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Research Article

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The Obstetric Risk and Neonatal Consequences of Adolescent Pregnancy

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Introduction: Adolescent pregnancy is a worldwide problem bearing serious social and medical implications relating to maternal and child health. Adolescent pregnancy is a complex and frustrating problem in both developed and developing countries.

Methods: A Cross-sectional observational study was carried out in the Department of Obstetrics and Gynecology; Dhaka Medical College & Hospital, Dhaka, a tertiary-level hospital in Bangladesh from 1st July 2015 to 31st December 2015. 50 patients presented with adolescent pregnancy (Primigravida without medical complications) diagnosed on clinical, biochemical, and investigational backgrounds were enrolled in the study, fulfilling the inclusion and exclusion criteria.

Results: It revealed that the maximum number of teenage patients 44(88%) were between the age group of 17 to 19 years. The present study showed that the majority of teenage mothers were Muslim 43(86%). Most of the teenage mothers were housewives 42(84%), then garments worker 4(8%), then day labourer 2(4%), maid servants 1(2%), student 1(2%). The study also showed that 68% of teenage mothers belong to the monthly income group below TK. 3000; in other words, most of the teenage mothers had come from a low socioeconomic class. Clinical examination findings showed 25(50%) of teenage mothers were anaemic, 10(20%) had oedema, 8(16%) were hypertensive. Among the antepartum and intrapartum complications, the current study shows a maximum number of patients 25(50%) were affected with anaemia and 17(34%) teenage mothers developed no complication. The current study showed that the majority of the adolescent delivered by C/S 18(36%), spontaneous onset of labour 17(34%) and induction given 15(30%). The most common overall indication for caesarean section was foetal distress (about 14%), followed by eclampsia (8%). Study showed that that 2(4%) of teenage mothers suffered from PPH, 2(4%) had PPE, 3(6%) had wound infection and 4(8%) had partial breast feeding. The current study also showed that the APGAR score of the baby at the first minute 27(54%) were greater than 7 and 23(46%) were less than 7. The maximum number of babies 29(58%) were between 2-2.5 kg, 14(28%) had very low birth weights and only 7(14%) of baby birth weights greater than 2.5 kg. Study showed 14(28%) of the babies developed birth asphyxia, 8(16%) had prematurity, 2(4%) had jaundice.

Conclusion: We observed low birth weight is a key predictor for fetal complication and child mortality. It may be due to babies born to adolescent mothers are likely to be premature, and hence, the incidence of low birth weight is higher in them.

Keywords: Obstetric Risk, Neonatal Consequences, Adolescent Pregnancy

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Introduction

Adolescence is a period of rapid physical, emotional, Cognitive and social growth and development. Generally, adolescence begins at age 11–12 years and ends between 18 and 21. WHO defines adolescence as the period between 10 and 19 years of age which broadly corresponds to the onset of puberty and the legal age of adulthood. Adolescent pregnancy, a social problem distributed worldwide, has serious implications for maternal and child health, especially in the context of developing countries. In Bangladesh, teenage pregnancy is an important public health problem, although the national policy of the Government advocates the minimum legal age of marriage for girls to be 18 years [1,2].

Marriage is the leading social and demographic indicator of the exposure of women to the risk of pregnancy. Marriage in Bangladesh marks the point in a woman's life when childbearing becomes socially acceptable. Age at marriage has a major effect on childbearing because the risk of pregnancy depends primarily on the age at which the woman marries. Women who marry early, on average, are more likely to have their first child at a young age and give birth to more children overall, contributing to higher fertility. Data from the Bangladesh Demographic and Health Survey (BDHS-2011) revealed that marriage occurs early for women in Bangladesh. Among women who are currently aged 15-19, 17.2 percent are married by age 15, and 74 percent are married by age 18. Men in Bangladesh tend to marry later in life than women [2].

