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Original Article

The Consequence of Teenage Pregnancy on the Primigravida Health Outcome Delivers at Sulaymaniyah Maternity Teaching Hospital-Kurdistan Region-Iraq.

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ABSTRACT

Background and Objectives: Teenage first pregnancy is a significant public health problem as it often occurs in the context of poor social support and maternal wellbeing. It is considered high risk for both the mother and infant. This study aimed to find out the effect of teenage pregnancy on neonatal health outcomes.
Methods: A descriptive, cross-sectional, prospective study was conducted in Sulaymaniyah in the Kurdistan Region of Iraq and involved all pregnant teenage mothers admitted to Sulaymaniyah Maternity Teaching Hospital from January 1, 2019, to June 30, 2019.
Results: 332 of mothers aged ≤19 years and their newborns were studied. A higher proportion of teenage mothers were from rural areas than the urban areas (59.3% vs 40.7%). The percentage of teenage mothers who did not attend antenatal care was 11.14%, and irregular attendees represented 9.94 %. Compared with teenage mothers aged 14–16 years, teenage mothers aged 17–19 years had higher risks of anaemia, systemic infections, coincidental condition, low birth weight, preterm delivery and low Apgar score. The risk of aspiration of meconium and stillbirth among infants born to teenage mothers was statistically not significant after adjustment for gestational age and birth weight, in addition to maternal characteristics and mode of delivery. Teenage pregnancy was associated with higher risks of adverse pregnancy outcomes.
Conclusion: Prevention strategies and the improvement of healthcare are essential to reduce the consequences of teenage pregnancy on maternal and neonatal health outcomes. Teenage women were less likely to receive antenatal care services. Use of community- and health facility-based education programs are necessary to prevent teenage pregnancy and thus reduce adverse maternal and neonatal outcomes.
Keywords: Primigravida, Outcomes, Pregnancy, Teenage, Health, Consequences

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INTRODUCTION

Teenage pregnancy is a terminology to define a teenage girl, usually within the ages of 13-19, becoming pregnant [1]. Globally, there are 16 million births a year to young married and unmarried women aged 15-19 years, representing 11% of all births worldwide [2]. Around 95% of these births arise in developing countries, as 49% of girls in these countries get married before the age of 18. First pregnancy at an early age is considered high risk for both the mother and infant [3]. Around the world, the rate of childbearing adolescent women shifts broadly, depending on cultural, religious, political, economic and other factors [4].Teenage pregnancy is present in all societies; however, the level of teenage pregnancy

and childbearing varies from country to country [5]. In particular, unstable biological and social environments have an impact on the tendency, prevalence and the results of teenage pregnancies. Additionally, the existing trends of teenage marriage in different parts of the globe also contribute to the problem persisting at various levels. Therefore, adverse pregnancy outcomes are significantly higher in teenagers than in adults. Babies of teen mothers are more likely to be premature and experience infant mortality [6]. The infants of teenage mothers often endure more risks to health and social wellbeing than do children of older mothers [7]. Among the young women aged 15-19, the negative consequences of pregnancy and childbirth are the leading cause of death in developing countries. It is estimated that 90,000 adolescent mothers are not physically ready for parenthood [8]. Study of maternal and perinatal outcomes in teenagers by Dutta and Joshi (2013) in West Bengal, India, concluded that the rate of low birth weight (LBW) in teenage pregnancy was relatively high in the teenage mothers (29.2%) compared to the adult mothers (16.6%) [9]. Also, birth asphyxia was found in 29.2% of the newborns of teenage mothers and 7.3% of the newborns of the adult mothers [10]. These adverse outcomes may be the result of the high rate of preterm delivery in the teenage group. Some researchers found that good quality prenatal and natal care reduce adverse pregnancy outcomes in teenagers [2].The fact established in many studies about the negative consequences of teenage pregnancies is that it is still challenging to know how much the biological factors related to age contribute to the physical outcomes such as birth weight, prematurity and other perinatal complications [11]. Therefore, this study was conducted to describe the consequences of teenage pregnancy on maternal and the first newborn health outcomes at Sulaymaniyah Maternity Teaching Hospital in Sulaymaniyah, Kurdistan Region of Iraq.

