The Impact of Teenage Pregnancy on Maternal and Neonatal Outcomes in Misan Province

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***Abstract*:** Teenage pregnancy remains a pressing public health concern, particularly in developing regions such as Misan Province, Iraq, where early marriage, limited education, and socio-economic challenges contribute to rising adolescent birth rates. This study aimed to assess the impact of teenage pregnancy on maternal and neonatal outcomes by comparing teenage mothers aged ≤16 years with adult mothers aged >16–35 years. A case-control study was conducted at Misan City Hospital from January 2024 to January 2025, involving 250 women in labour. The case group included 120 teenage mothers, while the control group included 130 adult mothers. Sociodemographic data, antenatal care patterns, maternal complications, and neonatal outcomes were collected and analyzed using SPSS version 26. Teenage mothers were more likely to be less educated, unemployed, nulliparous, and have irregular antenatal care. Statistically significant maternal complications among teenage mothers included higher rates of anaemia (38.3%) and preterm labour (21.7%) compared to adult mothers (16.2% and 11.5%, respectively). Neonatal outcomes were also poorer in the teenage group, with significantly lower mean birth weight (2.3 kg vs. 3.16 kg), higher rates of low birth weight (29.2%), lower 1-minute Apgar scores (<7 in 16.7% vs. 7.7%), and increased NICU admissions (25.8% vs. 12.3%). These findings highlight the heightened risks of both maternal and neonatal complications among adolescent mothers, largely driven by biological immaturity, poor nutritional status, and inadequate antenatal care. The study underscores the urgent need for targeted interventions, including adolescent reproductive health education, early antenatal registration, and community-based support to reduce teenage pregnancies and improve health outcomes. Strengthening policies to delay marriage and promote girls' education will be crucial in mitigating the long-term socio-economic and health impacts associated with teenage pregnancies in Iraq.

***Index Terms*:** Teenage pregnancy, maternal outcomes, neonatal complications, adolescent health, Iraq.

INTRODUCTION

Pregnancy occurring in individuals under the age of 20 is classified as teenage pregnancy. It remains a significant public health concern globally, posing substantial risks to both maternal and neonatal health. This issue has long been recognized as a high-risk condition due to its potential complications. Teenage pregnancy continues to be a pressing challenge, particularly in developing nations, where it is more prevalent and associated with adverse health and socio-economic consequences (1).

According to the World Health Organization (WHO), approximately 16 million girls aged 15 to 19 years and around 1 million girls under 15 give birth annually, with the majority of cases occurring in low- and middle-income countries. Pregnancy and childbirth complications are the second leading cause of mortality among adolescent girls aged 15 to 19 worldwide. Additionally, an estimated 3 million girls in this age group undergo unsafe abortions each year. Infants born to adolescent mothers are at a significantly higher risk of mortality compared to those born to women aged 20 to 24, highlighting the severe health risks associated with teenage pregnancies (2).

Early marriage is a significant factor contributing to the high prevalence of adolescent mothers in our region, with approximately one in every seven girls marrying before the age of 19 (3). Beyond poverty, social norms, and traditional beliefs, several Arab countries, including Iraq, which has endured war and

post-conflict scenarios, have experienced a notable rise in child marriages, particularly among girls under 18 years old (4).

Teenage pregnancy poses significant health risks for the mother. While adolescents aged 10 to 19 years contribute to 11% of global births, they bear 23% of the total disease burden related to pregnancy and childbirth, as measured by disability-adjusted life years (DALYs) (5). These adverse outcomes are largely attributed to biological immaturity, unintended pregnancies, inadequate perinatal care, poor maternal nutrition, and psychological stress. Research indicates a direct correlation between maternal and fetal morbidity and mortality and the mother's age, highlighting the increased health risks associated with adolescent pregnancies (6).

Adolescents are more likely to experience pregnancy-induced hypertension, anemia, gestational diabetes, and infections due to nutritional deficiencies and a lack of medical supervision. Additionally, teenage mothers face higher rates of preterm labor, prolonged labor, and obstetric complications such as postpartum hemorrhage and obstructed labor, often due to an underdeveloped pelvis. The psychological impact is also significant, as teenage mothers are at a higher risk of postpartum depression, anxiety, and emotional distress, which can affect their ability to care for their newborns. Limited education, financial instability, and social stigma further compound these risks, leading to long-term health and socio-economic consequences (7, 8).