When a woman becomes pregnant she is at risk of life-threatening complications which may arise at any time. However, there are certain groups of pregnancies, where the mother, the foetus or the neonate are in a state of jeopardy [3]. In Bangladesh, three women die every hour due to complications related to pregnancy and childbirth. The combination of poor nutrition and early childbearing exposes young women to serious health risks during pregnancy and childbirth, including damage to the reproductive tract, pregnancy-related complications, such as anaemia, pregnancy-induced hypertension, preterm labour, cephalopelvic disproportion, maternal mortality, perinatal and neonatal mortality, and low birth weight [4,5].

Teenage is the modern description of adolescence [6]. It is the time of development involving changes in physical, mental, emotional, spiritual and social functioning [7]. In the case of neonatal mortality about 7.5 million neonatal deaths occur annually in the world, most of these in developing countries. Bangladesh has had a very high neonatal mortality rate in nineteen decades i.e. 52 per 1000 births [8]. Although this situation has gradually improved in the last few years neonatal mortality rate in Bangladesh is now 28 deaths per 1,000 pregnancies [2], which is lower than the level observed in the 2007 BDHS (37 deaths per 1,000 pregnancies). Perinatal mortality is high among teenage mothers. Rural areas have higher perinatal mortality than urban areas [2]. In Bangladesh, adolescents constitute 23% of the total population. Early marriage in Bangladesh is almost universal between the ages of 15 and 19 years, 69% of females marry before 20 years of age [9]. Usha. R. Krishna and Vimta Salvi also stated that adolescence is a period of life in which, significant anatomical and physiological changes occur and the girl child matures into adulthood [10]. In a developing country, once a girl from an economically disadvantaged family has reached puberty, the greatest threat to her life is pregnancy and childbirth [11]. There is a lack of recent data on the neonatal outcomes of teenage pregnancy under the changing scenario of socioeconomic development and the availability of better healthcare facilities. The objective of the present study was to assess and evaluate the sociodemographic characteristics, and maternal and neonatal outcomes of adolescent mothers attending a tertiary-care hospital for their deliveries. To attain the successful "Safe Mother Hood" adolescent pregnancy stands as a burning issue and needs proper attention and evaluation for the prevention of its devastating effect.

Materials and Methods

Study design: This was a cross-sectional observational study.

Place of study: Obstetrics & Gynae Department, Dhaka Medical College, Dhaka, Bangladesh.

Study periods: Six months (1st July 2015–31st December 2015).

Sample size: A total of 50 Adolescent pregnant cases.

Research materials: All the data were recorded in a preformed structured questionnaire.

Main outcome variables: Patients who were admitted to the Department of Obstetrics & Gynae unit-III, Dhaka Medical College Hospital with an adolescent pregnancy were included in this study. An interview-based questionnaire was used to collect information from the patients or their relatives, regarding age, socio-demographic characteristics, educational level, clinical presentation, risk factors, complications during the antenatal period, delivery outcome neonatal outcome etc.

After taking an informed written Consent. Thereafter thorough clinical examination was performed and some laboratory investigations were conducted. This questionnaire was used for the collection of information by interviewing adolescents. The data were analyzed by the statistical (SPSS) method and presented in the form of tables, figures, graphs, diagrams & charts etc.

Selection criteria

Inclusion Criteria:

- Age of the mother <19 years
- Primigravida
- Duration of pregnancy >28 weeks of gestation.
- Willing to participate in the study.

Exclusion Criteria:

- Age of the mother >19 years
- Multigravida
- Duration of pregnancy <28 weeks of gestation.
- Not willing to participate in the study.

Data analysis: Detailed procedure: Detailed history, physical examination, other systemic examination and essential investigations were done in every adolescent. All adolescents were kept under close supervision. When any untoward events developed it was managed and recorded properly. Data were collected on a pre-designed schedule "Case Record Form" and recorded in tabulated form and analyzed by statistical method. Data Collection: Data was collected using a structured questionnaire (research instrument) containing all the variables of interest. The questionnaire was finalized following pretesting. Collected data was checked daily and edited (if needed).

