



## Teenage Pregnancy in Upper Egypt

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### Abstract

**Background:** Teenage pregnancies have long been considered a high-risk situation. Many studies have reported an increased risk of maternal and fetal complications while some studies have actually shown a good outcome of teenage pregnancies. **Objectives:** Evaluation of the teenage pregnancy outcomes in Upper Egypt. **Patients and Methods:** A descriptive comparative study that compares the outcomes of teenage pregnancy ( $n=694$ ) with that of older age pregnancy ( $n=2814$ ) retrospectively for the years of (2012 & 2013) and prospectively for the year of (2014) at Assiut General Hospital, Assiut, Egypt. Chi-square and t-test were applied with 0.05 as level of significance. **Results:** Teenage mothers had higher incidence of pre-eclampsia (12.4% vs 8.2%;  $P=0.001$ ), preterm labor (18.2% vs 14%;  $P=0.006$ ), premature rupture of membranes (16.1% vs 12.6%;  $P=0.013$ ), oligohydramnios (15% vs 10.8%;  $P=0.002$ ) and vaginal delivery (56.8% vs 41.2%;  $P=0.000$ ) and their babies have lower birth weight and more neonatal reference to neonatal intensive care unit (NICU) (20.9% vs 17.2%;  $P=0.025$ ). They are more likely to be housewives and resident in rural areas. On the other hand older group pregnancies had higher incidence of gestational hypertension, gestational diabetes and cesarean delivery. **Conclusion:** Teenage mothers are more susceptible to preeclampsia, pre-term labor, premature rupture of membranes, oligohydramnios, vaginal delivery and their babies have lower birth weight and more neonatal reference to NICU. It is concluded that teenage parturient women are more likely to be housewives and resident in rural areas.

**Keywords:** Teenage pregnancy, maternal and fetal complications, NICU.

### Introduction

Adolescence is the period between the onset of puberty and full maturity youth (Rosenfeld and Nicodemus, 2003). Adolescents are defined by WHO as individuals between the age of 10 and 19 years, adolescents make up approximately 20% of the world's population (UNICEF, 2005). Nearly one in four (22%) Egyptians is an adolescent (Ibrahim et al. 1999).

In recent decades, adolescent pregnancy has become an important health issue in a great number of developed and developing countries (WHO, 2004). About 16 million adolescents aged 15-19 years and 2 million adolescents under the age of 15 years give birth every year, accounting for around 11% of all

births. About 95% of these births occur in developing countries (WHO, 2013).

Egypt has a high birth rate, which is nearly constant at 2.7%, and the rate of adolescent pregnancy ranges from 4.1% in urban societies to 11.3% in rural areas (EL-Henawy, 2000; Rasheed et al. 2011). Upper Egypt had the highest level of teenage childbearing, especially in the rural areas (14 %) (El-Zanaty and Way, 2009). Reasons of increased teenage pregnancy rate are multifactorial including: behavioral, traditional, social, cultural or religious foundation. Most important factors are; poverty, low socioeconomic status (Bonell et al. 2005) and limited education (Nour, 2006).

Teenage pregnancies have long been considered a high-risk situation. Since 1960s, many studies have demonstrated increased risks of pregnancy and more perinatal complications in those pregnancies (Sweeney, 1989). During the early 1970s, rate of complications dropped markedly following the emergence of out-reaches programs that consisted of prenatal counseling and care for pregnant teenagers (Geist et al. 2006). However, the World Health Organization still considers teenage pregnancies as high- risk pregnancies (WHO, 2011).

**Patients and Methods**

The study included prospective and retrospective parts of two groups, one was teenage women (19 years and younger) and the other was the older women (more than 19 years). The study population consisted of 2758 and 750 women studied during the years 2012-2013 and 2014, respectively; all women were delivered at Department of Obstetrics and Gynecology, Assiut general hospital, Assiut, Egypt. Essentially there were no- differences between the two parts of the study allowing compiling the data of the three years into a 3508 subject study. Maternal, obstetric, fetal, and neonatal complications were compared between the two groups.

**Inclusion criteria:** Age: 10-19 years for study group and 20-35 for control group. Devoid of preconceptional (chronic) medical disorders affecting the pregnancy, such as: DM, HTN, bronchial asthma and rheumatic disease. Patients have no special habits

like drug abuse, alcoholic, and smoking. Patients have no history of medications affecting pregnancy like corticosteroid therapy, cytotoxic drugs... etc.

