

Factors Associated with Teenage Pregnancy: A Case Control Study

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ABSTRACT

Teenage pregnancy is a major public health problem worldwide. Studies shows that teenage mothers are more likely to experience pregnancy-related complications compared to normal age mothers. This study was conducted to find the associated factors of teenage pregnancy. Hospital based case-control study was adopted among teenage mothers (15-19 years) and non-teenage (20-29 years) postnatal mothers admitted in two medical college teaching hospitals of Pokhara. Systematic random sampling was used to select the respondents. Study sample comprises 432 respondents with 216 cases and 216 controls. The data was collected by using structured interview schedule and collected data were entered in MS excel with validated command and analyzed with SPSS 16 version. The study resulted that teenage pregnancy was associated with disadvantaged ethnicity (AOR: 2.02, 95% CI: 1.14-3.56) agriculture (AOR: 5.37, 95% CI: 1.86-15.49) and labour (AOR: 6.22, 95% CI: 2.56-15.11) family occupation, lower education (AOR: 2.57, 95% CI: 1.39-4.76), nonworking status of women (AOR: 2.87, 95% CI: 1.60-5.14), unplanned pregnancy (AOR: 1.79, 95% CI: 1.101-3.21), incomplete immunization (AOR: 2.32, 95% CI: 1.11-4.84) and preterm gestational age (AOR: 3.23, 95% CI: 1.46-7.15). It is recommended to design and implement health education interventions especially for disadvantaged groups and people with low socio economic to reduce teenage pregnancy; to emphasize on providing opportunities for higher education, employment and empowerment and increasing utilization of family planning and maternal health services among teenagers.

Key words: Teenage pregnancy, associated factors, case control study, outcomes, adolescents

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INTRODUCTION

Teenage pregnancy is girl being pregnant within the ages of 13-19 years and adolescents pregnancy is a girl becoming pregnant with in the age of 10 to 19 years, about 16 million women 10–19 years old give birth each year and an estimated 21 million girls aged 15 to 19 years and 2 million girls aged under 15 years become pregnant in developing regions every year.¹ Adolescents aged 10–19 years gave 11% of all births globally, they account for 23% of the overall burden of disease because of obstetrical cause.² South Asia has a large proportion of adolescence in the world and teenage pregnancy is one of the major public health problem among them, the recorded teenage pregnancy rate is highest in Bangladesh 35% followed by Nepal 21% and in India 21%, teenage pregnancy can have significant effect on the level of education, their employment opportunities and marital stability and it increases their economic and social dependency on family.³

In Nepal almost one in four (23%) have given birth before reaching 18 years and median age for first birth is about 20 years. Median age at first birth is highest in eastern region (21.1 years) and lowest in Tarai subregion (19.3years). Median age at first birth increases with women's education

women with no education or primary education give birth to their first child four years earlier than women having educational status School Leaving Certificate (SLC) and above.⁴

Pregnancies among women before the age of 18 years have irreversible consequences. It violates the rights of girls with life-threatening consequences in terms of developmental, sexual and reproductive health.² The younger the mother, the greater the likelihood that she and her baby will experience health complications.⁵

The incidence of having a low birth weight infant (<2500 g) among adolescents is more than double compared to adults, neonatal death rate (within 28 days of birth) is almost 3 times higher among teenage mothers and teenage pregnancy has been associated with other medical problems including poor maternal weight gain, prematurity, pregnancy-induced hypertension, anemia, and STDs.⁶ In developed countries majority of teenage pregnancies occur to unmarried girls unlike developing countries teenage pregnancies occur to married girls and are associated with early marriages.⁷ Teenage pregnancy is associated with increased risk

for anemia, urinary tract infection, pregnancy induced hypertension and operative delivery and also increased risks of low birth weight, intra-uterine growth retardation, prematurity and admission to the neonatal intensive care units.⁸ Adolescent pregnancy and its consequences represent a major public health concern in many low-middle income countries of the world.⁹ The objective of this study is to find out the associated factors regarding teenage pregnancy.

