

Prevalence and Risk Factors of Pregnancy Wastage among Women in India

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Abstract:

The prevalence and underlying socio-economic characteristics of abortions and still births- two adverse forms of pregnancy outcome are not well documented. Despite global commitments to improve maternal and child survival, there exists paucity of regular scientific estimates related to pregnancy wastage, particularly in developing countries. Pregnancy wastage comprises of all pregnancy outcomes other than a live birth which includes abortions and still births. This study attempts to estimate the prevalence of pregnancy wastage among married woman in India using the Indian Human Development Survey (IHDS) Data. In addition, the study examines the effects of social-economic and demographic characteristics of woman on the likelihood of their pregnancy resulting into wastage.

Results from logistic regression analysis suggest that these forms of fetal loss are affected not only by biological factors but also by mother's demographic, social and economic characteristics. The results show that education, belonging to a specific caste or tribe, religion, wealth, age at marriage and gravidity all have significant effects on the likelihood of foetal loss. Moreover it has been found that the estimates of pregnancy wastage differ at regional level that is rural and urban.

Keywords

Still Birth, Induced Abortion, Spontaneous Abortion, Socio-economic characteristics

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Introduction:

Many countries from developing world are undergoing fertility transition at varied pace supported by country specific reproductive and child health programmes focused to curtailing the unintended pregnancies through providing access to family planning programmes. However another connected issue related to protecting wanted pregnancies among married women resulting into miscarriages or spontaneous abortions remains to be addressed.

Pregnancy Wastage is to be identified as a significant public health problem especially in the developing countries. In India, 6 million abortions take place every year, out of which 4 million are induced and 2 million are spontaneous. (Kumar, Mengi and Kumar, 2013). Failing to use effective contraception, women especially in developing countries have been seeking induced abortions as a method of birth control. The number of abortions in India has been steadily increasing since abortion became legal in 1972 (Rao & Kanbargi, 1980; Sarkar, 1993 as quoted in Bose and Trent,2005).

Pregnancy Wastage is not only unwanted in itself but also has adverse impact on women's health. Induced abortion is an important cause of maternal mortality in lesser-developed societies (David, 1983; Dixon-Mueller, 1990; Baretto *et al.*, 1992 as quoted in Bose and Trent,2005).Abortion plays a critical role in the reproductive health of Indian women (Gupta *et al.*, 2000) and is estimated to account for 10–20% of all maternal deaths (Babu *et al.*, 1998). According to a report by The Lancet, the rate of unsafe abortions for the world is approximately 14 per 1000 women of childbearing age, totaling to 20 million deaths annually. “Thus, somewhere in the world a woman dies every 8 minutes because of an unsafe abortion.” Most of these deaths occur in sub-Saharan Africa (38 000) and south-central Asia (24 000).

Although scanty, but arguments and evidence does exist suggesting that not only human biology but also the social and economic environment play a role in causing fetal loss. Socio economic factors operate by indirectly influencing the core factors that determine foetal survival. For instance poor health and maternal malnutrition influence the foetus growth and these in turn to great extent are influenced by economic status of women. An adequate supply of nutrients is probably the single most important environmental factor affecting pregnancy outcome.(King J.; 2003). The author finds Poor maternal iron and folate status to be associated with preterm births and intrauterine growth retardation. In another study, the economic status of the household and parental education was found to be the most significant contributors to the rural–urban gap in childhood malnutrition in India.(Kumar A. and Kumari D., 2014)

Studies suggest that that rate of foetal death is higher for pregnancies at very young and old ages. (Yerushalmy *et. Al.*, potter *et. Al.*,1965; Northman 1974; Jindal 1978; Sidhu and Sidhu, 1988). Also, insufficient spacing and higher gravidity have been found to be more dangerous to foetal survival. Early age at marriage resulting into teenage pregnancy has been found to have adverse

impacts on the maternal and child health in the form of low weight at birth, infant mortality and anemia in mothers.(Kumar A., Kumar K. and Kumari D., 2012).

Another way to look at the impact of socio-economic factors on the foetal loss has been to study these in context of large social and economic crises. Authors Yong Cai and Wang Fang (2005) studied the impact of two social and economic crises-the Great Leap Forward famine and the Cultural Revolution resulted in elevating risks of miscarriage and stillbirth in the Chinese population. The results of their study confirmed the role of famine and social turmoil in affecting human reproduction by increasing involuntary fetal losses.

