Pregnancy Outcomes among Adolescent Tribal Women: Insights from South-East Rajasthan, India

Hemant Patidar[1]

ABSTRACT

BACKGROUND: Adolescent pregnancy has been common in India and it hosts to several health consequences to the mothers and children. A detailed investigation of the prevalence and consequences of adolescent pregnancy is required.
This study examines the association of pregnancy outcomes among adolescent women with various socio-cultural, economic and demographic backgrounds.
METHODS: This study is based on primary data collected from south-eastern districts of Rajasthan, India. The birth outcomes of first order pregnancy have been considered to highlight the adolescent pregnancy. Analyses have been done by employing SPSS 16.0.
RESULTS: The study reveals that 15.4 percent of the total first order pregnancies have been reported to have terminated into non-live births. Women who experienced their first pregnancy at 20 and above years of age are 3.889 times (p<0.01) more likely to have live birth outcome than to women who experienced it at 16 years of age. Women belonging to Meena tribe are 1.95 times (p<0.05) more likely to experience live pregnancy outcome than counterpart Bhil women. Women belonging to rich wealth index are significantly 4 times (p<0.01) more likely to give live births in reference to women belonging to poor wealth status.
CONCLUSION: The results demonstrate that considerable share of pregnancies among adolescent women turn into miscarriages and this prevalence is more likely among young, rural, uneducated and poor women than their counterpart women. Hence, there is a need to improve the health care system with its focus on educating and counseling adolescents and creating awareness about the complications of teenage pregnancy. The awareness and accessibility of contraceptive methods to adolescents should be ensured through health care system.

(1) Department of General and Applied Geography, School of Applied Sciences, Dr. Hari Singh Gour University, Sagar, M. P., India

CORRESPONDING AUTHOR: Hemant Patidar, Department of General and Applied Geography, School of Applied Sciences, Dr. Hari Singh Gour University, Sagar, M. P., India. Email: hpatidargeog@gmail.com

INTRODUCTION

Adolescent pregnancy and childbearing has become a great social concern in recent decades. The adolescent pregnancies host to many health consequences to the mothers and children [1]. About 70,000 adolescent women in developing countries die annually of causes related to pregnancy and childbirth [2]. In almost every region of the world, impoverished, poorly educated and rural girls are more likely to become pregnant at early ages than their wealthier, urbanites and educated counterparts [2]. Teenage pregnancy is common in India as well as in many south Asian countries since adolescent marriage is a social reality and there is a social expectation to have a child soon after marriage [3-6]. Many researches show that the ill consequences of adolescent pregnancy are due to marriage in early ages [7] and adverse social and economic conditions of women [8-17]. Biologically, a teenage pregnant woman, still growing, has to compete with the foetus for nutrients and hence, pregnancy within two years after menarche increases the risk of preterm delivery [18]. Many socio-psychological factors are also found to draw detrimental impacts on the health of mothers and children because of the unplanned pregnancies [19], and emotional immaturity of women to take the complications of gestation and post-partum responsibilities [2]. On the other hand, women in their 20s and early 30s have relatively fewer socio-psychological and biological disadvantages than teenagers and older age women [20]. The teenage mothers are at high risk for poor birth outcomes including stillbirth, underweight and death before age one [2,21]. According to WHO (2012), stillbirths and newborn deaths are 50 percent higher among infants born to adolescent mothers than among those born to mothers aged 20- 29 years [22].

Besides the physiological reasons, the adverse socio-economic status (SES) of the family is also strong determinant of pregnancy outcome [23-31]. Several researches, conducted in south Asia [11,32,33] and in India depict the improvement in adolescent pregnancy outcomes only among the population of high socio- economic status (SES), but people of lower socio- economic status (SES) particularly disadvantaged groups like tribal and backward classes have continuously confronted higher pregnancy miscarriage and infant mortality rates.

In view of the progress made around the world in reducing infant mortality and poor pregnancy outcomes, it is essential to examine the factors which exert independent causal effects on pregnancy outcomes. This study, therefore, is an attempt to highlight the level of teenage pregnancy and to examine the impact of maternal age and various spatial, socio-economic and demographic backgrounds on pregnancy outcome.

