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## Research Article



### Pregnancy outcome of teenaged upper Egyptian women

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#### Abstract

**Background:** Teenage pregnancy is an important public health problem as it often occurs in the context of poor social support and maternal wellbeing. It is considered a high risk for both the mother and infant. Several researchers reported that pregnancy among adolescents is associated with maternal complications, premature birth, low birth weight, perinatal mortality and increased infant mortality. **Aim of the work:** The aims of this study was to determine whether teenage pregnancy is associated with increased rates of adverse perinatal outcome and to compare obstetric outcome of teenage with middle aged pregnancy. **Patients and Methods:** a descriptive comparative study that compares the outcomes of the teenage pregnancy with that of adult pregnancy. A specially designed questionnaire was prepared for this purpose. Subjects were divided in to two groups according to their age at the time of the delivery: The teenage group (study group) includes women with the age of 19 years or less at the time of delivery (total of 1248 females were included in this group), and older group (control group) includes women aged more than 19 years at the time of delivery (A total of 245 females were included in this group). Maternal, obstetric, fetal, and neonatal complications were compared between the two groups. **Results:** Regarding the complications rate, there was a significant lower risk among middle aged females compared to teenages apart from hypertension, ectopic pregnancy and antepartum hemorrhage, which showed non-significant differences. Comparison between the two groups showed significant differences in mode of delivery, ICU need and hospital stay, while the presentation showed non-significant difference. Preterm labor was significantly higher among teenage mothers. Also, birth weight was lower in group 1. There was significant difference between the two groups regarding the risk for congenital anomalies or stillbirth. 32 cases out of the 1248 cases (2.6%) of the teenages and 3 cases out of 245 (1.2%) in the middle age group, died during labor. There was no significant difference between the two groups regarding APGAR score at birth **Conclusion:** healthcare providers should be aware that teenage pregnancies are high-risk pregnancies and inform pregnant teenage women about that risk and advice them for strict antenatal care. Teenage parturient women are more susceptible to preeclampsia, pre-term labor, and their babies have lower birth weight.

**Keywords:** Teenage pregnancy, maternal wellbeing, antepartum hemorrhage.

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#### Introduction

Teenage pregnancy is an important public health problem as it often occurs in the context of poor social support and maternal wellbeing<sup>(1)</sup>. It is considered a high risk for both the mother and infant<sup>(2)</sup>.

Teenage pregnancy rate is increased in many countries due to multifactorial reasons including: behavioral, traditional, social, cultural, or religious foundation. Most important factors are; poverty, low socioeconomic status and limited education.

Industrialized and developing countries have distinctly different rates of teenage pregnancy<sup>(3)</sup>. In developed regions, such as North America (in USA 54/1000 and in Canada 16/1000) and Western Europe (in Germany 111/1000 and in Poland 16/1000), teen parents tend to be unmarried and adolescent pregnancy is seen as a social issue. By contrast, teenage parents in developing countries (in Egypt 47/1000, in Oman 66/1000 and in Yemen 111/1000) are often married, and their pregnancy may be welcomed by family and

society. However, in these societies, early pregnancy may be combined with malnutrition and poor health care to cause medical problems. 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<sup>(4,5)</sup>.

Several researchers reported that pregnancy among adolescents is associated with maternal complications, premature birth, low birth weight, perinatal mortality and increased infant mortality<sup>(6,7)</sup>.

Other study attributed more adverse effect to teenage pregnancy; adolescents aged 15 years or younger had higher risk of maternal death, early neonatal death, and anemia compared with women aged 20 to 24 years. Moreover, all age groups of adolescents had higher risks for postpartum hemorrhage, puerperal endometritis, operative vaginal delivery, episiotomy, low birth weight, pre term delivery, and small-for-gestational-age infants<sup>(8)</sup>.

Some studies have suggested that first teenage pregnancies have a higher frequency of adverse perinatal outcomes<sup>(9)</sup>. However, there is argument about whether this is an independent association or explained by confounding factors<sup>(10)</sup>.

On the other hand, it has been shown that non-smoking teenagers giving birth for the first time are not at higher risk of adverse outcomes. This study also found that teenagers were less likely to have emergency cesarean sections than women aged 20-29<sup>(1)</sup>. In a newer study, it was concluded that after 16 years of age, pregnancy is not associated with increased risk of obstetric or neonatal complications<sup>(5)</sup>. Many of the studies also lacked sufficient power to detect small but important differences in common outcomes or larger differences in outcomes with low prevalence, such as stillbirth. Pregnancy in young women is associated with many confounding factors and it is important to account for them<sup>(1)</sup>.

