Original Article

Comparison of Obstetric Outcome among Teenage and Adult Pregnancies in Tertiary Level Hospital

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ABSTRACT

Background: Teenage pregnancies are a global problem but occur most often in poorer and marginalized communities. It is a high-risk situation for both mother and child because of their vulnerability to many health challenges. This study aimed to compare the obstetric outcome of teenage pregnant mothers (13-19 years) with that of adult pregnant mothers (20–29 years).

Methods: Hospital-based cross-sectional comparative study design was adopted. The study was carried out in Nepal medical college and teaching hospital, Kathmandu and Mahakali hospital, Kanchanpur, using a non-probability purposive sampling technique. The data were collected from 94 teenage mothers (13-19 years) and 94 adult mothers (20-29 years) comprising of 2 health facilities. Face to face interview technique was used for the collection of socio-demographic information and obstetric-outcomes related information was collected by observations and hospital/delivery records through pre-designed proforma. Statistical Package for Social Science (SPSS) version 16 was used for data analysis. Descriptive and inferential statistics were used for statistical analysis.

Results: The findings of this study showed higher proportion of anemia (28.7% vs. 5.3%, $p < 0.001$), Pereineal tear (42.3% vs. 16.1%, $p = 0.001$), pre-term birth (19.1% vs. 5.3%, $p = 0.004$) and low birth weight infants (30.9% vs. 8.5%, $p < 0.001$) occurred among teenagers compared to adult mothers (20-29 years). However, caesarean section was found to be lower and vaginal deliveries in higher proportion among teenagers.

Conclusions: Teenage pregnant mothers had significantly higher rates of anemia, perineal tear, pre-term birth, and low birth weight. Focusing on girl-child education, strict law to prohibit teenage marriage, proper antenatal care in case if teenage pregnancy occurs can reduce teenage pregnancy and its related complications.

Keywords: Teenage pregnancy; young mother; obstetric outcomes; adolescent; maternal health

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INTRODUCTION

Teenage mothers are those who deliver a baby before reaching 20 years of age. This period is a vulnerable phase in human development as it represents a transition from childhood to adulthood. Physical and psychological maturity in a person also starts with the teenage phase. Teenage pregnancy is a global problem; however, it's often experienced in poor and marginalized communities. In 2018, the estimated adolescent birth rate globally was 44 births per 1,000 girls aged 15 to 19.[1] Ninety-five percent of the world's births to adolescents (girls aged 15-19) take place in low- and middle-income countries. Complications relating to pregnancy and childbirth are the leading cause of death for teenage mothers globally.[1, 2]

Early childbearing can increase risks for newborns, as well as young mothers. Different studies conducted in various regions have reported that teenage pregnant women had a significantly higher risk of having anemia[3,4, 5, 6], preterm delivery[3,4,7,8], PIH[8], preeclampsia[4,5,8], eclampsia[8] and Prelabour Rupture of Membrane.[4,6] Similarly, teenage mothers had more chance to expose to the complications such as higher rates of episiotomies and perineal tears[7], Low Birth Weight (LBW) [4, 6], and fetal death[7, 8] in comparison to adult mothers.

In Nepal, adolescent marriage (< 20 years) was banned by law, which came into effect in 1963.[9] Nonetheless, more than half (52%) of the women in Nepal, get married by the time they reach 18. [10] There are several socio-economic factors, cultural and family structure, and low educational attainment, which leads to early marriage, resulting in adolescent pregnancy.[11] After extensive literature research and studies, it can be concluded that teenage pregnancy has adverse maternal and perinatal outcomes. Hence, it is an utmost necessity to conduct research and studies in this sector. This study intended to make investigations on whether teenage mothers are at higher risk of unfavorable pregnancy outcomes compared to mothers aged 20–29 years.