Lack of scientific estimates and poor understanding about the potential risk factors of pregnancy wastage shall be impediment to protect wanted pregnancies among thousands of married Indian women. Given the recent trend of rising infertility among married Indian women, issue of addressing pregnancy wastage is vital need of the hour. In this paper we attempt to estimate the prevalence of Pregnancy Wastage using individual level data from the second Indian Human Development Survey (2011-12) and try to understand the potential socio-economic and demographic risk factors of pregnancy wastage using multivariate analytical framework.

Data and Methodology:

Researchers have identified three sources of getting estimates of miscarriage and stillbirth rates, these include prospective clinical studies, hospital records and surveys. Retrospective surveys of pregnancy and fertility histories have the desirable features of being large scale and of containing information on socioeconomic background. However these are subject to errors in recall, underreporting, and cultural biases.

The study uses data from the second round of Indian Human Development Survey (IHDS 2011-12), a nationally representative survey conducted by National council of Applied Economic Research, Delhi and University of Maryland to examine the effects of economic and social characteristics of women on the likelihood of pregnancy resulting in wastage. Since the survey covers extensive domains of the respondents, it makes it possible to map the obstetric history of each women to other social, economic and demographic characteristics.

The present study considers the lifetime experience of the sample women for the analysis. Descriptive analysis is carried out to understand the percentage distribution of the target group of women across key background characteristics in the country. Multivariate logit model is used for the statistical analysis. Other techniques employed include chi-square testing to assess the prevalence and association of foetal loss with socio economic and demographic characteristics of the target group.

The dependent variable- pregnancy wastage is a dichotomous variable indicating whether or not a Woman has had foetal loss in her lifetime. Foetal loss includes still births, spontaneous

miscarriages and induced abortions. To dig deeper into the dynamics of foetal loss, separate logistic regressions were done with Still Births, Spontaneous Miscarriages and Induced abortions as dichotomous variables. The explanatory variables include region, education, caste and religion, Wealth Terciles, decision making power, age at marriage, gravidity, place of delivery, access to contraception and anemia and ante natal care.

Certain variables used in the study have been constructed in accordance with the goals of the study. The definitions of these are as follows:

Education

Education is measured using a dummy variable which has been categorized as illiterate, having primary of lower level of education, Secondary or lower level of education or those who have attained graduation or higher levels of education. Reference category is illiterate.

Religion and Caste

The variable for caste has been categorized into women belonging to General Caste coded as 1; women belonging to Other Backward Caste coded as 2; women belonging to Schedule Caste coded as 3 and women belonging to Schedule Tribe coded as 4.

The categories for religious groups include Hindu, Muslim, Christian, Sikh and all other religions have been grouped in the others category. The reference category is Hindu.

Income and Wealth

Income data are not readily available from the dataset, however detailed information is available on ownership of household possessions such as television set, car, tractor etc. Using this information a wealth index has been created using the Principal Component Analysis method. The households have been divided into three wealth terciles using the first dimension.

Decision Making Power

The variable categorizes the power of decision making with respect to number of children a couple would have into three categories with the reference category as women being the decision maker. The other two categories are husband as decision maker and other family members as decision makers.

Contraceptive practice

Contraceptive practice is a dichotomous variable coded as 0 for those who were not using any contraception at the time of the survey and coded 1 for those using contraception.

Age at marriage

It is again a dichotomous variable. The reference category includes women who got married before attaining the age of 18 years.

Gravidity

This variable classifies the number of children women have into two categories. The reference category is women with 0-2 children while the other category includes women with 3 and more children.

Ante Natal Care & Place of Delivery

Women who have not had even one ANC checkup in their last pregnancy are scored 0 and form the reference category while those who had at least one have been scored 1. Women who have had institutional delivery form the reference category for the variable Place of delivery while women who delivered at home form the other set of this dichotomous variable.

Anemia & Body Mass Index

Both are dichotomous variables. Women with anemia have been scored 1 and non-anemic women are the reference category. All women having BMI of either less than 8 or more than 30 form the reference category.