Statistical analysis: After collection, data was checked & analysis was done by Statistical Package for Social Science (SPSS). Result of clinical study with statistical analysis was presented by tables, figures, graphs, diagrams and charts etc. All these had their own legends (i.e. title) and be serially numbered.

Results

A total number of 1976 obstetric patients were admitted during the study period in the Obstetrics and Gynecology department of DMCH. Among them, 304 (15.38%) patients were adolescent pregnancy (Table-1), from them 50 patients were selected for the study, which fulfilled the inclusion criteria. The above table shows that the majority of teenage mothers were between more than 17 years to 19 years old (88%). The majority of teenage mothers were Muslim (86%). Table-1 shows the majority of the teenage mothers comprised of housewives 42(84%), then garments worker 4(8%), then day labourer 2(4%), maid servants 1(2%), student 1(2%). Table 1 shows that 68% of teenage patients belong to the monthly income group below TK. 3000. The above table shows that 38% of teenage mothers were illiterate, 32% had primary education, 8% had Secondary education and 22% could sign only. Among 40% of teenage mothers were being married due to economic conditions and 24% were being married due to family tradition.

Table 1: Demographics profile of teenage pregnant mother (n=50)

Age Group	No. of patients	Percentage (%)
<17 years	6	12%
>17 years to ≤ 19 years	44	88%
Religion	No. of patients	Percentage (%)
Muslim	43	86%
Hindu	5	10%
Others	2	4%
Occupation	No. of patients	Percentage (%)
Housewife	42	84
Day labourer	2	4
Housemaid	1	2
Garments worker	4	8
Student	1	2
Income/month	No. of patients	Percentage (%)
<3000 TK	34	68
3000-5000 TK	8	16
>5000 TK	8	16
Education status	No. of patients	Percentage (%)
Illiterate	19	38
Can do sign-only	11	22
Primary education	16	32
Secondary education	4	8

Table 2: Antenatal checkup of adolescent mothers (n=50)

Antenatal checkup	No. of patients	Percentage (%)
Regular	5	10
Irregular	27	54
No check-up	18	36

Table-2 shows that only 5(10%) of teenage mothers had regular antenatal checkup and 27(54%) irregular, 18(36%) had got no ANC.

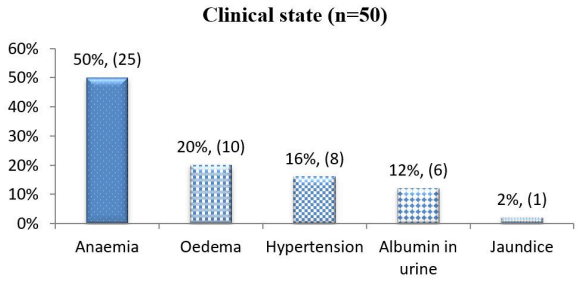

Figure 1: Clinical state (n=50)

Above figure-1 shows clinical examination findings, 50% of teenage mothers were anaemic, 20% had oedema, 12% were proteinuric, and 16% were hypertensive.

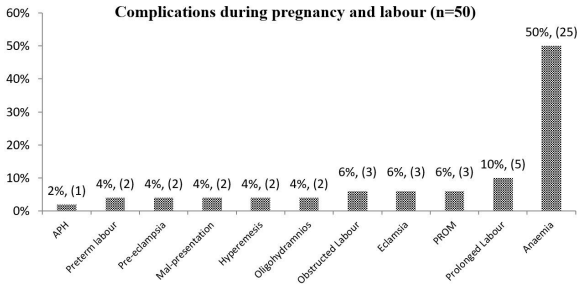

Figure 2: Complications during pregnancy and labour (n=50)

In this series, 25(50%) were affected with anemia, 5(10%) of teenage mothers develop prolonged labour, 2(4%) had preeclampsia, 3(6%) developed eclampsia and 3(6%) developed Obstructed labour (Fig-2).

Table 3: Mode of delivery (n=50)

Mode of delivery	No. of patients	Percentage (%)
Spontaneous onset of labour	17	34
Induction given	15	30
Elective C/S	18	36

Among the adolescent pregnant cases, the majority of the adolescent had delivered by C/S 18(36%), spontaneous onset of labour 17(34%) and induction given 15(30%) (Table-3).