METHODS

This study utilizes primary data collected from the south-eastern districts of Rajasthan during 2011. First, a total of 20 primary sampling units (PSUs) were selected one each from rural and urban area from all ten districts on the basis of their representativeness in the districts. The selection of respondents from each of these PSUs was randomly made. A total of 800 (50 from rural and 30 from urban areas from each district) ever married women of 15 to 44 years of age were interviewed. A self administered Interview Schedule was used for the purpose. In this study only first order pregnancies have been considered in order to ascertain the level of live birth outcomes. Moreover, first order pregnancy outcomes have been associated with variety of socio-economic and demographic determinants to highlight the extent to which the individual factors exert causal effect on pregnancy outcomes. The dependent variable in this study has been pregnancy outcomes which has been made dichotomous viz. live and non-live birth outcomes. The non-live birth outcomes are the pregnancy miscarriages in the form of stillbirth, induced and spontaneous abortions. The covariates in this study are: maternal age, place of residence (rural and urban), tribal groups (Bhil, Meena, Saharia and others), levels of education of the respondents, wealth status of the family and an institutional factor (reception of antenatal care during pregnancy). The wealth index of the family was calculated as proxy index to income, by using Principal Component Analysis with the help of SPSS 16.0, by taking all the assets and amenities families possess. The index calculated was later grouped into three categories namely poor, middle and rich wealth status. The bivariate logistic regression (unadjusted) has been applied to examine the

impact of the covariates on the occurrence of live birth outcome. The odds ratio (OR) for the pregnancy outcome has been assessed against each covariate and 95% confidence intervals (CI) have been computed to estimate the precision of the odds ratio (OR). Statistical software SPSS-(16) has been employed for the entire statistical analyses.

RESULTS AND DISCUSSIONS

Profile of the respondents (The covariates)

Table 1 shows the percentage distribution of ever married women by various background characteristics such as place of residence, level of education, tribal group, wealth status of the family and reception of antenatal care. The respondents belonging to rural and urban areas are 62.5 percent and 37.5 percent respectively. Among the respondents, 70.5 percent is uneducated while 15.4 percent is primary educated and 14.1 percent has completed secondary & higher education. Of

the all respondents, 47.75 percent belongs to Bhils tribe, followed by Mina (43 percent) and Saharias (3.5 percent) and the remaining 5.75 percent is composed of others including Damor, Garasia and Bhil-Mina tribe. The total respondents have been divided into three groups of wealth status of the family i.e. poor (33.1 percent), middle (33.5 percent) and rich (33.4 percent). Among all women nearly 31 percent has reported to have received antenatal care during their pregnancy (table 1).

Pregnancy outcome by pregnancy order

Of the total pregnancies (2437) conceived ever by the respondent women in their entire reproductive life, 9.7 percent has been reported to have terminated into non-live birth. But the chances of pregnancy wastage are higher in lower order pregnancies as 15.2 percent of all first order pregnancies have been found wasted in the form of stillbirth (4.7 percent), spontaneous (9.9 percent) and induced abortion (0.4 percent). But with increasing order of

TABLE 1		
PERCENTAGE DISTRIBUTION OF RESPONDENTS BY BACKGROUND CHARACTERISTICS		
BACKGROUND CHARACTERISTICS	**NUMBER**	**PERCENTAGE**
PLACE OF RESIDENCE		
Rural	500	62.5
Urban	300	37.5
LEVELS OF EDUCATION		
Uneducated	564	70.5
Primary education	123	15.4
Secondary & higher education	113	14.1
TRIBAL GROUP		
Bhil	382	47.8
Mina	344	43.0
Saharia	28	3.5
Others	46	5.8
WEALTH STATUS OF THE FAMILY		
Poor	265	33.1
Middle	268	33.5
Rich	267	33.4
ANTENATAL CARE		
Received	247	30.9
Not received	553	69.1