MATERIAL AND METHODS

A hospital-based cross-sectional comparative study design was carried out in Nepal medical college and teaching hospital, Kathmandu, and Mahakali hospital, Kanchanpur, Nepal using non-probability purposive sampling technique. The sample size was estimated by using the formula for definite proportion i.e. $n= Z^2pq/d^2$ with the assumptions of 8% allowable error, 95 % confidence interval and 10% non-response rate. The estimated prevalence of teenage pregnancy is taken as 17% as per Nepal demographic and health Survey 2016 findings.[10] The required sample size was 94 for both the "study" and "comparisons" groups. Therefore, the total sample size comprising both the group was 188.

Teenage pregnant women who have completed 13-19 years admitted in the maternity ward for delivery was the study population whereas adult mothers (20-29 years) were formed the comparisons group. Women admitted in the maternity ward for delivery with singleton pregnancy were included whereas women with major chronic illnesses such as heart, kidney diseases, bronchial asthma, diabetes mellitus, hypothyroidism, and connective tissue disorders were excluded in this study.

The data were collected from April 13, 2020, to March 26, 2021. Self-constructed structured tool was used. The tool was divided into two sections which include socio-demographic information and proforma (for observing) related to obstetric outcome. The socio-demographic section constituted a questionnaire related to information like age, educational level, ethnicity, religion, and occupation of the respondents. The obstetric outcome was measured in terms of complications of pregnancy like anemia, pre-eclampsia, eclampsia, pre-labor rupture of membrane, rate of cesarean section, perineal tear, primary PPH, pre-term birth, low birth weight infants, and perinatal death. Face-to-face interview technique was used for the collection of socio-demographic information from all the mothers. The first contact with the study participants for data collection was begun immediately after admission in the maternity ward for delivery. Data/Information regarding obstetric outcomes was collected by observations and hospital/delivery records through pre-designed proforma. Ethical approval was obtained from the "Institutional Review

Committee" (Reference number: 035- 076/077) of the Nepal Medical College. Verbal informed consent was taken from each participant, and assurance of confidentiality and anonymity was ensured before data collection. Data were entered in Epi data 3.1, and entered data were exported to IBM SPSS version 16. Descriptive and inferential statistics were used for statistical analysis. The data of the study group and the comparative group were expressed in terms of frequency and percentage. Inferential statistic such as the chi-square test was used to compare the categorical data. A p-value of less than 0.05 was considered as the appropriate level of statistical significance.

RESULTS

The data of 94 women from the teenage group and 94 from the adult group (188 women in total) were collected from 2 health facilities. The proportion of Brahmin/Chhetri and Janajati in the teenage group were 29.8% and 26.6% respectively which were significantly lower ($p < 0.001$) as compared to adult group whereas the proportion of Dalit ethnicity (43.6%) was significantly higher in the teenage group as compared to adult group (8.5%). Similarly, the data showed that most of the participants in the teenage group (89.4%) were Hindus which is higher than the adult group (67.0%). Moreover, the data illustrated that the adult group was following Buddhism and Christianity religion more than the teenage group with the statistical difference of ($p = 0.001$). Regarding education, 9.6% of the mothers in the teenage group were illiterate which is higher than the adult group (1.1%). Similarly, the proportion of teenage mothers having completed up to the primary level of education was 56.4% which is significantly higher ($p < 0.001$) than the adult group (11.7%). Likewise, 90.4% from the teenage group responded to household work as their occupation which is higher than the adult group (77.7%) ($p = 0.005$). Moreover, the adult group was doing business (10.6%), service (10.6%) more in percentage than teenage mothers (Table 1).

The data showed that the proportion of teenage mothers who had given birth to a child for the first time were 90.4% whereas 39.4% of the mothers were from adult age group with statistical significance at ($p < 0.001$). Similarly, 93.6% of the teenage mothers and 100 % of the adult mothers had visited ANC clinic during pregnancy, the difference between the group was statistically significant ($p = 0.013$). Among the teenage and adult mothers who had visited ANC clinic during pregnancy, 41 % from the teenage group and 97.8% from the adult group had visited four and more than four times. The data illustrated that the teenage group visited ANC clinic during their pregnancy as the standard (≥ 4 times) less than the adult group, and the difference was statistically significant at $p < 0.001$(Table 2).

