Original Article

# Where Has the Childhood Gone? Adolescent Pregnancy, A Continuing Obstetric Challenge



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## ABSTRACT

**Objective:** We aimed to analyze the frequency and adverse maternal and perinatal outcomes of adolescent pregnancy in a tertiary care setting.

**Study Design:** retrospective case-control study

**Place and Duration of Study:** This study was conducted at D. Ruth K. M. Pfau Civil Hospital Karachi from Nov, 2020 to Oct, 2021.

**Materials and Methods:** We recruited 921 women delivering between 15 to 35 years during this period. Participants were divided into two groups as adolescents and adults according to their age. First group comprised of adolescents (n) aged between 15-19 years and second consisted of adults (2n) between 20-35 years as control. Case records were reviewed and information collected on a specially designed proforma. This data included socio demographic characteristics, birth mode and maternal and fetal outcomes. Data stored and analyzed by SPSS version 21.

**Results:** Our results revealed frequency of teenage pregnancies as 9.5%. Majority of these adolescents were aged between 17-19yrs (96.7%), were urban residents (60.9%), un-booked (67.7%) and married (96.4%). However 3.6% comprised of unmarried girls also. About a quarter delivered by cesarean section (24.4%). Significant fetomaternal outcomes included anemia (35.8%), preterm delivery (25.4%), PPROM (9.4%), sepsis (7.2%), non-progress of labor (8.1%), Eclampsia (4.6%), stillbirth (13.4%) and neonatal deaths (7.2%).

**Conclusion:** Adolescent pregnancy poses serious health risks and is associated with adverse fetomaternal outcomes like anemia, preterm delivery, sepsis, eclampsia and poor perinatal outcomes.

**Key Words:** Adolescent pregnancy, perinatal outcome, maternal outcome.

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## INTRODUCTION

Adolescent or teen age pregnancy refers to pregnancy occurring in girls aged between 13 to 19 years [1]. Across the globe 21 million adolescents give birth every year, with 12 million in developing countries [2]. It is a major public health problem with huge consequences to maternal health, psychology and pregnancy outcomes [3]. The increased incidence of adolescent pregnancy is mainly because of their physiological and psychological immaturity and limited reproductive knowledge[4].

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These young girls are never able to enjoy their childhood, are not allowed to go to school and are forced to become wives and mothers. It is more likely to occur in indigenous underdeveloped communities driven by low economy, lack of education, early sexual activity, sociocultural expectations to produce a child soon after marriage and lack of employment opportunities[5]. Adolescent fertility rate in Pakistan is one of the highest in the world with 44 of every thousand live births [6]. It is considerably associated with adverse maternal and perinatal outcomes like pre-eclampsia and eclampsia, preterm labor, anemia, sepsis, low birth weight, perinatal deaths and maternal mortality. The risk of dying from pregnancy and child birth related complications is leading cause of death in 15-19 girls worldwide [7].

Continuing high rates of teenage pregnancies has pushed government at both national and international levels to set targets for reduction in number. Millennium Development Goals (MDGs) were set in year 2000 to improve maternal health and reduce maternal mortality by 2015. Unfortunately much of it was not accomplished as teen pregnancies were not given desired attention because of competing priorities [8]. Other reasons were lack of antenatal care in remote areas, less no. of skilled birth attendants, inadequate

transportation and poor identification and tracking of maternal deaths in community. This fact based the development of Sustainable Development Goals (SDGs) by United Nations in 2015 with an aim to decrease maternal mortality and promote wellbeing for all by 2030 [9]. The key strategies for accomplishment will be to reduce adolescent pregnancies, provision of health for all women and universal coverage of skilled birth attendants. The burden of this problem is quite under estimated across Pakistan and there's still a long way to reduce teen marriages and related adverse outcomes. We aimed to determine the frequency and analyze adverse maternal and perinatal outcome of teenage pregnancy in a tertiary care setting..

