Immediate neonatal outcome of adolescent pregnant mother at Nepal Medical College Teaching Hospital

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ABSTRACT

Pregnancy in teenage period of life is often associated with maternal complications as well as preterm delivery, low birth weight babies and small for date babies. The purpose of this study was to know the immediate outcome of neonates delivered by adolescent pregnant mother at Nepal Medical College Teaching Hospital (NMCTH), Attarkhel, Kathmandu. A retrospective comparative study was carried out in 350 adolescent pregnant mother who had delivered newborn at NMCTH from April 2005 to February 2009. Data were obtained from the case record register from Archive. Prevalence of adolescent pregnancy was 11.1%. Majority of adolescent mother were aged between 17-19years, belonging to Mongolian ethnicity, Hindu by belief and residing within Kathmandu Valley. More than 90.0% mothers were primigravida and 85.4% had complete antenatal check up (ANC). Normal vaginal delivery was the predominant mode of delivery in both group (84.6% vs 80.0%), followed by lower section caesarean section (LSCS) (14.0% vs 18.8%) and instrumental delivery (1.1% Vs 1.2%). In newborn, male outnumbered female (59.7% vs 40.3%). A reasonable number of preterm (10.9%Vs 6.3% p=0.029), low birth weight (12.3% vs 9.1% P=0.259) and small for gestational age babies (7.4% vs 5.1% p=0.318)) and birth asphyxia(10.3% Vs 5.1% p=0.009%) were found in this study. These newborns are often associated with high morbidity and mortality. Therefore, it is imperative to prevent teenage pregnancy by providing adequate access to health facilities and raising awareness about the sex and reproductive health amongst this population.

Keywords: Adolescent pregnancy, low birth weight (LBW), neonates, preterm, small for gestational age (SGA)

INTRODUCTION

The term "adolescere" is to grow in latin word and the period spans from 10 years to19 years of age.[1] Hence in this period of life a significant changes occur in structural and functional (biologic, physiologic, psychosocial and sexual) aspects of growth and development, which could lead to risk taking behavior such as substance abuse, unsafe sex potential for sustaining of early pregnancy.[2] In developing countries further more lack of proper sex and reproductive education, poor socioeconomic status and early marriage practices cause adolescent pregnancy.

Teenage pregnancy is a public health concern both in developed and developing world.[3,4] It is estimated that globally about 13 million infant born to adolescents and of which more than 90% occur in developing countries, especially in sub- Saharan Africa.[5]

South Asian countries (India, Pakistan, Sri Lanka, Nepal, Maldives, Bhutan and Bangladesh) have high proportions of teenage pregnancies, since early marriage is common and there is a social expectation to have a child soon after marriage.[6,7] A study showed that nearly 60% of all girls are married by the age of 18 years and one fourth are married by the age of 15 years in South Asia[8].

In our context, adolescents comprise 34.6% of the Nepalese population. The median age at first marriage for a woman in Nepal is 16.6 years, suggesting that the majority of newly married couples are teenagers. In Nepal 6.9% of 15 – 19 years old female get married. About 63.5% teenage pregnant mothers visit for antenatal check up where as 35.2% will be delivered at health facilities.[9]

Pregnancy in this period of life is often associated pregnancy related complications, such as such as anaemia, pregnancy induced hypertension, preterm delivery, low birth weight (LBW) babies and small for gestational age (SGA) babies, maternal mortality, perinatal and neonatal morbidity and mortality.[10,11] There is higher number of premature and low birth weight (LBW) in this group seen even in the developed countries.[12-14]

Hence this study was conducted to know the immediate outcome of newborns of adolescent pregnant mother who had delivered newborns at Nepal Medical College Teaching Hospital.

DEFINITIONS AND DENOMINATORS

Gestational age at birth was the age from the last menstrual period (LMP) in completed weeks. Small for gestational age (SGA), large for gestational age(LGA) and appropriate for gesational age (AGA) was a live baby who was less than 10th percentile, above 90th percentile and between 10th and 90th percentile of birth weight for the given week of gestation respectively. Birth weight below 2,500 grams, less than 1500grams and less than 1000grams, at birth irrespective of the gestational age was considered as Low Birth Weight (LBW),Very Low Birth Weight(VLBW) and Extreme Low Birth Weight (ELBW) respectively. Birth of a live baby at before 37 weeks' gestation was considered as pre-term delivery. APGAR score less than 7 was considered as low APGAR score at birth. Score of l- 3 was considered as severe birth asphyxia where as score of 4-6 and above 6-8 was considered as moderate and mild birth asphyxia respectively. Still birth was defined as delivery of a dead baby after 28 weeks of gestation.[1]

For all outcomes, the denominator used was the total number of deliveries in their respective categories.