The proportion of vaginal delivery in the teenage group was 84.0% which was significantly higher than the proportion in the adult group (58.5%) ($p < 0.001$). Likewise, the proportion of cesarean section among the teenage mothers was 13.8% while the proportion was 41.5% among the adult group whereas the proportion of vaccum delivery was 2.2% which was only from the teenage group. Among those who had a vaginal delivery, 50.6% from the teenage group and 67.3 % from the adult group were given episiotomy during vaginal delivery with no significant difference in the rate of episiotomy in teenage mothers compared to adult mothers ($p = 0.055$). Similarly, 42.3% from the teenage group and only 16.1 % from the adult group had perineal tear during vaginal delivery with statistically significant between the groups ($p = 0.001$). Among those mothers who had a perineal tear, 87.9% from the teenage group and 88.9% from the adult group had 1st-degree tear. Likewise, 12.1 % and 11.1 % from the teenage group and adult group respectively had 2nd-degree tear during vaginal childbirth with no statistical difference in the rate of the degree of tear between the group ($p = 0.93$). Regarding the viability status of a newborn delivered by both groups of mothers, 100% and 98.9% of neonates born from teenage and adult mothers respectively were alive. While only 1.1% of newborn born from non-teenage mother viability was not alive with no statistical difference between the group ($p = 0.31$) (Table 3).

Table 1: Maternal socio-demographic characteristics in relation to age

Variables	**Teenage group (≤ 19 Years) (n = 94)**		**Adult group (20 – 29 Years) (n= 94)**		**P value**
	n	**%**	**n**	**%**	
Ethnicity					
Brahmin/Chhetri	28	29.8%	35	37.2%	<0.001*
Janajati	25	26.6%	51	54.3%	
Dalit	41	43.6%	8	8.5%	
Religion					
Hinduism	84	89.4%	63	67.0%	0.001 *
Buddhism	9	9.5%	29	30.9%	
Christianity	1	1.1%	2	2.1%	
Education					
Illiterate	9	9.6%	1	1.1%	<0.001 *
Primary	53	56.4%	11	11.7%	
Secondary	27	28.7%	42	44.7%	
Higher secondary	5	5.3%	29	30.8%	
Bachelors and above	0	0.0%	11	11.7%	
Occupation					
Household work	85	90.4%	73	77.7%	0.005*
Business	4	1.1%	10	10.6%	
Service	1	4.3%	10	10.6%	
Others	4	4.2%	1	1.1%	

n = number, * p value is significant at <0.05 level

Table 2: Antenatal visit and parity information of teenage mothers compared to the adult mothers

Variables	**Teenage group (≤ 19 Years) n=94**		**Adult group (20 – 29 Years) n=94**		**P value**
	n	**%**	**n**	**%**	
Parity					
1st delivery	85	90.4%	37	39.4%	<0.001*
2 – 4th delivery	9	9.6%	57	60.6%	
ANC visit during pregnancy					
Yes	88	93.6%	94	100.0%	0.013*
No	6	6.4%	0	0.0%	
Number of ANC visit (n = 182)					
< 4 visits	52	59.0%	2	2.2%	<0.001*
≥ 4 visits	36	41.0%	92	97.8%	

n = number, * p value is significant at <0.05 level, ANC: antenatal clinic

Table 3: Mode of delivery and related outcome of teenagers compared to adult mothers

Variables	**Teenage group (≤ 19 Years) (n=94)**		**Adult group (20 – 29 Years) (n=94)**		**p value**
	n	**%**	**n**	**%**	
Mode of delivery					
Vaginal	7	84.0%	55	58.5%	<0.001 *
Vacuum	2	2.2%	0	0.0%	
Caesarean	13	13.8%	39	41.5%	
Episiotomy for vaginal delivery(n=134)					