Prevalence of Pregnancy Wastage:

Efforts to estimate the prevalence of Pregnancy Wastage have been limited to specific state and village boundaries. Not only are the existing estimates on prevalence scanty but also these are not readily comparable. There exists considerable variation among the estimates across the studies. R.G. Potter, et al (1965) obtains an overall rate of 100 abortions and 30 stillbirths per 1000 pregnancies for a sample of eleven Punjab Villages. D.K. Aggarwal and et al(1998) estimated the abortion ratio and the still birth rate for 170 villages of Varanasi and found the still birth rate to be 18.9 to 21.5 during 1988 to 1992 and the abortion ratio to be 162.8. Banerjee and Hazra (2004), in a retrospective study of women living in urban community found overall pregnancy wastage to be 11.19 percent. In another primary study done in Chandigarh, the authors, Kaushalya, Rana A.K and Saini S.K(2005) estimated pregnancy wastage to be 22.8%.

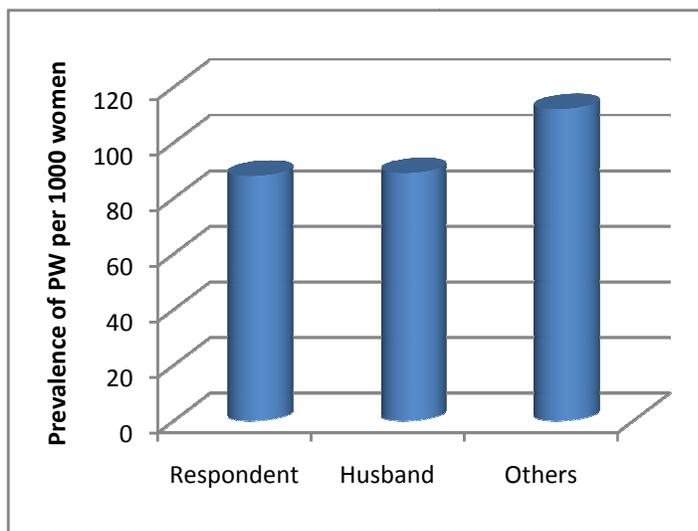
Using the unit level data, an attempt has been made to estimate the prevalence of Pregnancy Wastage on national level for India. A further bifurcation of the same has been done on the basis of region that is Rural and Urban India. These estimates are purely based upon the data of pregnancies given in the IHDS data set. Out of the 111223 pregnancies in the sample, 9862 ended in still births and abortions (both spontaneous and induced).

The estimated pregnancy wastage ratio comes out to be 89 per one thousand pregnancies. This estimate is believed to be an underestimate of the true incidence of wastage since it is based on self reported data of the women. Since abortions are not a socially acceptable behavior, women often prefer to conceal such information and thus underreport the same. Women especially in rural areas have been found to be very unwilling to discuss their obstetrics history.

The regional incidence of the same comes out to be 79 per thousand pregnancies in rural region and 98 per thousand pregnancies in urban region respectively. Higher abortion rates in urban areas have been found in other studies as well. Since urban women desire small families, and have more awareness of and access to abortion facilities thus the higher prevalence of foetal wastage. (Babu et al; 1998, Dreze and Murth,2001).

When the prevalence of pregnancy wastage is estimated by breaking it into Still Births, Spontaneous Miscarriages and Induced Abortions, the still birth ratio comes out to be 25 still births per one thousand pregnancies, prevalence of spontaneous miscarriages comes out to be 50 per one thousand pregnancies and induced abortions are estimated at 15 per one thousand pregnancies. This shows the spontaneous miscarriages to be the major contributor to pregnancy wastage.

When estimated across caste, women belonging to Schedule Caste have the greatest prevalence of pregnancy wastage followed by women belonging to general caste and other backward caste. Pregnancy Wastage is least prevalent amongst the Schedule Tribe Women. Among the religious groups, the data shows that women belonging to the religion Sikh have the highest prevalence of Pregnancy Wastage followed by Hindu and Muslim Women. Pregnancy Wastage is least prevalent amongst the Christian Women.



An interesting pattern of Prevalence of Wastage is revealed when it is estimated by the nature of Gender Relations. When prevalence was estimated by the power of decision making with respect to number of children, it came out that that the prevalence is high when the decision rests with other family members than with the mother or father. This is shown in Graph 2.

Figure 1: Prevalence of Pregnancy Wastage & Gender Relation

Analysis and Results:

First, descriptive statistics are presented for all the variables used in the analysis. Table 1 lists the socio-economic variables used and their distribution in terms of percentage. Table 2 lists the same for the Demographic Variables.