# MATERIALS AND METHODS

This was a retrospective case control study conducted at Dr. Ruth K. M. Pfau Civil Hospital Karachi Obs. and Gyn unit II. Civil Hospital is a 2000 bedded tertiary care public sector hospital. The study was conducted from Ist, Nov, 2020 to 31st Oct, 2021over a period of one year. Permission from institutional review board taken. There were 3230 deliveries in the unit during this period. A total of 921 singleton pregnancies coming through emergency or outpatient department between 15-35 years of age meeting inclusion criteria were enrolled and divided into two groups as adolescents between 15-19 years and adults 20-35 years, according to their age as cases (n) and controls (2n). There were 307 teenage girls and 614 adults. Patients with multiple pregnancy, having preexisting medical problems, gestational age <28weeks, birth weight <1 kg, anomalous baby and patients with incomplete data were excluded. Case records of those patients were reviewed thoroughly and information collected on a specially designed proforma by trained doctors. This data included socio-demographic features, booking status, obstetric risk factors, mode of delivery, ante/post natal complications, birth weight, still birth, neonatal deaths and admission to neonatal intensive care unit.

The adverse maternal outcomes included: Cesarean section, GDM (fasting sugar >5.1mmol/L), PIH or pre eclampsia (blood pressure >140/90 mmHg after 20 weeks of gestation on two occasions with or without proteinuria of >300mg/dl), HELLP syndrome (Syndrome comprising of hemolysis, elevated liver enzymes and low platelets associated with PIH), anemia (< 10.5gm/dl), packed cell transfusion, preterm delivery (delivery before 37 weeks of gestation), PPROM (preterm prelabor rupture of membranes at<37 weeks), placenta previa (placenta located in lower uterine segment), placental abruption, eclampsia (hypertensive disease of pregnancy with seizures), ICU/ ventilatory support, postpartum hemorrhage (blood loss >1000ml after delivery of baby), sepsis, non-progress of labor, acute kidney injury and maternal mortality. The adverse perinatal outcomes included: Low birth weight (< 2.5 kg), still birth (death of fetus in utero after the age of viability), neonatal death (death of baby after delivery till 7 days of life).

Data was entered and analyzed through SPSS version 21.0. Generalized screening was performed for missing data. Any missing data was entered from case records by serial number initially assigned to each participant. Descriptive characteristics were presented as frequencies and percentages. The association of adverse pregnancy outcomes with age and parity was checked by applying Chi- Square test. P value of less than 0.05 was considered statistically significant.

# RESULTS

**Table No.1: Socio-demographic and obstetric characteristics of adolescent girls**

| **Mean Age** | **18.11 ± 0.9 Years** |
|---|---|
| **Ethnicity** | **n (%)** |
| Sindhi | 161(52.4) |
| Punjabi | 29(9.5) |
| Pathan | 35(11.4) |
| Balochi | 25(8.1) |
| Urdu Speaking | 57(18.6) |
| **Marital Status** | |
| **Married** | 296(96.4) |
| **Unmarried** | 11(3.6) |
| **Parity** | |
| Primiparous | 214(69.7) |
| Multiparous | 93(30.3) |
| **Booking Status** | |
| Booked | 99(32.3) |
| Un-booked | 208(67.7) |
| **Residence** | |
| **Urban** | 187(60.9) |
| **Rural** | 120(39.1) |

**Table No.2: Adverse maternal & perinatal outcomes by age**

| **Outcomes** | **Adolescents (15-19 Years) n (%)** | **Adults (20-35 Years) n (%)** | **P-Value** |
|---|---|---|---|
| Caesarean section | 75(24.4) | 99(16.1) | 0.009 |
| Anemia | 110(35.8) | 169(27.5) | 0.010 |
| Gestational diabetes | 07(2.3) | 34(5.5) | 0.024 |
| PIH/ pre-eclampsia | 54(17.6) | 80(13.0) | 0.064 |
| Eclampsia | 14(4.6) | 11(1.8) | 0.015 |
| HELLP Syndrome | 13(4.2) | 17(2.8) | 0.237 |
| Abruptio placentae | 11(3.6) | 30(4.9) | 0.366 |
| Placenta previa | 03((1.0) | 20(3.3) | 0.037 |
| PPH | 23(7.5) | 42(6.8) | 0.716 |
| Acute kidney | 09(2.9) | 08(1.3) | 0.083 |