Yes	40	50.6%	37	67.3%	0.055
No	39	49.4%	18	32.7%	
Perineal tear among vaginal delivery (n=134)					
Yes	33	42.3%	9	16.1%	0.001*
No	45	57.7%	47	83.9%	
Degree of perineal tear (n=42)					
1st degree tear	29	87.9%	8	88.9%	0.93
2nd degree tear	4	12.1%	1	11.1%	
Viability status of newborn					
Alive	94	100.0%	93	98.9%	0.31
Perinatal death	0	0.0%	1	1.1%	

n = number, * p value is significant at <0.05 level

Table 4: Comparison f obstetrical Outcome between group of teenage mothers and adult mothers

Variables	**Teenage group (≤ 19 Years) n=94**		**Adult group (20-29 Years) n=94**		**p value**
	n	**%**	**n**	**%**	
Gestational hypertension	2	2.1%	5	5.3%	0.248
Pre-eclampsia	1	1.1%	0	0.0%	0.316
Anemia at labour (Hb%: <11mg/dl)	27	28.7%	5	5.3%	< 0.001*
Preterm birth (< 37 WOG)	18	19.1%	5	5.3%	0.004*
PROM	2	2.1%	1	1.1%	0.561
Low birth weight (< 2.5 Kg)	29	30.9%	8	8.5%	< 0.001 *

n = number, * p value is significant at <0.05 level, WOG: weeks of gestation, PROM: pre-labor rupture of the membrane

Table 4 shows that the proportion of gestational hypertension in the teenage group was 2.1% which was less than the proportion of adult mothers (5.3%) with no statistical difference between both the group (p = 0.248). Likewise, pre-eclampsia was seen in 1.1% of the teenage mother only. Teenage mothers were found to have anemia at higher rates (28.7%) when compared to adult mothers (5.3%) and the difference between the groups was statistically highly significant (p < 0.001). likewise, pre-term birth was also found to have higher percentages among teenage mothers (19.1 %) in comparison to non-teenage mothers (5.3%) and the difference was statistically significant (p = 0.004). Pre-labor rupture of the membrane was found among 2.1% of teenagers and 1.1% of adult mothers with no statistical difference in rate in both the groups (p = 0.561). The occurrence of low birth weight (less than 2,500 grams) was significantly higher in teenage mothers (30.9%) than in the adult group (8.5%), p < 0.001 (Table 4).

DISCUSSION

Teenage is defined as young women between the ages of 13 years and 19 years. In this study, the outcome of teenage pregnancy in terms of complications like anemia, pre-eclampsia, eclampsia, pre-labor rupture of membrane, rate of cesarean section, perineal tear, primary PPH, pre-term birth, low birth weight, and perinatal death was compared with the outcome of adult pregnancy. The data of 94 women from the teenage group and 94 from the adult group (188 women in total) were collected from 2 health facilities.

The present study found that most of the teenage mothers (43.6%) were from the lower ethnic backgrounds (Dalit ethnicity) with the high statistical differences (p <0.001). The finding of the study is similar to that of the studies

conducted in South Asia[11] and Nepal.[12] Likewise, the result of the present study revealed that teenage mothers had a significantly lower level of education than adult mothers similar to the findings of the studies[12, 13, 14, 15] conducted in several regions. The significantly higher rates of teenage pregnancy with a lower ethnic background in this study might be due to more to its association with lower educational attainment than the direct effect of ethnicity.

Similar to most of the studies[3, 8, 14] that reported a high rate of primiparity in teenage mothers, the proportion of primiparity in this study was 90.4% while only 39.4% was from the adult group. In this study, only 93.6 % of the teenage mothers and 100% of adult mothers had visited ANC clinic during pregnancy, the difference between the group was statistically significant (p = 0.013). Among the teenage and adult mothers who had visited ANC clinic during pregnancy, the data illustrated that the teenage group visited ANC clinic during their pregnancy as the standard (≥ 4 times) less than the adult group with the statistical significance of p < 0.001. This finding is consistent with the study conducted in Thialand.[5] Not receiving antenatal services and a smaller number of antenatal visits in teenage mothers might be due to low educational level and immaturity for reproduction.