METHODS

Hospital based unmatched case-control study was conducted to identify the factors associated with teenage pregnancy. The study was conducted among mothers aged ≤ 29 years admitted to postnatal ward of Manipal Medical College Teaching Hospital and Gandaki Medical College Teaching Hospital; where cases were teenage mothers with age 15-19 years and controls were non-teenage mothers with age 20-29 years. Both hospitals are tertiary level private hospitals. Manipal Medical College Teaching Hospital has 750 beds capacity. Gandaki Medical College Teaching Hospital has 500 beds capacity. Both hospitals provides 24 hour \times 7 days Comprehensive Emergency Obstetric and Neonatal Care (CEmONC) under safe motherhood program. Total sample size of the study was 432 with 216 for cases and

216 for control groups with 1:1 ratio. Pre-tested structured interview schedule was used as study tool for data collection with systematic random sampling and patient's chart also observed to complete the data as required (i.e. birth weight, Hb%, APGAR score). Before data collection, official written permission was obtained from the concerned authorities i.e. Pokhara University and both hospitals. The study were conducted after obtaining the ethical approval from Institutional Review Committee of Pokhara University. Informed consent was taken from each respondents, if respondent is below 18 years consent was taken from legal guardian and autonomy as well as confidentiality was maintained. To ensure the validity, extensive literature review and consultation with experts was done. The tool was translated in Nepali language and again translated to English for accuracy. The tool was pretested among 10% of the sample before data collection. After pre-testing necessary modification was done. Statistical analysis was performed in Statistical Package for Social Science (SPSS) version 16. Descriptive statistics like frequency, percentage, etc. was calculated as necessary. The bivariate and multivariate analysis were performed to find out the association between independent and outcome variables.

RESULTS

Table 1: Socio-demographic information of respondents

Characteristics	Cases(n=216) Frequency (%)	Control (n=216) Frequency (%)	Total (n=432) Frequency (%)
Family type			
Nuclear	40 (18.5)	53 (24.5)	93 (21.5)
Joint	176 (81.5)	163 (75.5)	399 (78.5)
Religion			
Hindu	174 (80.6)	179 (82.9)	353 (81.7)
Buddhist	19 (8.8)	28 (13.0)	47 (10.9)
Christian	20 (9.3)	0 (0.0)	20 (4.6)
Muslim	3 (1.4)	9 (4.2)	12 (2.8)
Ethnicity			
Dalit	93 (43.0)	52 (24.0)	145 (33.6)
Disadvantaged non-dalit	7 (3.2)	9(4.2)	16(3.7)
Tarai caste	3 (1.4)	0 (0.0)	3 (0.7)
Religious minorities	3 (1.4)	9 (4.2)	12 (2.8)
Relatively advantaged Janjati	76 (35.2)	80 (37.0)	156 (36.1)
Upper caste group	34 (15.8)	66 (30.6)	100 (23.1)

Table 2: Socio-economic characteristics of respondents

Characteristics	Case (n=216) Frequency (%)	Control (n=216) Frequency (%)	Total (n=432) Frequency (%)
Main source of family income			
Agriculture	73 (38.8)	31 (14.4)	104 (24.1)
Own business	42 (19.4)	53 (24.5)	95 (22.0)
Service	29 (13.4)	68 (31.5)	97 (22.5)
Labour	43 (19.9)	14 (6.5)	57 (13.2)
Remittance	29 (13.4)	50 (23.1)	79 (18.3)

Monthly family income in NRs			
Up to 9999	55 (25.5)	29 (13.4)	84 (19.4)
10000-19999	64 (29.6)	41 (19.0)	105 (24.3)
20000-29999	26 (29.6)	37 (17.1)	63 (14.6)
30000-39999	12 (5.6)	24 (11.1)	36 (8.3)
≥40000	59 (27.3)	85 (39.4)	144 (33.3)
Occupation of respondents			
Home maker	175(81.0)	135 (62.5)	310 (71.8)
Own business	8(3.7)	25 (11.6)	33 (7.6)
Service	4(1.9)	45 (20.8)	49 (11.3)
Labour	13(6.0)	4 (1.9)	17 (3.9)
Others	16(7.0)	7 (3.3)	23 (5.3)
Occupation of husband			
Agriculture	40(18.5)	29 (13.4)	69 (16.0)
Own business	43 (19.9)	53 (24.5)	96 (22.2)
Service	40 (18.5)	68 (31.5)	108 (25.0)
Labour	42 (19.4)	14 (6.5)	56 (13.0)
Foreign	34 (15.7)	52 (24.1)	86 (19.9)
Others	17 (7.9)	0 (0.0)	17 (4.0)
Place of residence			
Urban	150 (69.4)	155 (71.8)	305 (70.6)
Rural	66 (30.6)	61 (28.2)	127 (29.4)