METHODS

The descriptive, cross-sectional, prospective study was conducted. The questionnaire was given to each teenage mother after her verbal consent. The questionnaire was included in the postpartum patient file to be completed after the delivery. Teenagers were asked to complete the 23 questions and place the questionnaire in a sealed envelope provided by the researcher. The study was conducted in the Maternity Teaching Hospital in Sulaymaniyah in the Kurdistan Region of Iraq from January 1 to June 30, 2019.A purposive non-probability sample of 332 teenage mothers who delivered in the Sulaymaniyah Maternity Teaching Hospital and agreed to participate in the study was recruited to the study. During the study period, 6243 deliveries were registered and conducted at the Sulaymaniyah Maternity Teaching Hospital. Among this group, 332 out of 6243 were teenagers. Among the 332-teenager mothers, 273 had a normal vaginal delivery, and 59 had a caesarian section (Sulaymaniyah Maternity Hospital Statistical Department, 2019).The study was conducted after obtaining agreement from the Sulimaniyah University and the Sulaymaniyah Maternity Hospital in Sulymaniyah. The questionnaire included 23 questions approved by the Human Subjects Committee of the University of Sulaymaniyah. The study questionnaire consisted of three parts, as follows:

Part one: maternal socio-demographic information (such as age, education level, occupation, residency, nationality, socio-economic status, Body Mass Index (BMI), Antenatal Care (ANC) visit, medical condition and mode of delivery).

Part two: neonatal demography and medical history including seven items such as gender, gestational age (weeks), birth weight (grams), APGAR score, fetal distress, aspiration meconium and shoulder dystocia). **Part three:** neonatal outcomes, consisting of six items such as small for gestational age (SGA), large for gestational age (LGA), medical condition, type of deformity, neonate death and neonatal diagnosis. Also, it included information about BMI measurement, height and weight.

BMI Grading as per WHO [12]:

Underweight	<18.5
Normal	18.5-24.99
Overweight	25-30
Obese	>30

Newborn Birth Weight [13]:

Extremely Low Birth Weight (ELBW)
<1000
Very Low Birth Weight (VLBW)
1000-1500
Low Birth Weight (LBW)
1500-2500
Normal Weight
2500-4500
Over Weight
>4500

APGAR score interpretation [14]:

0-3	Severely depressed
4-6	moderately depressed
7-10	Normal

The Council of the College of Nursing accepted the research protocol, and the ethical committee approved the study of the College of Medicine University of Sulaymaniyah on February 7, 2019. Accordingly, an official letter from the College of Nursing of the University of Sulaymaniyah was sent to the Sulaymaniyah Maternity Hospital city to request facilitation and cooperation during data collection of this study.

Data were collected through direct structured interview of teenage pregnant women using questionnaire form, which was designed for the study purpose. The researchers clearly explained the purpose of the study to all pregnant women, and their verbal consent was obtained before filling the questionnaire. For mothers, the interview took approximately 15 minutes, but for some neonates, it took longer because of checking neonatal outcomes or rechecking the condition. Pregnant mothers aged 19 years and less and pregnant for the first time were included in the study. Teenage mothers with the second or third pregnancies were excluded. The University approved the study for the Advanced Nursing Research and Training by Sulaymaniyah Maternity Hospital. All information collected during the study will remain strictly confidential. No identifying information (i.e. name, address and telephone number) was requested so that the participants would not be recognized. Participation was voluntary, and an informed consent document was included with the questionnaire. Informed consent was obtained from the study participants before the data collection. The collected information during the period of the research was stored with the utmost confidentiality. All statistical computation was enhanced using the Statistical Package for Social Sciences (SPSS 21). The data were coded, tabulated, and presented in a descriptive form. The statistical procedure that was applied to determine the results of the present study included: alpha-Cronbach for testing the reliability of the questionnaire, descriptive statistical data analysis (maternal demography, neonate demography and neonate outcomes) and Chi-square, a simple regression model for inferential data analysis.

RESULTS

Table 1 demonstrates that alpha-Cronbach was used to get the result of the reliability of the questionnaire. As a result, the value of alpha-Cronbach equaled to 0.895, and the validity was 0.801. The result of alpha-Cronbach and validity shows the high reliability of the questionnaire.