### **Aim of the study**

To determine whether teenage pregnancy is associated with increased rates of adverse perinatal outcome, To compare obstetric outcome of teenage with middle aged pregnancy

## **Patients and Methods**

### **Study design**

This study is a descriptive comparative study that compares the outcomes of the teenage pregnancy with that of adult pregnancy in Sohag governorate of Upper Egypt. A specially designed questionnaire was prepared for this purpose and data was collected in two time points:

1- Phase 1: data for this phase was collected from Obstetric archive retrospectively for the previous two years (2011-2012). A total of 822 patients (702 teenage and 120 middle aged females) were included in the study through phase I.

2- Phase 2: data was collected through application of an interviewing questionnaire to all women who were followed up during pregnancy and those who were attended the labor ward at Sohag General Hospital (a Secondary care hospital located in Sohag, Egypt), during the next one year (2013-2014). A total of 671 cases (546 teenage and 125 middle aged females) were included in the study through phase II

### **Subjects in the two phases of the study were divided in to two groups according to their age at the time of the delivery:**

1- The teenage group (study group) includes women with the age of 19 years or less at the time of delivery. A total of 1248 females were included in this group (702 through phase I and 546 through phase II).

2- Older group (control group) includes women aged more than 19 years at the time of delivery. A total of 245 females were included in this group (120 through phase I and 125 through phase II).

Maternal, obstetric, fetal, and neonatal complications will be compared between the two groups.

### **All patients were subjected to:**

- Complete personal, medical and obstetric history.
- General, abdominal and local examination.
- Investigations: including urine analysis &Hb%.
- Follow up during pregnancy: to detect presentation & pregnancy related complications.

- Detection of time, way of delivery and its complications.
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### **Instrument of data collection and questionnaire design**

The tool of the study consisted of a questionnaire that included five sections. The study questionnaire was developed and revised by the investigator and the supervisors of this thesis. The questionnaire was constructed after an in-depth literature review. Administration of the questionnaire and collection of data were performed by the researcher.

### **Sections of the questionnaire**

- 1- Background information section included demographic information and personal characteristics regarding age, religion, marital state, weight, residence, maternal work outside home, prenatal visits and smoking habit.
- 2- Socioeconomic information section which included husband and wife level of education, family income and family characters.
- 3- Obstetric history and complication section: Included a set of questions related to the period of pregnancy. To assess the respondents about antenatal care, the complication related to pregnancy as hypertension, anemia, gestational age, abortion and presentation.
- 4- Delivery and its complications section: Include also variables related to time and way of delivery and any complications if any.
- 5- Fetal and neonatal outcome section: Included questions related to the state of neonate after delivery as birth weight, Apgar score and reference to neonatal intensive care unit.

### **Ethical considerations**

Researchers face ethical dilemmas in their daily duties, as do, when people are used as study respondents in an investigation. First, the researcher obtained verbal permission to conduct the study and to use the Community Centre and hospital facilities for data collection women center of the department of obstetric gynecology hospital. The approval was obtained from the Ethical Review Board: Patient agreement was obtained from the respondents after having a simple description of the nature of the study

as well as the respondents' rights to participate or refuse to participate in the study.

### **Study limitations**

This is a hospital-based study and cannot be generalized to the community. Perhaps many teenagers did not attend the hospital to deliver owing to poverty or lack of transport. Thus, the results should be interpreted with caution and larger community-based studies are urgently needed. The hospital records are not well organized so some data could be lost which could bias the result.

### **Statistical analysis:**

- Statistical package for social sciences (IBM-SPSS), version 19 IBM- Chicago, USA was used for statistical data analysis.
- Data expressed as mean, standard deviation (SD), number and percentage. Mean and standard deviation were used as descriptive value for quantitative data.
- Student t test was used to compare the means between two groups, and one-way analysis of variance (ANOVA) test was used to compare means of more than two groups.
- Pearson correlation test was used to compare two quantitative variables.
- For all these tests, the level of significance (P-value) was set at  $< 0.05$ .

### **Results**

This study included 1248 teenage pregnant females and 245 pregnant women aged more than 20 years (middle age women, taken as a control group) attending in the department of obstetrics and gynecology, GenegalSohag Hospital, in the period from 2013 to 2014.

Personal data of the studied females showed that less than one quarter of them were Christians, with no significant difference between the two groups. Regarding education level, occupation and residence, there was highly significantly a difference between the two groups (table 1).

