DOI: https://doi.org/10.53350/pjmhs2023175554

ORIGINAL ARTICLE

Pregnancy and Delivery Complications Between Adolescent and Adult Women at Mosul Maternity Teaching Hospitals: A Comparative Study

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ABSTRACT

Background: Adolescent pregnancy is one of the common public health problems worldwide today, with harmful health effects to the foetus, mother and the neonate.

Aims of the study: To identify the demographical characteristics of the study sample and to compare the complications of pregnancy and delivery between adolescent and adult pregnant women and to find out the relationship between demographical characteristics and study variables

Patients and Methods: A quantitative cross-sectional observational study design was conducted in four maternity teaching hospitals in Mosul, Iraq, from the 10th of December 2021, until the 1st of March 2022. The study group included 100 pregnant adolescents aged 10–19 years, and the comparable group included 157 pregnant women aged between 20 and 45 years.

Result: In comparison to adult women, adolescent women are more likely to suffer from anemia (77%), IUGR (13%), abruptio placenta (15%), psychological problems (24%), cervical insufficiency (20%), preterm labor (26%), obstructed labor (41%), prolonged labor (29%), postdate (30%), neonatal death (6%), and episiotomy (36%).

Conclusion: There is a statistically significant difference ($p<0.05$) between the two groups in terms of anemia, gestational diabetes, urinary tract infection, intrauterine growth restriction, abruptio placenta, psychological problem, incompetence cervix, preterm labour, prolong labour, postdate, obstructed labour, dead newborn, episiotomy, and there is a direct and positive correlation between a husband's job with H.T and between BMI with (UTI, IUGR, preterm labour, prolonged labor) and between educational level with (abruptio placenta, CPD, postdate) and occupation with abruptio placenta.

Recommendation: Instructing the Iraqi courts and the Ministry of Justice to legislate a law prohibiting the adolescent marriage and encourage the Iraqi Ministry of Health to activate family planning programs to delay pregnancy until the young girl's reach maturity.

Keyword: adolescent, pregnancy, delivery, complication, adult

INTRODUCTION

Adolescents are persons aged ten to nineteen years old. Each year, one million females aged ten to eleven years and sixteen million adolescent girls between the ages of fifteen and nineteen give birth, according to WHO data[(1)].

Adolescent pregnancy is one of the most common public health issues in the world today, causing harm to the fetus, mother, and new-born ([(2)].

WHO estimates that the rate of adolescent pregnancy will increase by the end of 2030[(3].

The global incidence of adolescent girl's pregnancy and birth rate is still high, according to research that was carried out in Africa between the years of 2016 and 2018, coming in at approximately 20.5 percent. Even though there have been significant advancements made by governments and nongovernmental organizations in the prevention of adolescent pregnancy. [(4)]

Complications of antenatal & postnatal pregnancy are most common in adolescence compared to pregnancies of adult women. Preterm birth, intrauterine growth retardation, neonatal death, abortion, chronic fetal distress, fetal congenital anomalies, placental abruption, caesarean birth rate are more in adolescent pregnancies [(5)] (Çift et al., 2017).

Many complications can be seen in adolescent pregnancies. The complications of pregnancy in adolescents are often, urinary tract infection, hyperemesis gravidarum, abortion, anemia, preeclampsia, eclampsia, placenta problem ([(7)].

Complications of maternal and neonatal are also increased in adolescents due to many reasons such as the immaturity of the pelvis and nutritional insufficiency [(8)]

A prospective cohort research exploring the association between maternal growth and outcomes revealed that sustained maternal growth in adolescent altered nutritional partitioning between maternal and fetal, which had a detrimental impact on fetal growth and preterm [(9)].

Adolescent women are substantially more likely than older women to die from pregnancy-related reasons. Every year, 70,000 adolescent women die as a result of pregnancy difficulties around the world. One million babies born to these adolescent are predicted to die before they reach the age of one year. [(10)].

For girls aged 15 to 19, pregnancy-related deaths are the main cause of death. The death rate from pregnancy-related causes is especially high for women under the age of eighteen [(11)]

About 3.9 million of the 5.6 million abortions done annually on female adolescents aged fifteen to nineteen are unsafe, resulting in maternal mortality, morbidity, and long-term health consequences. At least 10 million unplanned pregnancies occur annually among young women aged 15 to 19 in prosperous nations[(12)].

