comparison of obstetrical outcomes between group of a teenage girls (aged 14–19 years) and women (aged 20–25 years).

Outcome	Teenage girls (14–19 years) n=307	Women (20–25 years) n=307	*p*-value
Preterm delivery			
32–36 weeks*	47(15)	32(10)	0.090
<32 weeks*	22(7)	10(3)	0.040
Preterm prelabor rupture of membrane*	58(19)	32(11)	0.005
Polyhydramnios*	9(3)	4(1)	0.260
Oligohydramnios without preterm pre-labor rupture of membrane*	18(6)	3(1)	0.001
Gestational hypertension*	39(13)	24(8)	0.060
Pre-eclampsia*	25(8)	18(6)	0.340
Anemia (hemoglobin <11g/dL)*	177(58)	133(44)	0.005
Cesarean section*	31(10)	61(20)	0.001

*n(%)

Table 2: Comparison of perinatal outcomes between a group of teenage girls (aged 14–19 years) and women (aged 20–25 years).

Outcome	Teenage girls (14–19 years) n=307	Women aged (20–25 years) n=307	*p*-value
Birth weight (g) mean ±SD	2,750±690	2,890±480	0.020
Low birth weight (1,500-2,500g)*	59(19.2)	53(17.3)	0.600
Very low birth weight (<1,500g)*	12(3.9)	1(0.3)	0.003
Five-minute Apgar score <7*	5(1.6)	4(1.3)	1.000
Congenital malformation*	10(3.3)	10(3.3)	1.170
Admission to neonatal intensive care unit*	24(7.8)	15(4.9)	0.180
Stillbirths*	4(1.3)	2(0.65)	0.600
Early neonatal deaths*	1(0.33)	1(0.33)	1.500
Uncorrected perinatal mortality rate per 1000 live births n	16.2	9.7	0.720
Corrected perinatal mortality rate per 1000 live births, n	9.7	6.5	1.000

*n(%)

in teenage girls (p=0.040, p=0.005, p=0.001 and p=0.005, respectively). The proportion of cesarean deliveries was significantly higher in older women compared to teenagers (20% vs. 10%, p=0.001).

Table 2 compared perinatal outcomes between the two groups. There was no significant difference in the proportion of LBW babies (1,500–2,500g) between the two groups. The proportion of VLBW (<1,500g) born to teenage girls was 13-times that of older women (3.9% vs. 0.3%, p=0.003). Because of this, teenage girls had significantly lighter babies (mean weight ± standard deviation 2,750±690 vs. 2,890±480, p=0.020), and more babies were admitted to NICU (8% vs. 5%), but this difference did not reach statistical significance. Although the proportion of VLBW was higher among teenage girls, this was not reflected in the Apgar scores at five-minutes, which were similar in the two groups. The two groups had similar proportion of congenital malformations (3.3%). Although teenage girls had a significantly higher proportion of very preterm delivery and VLBW babies, perinatal mortality rate was not significantly higher in this group.

DISCUSSION

In Oman, 16–18% of women have their first pregnancy before the age of 15, since early marriage is still common and socially acceptable.[8] Marriage at a young age is associated with early onset of sexual activity and fertility.[9,10] All teenage women in this study were married and attended a tertiary teaching hospital for their antenatal care and delivery.

This study showed an increased risk of anemia among teenage girls compared to older women (58% vs. 44%, p=0.001). Similar results were reported in a study by Dutta and colleagues where anemia was noted in 68.7% of teenagers and 33.8% of older women (p<0.001).[11]

This high proportion of anemia may be attributed to the fact that teenage pregnant women are usually uneducated and are likely to come from relatively poor, under privileged families, so they do not appreciate the importance of regular antenatal care, blood tests for anemia, and taking iron and folic acid supplements during pregnancy to prevent and treat anemia. Low iron stores, common in these young women before pregnancy, increase the risk of developing iron deficiency anemia during pregnancy due to insufficient dietary intake.[12] We found that teenage girls were at a significantly increased risk of complications such as PPROM, as reported by other investigators.[4] Additionally, very young women usually have a biologically immature uterus (with a short cervix), which makes ascending infections easy to occur. Poor hygiene in this group also increases the chance of ascending infection.[13]

In our study, PPROM could be partially attributed to a relatively higher proportion of polyhydramnios in teenage mothers (3% vs. 1%). Contrary to expectations but in agreement with the literature, teenage women in this study did not show a significant difference in the proportion of GH, PE, and polyhydramnios when compared to

older women.[14,15] Delivery before 32 weeks was significantly higher in teenage women. Risk of preterm delivery was 1.9-times more common among teenagers, other investigators reported similar results.[16,17]

We found that very preterm delivery (<32 weeks) resulted in delivering significantly lighter babies (mean weight 2,750g) and more babies with birth weight less than 1,500g. The increased proportion of very preterm deliveries (<32 weeks) could be attributed to the high rate of PPROM among the teenagers (p=0.005).

Other factors that may be responsible for increased very preterm delivery in teenagers are GH, PE, oligohydramnios and polyhydramnios, the proportion of those factors when summated was 30% compared with a proportion of 16% among older women (p<0.001). This was in agreement with literature that reports that adolescents had a higher rate of delivering prematurely (<28 weeks).[18,19] Other factors which may be responsible for increased preterm delivery (<32 weeks) could be immaturity of the uterine or cervical blood supply (which may predispose teenage mothers to subclinical infection), preterm delivery, or psychological instability.[16,20]

The rate of cesarean section was higher in older women compared with teenagers, this may be attributed to the fact that older women delivered heavier babies compare to the teenage girls (mean birth weight 2,890g vs. 2,750g, p=0.020). These findings are supported by others who attributed this to the presence of more functional myometrium, greater connective tissue elasticity, and lower cervical compliance that allowed for more spontaneous vaginal deliveries in teenage women.[6,11]

In this study, although the proportion of both very preterm delivery and VLBW babies was significantly more in teenage girls, this was not adversely reflected in the five-minute Apgar scores. This can be partially explained by the fact that mothers of those babies received dexamethasone during their antenatal care to accelerate lung maturity in 36% of cases, and pain relief was achieved by epidural analgesia rather than narcotics in 27% of cases.

In our study, the Apgar scores at five-minutes was similar in the two groups. This may reflect efficient and well-timed resuscitation of babies requiring attention and resuscitation at time of delivery. The score, which is more relevant in assessing newborn health, is considered a predictor for post-neonatal hospitalization[14].

Perinatal mortality rate in our study did not differ between the two groups. Other researchers found that the perinatal mortality rate is higher among teenagers mainly due to higher proportion of stillbirths.[21] Teenage Omani girls in this study are at advantage of having their care during pregnancy and delivery at a tertiary teaching hospital.

Our study addressed only obstetric and perinatal outcomes of teenage girls, using a relatively small number, that attended a tertiary teaching hospital for their care. This may not reflect the real outcomes in the Sultanate of Oman for this group of women and is a limitation of this study.

CONCLUSION

Although teenage pregnant Omani girls are at increased risk of preterm delivery before 32 weeks, PPROM, and delivering VLBW babies, their perinatal mortality was similar to that of older women. This may be because these women were cared for during pregnancy and delivery at a tertiary teaching hospital.

Disclosure

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Statistics

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