Table 1: Socio-Economic Characteristics of Women		
Variable	Category	Percentage
Caste	General	29.77
	OBC	40.61
	SC	21.33
	ST	8.3
Decision Making Power	Decision making power with Women	25.33
	Decision making power with Husband	70.89
	Decision making power with Other Family Members	3.78
Education Level	Illiterate	38.37
	Primary Education	16.42
	Higher Secondary	38.59
	Graduate and above	6.62
Religion	Hindu	81.79
	Muslim	12.08
	Sikh	2.39
	Christian	2.34
	Others	1.4

About 38% of the women in the sample are uneducated and only a very small fraction 6% has attained graduation or higher levels of education. Majority of women belong to the religious group Hindu (82%) and about 12% are Muslims. Ethnic composition of women shows that 30 percent belonged to SCs/STs, 40 percent from OBC, and 29 percent belonged to other castes. Only one fourth of the woman in the sample had autonomy to decide the number of children. For majority, this decision making power rested with the Husband.

As depicted in Table 2, a very high percentage (62.84%) of the women got married before attaining the age of 18 years. Though half of the mothers had moderate body mass index but a considerable proportion (54%) in the sample were acutely undernourished. About one fourth of the sampled women were not using any form of contraception at the time of survey. 30 percent women reported to be anemic.

Table 2: Demographic Characteristics of Women

Variable	Category	Percentage
Age at Marriage	Below 18	45.87
	18 and above	54.13
Gravidity	Less than 2	50.55
	3 & more	49.45
Access to contraception	Yes	73.87
	No	26.13
Body Mass Index	Appropriate	45.88
	Inappropriate	54.12
Anaemia	Anemic	28.98
	Non-Anemic	71.02
Place of Delivery	Institutional Delivery	69.93
	Home Delivery	30.07
Antenatal Care (ANC)	ANC Availed	87.49
	ANC Not Availed	12.51

With regards to accessibility of ANC services, 87.49 percent of the sampled women had received atleast one ANC checkup during their last pregnancy. For women to approach birth as positive experience at the end of pregnancy, ante natal care has been identified as an essential requirement. “Preventing problems for mothers and babies ANC improves the survival and health of babies directly by reducing stillbirths and neonatal deaths and indirectly by providing an entry point for health contacts with the woman at a key point in the continuum of care.”[24]

Approximately 70 percent women delivered in either a government or private institution. However the percentage of home deliveries (30%) is quite significant. Improved skilled care at birth and delivery can help in reducing the chance of stillbirth in cases where unskilled health providers in obstructed deliveries or prolonged labour continue to wait for a vaginal delivery instead of opting for a timely caesarean section. (Dandora et al, 2017) Delivering at institution guarantees better skilled attendants compared to delivering at home.

Gender Relation and Foetal Loss

The extent of women’s control over reproductive decision-making is an important part of the social and demographic context of pregnancy wastage in India.

The figures in the Table 3 clearly show the role played by gender relation in determining foetal wastage. If the power to make decisions with regard to number of children lies with the husband, the instances of abortion see a steep hike. The percentage of women who have had 1-2 induced abortions is 25% in case she is the decision maker however for the same category if the decision maker happens to be the husband; the figure is 71% which is almost thrice compare to the case where women is the decision maker.

Type of Pregnancy Wastage	Frequency	Gender Relation		
		Decision making power with Women	Decision making power with Husband	Decision making power with other Family Members
Still Birth	1-2	26.54	70.89	2.57
	3 and More	19.13	79.13	1.74
Spontaneous Miscarriage	1-2	24.74	70.82	4.44
	3 and More	20.38	76.11	3.5
Induced Abortions	1-2	25.78	71.37	2.84
	3 and More	35.42	61.4	3.13

One of the plausible reasons explaining this could be the preference for sons. Son preference is common in India and there is evidence that this type of gender bias is increasing and spreading in modernizing India. Studies have found son preference to have links with an increase in the prevalence of abortion. Sex-selective abortion is a new and growing method of control of family sex composition (Bose S., Trent K., 2006).

More decision making power with the husband is an indicator of reliance of women on men. Given such reliance, one can understand that in cases where a woman carries a foetal but the husband does not want any more children, the women and her foetal might bear the brunt of her husband's neglect. Also if the woman happens to be economically dependent, she might not get the required healthcare and nourishment and this could result in foetal wastage.