Several research has been undertaken to investigate the effects of adolescent pregnancies on the clinical data of mothers and newborns in the short and long term. Despite differing opinions, many studies have found a link between neonatal and perinatal problems and adolescent age[(13)]

There are multi-factorial, lead to adolescent pregnancy including Individual-behavior, traditional and socio-cultural factors, as well as religious factors, all have a role in adolescent pregnancy. Poor socioeconomic level, a lack of education, and early sexual engagement are all factors that contribute to early sexual activity. (Ochen et al., 2019). Adolescent pregnancy also associated with physical, social problem [(14)] The aim of the study is measure the pregnancy and delivery complications for adolescent and adult women in Mosul city

METHODS

Initial approval has been obtained by the scientific and ethical committee of higher studies in college of Nursing /University of Mosul according to Administrative Order No. (1909/4) dated 5-9-2021. According to session no, to enter health facilities and collect samples, another approval is obtained from the Research Ethics Committee of the Nineveh Health Department in the Iraqi Ministry of Health (224) held on 17 / 11/ 2021.The quantitative cross-sectional observational study design achieves the present study's objectives from the 8th of December 2021 to the 1st of March 2022.This study was conducted in four maternity and obstetric hospitals in Mosul, Iraq: The data was collected from the 10th of December 2021 until the 1st of March 2022 in four Mosul city teaching hospitals. Permission was obtained from the pregnant women who were present during the sample collection and agreed

to participate in the study, and each interview lasted between 15 and 20 minutes. This study is a cross-sectional observational study at the obstetrics and gynecology units of Al Khansaa Teaching Hospital, Al-Salam Teaching Hospital, Al-Batool Maternity Hospital, and Mosul General Hospital in Mosul, Iraq. The data collection was carried out from 10th December 2021 to 1st March 2022. The study's sample size is 100 pregnant women under the age of twenty, compared to 157 women in puberty, ranging in age from 20 to 45 years. A structured questionnaire form specially constructed by the researchers for this study was used. The data were collected from each mother by direct interview after taking her verbal consent, and some information was obtained from women's records. The collected sample was 4 hours per day, 3 days per week. Based on literature review, experience, and previous research, a structured interviewing questionnaire was designed in English and then translated into Arabic. The data were collected from the mother by direct interview after taking her verbal and written consent, and some information was obtained from women's records. The collected sample is 4 hours per day, 3 days per week. Each interview duration is about 20 minutes. In this study, SPSS software version (25) was used, and descriptive statistics were computed as frequency, percentage, mean, and standard deviation; Fisher's exact test for the categorical variables; and Phi-correlation to find the relationship between the study variables.

RESULT

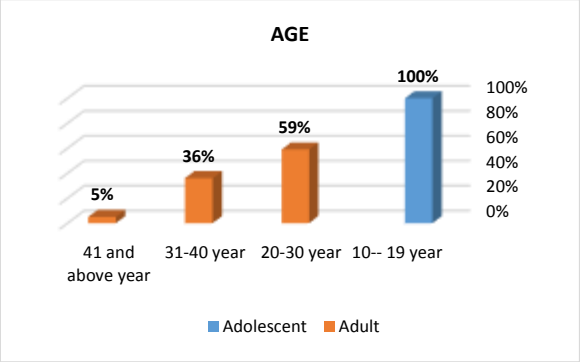

Figure 1: shows the distribution of age between adolescent and adult women:

Table 1: comparative between adolescent (multi 48) and adult (multi 105) according to Previous delivery complication

Complication		Case				Control				Fisher's exact test	
		yes	%	NO	%	yes	%	no	%	Z-value	P-value
1	Premature labor	11	23%	37	77%	7	7%	98	93%	2.49	0.006
2	Obstructed labor	14	29%	34	71%	21	20%	84	80%	1.20	0.220
3	Prolong labor	11	23%	37	77%	13	12%	92	88%	1.53	0.149
4	Post date	16	33%	32	67%	10	10%	95	90%	3.23	0.001
5	Dead newborn	5	10%	43	90%	5	5%	100	95%	1.16	0.288
6	Bleeding after child birth	4	8%	44	92%	5	5%	100	95%	0.79	0.463
7	Episiotomy	18	38%	30	62%	21	20%	84	80%	2.19	0.028
8	cephalopelvic disproportion	11	23%	37	77%	13	12%	92	88%	1.53	0.149
9	Cesarean Section	20	42%	28	58%	42	40%	63	60%	0.19	0.861
10	presentation of fetus/ Cephalic	45	94%	3	6%	98	93%	7	7%	0.10	0.922