Table 1: Reliability and Validity

Methods	Result
Alpha-Cronbach	0.895
Validity	0.801

Table 2 shows that out of 332 teenager mothers, 15.1 % were 14-16 years old, and 84.9% were 17-19 years old. The majority of mothers had a secondary level of education. Most of the participants(83.4%) were unemployed, and 59.3% were from rural areas. The majority of participants were Kurdish (65.1%), 61.7% were within the overweight BMI range, and 23.5% were obese. Most of the participants (78.92%) regularly visited ANC throughout pregnancy, while 9.94 visited the ANC irregularly, and only 11.14% of participants did not attend the ANC. Some of the participants (26.5%) were healthy, and 24.4% of participants had an infectious disease during pregnancy. 79.2% of participants had a normal vaginal delivery, while 18.1% had a cesarean section. Table 3 demonstrates that the majority of the newborns were male (53.6), more than half of the newborn were full-term in gestation age (59.9%), followed by extremely preterm (13.9%), and 11.1% were moderately and late preterm. However, only 6.6% of newborns were very preterm. Most of the newborns (63.6%) had normal birth weight, while 12% of newborns had low birth weight and only 3% of them were overweight. Regarding APGAR score, 57.8% had a normal APGAR score, 25% were moderately depressed, and only 3.3% were severely depressed. Furthermore, 22.6% of the newborns had fetal distress, and 14.8% were stillborn with meconium aspiration. 1.5% of babies developed shoulder dystocia. Table 4 demonstrates that 14.8% of newborns were stillborn, 17.8% was small for gestational age (SGA), and 2.7% were large for gestational age (LGA), The majority of the newborns were healthy (75%), while 9% of the baby had intrauterine growth retardation (IUGR), and 1.2% of them had congenital anomalies. Most of the babies (56.9%) had no deformity, while 22% had a physiological type of the deformity and 0.6% had a neurological deformity. Among the study participants, 17.2% (57/332) of neonates died (stillbirth and intrauterine death IUD), out of which 85.96% (49/57) of the newborns had a stillbirth, and 14.04 % (8/57) was IUD. In terms of the clinical diagnosis, 54.5% of the newborn were healthy, follow by neonatal respiratory distress (28.9%) and 3.3% of newborns suffered from respiratory distress + asphyxia. The lowest percentage among all neonatal diagnoses types was death because of respiratory distress + sepsis (0.6%).Ho: There is not a relationship between teenage mothers' age and newborns' gestational timeH1: There is a relationship between teenage mothers' age and newborns' gestational time Ho: There is not the effect of the teenage mothers' age on the newborns' gestational timeH1: There is the effect of the teenage mothers' age on the newborns' gestational time According to the model summary of regression analysis in Table 5, there is a significant positive statistical correlation between teenage mothers' age and gestational age, which is 0.709 and that the P-value = < 0.001. This indicates acceptance of the alternative hypothesis, a positive correlation between

the extent of teenage mothers' age and gestational age. On the other hand, R Square for this study is 0.5026. This indicates that 50.26% of the variance of gestational age has been explored in teenage mothers 'age. In other words, this illustrates that only 50.26% of factors affect gestational age in teenage mothers' age. Moreover, there was statistical significance by using the ANOVA table (F-test). This means that the method is possible to be used to analyze this data.

Table 2: Teenage mothers' socio-demographic and clinical data

Variables	Frequency	(Percent)
Age at first birth/years		
14-16	50	(15.1)
17-19	282	(84.9)
Education level		
Illiterate	14	(4.2)
Primary school	77	(23.2)
Secondary school	195	(58.7)
Undergraduate	46	(13.9)
Occupation		
Employed	3	(0.9)
Unemployed	277	(83.4)
Student	52	(15.7)
Residency		
Rural	197	(59.3)
Urban	135	(40.7)
Nationality		
Kurd	216	(65.1)
Arab	90	(27.1)
Other	26	(7.8)
Mother BMI		
Normal Weight	49	(14.8)
Over Weight	205	(61.7)
Obese	78	(23.5)
Antenatal care visit (ANC)		
Not attendant	37	(11.14)
Regular	262	(78.92)
Irregular	33	(9.94)
Medical condition		
Anaemia	42	(12.7)
Infectious disease	81	(24.4)
Coincidental condition	16	(4.8)
Other condition	52	(15.7)
Anaemia + Infectious disease	32	(9.6)
Anemia + Infectious disease+ Coincidental condition	3	(0.9)
Anemia+ Other condition	5	(1.5)
Infectious disease + Other condition	13	(3.9)
Normal	88	(26.5)
Mode of delivery		
Vaginal delivery	263	(79.2)
Instrument vaginal delivery	9	(2.7)
Cesarean section	60	(18.1)
Total	**332**	(**100**)