Table 4: Indication of caesarean section (n=21)

Indication of LSCS	No. of patients	Percentage (%)
Obstructed Labour	3	6
Prolonged Labour	2	4
Pre-Eclampsia	1	2
Eclampsia	4	8
Malpresnatation	1	2
CPD	3	6
Foetal Distress	7	14

The most common overall indication for caesarean section was foetal distress (about 14%), followed by eclampsia (8%) (Table 4).

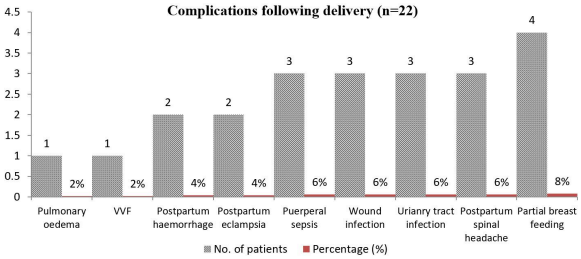

Figure 3: Complications following delivery (n=22)

Above figure-3 shows that 2(4%) of teenage mothers suffered from PPH, 2(4%) had PPE, 3(6%) had wound infection and 4(8%) had partial breast feeding.

Table 5: Apgar score (n=50)

Apgar Score	N	%
>7(Apgar Score 1 minute)	27	54
<7(Apgar Score 1 minute)	23	46
>7(Apgar Score 5 minute)	43	86
<7(Apgar Score 5 minute)	7	14

Table 5 shows that the APGAR score of the baby at the first minute 27(54%) were greater than 7and 23(46%) were less than 7. The table shows most of the baby's 43(86%) APGAR scores at five minutes were greater than 7 and 7(14%) were less than 7 i.e.14% neonates need NICU support.

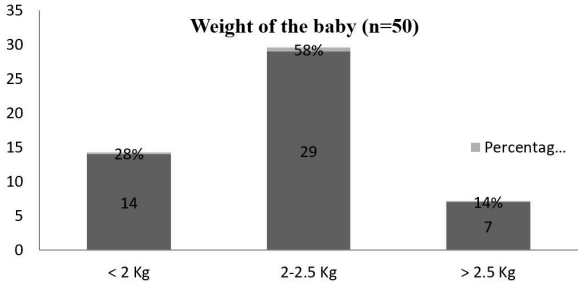

Figure 4: Weight of the baby (n=50)

Above figure-4 shows that a maximum number of babies 29(58%) were between 2-2.5 kg, 14(28%) had very low birth weight and only 7(14%) of baby birth weight greater than 2.5 kg.

Table 6: Fetal complication and morbidities (n=28)

Foetal condition	No. of patients	Percentage (%)
Prematurity	8	16
Birth asphyxia	14	28
IUGR	1	2
Birth injury	1	2
Jaundice	2	4
Stillborn	1	2
Neonatal death	1	2

Among the cases 14(28%) of the babies developed birth asphyxia, 8(16%) had prematurity, 2(4%) had jaundice (Table-6).

Discussion

Our study design raises several important methodological issues, including patient selection, sample size, and the prospective identification of maternal, and neonatal outcomes, all of which may exert a powerful influence on the results. Bangladesh is a developing country with about 149.77 million population. About 77.79 million of them are women and 15.4% are less than 20 years of age. Most young women are the victims of malnutrition, lack of education, low social status and economically weak. The health and life of teenage girls are put at risk by pregnancy and childbirth, especially where living conditions are poor and health care facilities are inadequate.

In the present study, teenage pregnancy is 15.38% among the total admitted patients in the Obstetric and Gynecology department of DMCH. In this series, the maximum number of teenage patients 44(88%) were between 17-19 years of age group, next 6(12%) were between the age group of <17 years. There was no teenage mother aged less than 15 years. This finding correlates with the study of home and abroad.