Table 2: Comparative of adolescent mothers and adult mothers according to complications during the current pregnancy

		Case				Control				Fisher's exact test	
		yes	%	NO	%	yes	%	NO	%	Z-value	P-value
1	Hypertensive	21	21%	79	79%	26	17%	131	83%	0.88	0.409
2	Gestational diabetes	0	0%	100	100%	8	5%	149	95%	2.90	0.024
3	Urinary tract infection	67	67%	33	33%	86	55%	71	45%	1.99	0.068
4	Anemia	77	77%	23	23%	74	47%	83	53%	5.15	0.000
5	Premature rupture of membrane	4	4%	96	96%	2	1%	155	99%	1.27	0.212
6	Intrauterine growth restriction	13	13%	87	87%	0	0%	157	100%	3.87	0.000
7	Abruptio placenta	15	15%	85	85%	8	5%	149	95%	2.49	0.012
8	psychological problem	24	24%	76	76%	6	4%	151	96%	4.45	0.000
9	incompetence cervix	20	20%	80	80%	9	6%	148	94%	3.24	0.001
11	Oligohydramnios	4	4%	96	96%	4	2%	153	98%	0.62	0.715

DISCUSSION

Physical growth and menstruation raise iron requirements, frequently unmet by nutrition. This causes a negative iron balance and makes the adolescent more vulnerable to anemia during pregnancy and poor fetal outcomes, particularly in cases of severe anemia. In the current study, anemia was one of the major complications found to be higher in adolescents than in older women (77% vs 47%). Also, about 72% of adolescents have anemia before getting pregnant, and 73% of women have anemia in their previous pregnancy. similar to a study conducted in Egypt by Eldaboly and others, which shows a significant difference between adolescents and adults at a rate (54.0%vs 29.3%) at a p-value (0.000) [15]. However, it disagreed with the results obtained in Ghana by Siakwa[15] and others, which showed there was no significant difference between adolescents and adults with a rate(13% vs 23%) at a p-value(0.55).

Maternal age, hypertension, placental problems, and cesarean section impact placenta health. Regarding abruption placenta (15%), more adolescent women with abruptio placenta than adult women with the rate (5%). This study, which is consistent with the finding of a study conducted by Aslan Çetİn and others, shows there is a significant difference between adolescents and adults (2.5% vs 1%) at a p-value (<0.001) (Aslan Çetİn et al., 2020). But this result disagrees with the study conducted by KÜÇÜKYILDIZ and others showed that adult women are more prone to abruption placenta with a rate of (1.3%) compared to adolescents with a rate of (0.2%)[16].

Intrauterine growth restriction is higher in adolescents than in adults (13% vs 0%). IUGR causes due to about15% of women with abruption placenta and (77%) with anemia. Are there risk factors for IUGR happening because the fetus doesn't get enough nutrients and nourishment. 29% of women overweight, (21%) of women with hypertension, and women less than 19 years' old all lead to IUGR. A study by Abbas and others in Egypt indicated that IUGR was higher in adolescents (15% vs 7%) than in older women[17]. and was different from a study conducted by Indarti and others. The study found no difference between adolescent and adult women (2.8% vs 4.3)[18].

Approximately 24% of adolescent women have psychological problems, compared to 4% of adult women.

Hormonal changes that occur during pregnancy may alter mood. However, other factors, such as lifestyle changes or work, may raise the risk of depression during pregnancy. psychological stress of life, lack of social support, problem in relationship, stop using anti-depressant drugs, unintended pregnancy, un wanted abortion, in addition to about 23% has psychological problem before pregnancy.

This study is consistent with finding of study conducted by Wong and others show that adolescent more rate of psychological problem(9.8% vs 6.8) at p-value(<0.001)[19]

In the current study, adult women have a significantly higher rate of diabetes than adolescents (5% vs 0%). More than half of women are overweight, and 36% within the age group (31-40) consider risk factors for gestational diabetes. This result agrees with the study conducted by Eldaboly and others. Whereas 1.3% of adolescents had DM compared with 6.2% of adult women, a study conducted by Abbas and others in Egypt found no significant difference between adolescent and adult women related to gestational diabetes (0.5% vs 0.3%) at p-value (0.071) (Abbas, Khairy, et al., 2017).

In the current study, we found that adolescents are more likely than adults to have an incompetent cervix (20% vs 6%), and there is a significant difference between them at p-value (0.001), which is less than 0.05.