**Exclusion criteria:** Cases not fulfilling the inclusion criteria regarding age. Chronic medical disorders as DM, hypertension or rheumatic disease. Unreliable age. Unreliable menstrual dating. Women refusal to continue study.

**Data analysis:** Data were analyzed using the SPSS (software package, version 16.0.program). Data analysis for categorical variables with percentages and frequencies was done using chi square. Continuous data represented by mean ±SD were analyzed using T-test. The level of significance was set at P<0.05.

**Results**

Three thousands, five hundred and eight (3508) women who fulfilled the inclusion criteria delivered at department of Obstetrics and Gynecology, Assiut general hospital, from January 2012 to 31 December 2014, their data were included in this part of the study. The subjects were divided into two main groups according to their ages at the time of delivery: 19 years old or less (teenager group) and 20-35 years old (older group). 694 (19.8 %) women constituted the first group and 2814 (80.2 %) women constituted the second group. The mean age of the two groups was 17.09±0.9 years (15 years to 19 years) and 26.1±4.5 years (19.5 to 35 years) for the first and the second group, respectively.

**Table 1:** Demographic characteristics for the two studied groups

| Characteristics                  | Study group<br>N=694 |      | Control group<br>N=2814 |      | P-value |        |
|----------------------------------|----------------------|------|-------------------------|------|---------|--------|
|                                  | Count                | %    | Count                   | %    |         |        |
| Maternal age(years) <sup>#</sup> | 17.9±0.9             |      | 26.1±4.5                |      | 0.000*  |        |
| Work outside home                | 19                   | 2.7% | 209                     | 7.4% | 0.000*  |        |
| Residence                        | Urban                | 87   | 12.5%                   | 610  | 21.7%   | 0.000* |
|                                  | Rural                | 607  | 87.5%                   | 2204 | 78.3%   | 0.000* |

<sup>#</sup>Mean±SD  
\*Significant

**Table 2:** Complications of pregnancy in the two studied groups

| Complications                       | Study group<br>N=694 |       | Control group<br>N=2814 |       | P-value |
|-------------------------------------|----------------------|-------|-------------------------|-------|---------|
|                                     | Count                | %     | Count                   | %     |         |
| Gestational age(weeks) <sup>#</sup> | 36.5±5.2             |       | 37.1±4.9                |       | 0.024*  |
| Gestational hypertension            | 6                    | 0.9%  | 123                     | 4.4%  | 0.000*  |
| Pre-eclampsia                       | 86                   | 12.4% | 232                     | 8.2%  | 0.001*  |
| Eclampsia                           | 5                    | 0.7%  | 24                      | 0.9%  | NS      |
| Gestational diabetes                | 4                    | 0.6%  | 51                      | 1.8%  | 0.019*  |
| Preterm labor                       | 126                  | 18.2% | 395                     | 14.0% | 0.006*  |
| Multiple pregnancy                  | 28                   | 4.0%  | 118                     | 4.2%  | NS      |
| Abortion                            | 60                   | 8.6%  | 292                     | 10.4% | NS      |
| Ectopic pregnancy                   | 2                    | 0.3%  | 2                       | 0.1%  | NS      |
| Ante partum hemorrhage              | 4                    | 0.6%  | 29                      | 1.0%  | NS      |
| PROM                                | 112                  | 16.1% | 354                     | 12.6% | 0.013*  |
| Chorioamnionitis                    | 3                    | 0.4%  | 3                       | 0.1%  | NS      |
| Oligohydramnios                     | 104                  | 15.0% | 305                     | 10.8% | 0.002*  |
| Polyhydramnios                      | 4                    | 0.6%  | 15                      | 0.5%  | NS      |