| | | | |
|---|---|---|---|
| Injury | | | |
| Sepsis | 22(7.2) | 24(3.9) | 0.032 |
| ICU care | 28(9.1) | 35(5.7) | 0.053 |
| Blood transfusion | 52(16.9) | 73(11.9) | 0.035 |
| Non progress of labor | 25(8.1) | 16(2.6) | 0.000 |
| Maternal mortality | 04(1.3) | 09(1.5) | 0.843 |
| PPROM /PROM | 29(9.4) | 23(3.7) | 0.000 |
| Small for gestational age | 78(25.4) | 107(17.4) | 0.004 |
| Preterm delivery | 78(25.4) | 99(16.1) | 0.001 |
| NICU care | 30(9.8) | 60(9.8) | 1.000 |
| Still birth | 41(13.4) | 46(7.5) | 0.004 |
| Neonatal death | 22(7.2) | 13(2.1) | 0.000 |

We analyzed 921 women in our study by dividing them into adolescent and adult groups. The frequency of teenage pregnancy was 307(9.5%). The mean age of adolescent girls was 18.11±0.9 years. In adolescent group, number of 15yrs old was 4(1.3%), 16 years old 6(1.9%), 17 years old 68(22.14%), 18 years old 104(33.87%) and 19 years old was 125(40.7%). The socio-demographic and obstetric characteristics of these girls are shown in table 1. Most belonged to Sindhi community, were primiparous and didn't receive any prenatal care (unbooked). A small proportion was single (unmarried) as well. Table 2 shows adverse pregnancy outcome comparison of adolescent and adult group. Majority delivered vaginally with statistically significant increased number of cesarean sections in adolescent group ($p<0.009$). When compared with adults, risk of GDM ($p< 0.024$) and placenta previa ($p<0.03$) was significantly less in adolescents. Teenage girls had significantly increased risk of anemia , pack cell transfusion , preterm birth, PPROM , non-progress of labor, sepsis, small for gestation , stillbirth, neonatal death. The results between adolescents and adults were insignificant for abruptio placentae, postpartum hemorrhage, acute kidney injury, NICU care and maternal mortality.

Table 3 displays association of parity with adverse fetomaternal outcomes in both the groups. Anemia was more common in primiparous in adolescents and in multiparous in adults. Gestational diabetes and abruptio placentae were also significantly associated with multi-parity in adult group while insignificant association in adolescents. Similarly preterm delivery and PPROM found more commonly in primiparous adolescents with insignificant association in adults. Small for gestational age was significantly associated to primiparity in both the groups ($p<0.01$, $p<0.003$).