Babies born to teenage mothers often face increased risks of preterm birth, low birth weight, and neonatal complications due to inadequate prenatal care and poor maternal nutrition. The likelihood of fetal growth restriction (FGR), birth asphyxia, and respiratory distress syndrome (RDS) is higher in neonates born to adolescent mothers. Additionally, infants of teenage mothers are at an increased risk of stillbirth, perinatal mortality, and sudden infant death syndrome (SIDS). Developmental delays and a higher incidence of neonatal infections are also observed due to poor maternal health and limited healthcare access. Moreover, children of teenage mothers are more likely to face malnutrition, impaired cognitive development, and socio-economic disadvantages, impacting their long-term health and well-being. Addressing these challenges through comprehensive prenatal care, education, and social support programs is essential to improving both maternal and neonatal outcomes in teenage pregnancies (9, 10).

This study aimed to analyse maternal complications such as anaemia, hypertensive disorders, and preterm labour among teenage mothers, to assess neonatal outcomes, including birth weight, Apgar scores, and NICU admissions, and to identify socioeconomic and educational factors contributing to teenage pregnancy.

METHODS

This case-control study was conducted at the labour wards of Misan City Hospital to analyze maternal and neonatal complications among teenage mothers who gave delivery before the age of 16 years. The study was carried out over 1 Year – From the 1st of January 2024 to the 1st of January 2025.

The study included women who presented in labour in the study period and were divided into two groups:

Case group:120 pregnant teenage mothers aged ≤16 years who were present in labour during the study period.

Control group: 130 pregnant women who were older than 16 years-35 years old and present in labour during the same period.

The women with a singleton pregnancy, who delivered after 28 weeks of gestation, and accepted to be part of the study were included.

Those with multiple pregnancies, pre-existing medical conditions such as cancer, DM, and HTN and those who are already diagnosed with congenital fetal anomalies were excluded from the study.

A structured questionnaire was used for the data collection, including the demographic variables age, residency, occupation and educational level. The pregnancy-related variables include

parity, ANC regularity, and current pregnancy complication, gestational age at the time of delivery.

The women were followed up till delivery and maternal complications were recorded including anaemia, hypertensive disorders, preterm labour, post-term delivery, antepartum haemorrhage (APH), postpartum haemorrhage (PPH), perineal tear, and cesarean section rate.

Neonatal outcomes were also assessed, including stillbirth, birth weight, Apgar scores, and NICU admissions.

The collected data was analyzed using SPSS version 26. Comparative analysis (Chi-square test) to assess maternal and neonatal outcomes between teenage and adult mothers. A P-value of <0.05 was considered significant.

RESULTS

The study included 250 women, 120 were aged 16 years and below and 130 women were aged above 16 years old. The mean age of the first group was 15.8 years and the mean of the second group was 27.8 years. There is no significant difference between the two groups regarding their residency p-value=0.332.

There is a significant difference between the groups regarding education, occupation, parity and ANC since p-value <0.001.

Most Women in the case group were of primary education or less, housewives, nullipara, and with irregular ANC.

Table 1: The Sociodemographic and Clinical Characteristics of Participants

Variables		Case group (n=120)	Control group (n=130)	p-value
Age	Mean ± SD	15.8 ± 0.47	27.8 ± 4.1	0.001
Residency	Rural	71 (59.2)	69 (53.1)	0.332
	Urban	49 (40.8)	61 (46.9)	
Educational level	Primary or less	84 (70.0)	57 (43.8)	0.001
	Secondary or higher	36 (30.0)	73 (56.2)	
Occupation	Housewife	112 (93.3)	107 (82.3)	0.008
	Employee	8 (6.7)	23 (17.7)	
Parity	Nullipara	71 (59.1)	38 (29.2)	0.001
	Multipara	49 (40.8)	92 (70.8)	
ANC visits	Regular	25 (20.8)	77 (59.2)	0.001
	Irregular	95 (79.2)	53 (40.8)	

Table 2 shows the maternal outcomes, anaemia, PIH, preterm labour, post-term delivery and APH were more prevalent in the case group while the CS, PPH, and perineal tear show higher percentages among women in the control group.

There is a significant difference between groups regarding anemia, and preterm delivery since p-value <0.05.

Table 2: The Maternal Outcomes Among Mothers in Each Group

Variables	Case group (n=120)	Control group (n=130)	p-value
Anemia	46 (38.3)	21 (16.2)	0.001
PIH	17 (14.2)	13 (10.0)	0.311
Preterm labor	26 (21.7)	15 (11.5)	0.031
Post-term delivery	25 (20.8)	19 (14.6)	0.197
Cesarean section	43 (35.8)	51 (39.2)	0.579
APH	13 (10.8)	8 (6.15)	0.183
PPH	11(9.2)	15 (11.5)	0.539
Perineal tear	5 (4.2)	6 (4.6)	0.863

The fetal outcomes are presented in Table 3. The mean birth weight in the case group was 2.3 kg while the weight in the control group was 3.16 kg. There are a high prevalence of low birth weight, 1-minute and 5-minute APGAR score < 7, and NICU

among births of the case group. There is a significant difference between groups regarding the birth weight, 1 minute Apgar and NICU admission.

