Pregnancy outcomes of mothers aged 17 years or less

Alia A. Shuaib, ABOG, MD, *Kaima A. Frass,* ABOG, MD, *Abdelrahman H. Al-Harazi,* ABOG, MD, *Najeeb S. Ghanem,* PhD, MD.

ABSTRACT

الأهداف: دراسة مضاعفات الحمل و الولادة التي تعاني منها النساء اللواتي يحملن في سن 17 عاماً أو أقل من هذا العمر.

الطريقة: أُجريت هذه الدراسة الاسترجاعية في مستشفى الثورة العام بصنعاء، صنعاء، اليمن وذلك خلال الفترة من يناير إلى ديسمبر 2009م. لقد قمنا باسترجاع البيانات الخاصة بالنساء اللواتي ولدن في زمن الدراسة وكانت أعمارهن 17 عاماً أو أقل وكن قد ولدن بحمل مفرد بعد مرور 24 أسبوعاً من الحمل. قُسمت عينة الدراسة إلى مجموعتين وهما: مجموعة الدراسة وكانت تضم 239 مشاركة ممن تبلغ أعمارهن 17 عاماً أو أقل، ومجموعة التحكم وتضم 240 مشاركة من اللاتي ولدن في نفس الفترة وأعمارهن تتراوح ما بين 20-24 عاماً.

النتائج: أشارت النتائج إلى ارتباط حدوث الحمل في عمر 17 عاماً أو أقل بالمضاعفات التالية: زيادة نسبة عدد المواليد قليلي الوزن (21.3% مقابل 12%) في مجموعة الدراسة بالمقارنة مع مجموعة التحكم (p=0.0091)، وزيادة حالات فقر الدم (17.5% مقابل 7%) في مجموعة الدراسة (p=0.0008)، وكذلك زيادة حالات الولادة المبكرة (11.6% مقابل 5.4%) في مجموعة الدراسة مقارنةً بمجموعة التحكم. لقد كانت نسبة تسمم الحمل في مجموعة الدراسة 7.9% مقابل 5% في مجموعة التحكم، بالإضافة إلى ارتفاع نسبة العمليات القيصرية في مجموعة الدراسة مقارنةً بمجموعة التحكم (6.3% مقابل 2%) (p=0.0331).

خاتمة: أثبتت هذه الدراسة أن الحمل والولادة في سن 17 عاماً أو أقل يؤدي إلى زيادة ظهور المضاعفات التي تؤثر على الأم والجنين معاً، وزيادة نسبة الولادات القيصرية.

Objectives: To study the obstetric complications of women who become pregnant at aged 17 years old or less.

Methods: A retrospective study was performed from January to December 2009 at Al-Thawra General Hospital, Sana'a, Yemen. We included all women aged 17 years or less who delivered in the hospital with singleton births after 24 weeks gestational age. The study group comprised 239 patients, and a control group (n=240) was chosen from women aged between 20-24 years. Data were retrieved from the hospital records.

Results: Pregnancy in women 17 years old or less was associated with higher frequency of low birth weight than the control group (21.3% versus 12%, p=0.0091). Anemia was higher in the study group (17.5% versus 7%, p=0.0008). Preterm labor was 11.6% in the study group, and 5.4% in the control group. In the study group, 7.9% had preeclampsia compared to 5% in the control group. The cesarean section rate in the study group was higher than the control group (6.3% versus 2%, p=0.0331).

Conclusion: Pregnant women 17 years old or less were more likely to have maternal and neonatal morbidity, and were more likely to have abdominal deliveries.

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From the Obstetrics and Gynecology Department (Shuaib, Frass, Ghanem), Faculty of Medicine, Sana'a University, and the Obstetrics and Gynecology Department (Al-Harazi), Faculty of Medicine, Thamar University, Sana'a, Yemen.

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Address correspondence and reprint request to: Assistant Prof. Abdelrahman H. Al-Harazi, Obstetrics and Gynecology Department, Faculty of Medicine, Thamar University, PO Box 25244, Sana'a, Yemen. Tel. +967 771843083. Fax. +967 (1) 246981. E-mail: Yem008@yahoo.com