**Table No.3: Adverse maternal & perinatal outcomes by parity**

| Outcomes | Adolescents (15-19 Years) n (%) | | | Adults (20-35 Years) n (%) | | |
|---|---|---|---|---|---|---|
| | Primi n(%) | Multi n(%) | P-Value | Primi n(%) | Multi n(%) | P-Value |
| Anemia | 87(40.6) | 23(24.7) | **0.0008** | 27(16.4) | 142(31.5) | **0.000** |
| Gestational diabetes | 04(1.8) | 03(3.2) | 0.464 | 02(1.2) | 32(7.1) | 0.005 |
| PIH/ pre-eclampsia | 40(18.6) | 14(15) | 0.442 | 19(11.5) | 61(13.5) | 0.521 |
| Eclampsia | 07(3.2) | 07(7.5) | 0.100 | 04(2.4) | 07(1.5) | 0.465 |
| HELLP Syndrome | 12(5.6) | 01(1.0) | 0.070 | 03(1.8) | 14(3.1) | 0.392 |
| Abruptio placentae | 09(4.2) | 02(2.1) | 0.373 | 02(1.2) | 28(6.2) | 0.011 |
| Placenta previa | 03(1.4) | 00(0) | 0.251 | 04(2.4) | 16(3.5) | 0.490 |
| PPH | 17(7.9) | 06(6.4) | 0.648 | 08(4.8) | 34(7.5) | 0.245 |
| Acute kidney Injury | 06(2.8) | 03(3.2) | 0.840 | 00(0) | 08(1.7) | 0.086 |
| Sepsis | 15(7.0) | 07(7.5) | 0.872 | 04(2.4) | 20(4.4) | 0.257 |
| ICU care | 18(8.4) | 10(10.7) | 0.513 | 08(4.8) | 27(6.0) | 0.596 |
| Blood transfusion | 44(20.5) | 08(8.6) | 0.010 | 15(9.1) | 58(12.8) | 0.205 |
| NPOL | 18(8.4) | 07(7.5) | 0.795 | 10(6.1) | 06(1.3) | 0.001 |
| Maternal mortality | 02(0.9) | 02(2.1) | 0.388 | 01(0.6) | 08(1.7) | 0.287 |
| PPROM /PROM | 25(11.6) | 04(4.3) | 0.042 | 07(4.2) | 16(3.5) | 0.681 |
| Small for gestational age | 63(29.4) | 15(16.1) | 0.014 | 41(25) | 66(14.6) | 0.003 |
| Preterm Labor | 64(29.9) | 14(15.0) | 0.006 | 27(16.4) | 72(16) | 0.890 |
| NICU care | 23(10.7) | 07(7.5) | 0.382 | 14(8.5) | 46(10.2) | 0.534 |
| Still birth | 25(11.6) | 16(17.2) | 0.191 | 10(6.1) | 36(8.0) | 0.428 |
| Neonatal death | 18(8.4) | 04(4.3) | 0.199 | 03(1.8) | 10(2.2) | 0.765 |

# DISCUSSION

According to our study most of the pregnancies occurred between 17-19 years despite law forbids early marriages in our country. It complies with a study conducted at rural Bangladesh[10]. The rate of adolescent pregnancy was high i.e. 9.5% which is consistent with other studies as well. It was reported to be 19.3% in Sub-Saharan Africa [11]. One of the study conducted in public sector hospital of Pakistan previously also reported the same incidence of 11% highlighting the fact that there's very little or almost no decrease in their number[12]. The other alarming fact which our study revealed was increasing number in unmarried girls

(3.6%) as a result of sexual assault or by their own will, which poses challenge for health care providers, community workers and policy makers. Majority of them belonged to Sindhi community in both groups just because the hospital is based in province Sind. The adolescent population mainly belonged to urban areas (Table 1) which is in accordance with a study from Africa [13], unlike of the fact which other studies stated where patients belonged to rural areas as incidence is directly linked to low income, lack of education and childhood marriages [4, 14, 15] . Major proportion of teenage girls was unbooked (67.8%) during their pregnancy receiving no antenatal care and attended labor ward directly for delivery which is self-explanatory for poor pregnancy outcomes.