MATERIALS AND METHODS

A hospital based a retrospective comparative study was conducted in Nepal Medical College Teaching Hospital, Attarkhel, Kathmandu. During the study period neonates of all adolescent mother (aged 10 – 19 years) who had delivered newborn at this hospital from April 2005 to March 2009 were included in the study. Randomly equal numbers of adult mothers aged 20 – 30 years were taken for the control group. Mothers with any chronic illness, congenital diseases, birth before 24 weeks, weight less than 500gms and home delivery cases were excluded from the study. Data were collected from the case record register from Archive and analyzed with the statistical package for social science (SPSS version 13) using Chi square test. P value less than 0.05 was taken as statistically significant.

RESULTS

During the period of study total numbers of delivery were found be 3144 out of which 365 deliveries were comprised of adolescent mother in which 15 were home delivery cases which were excluded from the study. So the remaining 350 (11.1%) cases constituted the actual adolescent pregnant mothers who had delivered at the hospital. The prevalence of adolescent pregnant delivery was found to be of 11.1%.

Demographically majority of the mothers 341 (97.4%) were aged between 17 -19 years (Table-1). Most of them were from within Kathmandu Valley in both case and control groups 331(94.0%), 343(98.0%) respectively. Hindu was found to be most common religion 280.3% versus 87.1% in both groups followed by Buddhist, Muslim. By ethnicity *Mangolian (Tamang, Lama, Sherpa, Gurung, Rai*) was found to be a predominant 52% versus 37.7% ethnical group followed by *Brahmin*, others, *Newar* and *Chhetri* in both groups (Table-1).

Table-1: Demographic representation of the adolescent mother

Age(year)	n.(%)
10- 13	0 (0.0%)
14- 16	9 (2.6%)
17 –19	341 (97.4%)
Residence	
Inside Valley	331 (94.5%)
Outside valley	19 (5.5%)
Religion	
Hindu	281 (80.3%)
Buddhist	62 (17.7%)
Christian	0 (0.0%)
Muslim	7 (2.0%)
Others	0 (0.0%)
Ethnicity	
Brahmin	67 (19.1%)
Chhetri	19 (5.4%)
Newar	30 (8.6%)
Mangolian	183 (52.3%)
Others	51 (14.6%)

Primi gravid mothers were significantly high in adolescents pregnant women than in control (93.1%, 53.1%)(P=0.001) respectively (Table-3). However multi parity was significantly less amongst adolescents (6.9% vs 46.9%)(P=0.001). Most of mothers in both groups had antenatal check up (ANC) visits (85.4%, 89.7%) respectively (Table-2).

Table-2: Antenatal visit by adolescent and adult mother

ANC	Case(n=350) No.%	Control(n=350) No.%	*P*-value
Yes	299 (85.4%)	314 (89.7%)	0.084
No	51 (14.6%)	36 (10.3%)	0.084

Table-3: Gravida of adolescent and adult mother

Gravida	Case(n=350) No.%	Control(n=350) No.%	*P*-value
Primi	326 (93.1%)	186 (53.1%)	0.001
multi	24 (6.9%)	164 (46.9%)	0.001

Almost all mothers from both groups had delivered live babies (98.9% vs 98.3%) respectively and very few still births was observed in both groups (0.9% vs 1.2%) respectively (Table-5).

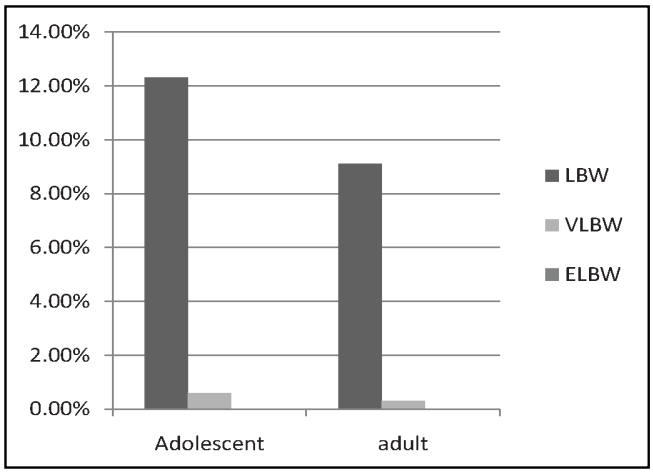

Fig.1. Distribution of newborn according to gestation.