Pregnancy Wastage	More Children desired by Husband	
	Yes	No
Yes	35.56	64.44
No	41.82	58.18

Table 4 shows that amongst the women whose husband desire more children, the percentage of pregnancy wastage is considerable low compared to women whose husband does not want any more children. Again, the most plausible reason explaining this would be higher induced abortions.

Wealth and Foetal Loss

The data shows that the patterns of economic differentials among the forms of pregnancy wastage are different. Figures in Table 5 and graph 2 show that Still Births- one of the forms of Pregnancy Wastage are more prevalent among the women belonging to the lower wealth Terciles. Whereas induced abortions are more prevalent among the women belonging to the High Wealth Terciles.

Table 5: Type of Pregnancy Wastage across Wealth Terciles				
Type of Pregnancy Wastage	Frequency	Wealth Tercile		
		Low	Medium	High
Still Birth	1-2	43.66	33.06	23.28
	3 and More	58.82	31.93	9.24
Spontaneous Miscarriage	1-2	34.86	30.84	34.3
	3 and More	38.11	32.32	29.57
Induced Abortions	1-2	24.88	30.89	44.23
	3 and More	31.31	26.26	42.42

Plausible reason explaining these differentials come from the association between income/wealth and access to good quality healthcare and food and nutrition which help in reducing still births and spontaneous abortions. Poor women find it difficult to access quality healthcare services. Studies have found household income to be one of the important indicators of maternal well being, since food consumption is believed to be influenced by income level.(Mahanta, L. B., T. D. Roy, R. G. Dutta, and A. Devi.,2012)

In a study conducted in Rural Varanasi, authors found that women with lower per capita income had about 65- 73% attributable risks for higher rates of abortion as well as still births. These were also the women who consumed poor diet. (Agarwal, D.K., A. Agarwal, M. Singh, K. Satya, S. Agarwal, and K.N. Agarwal.,1998)

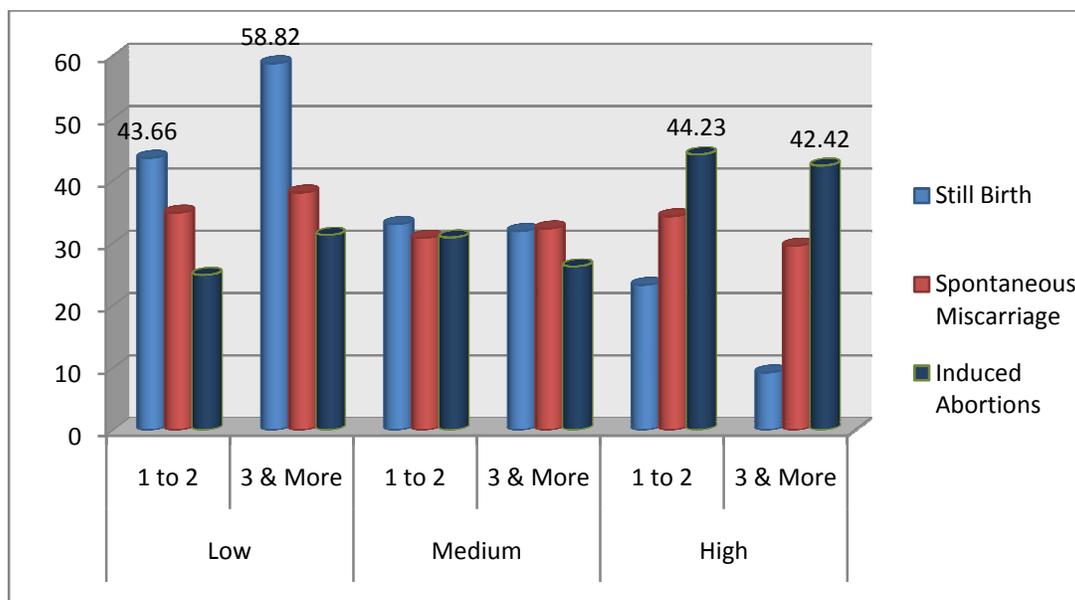


Figure 2: Pregnancy Wastage across Wealth Terciles

Of all the women who have had 1-2 induced abortions, 44% belong to the High Wealth tercile whereas only 24 percent belonged to the lower wealth tercile. For women belonging to the high wealth Terciles, the increased induced abortions might be because of them restoring to it as a means of birth control and easy access to legal abortion facilities.