Most of the adolescent delivered vaginally (74.6%) which is supported by other studies as well [14, 16], but cesarean section rates (24.4%) were significantly higher as opposed to adults (16.1%). Increased risk of cesarean was due to small underdeveloped pelves and increased incidence of poor progress of labor, obstructed labor and fetal compromise in this age group. We observed lower rates of GDM as compared to adults in consistent with a study reported by China[17], also it was more common in multiparous compared to primiparous in our study (Table 2,3). The risk of anemia and packed cell transfusion was far higher in adolescents compared to adults in our study because soon after achieving growth spurt they get married and enter pregnancy with poor reserves, in addition poverty, lack of nutritional supplementation of iron and folic acid and inadequate prenatal care also play role [16,18,19]. We found eclampsia more commonly in teenage population which is also suggested by a study conducted in Finland where girls were 3.2 times more likely to develop it [20]. The frequency of PIH and severe pre-eclampsia was higher in adolescents in our study but not statistically significant as earlier studies reported [16, 19, 24].The preterm labor and delivery, preterm prelabor rupture of membranes was much more common in adolescents compared to adults as quoted by many studies across the world including Pakistan [14, 16, 17, 21, 22]. These complications were also significantly associated with primiparity (Table 3). This is because of maternal malnutrition, poor antenatal care, increased chances of pregnancy related complications and reproductive developmental phase which make their developing uteri compete for blood supply to placenta. Our study also reported increased risk of chorioamnionitis and sepsis in adolescents as their immune system is not mature, most belonged to low socioeconomic class, received no antenatal care and higher prevalence of prelabor rupture of membranes, correlating well with a previous multicenter study conducted in Pakistani [21].

We also noticed low birth weights and small for gestation babies in teenage girls [14, 23, 25], attributed mostly to increased preterm deliveries and poor blood supply to fetus due to physiological immaturity. SGA was also associated with primiparity in both groups (Table 3) Consistent with many other studies from different parts of the world we also found increased rates of still births and neonatal deaths in adolescents[18,24- 26]. Deaths in adolescent girls contribute a large share to maternal mortality and they are at double risk of death due to pregnancy related complications [7]. Our study did not find an increase in mortality in adolescent group compared to adults as other studies reported. It is likely due to study area setting as our hospital being largest tertiary care of province received complicated referrals in large number, also lack of medical facilities and delay in transportation from primary place of care accounted for increased number of deaths in adults group.

There were some limitations to our research like data was collected from a tertiary care only so results cannot be generalized. Other was our case records did not include all information like about smoking and other addictions, socioeconomic status and BMI of patients which can be potential confounders affecting the pregnancy outcomes.

# CONCLUSION

Adolescent pregnancies has significant adverse maternal and perinatal outcomes especially anemia, preterm labor and PPROM, eclampsia, sepsis and perinatal mortality compared to adults. We should raise awareness about sexual and reproductive health, education of teen agers esp. males, childhood marriages and women empowerment. At the same time provision of contraceptives, training of health care workers and community based campaigns are also important. Strategies should be set by government and policy makers and strengthening of health care system is needed to decrease the number and improve the outcomes of teenage pregnancies.

**Author's Contribution:**

| | |
|---|---|
| Concept & Design of Study: | Shehla Arif |
| Drafting: | Farah Deeba Nasrullah, Riffat Jaleel |
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| Final Approval of version: | Shehla Arif |

**Conflict of Interest:** The study has no conflict of interest to declare by any author.

# REFERENCES

1. Mejia JR, Quincho-Estares AJ, Flores-Rondon AJ, Reyes-Beltran G, et al. Determinants of adolescent pregnancy in indigenous communities from the