Table 3: Newborns' socio-demographic and clinical data

Variables		Frequency	(Percent)
Gender			
Male		178	(53.6)
Female		154	(46.4)
Gestational age /week			
Less than 28	Extremely premature	46	(13.9)
28 to 32	Very preterm	22	(6.6)
32 to 37	Moderate to late preterm	37	(11.1)
37 to 40	Full-term	199	(59.9)
<42 weeks	Post mature	28	(8.4)
Birth weight (Grams)			
Extremely Low Birth Weight (ELBW)		56	(16.9)
Very Low Birth Weight (VLBW)		15	(4.5)
Low Birth Weight (LBW)		40	(12)
Normal Weight		211	(63.6)
Over Weight		10	(3)
APGAR score			
Not recorded		46	(13.9)
Severely depressed		11	(3.3)
Moderately depressed		83	(25)
Normal		192	(57.8)
Fetal distress			
Yes		75	(22.6)
No		208	(62.7)
Stillbirth		49	(14.8)
Aspiration of meconium			
Yes		27	(8.1)
No		256	(77.1)
Stillbirth		49	(14.8)
Shoulder dystocia			
Yes		5	(1.5)
No		278	(83.7)
Stillbirth		49	(14.8)
Total		**332**	**(100)**

Table 4: Neonatal outcomes

Variables	Frequency	(Percent)
SGA		
Yes	59	(17.8)
No	224	(67.5)
Stillbirth	49	(14.8)
LGA		
Yes	9	(2.7)
No	274	(82.5)
Stillbirth	49	(14.8)
Medical condition		
Normal	249	(75)
IUGR	30	(9)
Stillbirth	49	(14.8)
Congenital anomalies	4	(1.2)
Types of Deformity		
Physical	2	(0.6)
Physiological	73	(22)
Neurological deformity	2	(0.6)
Physical+ Physiological	6	(1.8)
Physiological+ Neurological deformity	14	(4.2)
Physical + Neurological deformity	46	(13.9)
Normal	189	(56.9)
Neonate death		
Yes	57	(17.2)
No	275	(82.8)
Type of Neonate death (Yes)		
Stillbirth	49	(85.96)
IUD	8	(14.04)
Neonatal Diagnoses		
Normal	181	(54.5)
Respiratory distress	96	(28.9)
Asphyxia	33	(10)
Other	9	(2.7)
Respiratory distress + Sepsis	2	(0.6)
Respiratory distress + Asphyxia	11	(3.3)
Total	**332**	**(100)**

Table 5: Regression analysis of a dependent variable (gestational age) Effect of teenage mothers' on the newborn's gestational age

Model	Coefficients				Model Summary				ANOVA Table	
	Unstandardized Coefficients		t-value	P-value	R	P-value	R^2	Adjust R^2	F-value	P-value
	B	Std. Error								
Constant	50.76	4.745	10.697	< 0.001						
Teenage pregnancy	4.737	0.264	17.96	< 0.001	0.709	< 0.001	0.5026	0.507	322.57	< 0.001

Table 6 represents the association between 14-16 years old and 17-19 years old related to birth weight characteristics. There was a highly statistically significant association between groups of 14-16 years old and 17-19 years old mothers and birth weight (p-value= < 0.001) because the result of p-value was less than the common alpha 0.05. Most, (89.57%, 189/211) of the normal birth weight newborns was recorded in a 17-19 years old group, and only 10.43%, 22/211) of the newborns were from 14-16 years old teenage mothers group. Ho: There is not a relationship between teenage mothers' age and newborn's birth weightH1: There is a relationship between teenage mothers' age and newborn's birth weight Ho: There is not the effect of the teenage mothers' age on the newborn's birth weight H1: There is the effect of the teenage mothers' age on the newborn's birth weight According to the model summary Table 7 of regression analysis above, there is a significant positive statistical correlation between teenage mothers' age and newborns' birth weight, which is 0.732 and that the P-value is = < 0.001. This indicates acceptance of the alternative hypothesis, a positive correlation between the extent of teenage mothers' age and neonatal birth weight.