**Table 1. Demographic data of the study groups**

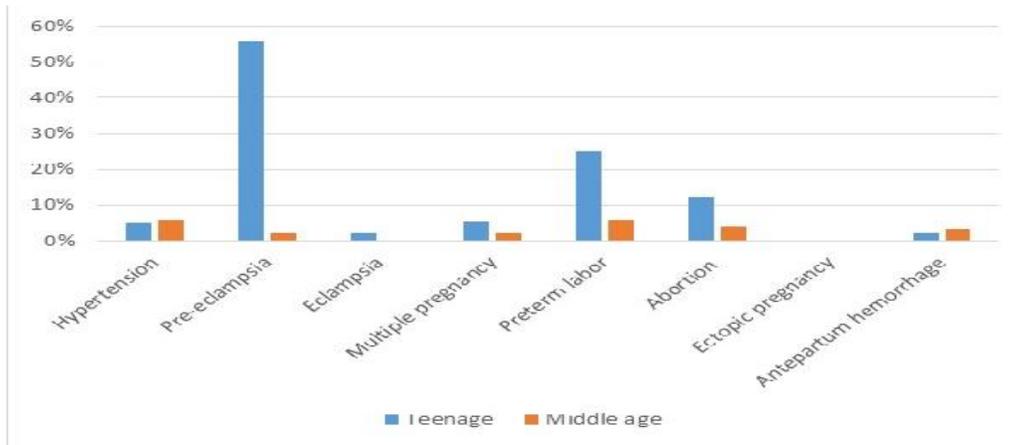
		Teenage		Middle age		P value
		No	%	No	%	
<b>Religion</b>	Moslim	973	78.0	188	76.7	0.672 (NS)
	Christian	275	22.0	57	23.3	
<b>Education</b>	Illiterate	795	63.7	43	17.6	<0.001(HS)
	Primary education	335	26.8	80	32.7	
	Secondary education	118	9.5	76	31	
	University	0	0	46	18.8	
<b>Occupation</b>	Working	216	17.3	143	58.4	<0.001(HS)
	Housewife	1032	82.7	102	41.6	
<b>Residence</b>	Urban	402	32.2	119	48.6	<0.001(HS)
	Rural	846	67.8	126	51.4	

Regarding the complications rate, there was a significant lower risk among middle aged females compared to teenagers to develop all complications, except hypertension, ectopic pregnancy and antepartum hemorrhage, which showed non-significant differences (Figure 1).

Comparison between the two groups showed significant differences in mode of delivery, ICU need

and hospital stay, while the presentation showed non-significant difference (table 2).

Preterm labor was significantly higher among teenage mothers. Also, birth weight was lower in group 1. There was significant difference between the two groups regarding the risk for congenital anomalies or stillbirth (table 3).



**Figure 1. Complications of teenage compared to middle ages women**

**Table 2. Labor data**

		Teenage		Middle age		P valve
<b>Mode of delivery</b>	Vaginal	690	55.3%	201	82%	<0.001 (HS)
	CS	558	44.7%	44	18%	
<b>Presentation</b>	Vertex	1038	83.2%	214	87.3%	0.192 (NS)
	Breech	152	12.2%	20	8.2%	
	Transverse	58	4.6%	11	4.5%	
<b>Hospital stay in hours (mean)</b>		18.09±9.778		16.65±11.717		0.043 (S)
<b>ICU need</b>	Yes	387	31%	10	4.1%	<0.001 (HS)
	No	861	69%	235	95.9%	

Table 3. Infants' data

		Teenage		Middle age		P value
Gestational age in weeks	34	220	17.6%	10	4.1%	<0.001(HS)
	35	96	7.7%	23	9.4%	
	36	117	9.4%	60	24.5%	
	37	218	17.5%	31	12.7%	
	38	198	15.9%	51	20.8%	
	39	127	10.2%	35	14.3%	
	40	149	11.9%	15	6.1%	
	41	94	7.5%	10	4.1%	
42	29	2.3%	10	4.1%		
Birth weight in grams (Mean±SD)		2611.06±531.613		3181.02±410.09		<0.001(HS)
IUGR		71	5.7%	13	5.3%	0.812
Stillbirth		32	2.6%	3	1.2%	0.010 (S)
Congenital anomalies		35	2.8%	0	0	0.008 (S)

Most cases (more than 80%) fell in the range of APGAR score of 8 or 9, while only 9-13% showed APGAR score of 10 and 5-7% had APGAR score of 7.