Table 3: Educational information of respondents

Characteristics	Case (n=216) Frequency (%)	Control (n=216) Frequency (%)	Total (n=432) Frequency (%)
Education of respondent			
Up to primary (up to grade 5)	37 (17.1)	26 (12.0)	63 (14.6)
Secondary	145 (67.1)	101 (46.8)	246 (56.9)
Higher secondary	34 (15.7)	50 (23.1)	84 (19.4)
Bachelor and above	0 (0.0)	39 (18.1)	39 (9.0)
Education of husband			
Up to primary	28 (13.0)	22 (10.3)	50 (11.6)
Secondary	121 (56.0)	89 (41.6)	210 (48.8)
Higher secondary	53 (24.5)	57 (26.6)	110 (25.6)
Bachelor and above	14 (6.5)	46 (21.5)	60 (14.0)

Socio demographic information are presented in the table 1. With regards to family type, majority of the respondents (78.5%) belonged to joint family. Majority of the respondents (81.7%) follow Hindu religion. More than one-third (36.1%) are from relatively advantaged Janjati.

Socio economic information are presented in the table 2. The study reveals that about one-fourth (24.1%) of the respondent's main source of family income is agriculture.

One third (33.3%) of family earn more than ≥40000 NRS every months. Majority (71.8%) of the respondents were home maker likewise one fourth (25.5%) of the respondents husbands were service holder.

Table no 3 shows with regards to educational status of respondents. More than half (56.9%) had secondary level education likewise about half (48.8%) of the respondents husband completed their secondary level education.

Table 4: Present obstetrics information of respondents

Characteristics	Case (n=216) Frequency (%)	Control (n=216) Frequency (%)	Total (n=432) Frequency (%)
Gravida			
Primi	193 (89.4)	95 (44.0)	228 (66.7)
Multi	23 (10.6)	121 (56.0)	144 (33.3)
History of abortion			
Yes	11 (5.1)	34 (15.7)	45 (10.4)
No	205 (94.9)	182 (84.3)	384 (89.6)

Pregnancy status			
Planned	139 (64.4)	183 (84.7)	322 (74.5)
Unplanned	77 (35.6)	33 (15.3)	110 (25.5)
4 ANC a/c guidelines			
Yes	130 (60.2)	170 (78.7)	300 (69.4)
No	86 (39.8)	48 (21.3)	132 (30.6)
Status of immunization			
Incomplete	88 (40.8)	381 (17.6)	126 (29.2)
Complete	128 (53.3)	178 (82.4)	306 (70.8)
Regular IFA compliance			
Yes	92(42.6)	142 (65.7)	234 (54.2)
No	124 (57.4)	74 (34.3)	198 (45.8)
Mode of delivery			
Normal	132 (61.1)	119 (55.1)	251 (58.1)
Instrumental	14 (6.5)	13 (6.0)	27 (6.3)
Caesarean Section	70 (32.4)	84 (38.9)	154 (35.6)
Gestational age at delivery			
Preterm	48 (22.2)	12 (5.6)	60 (13.9)
Term	164 (75.9)	194 (91.7)	362 (83.8)
Post term	4 (1.9)	6 (2.8)	10 (2.3)

Table no 4 reveals obstetrics information of respondents. Almost two-third (66.7%) of the respondents were primiparous. Majority (89.6%) had no history of abortion, almost three-fourth (74.5%) had planned pregnancy. Only 60.2% in cases and 78.7% in control groups were completed their ANC visit according to national guidelines. Likewise 42.6%

in cases and 65.7% in controls had regular IFA compliance. With regards to mode of delivery, 61.1% in cases and 55.1% in control group had normal delivery. In cases about one fourth (22.2%) whereas in controls only 5.6% had preterm labour. In cases 75.9% whereas in control group 80.6% had normal blood loss during delivery.