Teenage pregnancy is generally considered a high-risk event. Several medical complications like preterm birth, poor maternal weight gain, pregnancy-induced hypertension, anemia, and sexually transmitted disease are strongly associated with teenage pregnancy.[1] Many pregnant teens are subject to nutritional deficiencies, which affect both mother and infant health status. Also, inadequate prenatal care, low education, and poor socioeconomic conditions further influence the outcome of their pregnancies.[2] The World Health Organization estimates that the risk of death following pregnancy is twice as great for women between 15 and 19 years than for those aged 20-24. This figure can be

up to 5 times higher for girls aged between 10 and 14, than for women of around 20 years of age.[3] In these teens having babies, the complications are connected to the fact that the pregnancy occurs before the women have developed to their full potential capacity for reproduction. Under favorable living conditions, growth in height of a girl ceases at the age of 16-18 years, and the pelvic growth stops 3 years later. At menarche, young women have approximately 4% more height, but 12-18% more pelvic growth ahead of them. Even 2 years after the menarche, young women have 3-9% more additional pelvic growth, but only 1% more height to achieve. Under unfavorable conditions, the deficits are likely to be even greater because of the slower growth.[4] As a result, possible obstructed labor may ensue particularly in remote areas in the developing countries where the local facilities are absent. This can lead to eclampsia, obstetric fistula, infant mortality, or maternal death.[4] The age at marriage in our country, although differs among locations, is mostly directed by socio-cultural and religious factors. Accordingly, early marriage is often seen as a protection of young girls from possibly engaging in illegal sexual activity, and a proof of their fertility. Yemen has a high rate of early marriage,[5] unfortunately, the rate is increasing due to increasing poverty, low education, and dominance of the old traditional beliefs towards the woman's roles. The purpose of this study was to assess the magnitude of teenage pregnancy in the hospital and the related obstetrical complications compared to adults.

Methods. A hospital-based, retrospective study was undertaken over a year (January to December 2009) in Al-Thawra General Hospital, Sana'a, Yemen. We reviewed the medical records of all deliveries in the hospital and found 239 teenage mothers aged 17 years or less who were admitted and delivered in the hospital during the study period with singleton births. Those who had abortion (<24 weeks) or had multiple pregnancy were excluded. We collected the primary data from the medical records, which included: age, parity, gestational age, diagnosis at time of admission, mode of delivery, complications of labor, birth weight, Apgar score, and perinatal death. The hospital number was used to retrieve the secondary data such as the educational status, antenatal care visits, complications of pregnancy, the level of hemoglobin, smoking, and other relevant data. The hemoglobin level of all involved women was retrieved from the antenatal care records if measured during the third trimester. When such data were missing, the value at time of admission to the hospital was used instead. Two hundred and forty women aged between 20-24 years who delivered in the hospital at the same time period were chosen as a control group. They were matched for parity, smoking, gestational age, and number of antenatal care visits. Their primary and secondary data were similarly obtained. In the study group, there were 3 cases of multiple pregnancy, and 7 cases that had not enough data and both were excluded from the study. Maternal complications during pregnancy and delivery were recorded and compared between the 2 groups. They were anemia (defined as hemoglobin level below 10 gm% in the last trimester), preeclampsia, eclampsia, preterm labor (defined as spontaneous onset of labor resulting in delivery before 37 completed weeks), low birth weight (defined as babies weighing <2500g at birth), obstructed labor, surgical intervention, and post partum hemorrhage. The study received approval from the hospital ethical committee.

Data were analyzed using the Statistical Software for Social Sciences package (SPSS Inc., Chicago, IL, USA) version 10. The data were presented as mean and standard deviation or proportion as appropriate, and 95% confidence interval (CI) for independent variables was calculated as appropriate. Statistical significance was calculated by chi square (X^2) test and student's (t) test, and a *p*-value <0.05 was taken as statistically significant.

Results. The total number of deliveries at the hospital during 2009 was 11915, of which, and after exclusion, 239 (2%) were aged 17 years or less. Of these teenage mothers, 158 (66.1%) were aged 17 years, 75 (31.3%) were aged 16 years, and 6 (2.5%) were 15 years old.

Table 1 - The population characteristics of the women studied.

Parameters	Study group n=239		Control group n=240		*P*-value (95% CI)
Age (year)	16.63 ± 0.53		22.25 ± 1.25		<0.0001 (5.447 to 5.793)
Gravidity	1.21 ± 0.58		1.43 ± 0.69		0.0002 (0.106 to 0.334)
Gestational age (week)					
<32	6	(2.5)	2	(0.83)	NS
32 - 34	14	(5.8)	8	(3.3)	NS
35 - 37	18	(7.5)	3	(1.25)	NS
38 - 41	211	(88.2)	227	(94.5)	NS
Antenatal care visit					
No ANC	56	(23.4)	13	(5.4)	0.0001
ANC <3	123	(51.5)	129	(53.7)	NS
ANC ≥3	60	(25.1)	98	(40.8)	0.0004
Educational level					
Illiterate	150	(62.8)	62	(25.8)	0.0001
Primary school	76	(31.8)	141	(58.7)	<0.0001
Secondary school	13	(5.4)	37	(15.4)	0.0006
Bachelor degree	0	(0.0)	7	(2.9)	

Data presents as mean ± SD and n (percentage), NS - not statistically significance, CI - confidence interval, ANC - antenatal clinic

Table 2 - Obstetric complications.