There is no significant difference between the two groups regarding APGAR score (figure 2).

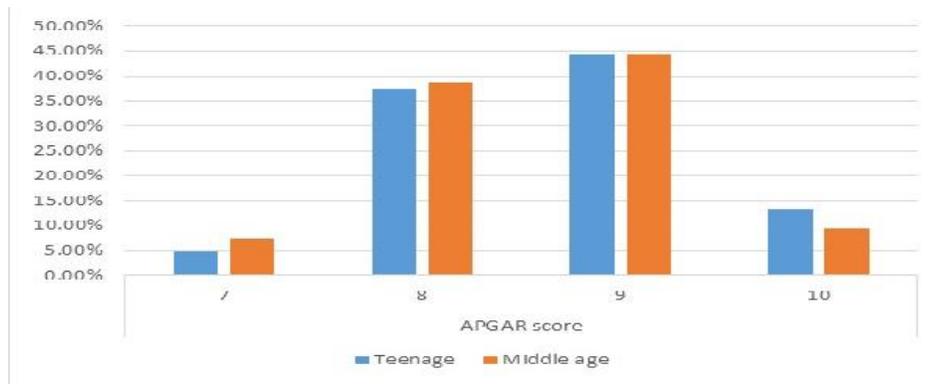


Figure 2. APGAR score at 5 minutes

### Discussion

Adolescence is a period of life that starts at puberty and ends at the culturally determined entrance to adulthood when biological, physical and psychosocial maturity occurs. From this biological perspective, adolescence is defined as a period of lifespan of the ages 10 to 19 years. Teenage pregnancy is the state of fertility in young age from 15-19 years. It may be associated with adverse outcomes as low birth weight (LBW), preterm delivery, small for gestational age and neonatal mortality<sup>(11)</sup>. Although the associated socio-demographic factors may account for an increase in the risk of adverse reproductive outcomes for adolescent pregnancy, there is a concern that young maternal age may be a biological risk factor<sup>(12)</sup>.

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. Some studies have suggested that first teenage pregnancies have a higher frequency of adverse perinatal outcomes such as infant mortality, preterm births, and fetal growth restriction. Maternal complications may include difference in rates of cesarean section and in maternal mortality<sup>(13)</sup>. 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<sup>(4)</sup>.

Personal data of our studied females showed that less than one quarter of them were Christians, while the majority (76-78%) were Moslims, with no significant difference between the two groups. This ratio is somewhat near to the normal distribution of religion in Sohag Governorate.

Regarding education level, around 2 thirds of the teenage group were illiterates, one quarter had only primary education, and the remaining 9.5% had preparatory or secondary level of education. This was highly significantly different from females older than 20 years, where only less than 18% were illiterate, and more than 18% had university graduation, with the remaining two thirds had either primary or secondary education level. These findings reflect to negative impact of early or teenage marriage and pregnancy on the education of the girls. The present study findings regarding education level are in agreement with these of *Fathalla*<sup>(14)</sup> who has indicated that the level of teenage fertility is negatively associated with a woman's educational level. It is highest among women with low education level. Also, in agreement with our result, *Watcharaseranee et al*<sup>(15)</sup> in a study that aimed to determine the incidence of teenage pregnancy and compared obstetric and neonatal complications of teenage mothers with adult mothers in Thailand. They compared a study group of women aged 13-20 years, to a control group of women aged 20-25 years who gave birth during the same period. They found that teenage mothers had lower levels of education and higher levels of inadequate antenatal care. *Rasheed et al*<sup>(5)</sup> concluded that the majority of women in teenage and adult groups had completed non-university education, but this was significantly more frequent in teenage group who had stopped their education at primary- and preparatory-school level.

More than 80% of teenage subjects were housewives, with only 17.4% are working. In the other group, only 41.6% of females were housewives. The difference between the two groups was, of course, highly significant. In agreement with this finding that reported by *Figueiredo et al*<sup>(16)</sup> who reported that employment and manual work were more in the old compared to teenager group. Physically demanding work does not seem to be associated with adverse pregnancy outcomes.

Regarding residence, more than two thirds of the teenage group live in rural areas, and only 32% live in

urban. In the other group, the residence is nearly divided into two equal parts between rural and urban. Again, this shows a highly significant difference between the two groups. In congruence with these findings, *Fathalla*<sup>(14)</sup> has reported that the level of teenage fertility in rural areas is almost twice the level in urban areas. This is explained by the early marriage and start of reproductive functions and pregnancy at very young ages in rural communities. Moreover, the same study has demonstrated that Upper Egypt, which is the setting of the present study, has the highest rate of teenage childbearing, while the lowest level is observed in urban Lower Egypt. Many studies indicated a more rural residence of teenage pregnancy compared to older women.