A study by Prianka Mukhopadhyay, R.N. Chaudhuri, and Bhaskar Paul "Hospital-based Perinatal Outcomes and Complications in Teenage Pregnancy in India [12], shows that a maximum number of teenage mothers (age 13-19 years) belonged to the age-group of 18–19 years (approximately 89%).

According to the study of Haider SJ. Saleh SN et al (1995) [13], show that the mean age of first marriage is 15 years, and 27% of teenage girls are mothers. It is comparable to the present study. According to Ghosh N.Ghos B. in India (Bombay) in 1976, teenage pregnancy was estimated to be as high as 14.9% [14].

The present study shows that 17(34%) teenage mothers came from rural, 29(58%) from urban slums and 4(8%) from urban non-slum areas. The study also showed that 68% of teenage mothers have come from low socioeconomic class. Studies revealed that economic instability plays an important factor in early marriage in our society, about 20(40%) of cases found economic causes for early marriage, then family tradition 12(24%). Most of the teenage mothers were housewives 42(84%), then workers 4(8%). All these findings are comparable with other studies, A Study by Sarker et al shows 51.3% of teenage mothers came from rural areas [15].

The increased risk of adverse pregnancy outcomes associated with low maternal age has been attributed to poor socioeconomic conditions among teenagers. The current study shows that Illiterate was 19(38%) and can sign only 11(22%), 16(32%) had primary and only 4(8%) had secondary education. Cooksey et al have shown that increased maternal education leads to first intercourse at a later age and a higher likelihood of using contraceptives at first intercourse [16]. According to the BANBEIS report, 65.5% of Bangladeshi are educated [17].

This study shows that only 4(8%) teenage mothers used contraceptives regularly and 30(60%) never used contraceptives. The NHDSBD-2011 [1], report showed that 76% of respondents currently used any one kind of family planning method (urban 76.6% and rural 75.6%) and most of them used modern methods of family planning. The table shows that only 5(10%) of teenage mothers had regular antenatal checkups, 27(54%) irregularly, 18(36%) had no ANC.

This indicates that teenage mothers were less careful about their pregnancy probably because of the lack of awareness and maturity. Other authors had reported early registration of pregnancy ranging from 40% to 90% in teenagers; however, the frequency of antenatal check-ups by them was consistently lower [18-23].

The current study shows that 50% of teenage mothers are anaemic, 5(10%) of teenage mothers develop prolonged labour, 2(4%) have preeclampsia, 3(6%) developed eclampsia and 3(6%) developed Obstructed labour. Among anaemic teenage mothers, 44% had mild anaemic, 36% had moderate anaemic, and 20% had severe anaemic. A study by Porozhanova V et al [24] showed in the adolescent group pre-eclampsia and eclampsia were 3.22%, and the rate of premature delivery was higher, 17.99%.

A study by Sarkar CS et al showed eclampsia and pre-eclampsia affected teenage mothers (10.6%) and were much more frequent than mothers of 20 years of age and above (5.2%). Incidence of low birth weight was 30%, prematurity 21.1% and perinatal mortality was 16.4% recorded [15]. The present study matched with the above study. Another study by Prianka Mukhopadhyay, R.N. Chaudhuri, and Bhaskar Paul [12] showed that post-term pregnancies were (2%) in teenage mothers, stillbirth rate was also significantly higher in teenage deliveries (5.1%) than in adults. The teenage mothers developed more adverse perinatal complications, such as preterm births, stillbirths, neonatal deaths and delivered low-birthweight babies, when compared with those of the adult primigravida mothers.

