Journal University of Kerbala , Vol. 15 No.4 Scientific . 2017

Risk of maternal and fetal complications in pregnant teenagers in comparison to adults, a cohort study.

خطورة حدوث مضاعفات للأم والجنين عند المراهقات الحوامل بالمقارنة مع البالغات، دراسة حشديه.

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Abstract

Background: Teenage pregnancy has been considered to have a higher risk than pregnancy in an adult, because of biological immaturity of the teenager, so it is a contributing factor to high maternal and prenatal complications.

Aims of the study: To identify sociodemographic characteristics of teenage pregnant mothers, and to compare obstetrical and medical complications, types of delivery, and fetal outcomes of teenage mothers with that of adult mothers.

Patients and Methods: A hospital based retro- prospective cohort study was conducted at Al-Zahraa Teaching Hospital for Maternity and Children in Al-Najaf Governorate /Iraq from June 1st to September 30th 2015.The study group included 150 pregnant teenagers aged 13-19 years, and the comparable group included 150 pregnant women aged between 20 and 35 years.Data included socio-demographic characteristics, antenatal care (ANC), medical and obstetrical complications, mode of delivery, and fetal outcome.

Results: There is a statistically significant difference ($p<0.05$) between the two groups in terms of severe anemia, hypertension, postpartum haemorrhage, preterm labor, post term labor, low birth weight, fetal distress, meconium aspiration syndrome and admission to neonatal care unit.

Conclusions: The study shows that medical problems complicating pregnancy and bad fetal outcomes are higher in teenager mothers.

الخلاصة

خلفية البحث : يكون الحمل في سن المراهقة ذو مخاطر أعلى من الحمل في مرحلة البلوغ، وذلك بسبب عدم النضج البيولوجي للمراهقة، لذلك يعتبر عامل مهم ويساهم في حدوث الكثير من المضاعفات للأمهات الحوامل خلال فتره الحمل وعند الولادة.

هدف الدراسة : لتحديد الخصائص الاجتماعية والديموغرافية للأمهات المراهقات، ولمقارنة مضاعفات الولادة والمضاعفات الطبية، ونوع طريقة الأنجاب، ومصير الجنين للأمهات في سن المراهقة مع الأمهات البالغات.

المرضى والعمل: أجريت دراسة حشديه رجعية-مستقبلية في مستشفى الزهراء التعليمي للولادةوالأطفال في محافظة النجف خلال الاول من حزيران وحتى الثلاثين من أيلول عام 2015 وشملت الدراسة تشمل 150أمراه حامل مراهقة اللاتي تتراوح أعمارهن بين 13- 19 عاما ومجموعة مقارنة هي 150 امرأة حامل تتراوح أعمارهن بين 20 و 35 عام. وشملت البيانات الخصائص الاجتماعية والديموغرافية والرعاية قبل الولادة واثنائها ، والمضاعفات الطبية ومضاعفات الولادة، وطريقة الأنجاب ومصير الجنين.

النتائج: أظهرت الدراسة بأن هناك فروق ذات دلالة إحصائية($p<0.05$) بين المجموعتين بالنسبة للأمهات المراهقات الحوامل في فقر الدم الحاد و ارتفاع ضغط الدم و نزيف ما بعد الولادة و الولادة المبكرة والولادة المتأخرة وانخفاض وزن الطفل عند الولادة و الضائقة الجنينية و متلازمة شفط العقي والرقود في وحدات رعاية الأطفال حديثي الولادة بالمقارنة مع مجموعة الأمهات الحوامل البالغات .

الأستنتاجات: أثبتت الدراسة أن المشاكل الطبية المرافقة للحمل مع مضاعفاته والمضاعفات المرافقة للولادة ومابعدها والمشاكل المتعلقة بالجنين عند الولادة ومابعدها تكون نسبتها أعلى عند النساء المراهقات الحوامل من النساء الحوامل البالغات

Introduction

Teenage pregnancy defines Teenage Pregnancy as "pregnancy of a female aged 10-19 years" [1], this age is regarded as her age at the time the delivery of her first baby[2].

Teenage pregnancy is regarded as an important public health problem and often occurs in the low socioeconomic class in which the maternal health is very poor [3]. In reproductive terms teenage pregnancy considers a risky group because of the burden of reproduction and growth and because of high prevalence of complications during pregnancy and labour which can be attributed to increasing mortality among teenage pregnant girls [4].