Most of the mothers were full term in both groups. However the full term was seen less in adolescents (85.7% vs 92.9%) when compared to adult group and was noted statistically insignificant. But preterm babies were observed more in adolescents than in control (10.9% vs 6.3%) group which was statistically significant (p=0.029) (Table-5), (Fig.1).

Most of the neonates delivered by the mothers were appropriate for gestational age (AGA) in both groups however more numbers of adolescent mother delivered small for gestational age (SGA/IUGR) (7.4% vs 5.1%) (Table-5) babies as compared to adult but it was not statistically significant.

Most of the mothers in the study delivered babies of normal weight babies. There were less numbers of normal weight babies of adolescent mother as compared to adults (86.9% vs 89.1%) (Table-5). However low birth weight (LBW) less than 2.5 kg babies were more in adolescents group than in adult (12.3% vs 9.4%) but it was statistically not significant (Fig.2). No extreme low birth weight babies were delivered in both groups. Birth asphyxia was observed significantly more in adolescents than in adults mothers (10.3% vs 5.1%) respectively and was statistically significant (p=0.009).(Tab-5).

Table-4: Mode of delivery

Mode of delivery	Case (n=350) No.%	Control (n=350) No.%	*P*-value
SVD	296 (84.4%)	280 (80.0%)	0.112
Instrumental			
Vaccum	1 (0.1%)	2 (0.6%)	0.533
Forceps	4 (1.1%)	2 (0.6%)	0.471
Total	5 (1.1%)	4 (1.2%)	0.815
LSCS			
Emergency	49 (14.0%)	60 (17.1%)	0.266
Elective	0 (0.0%)	6 (1.7%)	0.0744
Total	49 (14.0%)	66 (18.8%)	0.257

Table-5: Outcome of neoantes born to adolescent mother

Variables	Case (n=350) No. %	Control (n=350) No.%	*P* - value
Birth Status			
Live	347 (99.1%)	346 (98.9%)	0.790
Still	3 (0.9%)	4 (1.0%)	0.790
Term	300 (85.7%)	325 (92.9%	0.225
Preterm	38 (10.9%)	22 (6.3%)	0.029
Post term	12 (3.4%)	9(2.7%)	0.284
LBW	41 (12.3%)	32 (9.1%)	0.259
VLBW	2 (0.6%)	1 (0.3%)	0.553
ELBW	0 (0.0%)	0 (0.0%)	
AGA	320 (91.4%)	327 (93.4%)	0.208
SGA	26 (7.4%)	18 (5.1%)	0.318
LGA	4 (1.1%)	5 (1.4%)	0.271
Single	346 (98.9%)	344 (98.3%)	0.499
Twin	4 (1.1%)	6 (1.7%)	0.499
Birth asphyxia			
Mild	22 (6.3%)	11(3.1%)	0.045
moderate	11 (3.1%)	2 (0.6)	0.013
severe	3 (0.9%)	5 (1.4%)	0.535
Total	36 (10.3%)	18 (5.1%)	0.009
Mean Apgar Score			
1 minute	7.59 ± 1.17	8.05 ± 1.45	0.845
5 minute	8.75 ± o.96	9.15 ± 1.05	0.912
Congenital anomaly			
major	0 (0.0%)	0 (0.0%)	
minor	5 (1.4%)	3 (0.9%)	0.535

No gross major congenital abnormalities were noted in both groups but slightly more minor congenital abnormalities (1.4% vs 0.9%) were noted in adolescents than in adults (Table-5).

Most of the mothers from both groups (case and control) had normal vaginal delivery (84.6%, 80.0%) respectively. Less LSCS (14.0% vs 18.8%) was observed in adolescents mother than in adults and it was not statistically significant. Instrumental deliveries were also found more among adolescents (1.4% vs 1.2%) than adult mothers.(Table-4).