FIGURE 1

OCCURRENCE OF NON-LIVE BIRTH OUTCOME
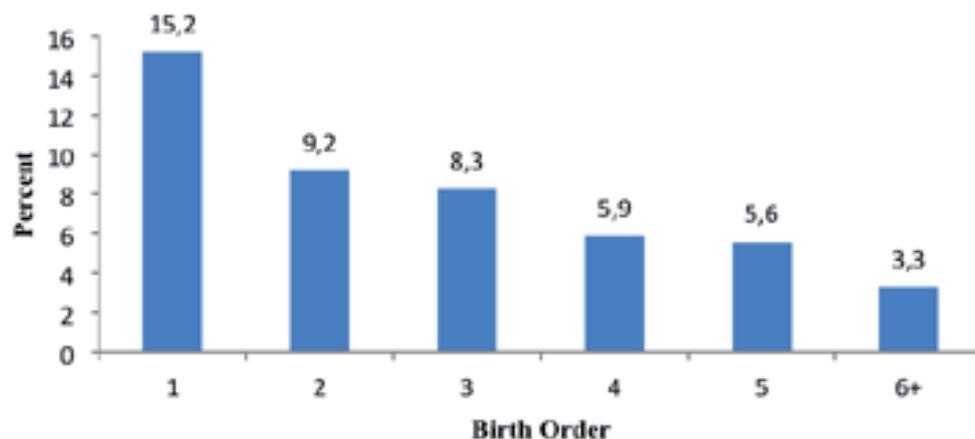
TABLE 2

PREGNANCY OUTCOME BY PREGNANCY ORDER					
PREGNANCY ORDER	TOTAL NUMBER OF PREGNANCIES	PREGNANCY OUTCOME			
		LIVE BIRTH	STILLBIRTH	SPONTANEOUS ABORTION	INDUCED ABORTION
1	738	84.8	4.7	9.9	0.4
2	565	90.8	3.2	5.6	0.3
3	469	91.7	1.3	5.1	1.1
4	305	94.1	1.6	3.6	0.7
5	180	94.4	2.8	2.8	0.0
6+	180	96.7	2.8	0.6	0.0
Total	2437	90.3	2.7	4.6	0.4

pregnancies the pregnancy miscarriage is likely to decrease. For example, out of all pregnancies, 9.2 percent of second order, 8.3 percent of third order, 5.9 percent of fourth order, 5.2 and 3.3 percent of fifth and above orders have been reported to have terminated in non-live births. The higher failure rates of pregnancies in lower birth orders may be because they mostly have taken place in teen age. Women in the teenage are biologically immature and the socio-psychological fear may remain throughout their gestation period which could lead to premature intra-uterine death of foetus. Generally when a woman successfully gives birth to her first child she achieves some confidence in her and consequently the chances of non-live birth decreases with increasing birth order.

Pregnancy outcomes by background characteristics

Pregnancy among women, from conception to giving birth to a baby is a biological phenomenon but the successful outcome of that foetus is often influenced by several socio-economic and demographic factors. The maternal age is a strong determinant in pregnancy outcomes. This study reveals that roughly 15.2 percent of all first order pregnancies have been terminated into non-live births. But it is greatly influenced by the maternal age of conception. 25 percent pregnancies of women who conceived their first child at age 16 and below have been terminated into non-live births which is comprised of mainly

ORIGINAL ARTICLES

TABLE 3

FIRST ORDER PREGNANCY OUTCOME BY BACKGROUND CHARACTERISTICS			
BACKGROUND CHARACTERISTICS	NUMBER OF FIRST ORDER PREGNANCIES	PREGNANCY OUTCOME (IN PERCENT)	
		LIVE BIRTH	NON- LIVE BIRTH
AGE AT FIRST BIRTH OUTCOME			
< 16 (ref)	108	75.0	25.0
17-18	337	83.4	16.6
19-20	179	88.8	11.2
>20	114	92.1	7.9
PLACE OF RESIDENCE			
Rural	455	83.7	16.3
Urban	283	86.6	13.4
TRIBAL GROUP			
Bhil	356	80.6	19.4
Meena	310	89.0	11.0
Saharia	28	85.7	14.3
Others	44	88.6	11.4
LEVELS OF EDUCATION			
Uneducated	540	82.8	17.2
Primary education	107	92.5	7.5
Secondary & higher education	91	87.9	12.1
WEALTH STATUS OF THE FAMILY			
Poor	253	75.5	24.5
Middle	247	87.0	13.0
Rich	238	92.4	7.6
ANTENATAL CARE			
Received	217	87.3	12.7
Not received	521	76.4	23.6