The current study shows that the majority of the adolescents had delivered by C/S 18(36%), spontaneous onset of labour 17(34%) and induction given 15(30%). Among teenage mothers delivery by C/S was more and spontaneous onset of labour was lower, this could be due to a higher proportion of smaller babies in that age group. Our study also showed most common overall indication for caesarean section was foetal distress 7(14%) and 4(8%) eclampsia followed by obstructed labour 3(6%). This result correlated with the study of Prianka Mukhopadhyay, R.N. Chaudhuri, and Bhaskar Paul "Hospitalbased Perinatal Outcomes and Complications in Teenage Pregnancy in India [12]. The present study showed that a maximum number of babies 29(58%) were low birth weight, and had birth weight between 2-2.5 kg. Then 14(28%) had very low birth weight, had less than 2 kg body weight and only 7(14%) of baby birth weight >2.5 kg. The higher frequency of occurrence of low-birth-weight babies in the teenage group was the most common reason for fetal complications and morbidities.

Teenage mothers had a significantly higher number of preterm deliveries. Compared to the adult mothers the reverse was noted in post-term deliveries. Such a high incidence of preterm labour leads to higher risks for neonates. Many authors from developed countries have reported an association between teenage pregnancy and preterm delivery [25-28]. In a study by Ali et al 'adolescent pregnancy was found to be associated with a significantly higher rate of premature and low birth weight infants [29]. In this current study 14(28%) of the babies developed birth asphyxia, 8(16%) had prematurity, 2(4%) developed jaundice. Low birth weight is a key predictor of malnutrition and an important determinant of child mortality [30]. One of the most detrimental outcomes of low birth weight is growth retardation, and if the newborn happens to be a girl, it perpetuates a vicious cycle of female malnutrition throughout adolescence and adulthood. This process gives rise to a condition of intergenerational transmission of physical (small mothers have small babies), social and economic disadvantages into the next generation [31]. The present study found that the number of low-birth-weight babies, and very low-birth-weight babies was higher in teenage mothers. Babies born to teenage mothers are likely to be premature, and hence, the incidence of low birthweight is higher in them. This observation corroborates the findings of several other authors [32,33].

Conclusions

The findings of the study suggest that adolescent childbearing and motherhood are common and still deeply embedded among Bangladeshi women. The findings indicated that women's education, social status, economic stability etc have a significant depressive influence on the probability of adolescent childbearing. It was found from this study that the teenage mothers were from socioeconomically disadvantaged backgrounds with lower levels of education and used lesser antenatal healthcare services. They developed more perinatal complications, such as preterm births, stillbirths, and neonatal deaths, and delivered babies with low birth weight. Early marriage is directly associated with early childbearing. Higher incidents of maternal mortality, morbidity and perinatal complication in Bangladesh result from a higher prevalence of teenage motherhood.

Childhood place of residence and religion are also two important determinants in adolescent motherhood and perinatal complications.

Recommendations: In light of observation of present study, following recommendations are laid down:

- Further studies with large sample sizes could be undertaken to validate findings of study.
- Further study is recommended with an extended follow-up of at least one week in hospital.
- Service providers must have necessary technical communication skills to deliver teenage-friendly services.
- Countries should create a socio-economic environment conducive to elimination of all child marriages and should discourage early marriage and pregnancy.
- Countries should take affirmative steps to keep girls and teenagers in schools rather than in married life.
- There is an urgent need for better family health education and nutritional status.
- Awareness of teenage health care to prevent unwanted and early pregnancy and unsafe abortions.

Limitation: Most people are not aware of health facilities available. They only -attend hospital when complications arise. So, from this small percentage of population (who attended hospital), exact situation of teenage pregnancy in our country cannot be ascertained. Hospital stay is only for a short period due to various reasons including shortage of beds and hurryness of patient's party. So, entire maternal and perinatal outcome could not be estimated and maternal morbidity cannot be estimated also. The primary limitation of study was that, since it was conducted in a tertiary-care hospital set-up, chances of high-risk cases may be more and it may not truly reflect prevailing situation in a community setting. Family income, which can be an important determinant in pregnancy outcomes, could not be clarified under sociodemographic characteristics, as income could not be verified. Another limitation of study was that findings of adverse perinatal outcomes of teenage pregnancy could have been confounded by unequal distribution of different sociodemographic characteristics in case-control.

Further studies are needed to quantify the adverse outcomes after adjusting for the different confounding factors.

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