On the other hand, R Square for this study is 0.534. This indicates that 53.4% of the variance of birth weight has been explored in teenage mothers' age. In other words, this illustrates that only 53.4% of factors affect birth weight and teenage mothers' age. Moreover, there was statistical significance by using the ANOVA table (F-test). This means that the method is possible to be used to analyze this data. Table 8 shows the association between teenage mothers' age (14-16 years old) and (17-19 years old) and the newborn's health outcomes. The result of the study shows that there were highly significant associations between both groups of the teenage mothers' age and Apgar score at p= <0.001, fetal distress p= <0.001, aspiration of meconium p= <0.001, shoulder dystocia p= <0.001, SGA p= <0.001, LGA p= <0.001, medical condition p= <0.00, and a significant association of neonatal diagnoses at p=0.046 because the P-value was less than the common alpha 0.05. However, there was no statistically significant association between the maternal age and neonatal death (P = 0.56), which was more than the common alpha 0.05.

Table 6: Association between teenage mothers' age and newborns' birth weight

Variables	Items	14-16 years old		17-19 years old		Total	Significance test
		N	%	N	%		
Birth weight	(ELBW)	18	32.14	38	67.86	56	
	(VLBW)	0	0	15	100	15	χ^2 =20.907
	(LBW)	7	17.5	33	82.5	40	p= < 0.001
	Normal Weight	22	10.43	189	89.57	211	
	Over Weight	3	30	7	70	10	

Table 7: Regression analysis of a dependent variable (birth weight)
Effect of teenage mothers' age on the newborn's birth weight

Model	Coefficients				Model Summary				ANOVA Table	
	Unstandardized Coefficients B	Std. Error	t-value	P-value	R	P-value	R^2	Adjust R^2	F-value	P-value
Constant	9528.91	68159	13.98	< 0.001						
Teenage pregnancy	702.346	38.165	18.403	< 0.001	0.732	< 0.001	0.534	00.513	338.66	< 0.001

Table 8: Association between teenage mothers' age and newborns' health outcomes

Variables	Items	14-16years old N	(%)	17-19 years old N	(%)	Total	Significance test
Apgar score	Not recorded	17	(37.0)	29	(63)	46	**χ^2 =21.928 p= < 0.001**
	Severely depressed	2	(18.2)	9	(81.8)	11	
	Moderately depressed	6	(7.2)	77	(92.8)	83	
	Normal	25	(13)	167	(87)	192	
Fetal distress	Yes	5	(6.7)	70	(93.3)	75	**χ^2 =22.829 p= < 0.001**
	No	27	(13)	181	(87)	208	
	Stillbirth	18	(36.7)	31	(63.3)	49	
Aspiration of meconium	Yes	1	(3.7)	26	(96.3)	27	**χ^2 =22.46 p= < 0.001**
	No	31	(12.1)	225	(87.9)	256	
	Stillbirth	18	(36.7)	31	(63.3)	49	
Shoulder dystocia	Yes	1	(20)	4	(80)	5	**χ^2 =21.411 p= < 0.001**
	No	31	(11.2)	247	(88.8)	278	
	Stillbirth	18	(36.7)	31	(63.3)	49	
SGA	Yes	6	(10.2)	53	(89.8)	59	**χ^2 =21.186**
	No	26	(11.6)	198	(88.4)	224	
	Stillbirth	18	(36.7)	31	(63.3)	49	
LGA	Yes	2	(22.2)	7	(77.8)	9	**χ^2 =21.976**
	No	30	(10.9)	244	(89.1)	274	
	Stillbirth	18	(36.7)	31	(63.3)	49	
Medical condition	Normal	27	(10.8)	222	(89.2)	249	**χ^2 =21.835 p= < 0.001**
	IUGR	4	(13.3)	26	(86.7)	30	
	Stillbirth	18	(36.7)	31	(63.3)	49	
Types of Deformity	Congenital anomalies	1	(25)	3	(75)	4	**χ^2 =26.159 p= < 0.001**
	Physical	0	(0)	2	(100)	2	
	Physiological	5	(6.8)	68	(93.2)	73	
	Neurological deformity	1	(50)	1	(50)	2	
	Physical+ Physiological	2	(33.3)	4	(66.7)	6	
	Physiological+ Neurological deformity	2	(14.3)	12	(85.7)	14	
	Physical + Neurological deformity	17	(37)	29	(63)	46	
Neonatal death	Normal	23	(12.2)	166	(87.8)	189	**χ^2 =0.33 p=**
	Yes (Stillbirth=49, IUD=7)	10	(17.5)	47	(82.5)	57	
	No	40	(14.5)	235	(85.5)	275	
Neonatal Diagnoses	Normal	26	(14.4)	155	(85.6)	181	**χ^2 =11.28 p= 0.046**
	Respiratory distress	18	(18.8)	78	(81.3)	96	
	Asphyxia	0	(0)	33	(100)	33	
	Other	3	(33.3)	6	(66.7)	9	
	Respiratory distress + Sepsis	1	(50)	1	(50)	2	
	Respiratory distress + Asphyxia	2	(18.2)	9	(81.8)	11	