Peruvian central jungle: a case–control study. Reprod Health 2021; 18: 203.
2. UNFPA. Girlhood, not motherhood: Preventing adolescent pregnancy. New York: UNFPA; 2015.
3. Imtiaz A, Haq Z, Badrashi M, Farooq S. Association of teenage pregnancy with low birth weight of neonates: tertiary care hospital based case control study in Peshawar. Khyber Med Uni Med J 2015;7(4):165-73.
4. Worku MG, Tessema ZT, Teshale AB, et al. Prevalence and associated factors of adolescent pregnancy (15-19 years) in East Africa: a multilevel analysis. BMC Pregnancy Childbirth 2021;21:253.
5. Shakya HB, Darmstadt GL, Barker KM, Weeks J, Christakis NA. Social normative and social network factors associated with adolescent pregnancy: a cross- sectional study of 176 villages in rural Honduras. J Global Health 2020;10(1):010706.
6. Tanveer Q, Fatima A. Adolescent pregnancy: a comparative study from the teaching hospital of Lahore, Pakistan. Professional Med J 2016;23(06): 727-30.
7. WHO. Adolescent pregnancy: WHO; Jan 2020.
8. WHO. Core competencies in adolescent health and development for primary care providers: including a tool to assess the adolescent health and development component in pre-service education of health care providers. Geneva: WHO; 2015.
9. GBD 2015 SDG Collaborators. Measuring the health- related Sustainable Development Goals in 188 countries: a baseline analysis from the Global Burden of Disease Study 2015. Lancet 2016;388(10053):1813-1850.
10. Haque MA, Sayem AM. Socioeconomic determinants of age at first birth in rural areas of Bangladesh. Asia- Pacific J Public Health 2009;21:104-11.
11. Kassa GM, Arowojolu OA, Odukogbe AA, Yalew AW. Prevalence and determinants of adolescent pregnancy in Africa: a systematic review and Meta-analysis. Reprod Health 2018;15:195.
12. Hashmi HA, Tufail A. Maternal and perinatal outcome in teenage pregnanacy in a community based hospital. Pak J Surg 2008;24(2):130-4.
13. Ochen AM, Chi PC, Lawoko S. Predictors of teenage pregnancy among girls aged 13-19 years in Uganda: a community based case-control study. BMC Pregnancy Childbirth 2019;19: 211.
14. Rexhepi M, Besimi F, Rufati N, et al. Hospital-based study of maternal, perinatal and neonatal outcomes in adolescent pregnancy compared to adult women pregnancy. Open Access Maced J Med Sci 2019;7(5):760-66.
15. Hotchkiss DR, Godha D, Gage AJ, Cappa C. Risk factors associated with the practice of child marriage among Roma girls in Serbia. BMC Int Health Hum Rights 2016;16(1):6.
16. Kawakita T, Wilson K, Grantz KL et al. Adverse maternal and neonatal outcomes in adolescent pregnancy. J Pediatr Adolesc Gynecol 2016; 29(2): 130-6.
17. Zhang T, Wang H, Wang X, et al. The adverse maternal and perinatal outcomes of adolescent pregnancy: a cross sectional study in Hebei, China. BMC Pregnancy Childbirth 2020;20:339.
18. Qazi G. Obstetrics characteristics and complications of teenage pregnancy. J Postgrad Med Inst 2011;25(2): 134-8.
19. Tanveer Q, Fatima A. Adolescent pregnancy; a comparative study from the teaching hospital of Lahore, Pakistan. Professional Med J 2016;23(06): 727-30.
20. Leppälahti S., Gissler M, Mentula M, Heikinheimo O. Is teenage pregnancy an obstetric risk in a welfare society? A population-based study in Finland, from 2006 to 2011. BMJ Open 2013; 3(8): doi:10.1136/bmjopen-2013-003225.e003225.
21. Shah N, Khan N, Rohra DK, Ahuja KL. Comparison of obstetric outcome among teenage and non-teenage mothers from three tertiary care hospitals of Sindh, Pakistan. J Pak Med Assoc 2011;61(10): 963-7.
22. Saba N, Hamayun M, Bilal M. Outcome of teenage pregnancy. Biomedica 2013;29(1): 27-31.
23. Naqvi MM, Naseem A. Maternal and fetal risks associated with teenage and adult pregnancy. J Rawal Med Coll 2010;14(1): 40-2.
24. Abebe AM, Fitie GW, Jember DA, Reda MM, et al. Teenage pregnancy and its adverse obstetric and perinatal outcomes at Lemlem Karl Hospital Tigray Ethiopia, 2018. Biomed Res Int 2020; 2020:10.1155/2020/3124847.
25. Ogawa K, Matsushima S, Urayama KY, Kikuchi N. Association between adolescent pregnancy and adverse birth outcomes, a multicenter cross sectional Japanese study. Sci Rep 2019;9: 2365.
26. Patra S. Motherhood in childhood: addressing reproductive health hazards among adolescent married women in India. Reprod Health 2016;13:52.