In developing countries early pregnancy may combine with malnutrition and in adequate antenatal care [5].So the coexistence of malnutrition and early pregnancy are the main attributable factors for many serious health risks during pregnancy and labour such as anaemia, pregnancy induced hypertension, prolonged labour , preterm labour, cephalo-pelvic disproportion,maternal morbidity and mortality,perinatal and neonatal morbidity and mortality, and damage to the reproductive tract [6,7,8].So that early child bearing is a high health risk for both the mother and the child[9].The incidence of teenage pregnancies varies between countries and within countries [10].Adolescents fertility rate in Iraq in 2012 was 69 per 1000 women aged 15-19 years compared to neighboring countries;Syria 42,Iran 32,Turkey 31,Jordan 26,Kuwait 14 and Saudi Arabia 10 [11].

Aim of the study: The present study aims to identify sociodemographic characteristics of teenage mothers, and to compare obstetrical complications, medical complications, and fetal outcomes of teenage pregnant mothers with that of adult mothers.

Subjects and Methods

Study design and Target population:

This study is a retro- prospective cohort study conducted at the unit of obstetrics and gynecology of Al-Zahraa Teaching Hospital in Al-Najaf governorate /Iraq. The data collection was carried out from June 1st to September 30th 2015 in rate of 4 hours per day, 3 days per week. The collected sample includes those women who were admitted to the hospital in Spontaneous labor or referred from antenatal care units for induction of labor who underwent delivery.

Inclusion criteria are: singleton pregnant ladies, maternal age between (13-19) years for the study group and (20-35) years for the comparable group.Whereas pregnant women who had one of the followings were excluded from the study to avoid the confounding factors effect on the results of the current study: multiple pregnancy, history of chronic medical illnesses (chronic hypertension, diabetes and others), and history of infertility.

Research plan:

A pilot study was carried out on a purposive sample selected from patients attending the delivery ward, but they were not included in the final sample of the study. The purposes of the pilot study were: to estimate the time needed for the interview to collect the required data, and to pinpoint any difficulties and unclear questions in the questionnaire. The study included (150) teenage pregnant mothers aged 13-19 years old and (150) adult mothers aged 20-35 years old as a controls who were delivered in the same hospital during the same period. Both groups were matched in parity, the selected subjects of both groups in this current study were taken sequentially .The Questionnaire form answers were taken from the mothers at pre delivery and delivery wards, the mothers were followed up postnatally for 3hours in post-delivery wards.

Data collection:

Data were collected from each mother by direct interview after her verbal consent was taken, and some information were obtained from patients records. Structured questionnaire form specially constructed by the researchers for the purpose of this study was used. The questionnaire was divided into sections including sociodemographic variables such as age, educational level, occupation, and residency. Another section was about history of the current pregnancy; including data such as gestational age, antenatal care, antepartum hemorrhage, postpartum hemorrhage, and duration of labour. Clinical examination was done by obstetrician for pregnant women when they presented to the outpatient clinic and labor unit. All patients in labour were admitted to labor unit and had general and vital signs examination. Abdominal examination was performed to detect fetal lie, presentation, engagement, clinical estimation of fetal size, fetal heart sound and assessment of uterine contractions.

Pelvic examination was carried out to confirm diagnosis of labor, fetal presentation, position, station of fetal head, state of amniotic membrane, and for assessment of cervical dilatation. The body mass index was calculated by the measurement of body weight and height of each mother using the classical height and weight scale instruments. Biochemical and hematological tests including random blood sugar and hemoglobin test were performed routinely during labor for each mother admitted to the labor unit. Medical problems of pregnant women like anemia, gestational diabetes, and pregnancy induced hypertension were assessed by history, examination, and investigations.

Pregnancy outcomes were measured according to certain criteria which included mode of delivery (normal vaginal delivery or caesarean section) and assessment of new born baby. All newborn babies were examined by pediatrician and the following data were recorded: birth weight, gross congenital anomalies, still birth (is a baby born with no signs of life at or after 24 weeks gestation), prematurity, post maturity, meconium aspiration syndrome.