Regarding the complications of teenage pregnancy of the studied females, pre-eclampsia was the most frequent complication, seen in 55.9% of cases. This is followed by preterm labor (25.2%), then abortion (12.6%), then multiple pregnancy (5.4%), then gestational hypertension (5%). The remaining complications were rare, seen only in less than 3% for each complication, namely eclampsia and antemartum hemorrhage (2.3% each), and ectopic pregnancy, seen only in 0.2% of cases.

Comparing these figures with the complication rate among group 2 of older pregnant females, there was a significant lower risk among middle aged females compared to teenagers to develop all complications, except hypertension, ectopic pregnancy and antepartum hemorrhage, which showed non-significant differences. Regarding hypertension, the finding is not in agreement with the finding in a study at a university hospital in Jordan<sup>(17)</sup>.

Regarding preeclampsia, the findings are in agreement with that reported by *Rasheed et al*<sup>(5)</sup>. Other study showed high percentage of preeclampsia in the teenager<sup>(18)</sup>. This result disagreed with that reported by few studies where similar incidence or even lower preeclampsia rates among teenagers were recorded<sup>(17)</sup>. Regarding ectopic and multiple pregnancy, our results agreed with previous studies<sup>(19)</sup> while other studies pointed to significant increase risk of such complication in the teenagers<sup>(20)</sup>.

A little more than half of the pregnant teenage women undergone normal vaginal delivery, with the remaining 45% had a CS operation. This was significantly different from the middle aged women, who needed CS in only 18% of cases. The majority of presentations were vertex (83-87%). Breech (8-12%) and transverse (about 4.5%) were seen only in a minority of cases. There was no significant difference between the two groups regarding the presentation of the fetus. Our finding did not agree with that reported by *Maryam and Ali*<sup>(21)</sup> and in agreement with that reported by *Rasheed et al*<sup>(5)</sup> who reported higher incidence of cesarean section rate in teenage group.

Gestational age ranged from 34-42 weeks, this can be divided into preterm (nearly 25% in the teenage group and 14% in the middle age group), term (65% in the teenages and more than 75% in the middle ages) and post-date (8-10%) of cases. More middle age women had term pregnancy than teenages, with a significant difference. This result is in agreement with *Chen et al*<sup>(22)</sup> and the increased gestational with mother age can be due to increased preterm delivery in the younger group. In fact, preterm birth is the leading cause of perinatal mortality and morbidity in modern obstetric practice.

Birth weight was 2.6 Kg with a standard deviation of half a kilogram in the teenage group, the mean weight was higher by about half a kilogram in the other group, with a highly significant difference. IUGR was seen in only 5% of cases in both groups, with no significant difference. These 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<sup>(23-25)</sup>.

Congenital anomalies and still births occurred in 2.8 and 2.7% of cases, respectively in the teenage group, while non in the middle age group, both shows a significant difference. *Chen et al.*<sup>(23)</sup> reported increased risks of congenital anomalies in central nervous, gastrointestinal, musculoskeletal and integument systems in the teenage group.

32 cases out of the 1248 cases (2.6%) of the teenages and 3 cases out of 245 (1.2%) in the middle age group, died during labor. The difference is, however, non

significant, may be due to the limited number in both groups.

Most cases (more than 80%) fell in the range of APGAR score of 8 or 9, while only 9-13% showed APGAR score of 10 and 5-7% had APGAR score of 7. There is no significant difference between the two groups regarding APGAR score. Our findings were in contrast to those in the studies by *Al-Ramahi and Saleh*<sup>(17)</sup> who reported that infant Apgar scores were not different. Meanwhile, *Chen et al*<sup>(24)</sup> in a study of the association between teenage pregnancy and adverse birth outcomes, they demonstrated that infants born to teenage mothers aged 17 or younger had a higher risk for low Apgar score at five minutes.

## Conclusion

In conclusion, healthcare providers should be aware that teenage pregnancies are high-risk pregnancies and inform pregnant teenage women about that risk and advise them for strict antenatal care. Teenage parturient women are more susceptible to preeclampsia, pre-term labor, and their babies have lower birth weight. Also, as teenage pregnant women are more likely to be illiterate, housewives and of rural residence; this add additional impact on teenage pregnancy.

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