DISCUSSION

This study was conducted to provide information about the consequences of teenage pregnancy on maternal and neonatal outcomes at Sulaymaniyah Maternity Teaching Hospital in Sulaymaniyah, Kurdistan Region of Iraq. Totally 332 teenager mothers participated in this study. Among them, around one-seventh were between 14-16 years old, and the majority were 17-19 years old. The majority of participants had a secondary level of education, and the minority was illiterate. Among the study participants, more than half were from rural areas. In 2019, in a study about the predictors of teenage pregnancy among mothers aged 13–19 years in Uganda, the results showed that age of the respondents and place of residence of respondents were not significantly associated with teenage pregnancy after adjusting for all independent factors [15]. Teenage mothers, who reside in rural areas were twice more likely to become pregnant. These findings are inconsistent with the previous study in Nepal [16]. The use of ANC is essential and widely recommended for all pregnant women to reduce pregnancy-related morbidity and mortality. This study found that more than three-quarters of pregnant mothers attended ANC; however, some attended irregularly, and more than one-tenth did not attend at all. Moreover, in this study, the minority were illiterate. Previous studies which were done in Slovenia [17] and Thailand [18], also showed significantly lower antenatal care use among teenage mothers compared to others. This could be because of the difference in educational status between teenage mothers and adult women. These findings indicate an urgent need to improve female health education. The high rate of neonatal complications can be reduced through health education and properly organized antenatal checkup [11]. Therefore, improvement of healthcare is essential to reduce adverse pregnancy outcomes among teenage women in Iraq. Teenage women who are less likely to receive ANC service, and follow-ups, have a lower mean age at first pregnancy and are less likely to receive food supplements during their first pregnancy [19]. As a consequence, the lack of knowledge, early pregnancy, and absent or insufficient antenatal checkup have contributed to the infant in in-utero growth, resulting in LBW [20].Regarding teenage mother's BMI, nearly two-third were overweight and almost a quarter was obese. The majority had an infectious disease during pregnancy, while only a quarter was healthy. Out of the total number, three-quarter of teenage mothers had a normal vaginal delivery, the minority had a cesarean section, and only 9 has instrumental vaginal delivery. Some studies report that the risk of caesarean section is increased in teenage pregnancy [21]. This result agrees with other study done in Italy, which reported that two-third of teenage pregnant women had a normal vaginal delivery compared to less than half in the control group [17]. In comparison, some have the opposite finding stating that the chance of the infant's lower birth weight can lead to a higher rate of success in normal vaginal delivery [22]. In the current study, 332 newborns were delivered. The majority of the newborns were male. More than half of the newborns had a gestational age between 37 and 40 weeks, which is the highest rate among all levels of gestational age, and 31.6% of all newborns were premature. This finding is in contrast with the previous study done in Babylon, which reported a higher proportion of preterm deliveries in teenage