spontaneous abortion (16.67 percent) and still birth (8.33 percent). Further, the non-live birth outcomes among women are likely to decrease with increasing age. For example, women who happened to conceive their pregnancy during age 17 to 18 years experienced 16.6 percent non-live births and this again decreased to 11.2 percent among women age 19 to 20 years. Among the women with their age above 20 years have almost 8 percent cases of non-live birth outcomes in the form of stillbirth (0.9 percent), spontaneous abortion (4.4 percent) and induced abortion (2.6 percent). A notable share of induced abortion (2.63 percent) among women above 20 years of age may be because of unwanted pregnancies in order to complete their education and career aspirations.

The place of women has been found affecting pregnancy outcome as women belonging to rural areas have higher cases of pregnancy wastage (16.26 percent) than their counterpart urban women (13.43 percent). Similarly different tribal groups also experience varying birth outcomes. Bhils, distributed mainly in tribal sub plan area (TSP) in Rajasthan experiences the highest cases of non-live births (19.38 percent) followed by Saharias (14.29 percent) and Minas (10.97 percent). Education is an important indicator which also influences the pregnancy outcomes by enhancing knowledge and awareness of childbearing. Better knowledge of health related behaviour is also likely to be reflected by the woman's education level. The results of this study favour these researches as 17.22 percent pregnancies among uneducated women have been reported to have terminated into non-

live births. But the chances of non-live births decreases significantly with increasing level of education as 7.5 percent pregnancies of primary educated women and 12.1 percent pregnancies of secondary and highly educated have been reported to have ended into non-live births.

The wealth index, calculated as a proxy index of the income of the family, has been an important indicator for the pregnancy outcome of the tribal women as a very high occurrence of non-live births has been reported among women belonging to poor wealth status (24.51 percent) than to middle (12.96 percent) and rich wealth status (7.56 percent). The reception of antenatal care during pregnancy is important for both mother and child and the health of the foetus and baby is widely depended upon that. The cases of pregnancy miscarriages are higher (23.6 percent) among women who did not receive antenatal care during their pregnancies in comparison to women who received antenatal care (12.7 percent).

District wise pregnancy outcomes

Pregnancy outcome is also found to be varied across the districts. In the study area, women from districts like Banswara (18.18 percent) and Dungarpur (17.81 percent) experienced high occurrence of non-live births in comparison to other districts. These districts are geographically isolated and comprised

mainly of Bhil tribe, one of the most backward tribes of India, reflecting health and educational backwardness. Consequently these districts experiences higher prevalence of non-live births in comparison to other districts in the study area except Baran district, home to Saharia tribal group, which also poses high occurrences of non-live births (17.81 percent).

Binary logistic regression analysis

The results of binary logistic regression analysis indicate that maternal age and socio-economic status of the respondents affect the pregnancy outcome. The covariates involved in this study are found to govern the pregnancy outcomes among tribal women. In reference to women who had their first pregnancy experience up to age of 16 years, women who conceived their first child at age 17 to 18 years are 1.673 times ($p<0.05$), at 19 to 20 years are 2.650 times ($p<0.01$) and at above 20 years of age are 3.889 times ($p<0.01$) more likely to experience live birth outcome. Regarding the place of residence, the probability to have live birth outcome is also 1.25 times (OR=1.252, CI=0.820-1.911) higher, although not significantly, among tribal women residing in urban areas in reference to rural women. The odds of occurrence of live birth outcome among Meena women is significantly ($p<0.05$) 1.95 times higher in comparison to

TABLE 4			
FIRST ORDER PREGNANCY OUTCOME BY DISTRICTS			
DISTRICT	**NUMBER OF FIRST ORDER PREGNANCIES**	**PREGNANCY OUTCOME**	
		LIVE BIRTH	**NON- LIVE BIRTH**
Bundi	75	86.8	13.3
Bhilwara	74	87.8	12.2
Rajasamand	76	85.5	14.5
Udaipur	71	83.1	16.9
Dungarpur	73	82.2	17.8
Banswara	77	81.8	18.2
Chittaurgarh	73	84.9	15.1
Kota	71	88.7	11.3
Baran	73	82.2	17.8
Jhalawar	75	85.3	14.7
Total	738	84.8	15.2

Bhil women. Among Saharias and other tribal group also have higher probability to have live birth outcome than Bhils. Educated women, especially women with primary education are significantly (p<0.01) 2.58 times more likely to experience live birth outcome than to uneducated women. Higher education not only provides economic standing but also inform about both self care and the accessibility to health care system.