The result of the present study found that teenage mothers had a significantly higher proportion of anemia (Hb < 11mg/dl) in comparison to adult mothers. The proportion of anemia among the teenage group was 28.7% while among the adult group was 5.3% (p < 0.001). This finding was in agreement with the findings of several studies.[4, 5,3,15] Low consumption, and low storage of iron during adolescence increase the possibility of the young woman being anemic during pregnancy.[16] Furthermore, an adolescent woman's body requires an increased proportion of iron, as their body experience growth spurts and menstruation.[17]

In the present study, teenage mothers had a higher percentage of vaginal deliveries compared to adult mothers. This might be because teenage mothers give birth to smaller infants. The finding of this study was in agreement with the studies.[7, 5, 15, 18] However; the findings of this study contradict the findings of the study[13] where vaginal deliveries were significantly lower among the teenage group. The percentage of cesarean section was higher in adult mothers in this study which is similar to the studies conducted in Thailand [5], Cameroon[7], Egypt[18], and contrast to the study in India.[8] This might be because both of the study settings in the present study is a referral center and receives indication for the cesarean section from both the groups. Similar to study[7], the difference in the rate of perineal tears between both the groups in this study became significant (42.3% and 16.1% for the teenage and adult group respectively, p = 0.001). This reflects the necessity of episiotomies in preventing tears. There was no significant difference between the two groups concerning perineal tears severity.

The present study showed a significantly higher rate of pre-term birth among teenagers compared to adult mothers (19.1% among teenagers while 5.3% among adults, p = 0.004). This finding is a common finding by several other studies carried out in Lebanon[3], India[8], Egypt[13], Turkey[14], Pakistan[15], and Nepal.[19] Biological immaturity in teenage mothers could be the possible explanation for this poor obstetric outcome. Furthermore, these young girls, lack proper knowledge regarding birth control and conceive without any planning as soon as they get married, which further aggravates the physical and psychological stress. Reports suggest that psychological stress can be an important risk factor to cause preterm labor by inducing endocrine disturbances.[20] Likewise, increased perinatal death has been documented in previous study[21] but it was not the same in the present study. Only 1.1% of newborn born from adult mother viability was not alive.

The findings in the present study revealed that low birth weight was significantly higher among teenage mothers compared to adult mothers. (30.9% among teenage and 8.5% among adult, p < 0.001). The findings were consistent with different previous studies.[8, 13, 15, 19, 22, 23] This can be justified by the physical immaturity of the teenagers and high nutrition demand by their own body, which might compete with fetuses for dietary intake when they become pregnant.

However, the finding contradicts the results reported in the studies carried out in Lebanon.[3] Unlike the previous study [6], there was no significant difference in the occurrence of pre-labor rupture of membranes between both the groups in this study.

Pre-eclampsia was seen in 1.1% of the teenage mother only. However, several studies[3,8,22,24] conducted in several regions showed the proportion of pre-eclampsia is significantly higher among the teenage group which contradicts the result of this study. This study also assessed occurrences of eclampsia and PPH among teenage and adult mothers as obstetric complications. However, there was an absence of eclampsia and PPH among both the group of mothers from whom data is collected, unlike other studies.[25] The difference in result is most likely due to the small size in the present study.

CONCLUSION

Teenage pregnant mothers had significantly higher rates of anemia, perineal tear, pre-term birth, and low birth weight infants. So, it is very necessary to recognize teenage pregnancy as a high-risk pregnancy by all health care professionals and should encourage teenage mothers to have regular antenatal visits so that signs and symptoms arising from complications of teenage pregnancy could be recognized early and managed on time. Likewise, focusing on girl-child education, strict law to prohibit teenage marriage, and awareness of contraception might prevent teenage pregnancy and its related complications.

This study presented is based on the hospital, and cannot be generalized to the community. Many teenage mothers might have been unable to deliver baby inside hospital facility due to lack of awareness, or poverty. In such a scenario, the childbirth process and outcomes could be distressing than this result has shown. Hence, the results should be interpreted with caution, and larger community-based studies are needed.

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