<sup>#</sup>Mean±SD \*Significant

**Table 3:** Fetal presentation and mode of delivery in the two studied groups

| Variables          |                              | Study group<br>N=694 |       | Control group<br>N=2814 |       | P-value |
|--------------------|------------------------------|----------------------|-------|-------------------------|-------|---------|
|                    |                              | Count                | %     | Count                   | %     |         |
| Fetal presentation | Vertex                       | 593                  | 85.4% | 2364                    | 84.0% | NS      |
|                    | Breech                       | 38                   | 5.5%  | 151                     | 5.4%  | NS      |
|                    | Other abnormalities          | 1                    | 0.1%  | 5                       | 0.2%  | NS      |
| Mode of delivery   | Spontaneous vaginal delivery | 394                  | 56.8% | 1158                    | 41.2% | 0.000*  |
|                    | Induction                    | 17                   | 2.4%  | 66                      | 2.3%  | NS      |
|                    | Vacum extraction             | 0                    | 0.0%  | 0                       | 0.0%  | -       |
|                    | Foreceps extraction          | 0                    | 0.0%  | 0                       | 0.0%  | -       |
|                    | Emergency caesarean section  | 200                  | 28.8% | 1041                    | 37.0% | 0.000*  |
|                    | Elective Caesarean section   | 23                   | 3.3%  | 267                     | 9.5%  | 0.000*  |

\*Significant

**Table 4:** Fetal and neonatal outcomes in the two studied groups

| Outcomes  | Study group<br>N=694 |       | Control group<br>N=2814 |       | P-value |        |
|---|----------------------|-------|-------------------------|-------|---------|--------|
|   | Count                | %     | Count                   | %     |         |        |
| Birth weight (gm) <sup>#</sup>                    | 2705±711             |       | 2862±687                |       | 0.000*  |        |
| Low birth weight                                  | <1500                | 94    | 13.5%                   | 193   | 6.9%    | 0.000* |
|   | From 1500 to <2500   | 174   | 25.1%                   | 544   | 19.3%   | 0.001* |
| Stillbirth  | 22                   | 3.2%  | 95                      | 3.4%  | NS      |        |
| Death before discharge                            | 0                    | .0%   | 0                       | .0%   | -       |        |
| Preterm   | 126                  | 18.2% | 395                     | 14.0% | 0.006*  |        |
| IUGR  | 5                    | 0.7%  | 34                      | 1.2%  | NS      |        |
| Congenital anomalies                              | 5                    | 0.7%  | 22                      | 0.8%  | NS      |        |
| Apgar score in first 5 minute (mean) <sup>#</sup> | 8.6±1.6              |       | 8.5±1.5                 |       | NS      |        |
| Apgar score in first 5 minute                     | <7                   | 96    | 13.8%                   | 356   | 12.7%   | NS     |
|   | 7                    | 514   | 74.1%                   | 2069  | 73.5%   | NS     |
| Reference to NICU                                 | Total referred       | 145   | 20.9%                   | 485   | 17.2%   | 0.025* |
|   | Improved             | 83    | 57.2%                   | 270   | 55.7%   | NS     |
|   | Dead                 | 62    | 42.8%                   | 215   | 44.3%   | NS     |

<sup>#</sup>Mean±SD; \*Significant

### Discussion

Teenage pregnancy is an important public health problem as it often occurs in the context of poor social support and maternal wellbeing. Worldwide, there is a large difference between countries concerning the rate of teenage pregnancies and their outcome in birth or abortion (Darroch, 2001). The sample size in the present study is representative of the local community regarding maternal age distribution since teenage mothers constituted about 19.8%. Similar figures were found in other studies; in the District of Columbia where 18% of all infants are delivered by teenage mothers (Goldenberg and Klerman, 1995) and in Jordan It was 25% (Ziadeh, 2001). But however, our results disagree with other studies. Teenage mothers were more in other countries; in Turkey it was 29% (Canbaz et al. 2005), in Sudan it was 31% (Adam et al. 2009) and in Kenya it was 31% (Were, 2007). On the other hand, teenage mothers were less in other countries; in the United States, approximately 13% of all infants were delivered by teenagers (Hamilton et al. 2009) and in Sweden, less than 3% of all infants are delivered by teenage mothers (Official Statistics of Sweden, 2006).

The present study findings have demonstrated that about (87.5%) of teenage women had rural residence, In the present study preterm delivery and premature rupture of membranes were significantly higher in the teenager group compared with the older group. This is in agreement with what was reported with Rasheed et

compared to about (78.3%) of the adult group. In congruence with these findings, Fathalla, (2007) has reported that the level of teenage fertility in rural areas is almost twice the level in urban areas. Many studies indicated a more rural residence of teenage pregnancy compared to older women (Haldre et al. 2007; Yadav et al. 2008).