Parameters	Study group n = 239		Control group n = 240		P-value (95% CI)
PET and eclampsia	19	(7.9)	12	(5.0)	NS (-1.82 to 7.71)
Preterm labor	28	(11.6)	13	(5.4)	0.0232 (0.94 to 11.57)
Anemia	42	(17.5)	17	(7.0)	0.0008 (4.41 to 16.64)
Obstructed labor	4	(1.7)	2	(0.83)	NS
Still birth	1	(0.41)	1	(0.41)	NS
Cesarean section	15	(6.3)	5	(2.0)	0.0331
Low birth weight	51	(21.3)	29	(12.0)	0.0091 (2.36 to 16.2)
Apgar score					
at 1m <7	28	(11.7)	19	(7.9)	NS
at 5m <7	13	(5.4)	8	(3.3)	NS
Postpartum hemorrhage	8	(3.3)	5	(2.0)	NS

Data present as n (percentage), NS - not statistically significance, CI - confidence interval, PET - preeclampsia

There was no case recorded below 15 years of age. Most were primiparas, 194 (81.1%) in the control group, and 162 (67.5%) in the study group. The demographic characteristics are summarized in **Table 1**. Low birth weight was the most common obstetric complication seen in the study group. Anemia was significantly higher in the study group in comparison with the control group. Preterm labor was observed to occur significantly more frequently in the study group than in the control group, and this difference was significant. Preeclampsia and eclampsia were higher in the study group than controls, but the difference was not statistically significant. The cesarean section rate was observed to be significantly higher among the teenage mothers. Smoking habits were not reported in both groups. Obstructed labor was reported in 4 cases (1.7%) of the study group versus 2 cases (0.83%) in the control group. The difference between the 2 groups was statistically insignificant. Postpartum hemorrhage occurred in 8 teenaged mothers (3.3%), whereas only 5 cases of the control group (2%) had postpartum hemorrhage. The difference was statistically insignificant. Only one case of perinatal mortality was recorded in each group. The obstetric outcomes are shown in **Table 2**.

Discussion. The incidence of pregnant women aged 17 years or less was 2% in our hospital. This study demonstrated that the obstetric risks of pregnancy in women 17 years old or less are generally higher than in the control group. The incidence of preeclampsia-eclampsia was found to be higher than the control. This finding is similar to other study findings.[6,7] One previous study showed the rate of preeclampsia was doubled among teenage pregnant compared to adult women.[8] Our results found increased incidence of preterm labor, low birth weight (LBW), and maternal anemia compared to controls. These findings are comparable to other studies.[6,8,9] However, the results of many previous studies as regards the obstetric risks are inconsistent. Some reported statistically significant higher frequency of anemia, LBW, and preterm labor, but others did not.[10] These reports have attributed such adverse outcomes to other associated factors, such as low socio economic status, inadequate prenatal care, smoking, and other factors rather than to maternal age, and therefore, these risks can be reduced by improving socio-economic conditions.[8] Moreover, the positive association between teen pregnancy and adverse birth outcome is not limited to the first birth. Indeed, there is evidence that the risk of preterm labor, and LBW persisted and were unaltered by the second pregnancy in young age women.[11] This evidence is supported by a recent study conducted in the UK.[12] Although the smoking habit is not common in teenage mothers in our community, lack of access to medical care and poor nutritional intake from poor eating habits are common in adolescents. These associations could be the probable causes of the higher incidence of anemia noted in our study, but the actual cause of anemia still unknown. Our data are consistent with other study findings in which the age itself in pregnancy at 17 years or before, represents an independent risk factor. This observation would agree with Fraser et al,[13] who reported that young age has an intrinsically increased risk of adverse pregnancy outcome quite apart from the increased risk due to the adverse social and behavioral factors that are frequently associated with teenage pregnancy. As the interaction with socio demographic factors is complex and pertains to mothers of all ages, young maternal age (16 years or less) clearly has the potential to influence the pregnancy outcomes. This may explain why the elevated risk of poor outcomes have not been found only in socially disadvantaged teens, but also in those adolescents who obtained adequate prenatal care and had age-appropriate education, without smoking or drug use.[14] It appears that making a definitive age at which the girl should not marry is not appropriate. It is evidenced that the chronologic age is a poor measure of adolescent physiologic maturity. The latter has long been found to be strongly associated with the onset of menarche rather than to chronologic age.[15] This issue is further confused by the evidence that the age at menarche shows a declining trend over the last few decades.[14] In the present study, 33.9% of teenage mothers were aged 16 years old or less, but we could not study them separately. However, the effects of becoming pregnant at a very young age (16 years and below) for