The economic condition of the respondents is also appeared to have affected the birth outcome of the respondents. Women belonging to middle and rich wealth index are significantly 2.2 times (OR=2.181, CI= 1.211-5.474) and 4 times (OR=3.967, CI= 2.268-6.942) more likely to have live birth outcomes respectively than their counterpart poor wealth status. The reception of antenatal care services is important for the healthy development of a foetus. In the study area, women who received antenatal care for at least once are nearly 2.5 times (OR=2.456, CI=1.678-3.234) more likely to have live birth outcomes than to women who have never had any antenatal care during their pregnancy.

CONCLUSION

The adolescent pregnancies have always been a critical biological event among women. Pregnancies in the pre-mature ages of women

TABLE 5

BINARY LOGISTIC REGRESSION SHOWING THE ODDS RATIOS (UNADJUSTED) AND CONFIDENCE INTERVAL FOR LIVE OCCURRENCE OF FIRST ORDER PREGNANCY OUTCOMES ACROSS THE BACKGROUND CHARACTERISTICS OF RESPONDENTS		
BACKGROUND CHARACTERISTICS	EXP. B (ODDS RATIO)	95 % CONFIDENCE INTERVAL LOWER- UPPER
AGE AT FIRST BIRTH OUTCOME		
< 16 (ref)	1.000	
17-18	1.673*	0.993-2.818
19-20	2.650**	1.401-5.011
>20	3.889**	1.733-8.726
PLACE OF RESIDENCE		
Rural (ref)	1.000	
Urban	1.252	0.820-1.911
TRIBAL GROUP		
Bhil (ref)	1.000	
Meena	1.952*	1.254-3.038
Saharia	1.443	0.485-4.293
Others	1.875	0.713-4.934
LEVELS OF EDUCATION		
Uneducated (ref)	1.000	
Primary education	2.575**	1.211-5.474
Secondary & higher education	1.513	0.775-2.953
WEALTH STATUS OF THE FAMILY		
Poor (ref)	1.000	
Middle	2.181**	1.364-3.486
Rich	3.967**	2.268-6.942
ANTENATAL CARE		
Received (ref)	1.000	
Not received	2.456*	1.678-3.234

Note: Significant at, p< 0.05*, p< 0.01** (ref) – Reference category

become a serious health problem in mothers and children. The early marriage and consequently early childbearing is common in many Indian families as childbearing is expected soon after marriage [3] and that lead to several health and socio-psychological impacts on child and mother. Several tudies reveal that a considerable share of all pregnancies terminated into non-live births but the occurrence of non-live births is determined by variety of socio-economic factors (9-13, 23-25, 32-34). This study investigates the association between the pregnancy outcomes and factors such as spatial, socio-economic, demographic and antenatal care. Results demonstrate the significant association between maternal age, tribal group, educational status, wealth status of the family and antenatal care with pregnancy outcomes among tribal women. The results of other such studies have been cited and discussed. Women in their teen age are physically and psychologically not mature enough to bear a child. They lack proper knowledge about complexities and cares during pregnancy. They even shy and fear to share their problems to family members.

The present study documents the spatial, socio-cultural, economic and demographic factors affecting pregnancy outcome among tribal women This knowledge will highlight maternal factors positively and significantly related to the pregnancy outcomes. With this knowledge we require concerted efforts for developing appropriate strategies to improve the present situation. Furthermore, effective policies should be devised by governments and non-governmental agencies by providing better infrastructure for women so as the pregnancy miscarriages can be reduced and thus the health of mothers and their children can be enhanced.

Implication of the study

This study examines the occurrence of pregnancy outcomes in adolescent ages of the tribal women. It highlights the factors affecting live pregnancy outcomes and thus it may be useful for other such studies to be carried out in future. It may be used for policy formulation aiming to enhance the child and maternal health.

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