In the present study maternal work outside home was significantly higher in the older group (7.3%) compared with the teenager group (2.0%) which related probably to some factors as maternal age, level of education and residence. In agreement with this finding that reported by Teitelman et al. (1990) and Figueiredo et al. (2006).

In the present study, gestational hypertension was significantly higher in the older group (4.4%) than the teenager group (0.9%). The finding is in agreement with the finding in a study at a university hospital in Jordan (Al- Ramahi and Saleh, 2006). The finding is in disagreement with the finding of Sharma et al. (2002). Preeclampsia was significantly higher in teenager group (12.4%) compared with the older group (8.2%). The findings are in agreement with that reported by Galvez and Myles, (2005), Leichtentritt et al. (2005), Kongnyuy et al. (2008) and Rasheed et al.

al. (2011), Watcharaseranee et al. (2006) and Chen et al. (2008). The increased risk of preterm labor and premature rupture of membranes has been attributed to biologic immaturity of the uterus or to shortness of the

cervix, with subsequent increased risk of ascending infection (Raatikainen et al. 2006).

The present study showed a significantly increase in the gestational diabetes in the old group (1.8%) compared to the teenage group (0.6%) This is in agreement with that reported by Rasheed et al. (2011) and Kovavisarach et al. (2010), while other researchers report similar incidence of such complication between teenage and adult mothers (Kumar et al. 2007; Nato, 2005; Thato et al. 2007; Al-Ramahi and Saleh, 2006). DM during pregnancy in the USA has increased progressively with maternal age, showing from 8.3 per 1,000 singleton live-born infants of maternal age under 20 years old to 16.3, 25.1, and 33.8 per 1,000 singleton live-born infants of maternal age 20-24, 25-29, and 30-34 years old, respectively (CDC, 2011).

In the present study there were no significant differences between the two groups regarding multiple pregnancy, abortion, ectopic pregnancy and antepartum hemorrhage ( $p>0.05$ ). This result agreed with previous studies (Lubarsky et al. 1994; Ziadeh, 2001). While other studies pointed to significant increase risk of such complications in the teenagers (Fraser, 1995; Yildirim et al. 2005; Deligeoroglou et al. 2004). Also, there is no significant difference between the two groups regarding fetal presentation and labor induction. Most cases present with vertex presentation. Our finding agreed with these of Sharma et al. (2002).

Spontaneous vaginal delivery was significantly higher in the teenage group (56.8%) compared to the old group (41.2%). This result agrees with these of Chandra et al. (2002). In contrast to this result, some have suggested that adolescents are at risk for prolonged labor with a higher CS and difficult delivery rates due to physical immaturity (M'bede, 1985; Scholl et al. 1994a; Hoque and Hoque, 2010). In the present study it was found that cesarean section rate was significantly higher in older group (46.5%) compared with teenage group (32.1%). This is consistent with that reported by Maryam and Ali, (2008) and in contrast with that reported by Lao and Ho (1998) and Rasheed et al. (2011)

In the present study, It was found that the fetal birth weight was significantly lower in the teenager group ( $2705\pm 711$ ), compared with adult group ( $2862\pm 687$ ). Furthermore, teenage mothers had a significantly higher percentage (13.5%) of newborns below 1500 gm. These foregoing findings are in agreement with

previous studies that have demonstrated a consistent trend of increased risk of low birth weight and growth restriction as a reflection of the young age of the mother that intrinsically increased the risk of adverse fetal outcome (Fraser et al. 1995; Jolly et al. 2000). The percentage of babies who were admitted to neonatal care unit (NICU) in the present study was significantly higher in the teenager group (20.9%), as compared to those in the adult group (17.2%). This is in agreement with what has been reported by Olausson et al. (1999), Kovavisarach et al. (2010) and Al Ramahi and Saleh, (2006).

## **Conclusion**

It can be concluded that teenage parturient women are more susceptible to preeclampsia, pre-term labor, premature rupture of membranes, oligohydramnios, vaginal delivery and their babies have lower birth weight and more neonatal reference to NICU. Also, it is concluded that teenage parturient women are more likely to be housewives and resident in rural areas.

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