5.7 A comparison of adolescent mothers and adult mothers according to complications during delivery in the current pregnancy Emotional stress can cause preterm labour by disrupting the endocrine system. The immaturity of adolescent women's reproductive systems and cervical blood supply causes increased prostaglandin production, resulting in preterm labour, poor nutrition, insufficient ANC, urinary tract infection, anemia, and a low educational level. Furthermore, approximately 20% of adolescents have incompetent cervixes, which are risk factors for early labour. In the current study, which shows a significant difference between adolescent & adult women regarding some complications of delivery, the adolescent has a greater rate than the adult regarding preterm labour (26% vs 7%). In a Pakistani study, the prevalence of adolescent and adult women was significant (20 % vs 10.5 %) (Sarwar & Iftikhar, 2016). But research conducted by Lee and others found that (3.7 % vs 1.3 %) was in disagreement with our study at (a p-value of 0.112) (Lee et al., 2016).

Prolonged labour can be caused by various factors, including fetal malpresentation, uterine contraction problems, cephalopelvic disproportion, and young maternal age. About 29% of adolescents had prolonged labour compared to (14%) of the adult group. This is consistent with a study conducted in the Democratic Republic of the Congo by Innocent and others, which found that adolescents have a greater rate of prolonged labour than adults (81.3% vs 18.8%) (Innocent et al., 2019). However, this contradicts a study by Tembo and others in Lusaka, Zambia. The display was lower and non-significant (p-value 0.2) (Tembo et al., 2020).

Compared to 13% of adult women, almost 30% of adolescent women give birth after their due date. Fear of delivery and psychiatric issues may lead some pregnancies to delay childbirth till the ninth month. Or maybe if the date of birth is wrong. Similar findings were seen in Egypt (Selem et al., 2018). A statistically higher percentage of women in the first group (< 20) suffered post-term labour than those in the second (20-35) and third (more than 35) (21.5% vs 7.7% & 3.1%; respectively, for P= 0.003). This study disagrees with one conducted in Baghdad and shows no significant difference between adolescent and adult women's problems (p-value 0 .646) (Qasim et al., 2014).

The current study demonstrates that adolescents have more problems with obstructed labour than adult women (41% v 22%). Obstructed labour can be caused by a large or improperly positioned baby, a small pelvis, or birth canal issues. This finding disagrees with the study conducted by Jeelani and others in Pakistan that found there was no significant difference between adolescent & adult women at a p-value(0.650) (Jeelani et al., 2017).

Adolescents are more exposed to episiotomy (36% vs 17%), which is a significant difference. prolonged labor and breech delivery or delivery of a large baby, abnormal position of the baby's head, and primiparous causes of episiotomy. This result agrees with a study done by Fouelifack and others showing adolescent deliveries require significantly twice the number of episiotomies than non-adolescent deliveries [20], and disagreement with a study confirmed by Ergen and others. In Turkey, at (p-value greater than 0.05)[21].

Adolescents have a higher rate of neonatal death at a rate of 6.0% compared to the adult group at a rate of 1%. The main causes of the high risk of newborn mortality are maternal age under 18 and maternal obesity. A study carried out by Fouelifack and others in Cameroon showed that adolescents have more neonatal deaths (12.4%) compared with adult women (7.6%) at (a p-value of 0.001)[21]. However, another study found that adolescents have a lower rate of newborn death (0%) than adult women (0.33%) in an Indian study. There is no significant difference between adolescent and adult women regarding this problem (p-value of 0.99) [23]

CONCLUSION

There is a statistically significant difference (p<0.05) between the two groups in terms of anemia, gestational diabetes, urinary tract infection, intrauterine growth restriction, abruptio placenta, psychological problem, incompetence cervix, preterm labour, prolong labour, postdate, obstructed labour, dead newborn, episiotomy, and there is a direct and positive correlation between a husband's job with H.T and between BMI with (UTI, IUGR, preterm labour, prolonged labor) and between educational level with (abruptio placenta, CPD, postdate) and occupation with abruptio placenta.

Recommendation: Instructing the Iraqi courts and the Ministry of Justice to legislate a law prohibiting the adolescent marriage and encourage the Iraqi Ministry of Health to activate family planning programs to delay pregnancy until the young girl's reach maturity.

Acknowledgments: The authors are thankful to the Ethical Research committee on Mosul Directorate of Health for approved the study.

Ethical consideration: Before data collection, official permission was obtained from the Ministry of Education/ Nineveh Directorate, and Written approval of participants was obtained before the start of data collection.

Conflicts of interest: Nil

Source funding: Self

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