Table 3: The Fetal Outcomes Among Women in Both Groups

Variables	Case group (n=120)	Control group (n=130)	p-value
Low birth weight < 2.5 kg	35 (29.2)	12 (9.2)	0.005
Mean birth weight	2.3± 0.8	3.16 ±0.23	0.001
1-minute APGAR score <7	20 (16.7)	10 (7.7)	0.02
5-minute APGAR score <7	15 (12.5)	8 (6.2)	0.083
NICU admission	31 (25.8)	16 (12.3)	0.006

DISCUSSION

Teenage pregnancy, particularly among girls under the age of 16, continues to pose a major threat to maternal and neonatal health, especially in low- and middle-income countries such as Iraq (11). This study was conducted to assess the impact of teenage pregnancy on maternal and neonatal outcomes in Misan Province, where early marriage, poverty, and limited education contribute to elevated adolescent birth rates. The justification for this research lies in the lack of local data quantifying the risks faced by teenage mothers and their infants, and the need to inform public health strategies and targeted interventions.

The sociodemographic data (Table 1) revealed significant disparities between the teenage and adult groups. Teenage mothers were more likely to be less educated, unemployed, nulliparous, and to have received irregular antenatal care (ANC). These findings align with previous studies indicating that adolescent mothers often have limited access to reproductive health services and education, contributing to poor pregnancy outcomes as reported by Emagneneh et al. (2025) (12). The irregular ANC observed in nearly 80% of teenage participants likely contributed to the increased prevalence of complications, as consistent ANC is crucial for early detection and management of maternal risk factors (13).

Maternal outcomes (Table 2) highlighted a significantly higher rate of anemia (38.3%) and preterm labour (21.7%) among teenage mothers compared to adults. These results are consistent with findings from studies in similar socio-economic settings (12, 14), where poor maternal nutrition and physiological immaturity were cited as leading contributors to anemia and early labour. Although hypertensive disorders and cesarean section rates were not statistically different, a trend toward higher obstetric complications in both groups reinforces the importance of continuous monitoring. Interestingly, adult mothers had slightly higher rates of PPH and cesarean delivery, potentially due to higher parity or comorbidities associated with older maternal age, as supported by Ramos et al. (2020) (15).

Neonatal outcomes (Table 3) further underscored the vulnerability of infants born to adolescent mothers. Low birth weight (<2.5 kg) was significantly more common in the teenage group (29.2%), along with poorer 1-minute Apgar scores and higher NICU admissions. These findings are supported by previous research that shows teenage mothers are more likely to deliver infants with intrauterine growth restriction (IUGR), preterm complications, and neonatal distress due to suboptimal uterine environment and inadequate prenatal care as reported by Diabelková et al. (2023) (16) and Thirukumar et al. (2020) (17). The non-significant difference in 5-minute Apgar scores suggests that some infants may stabilize with immediate neonatal intervention, although their initial condition was compromised (18).

This study confirms that teenage pregnancy, particularly under the age of 16, significantly increases the risk of both maternal and neonatal complications. These outcomes are likely exacerbated by a combination of biological immaturity, social disadvantage, inadequate ANC, and insufficient health education. While the results are consistent with global findings, the situation in Misan Province is further complicated by sociopolitical instability, high rates of early marriage, and limited access to comprehensive reproductive health services.

In conclusion, targeted efforts to delay childbearing through education, community engagement, and legal frameworks against child marriage are essential. Expanding access to youth-friendly reproductive health services and improving ANC coverage for adolescent girls can significantly reduce the health burden associated with teenage pregnancy in Iraq and similar contexts.

This study was limited by its single-centre design, which may affect the generalizability of the findings to other regions. Additionally, potential recall bias during interviews and the exclusion of pregnancies with known comorbidities could have influenced outcome variability.

CONCLUSIONS AND RECOMMENDATIONS

Teenage pregnancy, particularly among those aged 16 and below, is significantly associated with adverse maternal and neonatal outcomes. Early childbearing is closely linked to low education levels, poor antenatal care, and socio-economic disadvantage. Strengthening community education, delaying early marriage, and expanding adolescent-focused reproductive health services are essential to reduce the health burden. It is recommended that policymakers integrate these findings into targeted public health strategies to improve outcomes for adolescent mothers and their infants.

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DATA CONFIDENTIALITY AND STORAGE

The data will be processed with a higher degree of confidentiality and privacy.

CONFLICTS OF INTEREST

The researchers did not report any conflicts of interest.

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