Next, Cross-tabulation is used to understand the differentials in Pregnancy Wastage across certain socio-economic characteristics of the women.

Table 6: Prevalence of Pregnancy Wastage by Socio-Demographic Characteristics			
Feature		Pregnancy resulting in Wastage	
		Yes	No
Age at Marriage	Below 18	18.44	81.56
	Above 18	16.2	83.8
Education	Illiterate	18.63	81.37
	Primary Education	17.09	82.91
	Higher Secondary	16.09	83.91
	Graduate or above	16.02	83.98
Gravidity	0-2	14.66	85.34
	3 & more	19.81	80.19
Religion	Hindu	17.05	82.95
	Muslim	19.58	80.42
	Christian	9.49	90.51
	Sikh	19.72	80.28
	Others	15.86	84.14
Caste	General	16.89	83.11
	OBC	17.61	82.39
	SC	18.95	81.05
	ST	12	88

Table 6 shows that for women who got married before attaining the age of 18 years, the instances of experiencing pregnancy wastage are higher (18.44 %) as compared to the woman who got married after attaining the age of 18. (16.2%)

Estimates for pregnancy wastage stratified by education qualification show that as the level of education increases, there is a gradual drop in the percentage of pregnancy wastage. Tabulation shows that women having three or more children have reported higher foetal loss compared to women with two or less children.

Amongst the religious groups, the data shows that the percentage of Pregnancy Wastage for Sikhs are found to be the highest (19.72%) compared to the other groups, whereas it is lowest amongst the Christians. (9.49%) Across caste, women belonging to the Schedule Caste have the highest percentage of pregnancy wastage followed by other backward caste women. Next, results are presented from logistic regression analyses.

Logistic Regression Results

Table 7: Multivariate Logistic Analysis of Pregnancy Wastage

Dependent →		Pregnancy Wastage (Model 1)			Still Births (Model 2)			Spontaneous Miscarriages (Model 3)			Induced Abortions (Model 4)		
Independents ↓	Category	Odds Ratio	SE	95% Confidence Interval	Odds Ratio	SE	95% Confidence Interval	Odds Ratio	SE	95% Confidence Interval	Odds Ratio	SE	95% Confidence Interval
Education	Illiterate (Reference Category)	1.00			1.00			1.00			1.00		
	Primary	1.109	0.06	0.98 - 1.24	1.03	0.11	0.83 - 1.26	0.91	0.094	0.73 - 1.10	0.85	0.16	0.58 - 1.23
	Higher Secondary	0.88	0.06	0.76 - 1.03	0.77*	0.09	0.60 - 0.98	0.86	0.082	0.71 - 1.04	1.59*	0.23	1.16 - 2.07
	Graduate and above	0.83*	0.05	0.72 - 0.95	0.72*	0.08	0.57 - 0.90	0.87	0.13	0.64 - 1.19	1.83*	0.43	1.15- 2.91
Region	Urban (Reference Category)	1.00			1.00			1.00			1.00		
	Rural	0.79*	0.09	0.62 - 0.99	0.55*	0.13	0.34 - 0.90	0.96	0.07	0.82 - 1.13	1.14	0.14	0.89 - 1.44
Caste	General (Reference Category)	1.00			1.00			1.00			1.00		
	Other Backward Caste	1.01	0.06	0.89 - 1.14	1.09	0.11	0.81 - 1.24	1.16*	0.09	0.99 - 1.37	1.34	0.18	1.04 - 1.74
	Schedule Caste	1.104	0.07	0.96 - 1.26	1.02	0.12	0.80 - 1.29	1.03	0.09	0.86 - 1.24	1.37*	0.21	1.03 - 1.84
	Schedule Tribe	0.58*	0.06	0.46 - 0.72	0.73	0.13	0.53 - 1.03	0.94	0.14	0.70 - 1.27	0.68*	0.68	0.36 - 1.27
Wealth Tercile	Low (Reference Category)	1.00			1.00			1.00			1.00		
	Medium	0.95	0.06	0.84 - 1.08	0.77*	0.08	0.63 - 0.96	0.98	0.08	0.82 - 1.17	1.02	0.15	0.75 - 1.36
	High	1.18*	0.09	1.01 - 1.38	0.63*	0.09	0.47 - 0.83	1.17	0.12	0.95 - 1.44	1.26	0.21	0.91 - 1.74