Statistical Analysis:

the data were analyzed by using the statistical package of SPSS-18. Descriptive statistics were presented as frequency tables. The association between categorical variables was assessed by chi square test. Relative Risk (R.R) and 95% confidence interval (C.I) were also used to measure the risk of association of teenage pregnancy with medical problems, obstetrical complications and perinatal outcomes. Statistical significance will be considered whenever the p-value is equal or less than 0.05.

Results:

During the period of the study, a total of 300 pregnant ladies were included, 150 of them were teenagers (aged 13-19 years) who represented the study group, while 150 of them were aged 20-35 years who represented the comparable group. The mean age of teenage mothers was 16.3 years ± 1.7, the range 13 - 19 years. The comparable group had a mean age 25.3 years± 4.2 with a range 20 - 35 years.

Mean parity and gravidity of teenage mothers and the comparable group were: 1.6 ± 0.69921 SD, 1.7 ± 0.82327 SD for teenage group, and 1.6 ±0.69921 SD, 1.7±0.82327 SD of the second group.

Normal vaginal delivery rates were 77.3% among teenage group and 73.3% among comparable group, while the rates of caesarian section were 22.6% and 26.6 % among teenage and comparable groups respectively. The distribution of some socio-demographic features are shown in table 1. The percentage of rural residency among teenage group (29.3%) was higher than comparison group (18%). Regarding the level of education, 20% of adult mothers received college education compared to teenage group who had illiteracy rate of 36.6%. Regarding BMI, the rate of normal weight among teenage mothers (54%) was higher than adult mothers (37.3%), while the rate of obese women among the comparison group (26.6%) was higher than teenage group (9.3%).

Table 1: The distribution of teenage mothers and comparison group according to socio demographic characters.

Variables		Teenage mothers (N=150) No.(%)	Adults mothers (N=150) No.(%)
Residence	Urban	106(70.6%)	123(82%)
	Rural	44(29.3%)	27 (18%)
Occupation	Unemployed	150(100%)	135(90%)
	Employed	0(0%)	15(10%)
Level of education	Illiterate	55(36.6)	28(18.6)
	Read and write	9(6)	8(5.3)
	Primary	40(26.6)	51(34)
	Intermediate	36(24)	24(16)
	Secondary	10(6.6)	9(6)
	College and above	0(0)	30(20)
BMI (Kg/m2)	Normal weight (18.5-24.9)	81(54)	56(37.7)
	Over weight (25-29.9)	55(36.6)	54(36)
	Obese(30 and above)	14(9.3)	40(26.6)

Table 2 shows that teenage and adult mothers rates of regular visits were close in both groups (49.3% in teenage mothers and 48% in comparison group).

Although the rates of Folate and Iron intake were higher among adult mothers (41.3% and 56.6% respectively), no significant association was demonstrated between the two groups. Teenage and non-teenage mothers had no significant association in the rates of some obstetrical variables like mode of delivery, fetal presentation and prolonged labour as shown in table 3

Table2: The distribution of teenage mothers and adult mothers according to some antenatal care and obstetrical variables.

Variables		Teenage mothers (N=150) No.(%)	Adults mothers (N=150) No.(%)	P	RR (95%CI)
Folate intake		59 (39.3)	62(41.3)	0.72	0.96 (0.8-1.2)
Iron intake		79 (52.6)	85 (56.6)	0.486	0.9 (0.7-1.2)
ANC	≥4	74 (49.3%)	72 (48)	0.081	1.03 (0.8-1.3)
	<4	76 (50.6%)	78 (52)		
Tetanus vaccine		114 (76%)	112 (74.6)	0.78	1.04 (0.8-1.4)

Table 3:The distribution of teenage mothers and adult mothers according to some obstetrical variables.

Variables		Teenage mothers (N=150) No.(%)	Adults mothers (N=150) No.(%)	P	RR (95%CI)
Presentation	Cephalic	147 (98)	144(96)	0.35	1.5(0.6-3.8)
	Breech	3(2)	6(4)		
Prolonged labour		8(5.3)	10 (6.6)	0.627	0.9(0.5-1.5)
Mode of delivery	Vaginal	116 (77.3)	110 (73.3)	0.421	1.1(0.8-1.5)
	Caesarean section	34 (22.6)	40 (26.6)		

Newborn babies of teenage mothers were at a higher risk of low birth weight, fetal distress, meconium aspiration syndrome, and admission to neonatal care unit with rates of 13.3%, 22%, 12%, and 24% among teenage mothers, respectively (table 5). Teenage mothers were at a higher risk of both preterm and post term delivery (12.6% and 8% respectively) (table 4).