DISCUSSION

Adolescent pregnancy remains a public health concern since its adverse consequences regarding immature maternal's health and the newborns morbidity and mortality. Most of the pregnant mother were aged 17-19 year and similar findings were noted in the western countries and other studies.[2,3] This could be because of the peak changes in psychosexual and behavioral profile that occur during this late adolescent period.

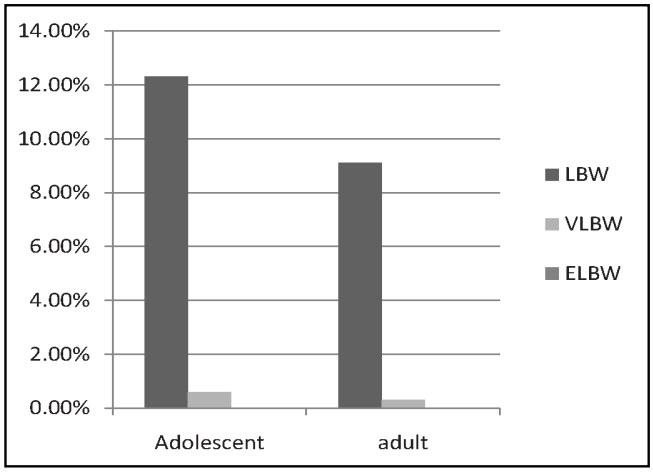

Fig. 2. Distribution of newborn according to low birth weight (LBW)

Most of these mothers were from within valley and predominantly belonging to Mangolian ethnicity with Hindu religion by belief. This could be because of most of them are residing in the vicinity of the hospital and the area is being densely populated by the Mongolian (*Tamang, Lama, Sherpa*) population and Nepal is a Hindu predominant country.[9]

This study shows that teenage pregnancy is associated with preterm delivery which is statistically significant. Many previous studies have shown similar findings.[15-17] This could be due to immature biological system. Although SGA and low birth weight babies were comparatively found to be more in adolescent pregnant however it was not statistically significant which contradicts with other previous studies.[12,13,18] This could be because of mothers were predominantly from Mongolian ethnicity and newborn to this ethnicity was found have a good birth weight.[19]

Regarding immediate morbidity birth asphyxia (mild and moderate) was found to be significant in teenage group where as severe birth asphyxia was found to be less than in control group which was comparable with other studies.[20-22] The APGAR score, still birth and congenital anomaly (all minor) in teenage age group was not statistically significant compared to the adult women. This is in agreement with recent studies.[23,24] Since this is a hospital based study complications are well addressed .

The adverse reproductive outcome in teenage pregnancy is due to the social, economic and behavioral factors rather the biological effect of young age which is often argued.[25] One earlier study has shown that significant differences in the socioeconomic status between teenage mothers and older mothers exist in Nepal as well.[26] The weight of the mother also plays an important role in outcomes such as small for gestational age.[27] However, socioeconomic and behavior factors or maternal weight were not taken into account which is one of the major limitations of our study.

Caesarean section was comparatively less in teenage pregnancy which agrees with previous studies.[21,28,29] All LSCS were emergency may be due to arising complications (low maternal age,maternal illness and fetal complications) during pregnancy and during delivery.[12] This study shows that this risk is slightly decreased, which could be due to a higher incidence of low birth weight in teenage pregnancies as this would be associated with a higher chance of successful vaginal delivery.[27] Instrumental delivery among teenage groups in this study seems slightly high which is comparable with some other studies.[12,29] Since it is required when prolong second stag labor with fully dilated cervix and it is often associated with risk of trauma to neonates.[1,2] Another possibility is that teenage women understand that teenage pregnancy is a risk and may present to the hospital early compared to non-teenage women. Further information on socioeconomic and behavioral variables is needed to confidently conclude on adverse effects of teenage pregnancy. So it is suggestible to collect a prospective community based data for this.

Therefore this study concludes that preterm delivery and birth asphyxia was found to be concerning issues in teenage pregnancy in comparison to the adult pregnant women. However other parameters like LBW, SGA, still birth, congenital anomaly, mode of deliveries (SVD, LSCS, Instrumental) did not reach statistical significant when compared with adult mothers. If adequate reproductive health education and access to health facilities are provided among these populations the subsequent morbidity and mortality regarding this social dilemma can be prevented.

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