Decision Making Power	Women (Reference Category)	1.00			1.00			1.00			1.00		
	Husband	0.99	0.05	0.88 - 1.11	1.04	0.10	0.85 - 1.26	0.87	0.07	0.74 - 1.02	0.89	0.13	0.69 - 1.13
	Other Family Members	1.009	0.12	0.79 - 1.27	0.74	0.17	0.46 - 1.17	1.29	0.21	0.93 - 1.78	0.65	0.21	0.35 - 1.19
Age at Marriage	Below 18 (Reference Category)	1.00			1.00			1.00			1.00		
	Above 18	0.85*	0.04	0.76 - 0.94	0.88	0.080	0.73 - 1.04	0.84*	0.06	0.73 - 0.98	1.09	0.13	0.85 - 1.39
Gravidity	0-2 (Reference Category)	1.00			1.00			1.00			1.00		
	3 & more	1.41*	0.07	1.26 - 1.57	1.75*	0.17	1.45 - 2.12	1.29*	0.11	1.11 - 1.51	1.51*	0.19	1.17 - 1.92
Anaemia	No (Reference Category)	1.00			1.00			1.00			1.00		
	Yes	1.51*	0.07	1.36 - 1.67	1.20*	0.11	1.01 - 1.43	1.50*	0.11	1.31 - 1.73	1.36*	0.15	1.09 - 1.70
Place of Delivery	Institutional(Reference Category)	1.00			1.00			1.00			1.00		
	Home	1.05	0.06	0.93 - 1.18	0.95	0.09	0.78 - 1.14	1.01	0.08	0.86 - 1.19	1.23	0.16	0.95 - 1.59
ANC Availed	No(Reference Category)	1.00			1.00			1.00			1.00		
	Yes	0.95	0.07	0.81 - 1.12	0.95	0.11	0.75 - 1.19	0.93	0.10	0.75 - 1.16	1.32	0.26	0.89 - 1.97
BMI	Non-Ideal (Reference Category)	1.00			1.00			1.00			1.00		
	Ideal	0.97	0.05	0.87 - 1.08	1.03	0.098	0.85 - 1.24	0.95	0.07	0.82 - 1.10	0.97	0.12	0.78 - 1.23
Access to Contraception	No (Reference Category)	1.00			1.00			1.00			1.00		
	Yes	0.95	0.05	0.85 - 1.06	0.76*	0.07	0.64 - 0.91	0.82*	0.06	0.71 - 0.95	1.51*	0.21	1.15 - 1.97

Table 7 presents the logistic regression results for four models. Given that the dynamics of each form of Pregnancy Wastage would differ, and to better understand these differences, four different models of logit regression are run with same set of independent variables but different dependent variable. The dependent variable for Model 1 is a dichotomous variable indicating whether or not a Woman has had pregnancy wastage in her lifetime. Pregnancy Wastage includes still births, spontaneous miscarriages and induced abortions. The dependent variable for Model 2 is a dichotomous variable indicating whether or not a Woman has had a still birth in her lifetime. Similarly Model 3 and Model 4 have Spontaneous Miscarriage and Induced Abortions respectively as their dependent variables.

All the four models show that there is a significant association between education level of women and pregnancy wastage. With increasing levels of education, there is a gradual decline in the probability of Pregnancy resulting into wastage. Married women who have attained secondary education are less likely to undergo pregnancy wastage compared to women who are illiterate. The odds of secondary educated women having pregnancy wastage are 12% lower compared to illiterate women. For the women having attained graduation or higher education the odds are 13% lower compared to illiterate women. Similar is the case of still births and spontaneous miscarriages. However, in the case of induced abortions it comes out that educated women have higher odds of having induce abortions compared to illiterate women. A plausible reason could be better awareness and knowledge of abortion facilities among educated women.

Separate regression for each form of pregnancy wastage highlighted that women belonging to higher wealth Terciles are 37% less likely to experience still births compared to women belonging to lower wealth Terciles whereas for all other forms of Pregnancy wastage the opposite is true. Considering the caste, Women belonging to Schedule Tribes are significantly less likely to have any form of pregnancy wastage compared to women belonging to general caste. No significant association of decision making power with the incidence of pregnancy Wastage is seen.

Compared to women who got married before attaining the age of 18 years, women married after age of 18 have less likelihood of experiencing any form of foetal loss except for induced abortions. In case of induced abortions, women married after 18 have 9% higher chances. Women having more number of children are more likely to experience any form of wastage compared to women with less number of children.