Table4: The distribution of abnormal pregnancy outcomes among study group

Variable	Teenage mothers (N=150) N(%)	Adult mothers (N=150) N(%)	P. value	Relative Risk (R.R) (95% Confidence interval)
Low birth weight (<2500gm)	20(13.3)	7(4.7)	0.0087*	1.6(1.2-2)
Preterm	19(12.6)	8(5.3)	0.016*	1.5(1.1 -1.9)
Post term	12(8.0)	3(2.0)	0.01*	1.6 (1.2 -2.2)
Fetal distress	33(22.0)	9(6.0)	0.00006*	1.7(1.4-2.1)
Meconium aspiration syndrome	18(12.0)	8(5.3)	0.040*	1.4(1.08-1.9)
Admission to neonatal care unit	36(24.0)	21(14)	0.027*	1.3(1.06-1.7)
Congenital anomalies	2(1.3)	1(0.6)	0.561	1.3(0.6-3)
Still birth	5(3.3)	2(1.3)	0.25	1.4(0.9-2.3)

According to table (5) Teenage mothers in the current study were at a higher risk of developing severe anemia, hypertension and postpartum hemorrhage. No significant risk was estimated regarding other medical and obstetrical complications such as mild and moderate anaemia, abortion, premature rupture of membrane, gestational diabetes, oligohydramnios, polyhydramnios, and antepartum hemorrhage.

Table 5: The distribution of teenage mothers and adult mothers according to maternal medical problems and complications.

Varibles	Teenage mothers (N=150) No.(%)	Adults mothers (N=150) No.(%)	P	RR(95% CI)
Moderate anemia	45(30.0)	43(28.6)	0.35	1.35 (0.5-1.5)
Severe anemia	13(8.6)	4(2.6)	0.016*	1.6(1.2-2.1)
Abortion	5(3.3)	5(3.3)	1	1(0.5 -1.9)
PROM**	10(6.6)	8(5.3)	0.627	1.1(0.7 – 1.7)
Pregnancy induced hypertension	23(15.3)	11(7.3)	0.02*	1.4(1.09-1.8)
Gestational diabetes	3(2.0)	5(3.3)	0.47	0.3(0.3-1.8)
Oligohydramnios	12(8)	13(8.6)	0.819	0.92(0.6-1.5)
Polyhydramnios	9 (6)	10 (6.6)	0.798	0.9(0.6-1.5)
Antepartum haemorrhage	19(12.6)	14 (9.3)	0.35	1.2(0.9-1.6)
Postpartum Haemorrhage	25 (16.6)	6 (4)	0.0003*	1.7(1.4-2.1)

* P. value is of statistical significant. ** Premature rupture of the membrane

* P. value is of statistical significant.

Discussion:

Teenage women suffer from higher risk of complications during pregnancy and labour than women in their twenties. Although teenage pregnancy can be a good experience, particularly in the later years of teenage, but it is usually associated with more frequent health and social adverse outcomes [12].

The results of this study showed that teenage pregnancy is associated with high risk of poor education, anaemia, hypertension, postpartum hemorrhage, low birth weight, preterm labor, post term labor, fetal distress, meconium aspiration syndrome. In this study all the studied mothers were married, so there was no social problems that reported by other researches.[13,14,15,16].

Regarding socio-demographic characteristic, teenage mothers in this current study had lower educational level than adult mothers which is similar to other studies, Pattanapisalask et al in Thailand(2011) [17] and Sharma et al in India (2003) [18] and Supadit et al in Thailand (1998)[19].

Several studies such as Gortzak-Uzan et al (2001) [20] and Bukulmez et al (2000) [21] showed that socio-demographic risk factors more prevalent in teenage gravidas were lower level of education and poor prenatal care. It is believed that the adverse outcomes observed in teenage pregnancies might have been attributed to these socio-demographic factors[15].