Table 5: Neonatal information of respondents

Characteristics	Case (n=216) Frequency (%)	Control (n=216) Frequency (%)	Total (n=432) Frequency (%)
APGAR score in 1 minutes			
Low	94 (43.5)	79 (36.6)	(46.5)
Normal	122(56.5)	137(63.4)	(53.5)
APGAR score in 5 minutes			
Low	54 (25.0)	37 (17.1)	91(21.1)
Normal	162 (75.0)	179 (82.9)	341 (78.9)
Birth weight in grams			
Low	55 (25.5)	23 (10.6)	78 (18.1)
Normal	161(74.5)	193(89.4)	354 (81.9)
Resuscitation use			
Yes	13(6.0)	7(3.2)	20 (4.6)
No	203(94.0)	209(96.8)	412 (95.4)

Table no 5 reveals the neonatal information of respondents. With regards to APGAR score in one minutes of birth, 43.5% of the neonates in cases and 36.6% in control group had low APGAR score whereas in five minutes of birth 25.5% in

cases and 17.1% in controls had low APGAR score. Among cases one-fourth (25.5%) whereas in controls 10.6% had low birth weight. With regards to resuscitation use, 6.0% in cases and 3.2% in controls uses resuscitation.

Table 6: Logistic regression analysis of demographic factors associated with teenage pregnancy

Characteristics	Unadjusted Odd Ratio		Adjusted Odd Ratio		p value
	UOR	95% CI	AOR	95% CI	
Ethnicity					
Other disadvantaged groups	2.35	1.47-3.75	2.02	1.14-3.56	0.015*
Relatively advantaged Janjati & upper caste groups	Reference		Reference		
Main source of family income					
Business/service	Reference		Reference		
Agriculture	4.02	2.47-6.55	5.37	1.86-15.49	0.002*
Labour and others	5.25	2.73-10.07	6.22	2.56-15.11	<0.001*
Monthly family income					
Up to 9999	2.73	1.56-4.77	0.63	0.25-1.54	0.313
10000-19999	2.24	1.34-3.75	1.13	0.58-2.19	0.720
20000-29999	1.01	0.55-1.84	0.69	0.33-1.42	0.321
30000-39999	0.72	0.33-1.55	0.73	0.32-1.65	0.451
40000+	Reference		Reference		
Education of respondent					
Up to secondary	3.75	2.37-5.91	2.57	1.39-4.76	0.003*
Higher secondary and above	Reference		Reference		
Education of husband					
Up to secondary	2.02	1.36-3.00	0.63	0.35-1.22	0.120
Higher secondary and above	Reference		Reference		
Occupation of respondent					
Working	Reference		Reference		
Not working	3.98	2.40-6.58	2.87	1.60-5.14	0.001*
Occupation of husband					
Cash income	Reference		Reference		
No cash income	2.31	1.41-3.79	1.67	0.56-4.97	0.351

Table 7: Logistic regression analysis of obstetrical factors associated with teenage pregnancy

Characteristics	Unadjusted Odd Ratio		Adjusted Odd Ratio		p value
	UOR	95% CI	AOR	95% CI	
Pregnancy status					
Planned	Reference		Reference		
Unplanned	3.07	1.93-4.88	1.79	1.01-3.21	.049*
4 ANC a/c guideline					
Yes	Reference		Reference		
No	2.44	1.59-3.73	0.60	0.28-1.29	.196
Status of immunization					
Complete	Reference		Reference		
Incomplete	3.22	2.06-5.01	2.32	1.11-4.84	.024*
180 IFA compliance					
Yes	Reference		Reference		
No	2.58	1.75-3.81	1.39	0.81-2.40	.229
Status of Hemoglobin					
No anemia	Reference		Reference		
Anemia	2.11	1.43-3.11	1.15	0.71-1.84	.557
Gestational age at delivery					
Preterm	4.85	2.49-9.44	3.23	1.46-7.15	.004*
Full term	Reference		Reference		
Birth asphyxia					
Asphyxia	1.61	1.01-2.57	0.90	0.50-1.59	.722
No asphyxia	Reference		Reference		
Birth weight					
LBW	2.86	1.68-4.86	1.17	0.60-2.29	.631
NBW	Reference		Reference		