mothers compared to only 6% in the adult mothers [23]. The mechanisms associated with preterm labour are not well known and evoke much discussion. It is suggested that it could be due to immaturity of the reproductive organ of young women, poor nutrition, inadequate ANC, urinary tract infection, anaemia and low level of education [24].According to the current study, about one-fifth of the newborns had SGA, almost one-seventh were stillborn, while very few had LGA. More than a quarter of the newborns suffered from respiratory distress, one-tenth had asphyxia as a medical diagnosis, and few had respiratory distress with asphyxia. A previous study from the United States found that the first teenage birth was independently associated with an increased risk of intrauterine growth restriction and premature delivery [25].Regarding the association between both teenage mothers' age groups and gestational age, there was a highly statistically significant association between 14-16 years old mothers and 17-19 years old mothers and newborns, gestational age at p-value = 0.000. Some studies agree with the present study results and found that low birth weight occurred significantly more often among infants of young mothers than among infants of older mothers (27,28). However, one of the studies from a high-income country did not show a significant association [26].There was a statistically significant association between both groups of the teenage mothers with the APGAR score, fetal distress, aspiration of meconium, shoulder dystocia, SGA, LGA, medical condition, types of deformity and neonatal diagnoses. However, there was no statistically significant association between both groups and neonatal death. In another study that agrees with the present study regarding the association between early maternal age and newborn death, there was no statistically significant association between the teenage pregnancy groups and neonatal death (p=0.56). Katz et al. also found no association between young maternal age and stillbirth in Nepal [27]. In comparison, de Vienne et al. found a significant relationship between the two [28]. A study in the city of Sakarya in Turkey determined that postnatal infant death rate is 2.5% in adolescent pregnancies and 0.1% adult pregnancies [29].Regarding neonatal outcomes, this study showed a significantly higher risk of SGA (p=0.000, $\chi 2$ =21.186) than LGA. However, LGA (p=0.000, $\chi 2$ =21.976) is less among newborn babies of teenage mothers. Socolov et al. (2017) in Romania who conducted a study among 3891 women aged < 19,9 and 9479 women aged 20-24, found the higher rate of SGA infants in the first group than in the second group (13.77% vs 10.40%, p < 0.001) [30]. The results correspond with previous results of other authors (31,32) who found that the rate of SGA infants is higher in adolescents compared to adult women (3.5% vs.2.3%), while the rate of LGA infants is higher in adult mothers (3.2% vs 1.8%) [31]. Other study did not find a significant difference between both groups [32].A highly significant difference in the APGAR score of newborn babies at birth and at five minutes after birth was observed in the current study. Analysis of the association between teenage pregnancy and adverse birth outcomes demonstrated that infants born to teenage mothers aged 17 or younger had a higher risk for low APGAR score at five minutes [33].This could be attributed to the difference in the socio-demographic, obstetric, nutritional factors of the mother [34]. According to the model regression analysis, there is a significant positive statistical correlation between

teenage mothers' age and birth weight. R Square for this study is 0.534. This indicates that more than half of the variance of birth weight has been explored in teenage mothers' age. A local study was done in Basrah, which reported that one-fifth of the cases had LBW babies as compared to (6.8%) of the control group (19). Feto-maternal competition for nutrition is a common explanation for the higher risk of delivering low birth weight infant in adolescent mothers [35]. One-sixth of all births globally are LBW, with an increased risk of neonatal morbidity and mortality. As a result, the WHO during the sixty-fifth World Health Assembly in May 2012 planned to reduce LBW by 30% by the end of 2025 [36]. In this study, there was a statistically significant association between both age groups and newborns' gestational time. In other words, there was a highly statistically significant difference between 14-16 years old and 17-19 years old in the birth weight of their infants. The LBW is less likely in teenage mother aged 14-16 than in the teenage mothers who are 17-19 years old. Therefore, strategies, which aim to reduce teenage pregnancy and adverse neonatal outcomes of adolescent pregnancy are necessary. Immediate and effective measures to reduce the teenage pregnancy need to be developed and implemented, to achieve such target. In this study, the number of teenage pregnancies was 332 out of 6243, which is high alert to this region as well as to other countries. The WHO recommends prevention of teenage pregnancy as the primary strategy to reduce neonatal mortality, especially in developing countries. Preventive measures such as prevention of early marriage and the use of contraceptive methods are effective in reducing teenage pregnancy and related complications. Therefore, the programs in the prevention of teenage pregnancy should be developed and delivered. The use of such steps can reduce unwanted pregnancy among adolescents; LBW and preterm birth complications, and can decrease overall child morbidity and mortality in the country [37].

CONCLUSION

Teenage pregnancy was associated with higher risks of adverse pregnancy outcomes. It has been demonstrated that pregnant teenagers have more significant health problems during pregnancy, labour and after labour. Teenage pregnancy age significantly reduces the risk of gestational age as they were less likely to receive antenatal care service.

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CONFLICT OF INTEREST

The authors report no conflict of interests

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