Regarding medical and obstetrical outcomes in this study the incidence of preterm delivery ,low birth weight ,hypertension and anemia were more in teenagers and these findings are agreed with the findings of a study done by Banerjee et al (2009) [22] which showed that teenage pregnancy is often of grave concern and is of high risk pregnancy. Teenage women face a greater risk of bad obstetrical outcomes than adult mothers. The cause of hypertension among teenage pregnant mothers could be due to biological age itself [23].While low birth weight might be attributed to the preterm delivery. In addition to that, biological immaturity and poor socio-economic environment can be also etiological factors for low birth weight.

Both teenage and adult mothers in the current study had nearly equal rates of diabetes mellitus, a finding similar to that found by Nato et al (2005) [24], Thato et al (2007) [25] but in disagreement with another study by Kovavisarach et al (2010)[26] who found significantly higher rates of diabetes mellitus among adult mothers.

Majority of the studied women were anaemic (Hb <11gm/dL) which may reflect the general nutritional deficiency state of Iraqi women. However, teenage mothers with severe anemia (Hb < 7 gm/dL) was significantly higher than adult mothers. This may be explained by their physiological needs, as these are still growing, young mothers in addition to the nutritional requirements of the fetus. The same finding has also been showed by several other researches [27,28,29].

Usta et al (2008) [30] showed that adolescents are more likely for preterm delivery than adult women, and are more likely to suffer from anemia, and this agreed with current study. The cause of preterm delivery among teenage mothers may be attributed to immaturity of reproductive organs of young women, poor nutrition, anaemia, low level of education and psychological distress.

The present study found that teenage mothers had a higher incidence of hypertension and post-partum haemorrhage similar to that found in a previous study by Iqbal F et al, that reported higher rates of both hypertension in pregnancy and post-delivery bleeding in teenage mothers compared to adult mothers [31].

The high incidence of postpartum haemorrhage among teenage mothers may be due to both hypertension and severe anemia which were higher in this current study.

A lot of controversy in previous studies about the mode of delivery in teenage mothers. Some studies found that higher rates of normal delivery and lower rates of operative delivery for teenagers[23,32,33],whereas others have found no significant difference in the type of delivery between the teenagers and adults, a finding compatible with our study results[27.31,35]. Regarding neonatal outcomes, Mukhopadhyay et al (2010) [4] in India revealed that the teenage mothers had a higher rate (27.7%) of early deliveries compared to (13.1%) in the non teenage mothers, and had babies with low birth weight (38.9 %) compared to (30.4%) in adult mothers. This was agreed with Chahande et al (2009) [34] and Banerjee et al (2009) [22] who found that the incidences of preterm

labour and low birth weight were more in teenagers. This result was compatible with the current study findings. This study shows an increased risk of other adverse perinatal outcome such as post maturity and meconium aspiration syndrome among teenage mothers in comparison to adult mothers. This result was similar to another study conducted by Shah et al (2011) in Pakistan [8] who also found no significant association between both groups regarding the still birth babies which was agreed with this study. However, other studies have not shown increased risk of adverse perinatal outcomes [5,23,36,37].

Conclusions

It was concluded from the present study that all teenage mothers were unemployed. The rates of illiteracy and rural residence were higher in teenage than adult mothers. Severe anaemia and hypertension and post-partum hemorrhage were the most prevalent medical complications during the gestation among teenage mothers. Normal vaginal delivery was the major route of delivery among teenage mothers. And teenage pregnancy ends generally with bad fetal outcomes such as: pre-and post-term delivery, low birth weight, fetal distress, meconium aspiration, and admission to neonatal care unit.

Teenage pregnancy still represents one of the major public health problems. Therefore, public awareness about the health impacts of teenage girls marriage and early pregnancy should be increased. At the same time, education of teenage girls should be provided, together with increasing the frequency of antenatal visits for early diagnosis and management of antenatal complications. Improving nutrition during pregnancy and ensuring supplementation of folic acid, iron, and other vitamins during pregnancy to prevent anaemia are of paramount importance. Information can be provided early through premarital counseling and counseling regarding family planning services to delay pregnancy until the young girl reaches maturity.

Further prospective cohort studies with large sample size of both adolescents and adult mothers groups will help in highlighting the complications of pregnancy and obstetrical outcome.

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