Factors those significantly associated with teenage pregnancy in Pearson's chi square test with significance level (<0.05) were brought for binary logistics regression analysis. Unadjusted odd ratio was obtained separately for outcome variable and each independent variables. Adjusted odd ratio was obtained using inter method in binary logistic regression analysis. Respondents with disadvantaged ethnicity were 2.35 (CI: 1.47- 3.75) times higher chance of being teenage mother compared with respondents with relatively advantaged Janajati and upper caste group. With regards to main source of family income, among agriculture and others had 4.02 (CI: 2.47-6.55) times higher chance of being teenage mother compared to business and service. Respondent whose educational status is up to secondary as compared to higher secondary and above had 3.75 (CI: 2.37-5.91) times higher chance of being teenage mothers. With regards to occupation of the respondents, non-working women had 3.98 (CI: 2.40-6.58) times higher chance of being teenage mother as compared to working mother. Chances of unplanned pregnancy is 3.07(CI: 1.93-4.88) times higher among teenage mother. With regards to status of immunization during pregnancy, incomplete immunization is found 3.2(CI: 2.06-5.01) times higher among teenage mother. Chances of preterm delivery is 4.85(CI: 2.49-9.44) times more common in teenage mothers as compared to normal age mothers.

DISCUSSION

It is well recognized that the pregnancy among teenagers is associated with an increased risk of poor maternal and fetal outcome¹⁰.

The study reveals more than two third (69.4%) of teenage mothers were reside in urban community. Majority of the teenage mothers (81.7%) follows Hindu religion. Maximum of teenage mothers (43%) were Dalit. About two third (67.1%) of the teenagers level of education is secondary. Very few (13.4%) of the teen age mothers and 22.5% of normal age mothers were service holder. More than half (51.9%) of the teenage mothers had a history of anemia during pregnancy. Only 69.4% of the mothers completed their ANC visit according to guidelines. The finding of the study consisted with another study which was conducted to find out the consequences of teenage pregnancy in Kathmandu valley which shows that maximum (65.0%) of the respondents from urban areas. Majority of the respondents in total (72.0%) were Hindu. With regards to occupation of the respondents Very few (8%) of the teenage mothers and 36% of normal age mothers were service holder. More than one third 38% of non-teenagers main source of family income is business or

service where as 44% of teenage mother's works as a labour or house work. Majority of the teenage mother's level of education is secondary. Forty seven percent of the mothers completed their ANC visit at least 4 times. Maximum (64%) of the teenage mothers had history of anemia during pregnancy.¹¹

Regarding the factors associated with teenage pregnancy, this study revealed that disadvantage ethnicity, low socioeconomic status and unemployment had higher chances of being teenage mothers compared to advantaged ethnicity, high socioeconomic status and employment. This study is consisted with previous study.¹²

Likewise, this study revealed that anemia is more likely in teenage pregnancy compared with non-teenagers which was consistent with previous studies.^{13,14,15} This study also revealed that preterm delivery is associated with teenage pregnancy which was consisted with previous study.^{14,15,16} This study revealed that low birth weight is more common in teenage mothers which is consisted with previous study.¹⁶ This study showed that unplanned pregnancy is more common among teenage mothers which is consisted with previous study.¹⁷

Moreover, incomplete immunization is found about three (AOR: 3.2, 95% CI: 2.06-5.01) times higher among teenage mothers compared to non-teenage mothers. Chances of preterm delivery is about five times (AOR: 4.85, 95% CI: 2.49-9.44) more common in teenage mothers as compared to normal age mothers.

CONCLUSION

The study concluded that teenage pregnancy was associated with disadvantaged ethnicity, agriculture and labour source of income, lower education, nonworking occupation, unplanned pregnancy, incomplete immunization and preterm gestational age. It is recommended to design and implement health education interventions especially for disadvantaged groups and people with low socio economic to reduce teenage pregnancy and to emphasize on providing opportunities for higher education, employment and empowerment for adolescent girls and young women. It is also crucial to emphasize on the utilization of family planning and maternal health services among teenagers.

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