Non-Anaemic women and those with ideal Body Mass Index, are less likely to experience pregnancy wastage compared to women who are anemic and are either underweight or obese.

Results show that having access to contraception reduces the probability of wastage. However the opposite is seen in case of Induced abortions. The results show that women having access to contraception are at higher odds of having induced abortions. A plausible cause explaining this could be contraception failure. Also one cannot overlook the possibility of errors in data.

Mothers delivering child at home compared to institutional deliveries and mothers not getting antenatal checkup done compared to those getting ANC, are more likely to experience pregnancy wastage. Here also an anomaly is seen in case of place of delivery and still births. Results show that women delivering at home have lower odds of having still births compared to women delivering at health centres. This again might be a result of errors in data.

Discussion and Conclusion:

Using a multivariate framework, an attempt has been made to better understand the linkages between women's social and economic roles and reproductive outcomes. Based on the individual level data from the second round of Indian Human Development Survey, the analysis shows that women's economic status, her education and other social, demographic and cultural context's have significant influence on the outcomes of pregnancy.

Pregnancy Wastage has been found to be most prevalent amongst the Schedule Caste Women. This observation corresponds to a study conducted in Rural Varanasi where Schedule caste women had significantly higher abortion ratio of 347.1 as compared to 112.4 and 108.4 observed for backward and upper castes. (Agarwal, D.K ,A.Agarwal, M.Singh, K.Satya, S.Agarwal, and K.N Agarwal.,1998)

The data shows that the patterns of economic differentials among the forms of pregnancy wastage are different. Still Births- one of the forms of Pregnancy Wastage are more prevalent among the women belonging to the lower wealth Terciles. Whereas induced abortions are more prevalent among the women belonging to the High Wealth Terciles. This is in accordance with the theory given that women in urban areas and with higher social status have better access to prenatal care and delivery facilities, the rates of still births among them are lower compared to the women belonging to lower wealth Terciles.

Decision making power in hands of Women with regard to the number of children is also associated with reproductive outcome. More decisive power with women leads to desired pregnancy outcomes.

In the present study it was observed that incidence of Pregnancy Wastage decreases gradually with higher levels of education. These results are consistent with the findings of other studies. Banerjee and Hazra(2004) found Pregnancy Wastage rate among illiterate women (12%) to be more than among literate women.(8.01%). Agarwal et al,(1998) in a study conducted in rural

Varanasi, also observed that women having education over 10th standard had lower risks for abortion and still birth.

Potter et al,(1965) found rate of still births to be distinctly high among women of age group 15-19. This study also finds the that incidence of pregnancy wastage are more likely among woman who get married before attaining age of 18 years. Authors Rashmi kumara and Dinesh Kumar(2013) found a significant association of anemia and hypertension with pregnancy wastage. Also, authors Kaushalya, A.K. Rana and S.K. Saini(2005) in a study conducted in Chandigarh, found that anemic and underweight women had higher pregnancy wastage. Similar results are obtained in this study.

The study also highlights the importance of antenatal checkups and deliveries conducted by skilled birth attendants to achieve a positive outcome at the end of pregnancy.

Information on incidence of Pregnancy Wastage is crucial for formulating policies and programmes aimed at preserving maternal storages. Also since pregnancy wastage is a cause of maternal mortality and morbidity; it becomes even more important to have estimates to monitor the progress being made towards lowering the maternal mortality rate. However since these estimates are based on self reported measures of wastage, it is very likely that they are under-reported. For future research, more regressive efforts need to be put in collection of such data.

Socio-economic factors are thus seen to influence the outcomes of pregnancy. It is crucial for the policy makers to design context-specific programmes and policies to address the issue of protecting vulnerable pregnant women from spontaneous abortions and miscarriages. In addition to strengthening the existing healthcare services, providing health education with emphasis on do's and don'ts of pregnancy to the uneducated mothers could help. There is a need to sensitize women and men about the ill impacts of abortions as a method of family planning on women health.

Preventable and treatable risk factors such as anemia and Low Body Mass Index should be taken care of to ensure a live birth at the end of each pregnancy. The abortions happening due to lack of contraception methods can be avoided by providing access to effective and cheap contraception methods. Also, improving sex education among both men and women can reduce the need for unsafe abortions. Based on their vulnerability, women belonging to economically weaker sections should be targeted to improve pregnancy outcomes.

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