both mother and baby need to be further studied using designs capable of eliminating the confounding factors.

As regards the mode of delivery, and whether the rate of cesarean section is increased, the difference in reporting is present. Some investigators have reported increased cesarean section rates among teenagers.[16] Other studies found that the cesarean section rates were significantly lower than that of the adult group.[17,18] Such low rates have been explained by the fact that teenage mothers give birth to smaller infants.[17] Moreover, one study reported that the teenage mothers perform better in labor compared to mothers aged 20-34 years.[18] The present study results showed that the cesarean delivery rate was higher than the control group. The rate of cesarean section for the general population in this hospital during 2009 was 17.1%. Our finding could be explained by the fact that those teens that marry early are often of low social class, and more likely to have malnutrition and stunted growth with the consequence of an inadequately developed bony pelvis to cope with an even smaller fetus. Also, the lack of antenatal care utilization in a high proportion of teenage mothers could lead the obstetrician to prefer cesarean section over exposing a laboring girl to a difficult and prolonged labor, particularly in situations where the mother sought the hospital too late or when the complications had already developed. Another possible explanation is that in our area, almost all the pregnant teenagers are married and when the pregnancy is diagnosed, termination is not an option. The pregnant girl therefore, has a stable relationship and family support. This most important factor could enhance abdominal delivery to minimize possible fetal damage while attempting vaginal delivery. In contrast to other nonconservative societies where unmarried teenage pregnancy is common, the obstetrician may refuse performing cesarean section where the mother is going to sign her baby off for adoption.

Lao and Ho[18] argued that early marriage may be a reflection of nature's design that humans should reproduce when they are young and fertile, instead of procrastination until the other end of the reproductive span. This perspective however, could reflect the disagreement as regards whether the obstetric complications are pertaining to the age per se. Alternatively, it could reflect different views towards the girls' roles and responsibilities in different societies. When the relationship between age at marriage and development are examined, it becomes clear that later marriage is a precondition for the attainment of desired development related goals. These can include completion of education and participation in civic life.[3] Teenage pregnancy, beside its negative health consequences, also has negative social and economic dimensions. For these reasons, early marriage should be discouraged to reduce the population pressure, family size, and poverty.

Among the neonatal morbidities, we found lower Apgar score in infants of the study group in comparison with the control group. The most probable cause could be a high incidence of preterm delivery and LBW in this age group. We found that the teenage women were no more likely to have stillbirths. Poor antenatal care and low education were documented in other studies similar to our findings in the present one.[9] A problem that should be taken into account in antenatal care is that we, as most of the other studies, assessed the adequacy of antenatal care by measuring the quantity rather than the quality, which might have wide variability in the base line content across the regions, and thus do little in delivering the effective teen-focused maternity care. Our results therefore, may not apply to other populations with high quality prenatal care.

Our analysis demonstrated that 18.8% of women aged 17 years or less were carrying their second or third pregnancy, which suggests that these women have no control over fertility along with short pregnancy intervals. This factor when added to the high annual growth rate of 3.1% that already exists,[5] places the country under severe threat of population rise. The limitation of this study is that, it was a hospital-based study therefore, it may not reflect the true situation in the community as not all cases of teenage pregnancy come to the hospital because of social reasons, poverty, or absence of transferable system. Similarly, apart from controlling the smoking and family support, which may have an impact on the outcome, pregnancy weight gain, and maternal infections among other confounders could not be assessed in our designed retrospective study.

In conclusion, teenage pregnancy poses various obstetrical complications including among others, preeclampsia, preterm delivery, LBW, and anemia. Our data suggest that the biologic immaturity of young pregnant women contributes to the increased risk of adverse outcomes. In areas where the poverty, low educational attainment, population pressure, and low medical care services are prevalent, special efforts should be strengthened to combat teenage pregnancy.

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Related topics

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