Original Article

Prevalence and Determinants of Adverse Pregnancy Outcomes among Women in India: A Secondary Data Analysis

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Abstract

Objective: The present study aimed to identify the determinants of adverse pregnancy outcomes (abortion, miscarriage, and stillbirth) among women aged 15–49 years in India. **Methodology:** Data for the analysis were taken from the latest survey of the National Family Health Survey 2015–2016. The determinants associated with abortion, miscarriage, and stillbirth among women in the age group of 15–49 years were identified. The analysis was done using adjusted binary logistic regression. **Results:** The contributory variables such as age, level of education, type of residence, wealth status, caste, religion, body mass index (BMI), and anemia level were found to be significantly associated with adverse pregnancy outcomes. The risk of adverse pregnancy outcomes was significantly associated with all the selected predictors. **Conclusion:** This study revealed that high prevalence of adverse pregnancy outcomes was found in India. The association between sociodemographic variables and the pregnancy outcomes are attributed to the fact that there is a lack of availability of fundamental health-care services for young women.

Keywords: Abortion, India, miscarriage, National Family Health Survey, stillbirth

Introduction

Maternal health plays a vital significance role in each society. However, supportable actions have been taken in the last 15 years and 2.6 million women encountered the death of their infants in stillbirths in the last trimester of pregnancy or during labor in 2015 globally.[1] Maternal and child health additionally experiences the effects of medical problems. The conditions are not better in all the developing nations, generally in all the African countries. Worldwide, these issues have neglected in the absence of any formalized plan and activity involvement in public health. The abortion is performed during the initial 24 weeks of pregnancy. The American College of Obstetricians and Gynecologists is given the estimate of abortion 26% which is the most common adverse pregnancy outcome and miscarriage up to 10% in the clinically perceived pregnancies.[2] In middle economic countries, stillbirth 18.4 per 1000 births was found and in high per capita income countries still birth was found 1.3 to 8 per 1000 birth in 2015. The data shows that stillbirth issues are ignored in public health and Millennium Development Goals and Sustainable Development Goals are also neglected.[3] The studies have been explained that age at first birth, wealth index, birth order[4] and maternal contaminations, non-transferable diseases, nutritional and quality of life, mother age, delayed pregnancies affect the adverse pregnancy outcomes. The factors such as age of mother, underweight also affect the pregnancy outcome[5] and other hazardous factors such as liquor consumption, lifting of in excess of 20 kg and over time work are responsible for pregnancy complexities. The concerned components of abortion are instruction, religion, age, information about legal abortion.[6] Undesirable pregnancies are the single main reason behind abortions.[7] In the Indian context, social and therapeutic complications are responsible for adverse pregnancy outcomes.[8-11] The adverse pregnancy outcomes have shown overpowering pregnancy results and there is a

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need for the expanded action plan to distinguish the causes to preventive measures. Subsequently, this study is directed with a unique focus in India. The objective of the study is to identify the determinants of adverse pregnancy outcomes among women aged 15-49 years in India..

Methodology

Data source

The secondary data are taken from the most recent survey of the National Family Health Survey (NFHS) (2015–2016) in India. The datasets are extracted from the NFHS https://dhsprogram.com/data/available. Women aged 15–49 years across the households were eligible to participate in the NFHS.[12] The total sample size was 195,455. The pregnancy outcome indicators were used to assess abortion, miscarriage, and stillbirth of women from the data.

Statistical analysis

The most common Chi-square test of significance for independence has been used for analysis purpose. This test compares the observed and expected frequencies in each category. The adjusted binary logistic regression analysis has been used for the analysis of outcome variables. In this case, when a dependent variable is a dichotomous form (0 and 1), adjusted binary logistic regression is preferred over simple multiple regression.[13] Data was analyzed using SPSS version 23.0 (SPSS Inc.,Chicago, IL, USA).

Results

In Table 1, the distribution of women 15-49 was calculated for selected variables in this study. A bivariate analysis was carried to show the distribution of adverse pregnancy outcomes with selected variables. Adjusted binary logistic regression was applied to identify the association between selected determinants and adverse pregnancy outcomes. Association between the dependent and independent variables was assessed using adjusted binary logistic regression. The statistical association was declared significant if P <0.05. The prevalence of adverse pregnancy outcomes was higher among primary, secondary and higher secondary educated women as compared to illiterate women. It is also found that prevalence of adverse pregnancy outcomes was higher 14.5 percent among women aged (35 & above). Prevalence of adverse pregnancy outcomes was higher about 12 percent in urban area as compared to rural area. Around 11 percent prevalence of adverse pregnancy outcomes was found in rich families as compared other. Prevalence of adverse pregnancy outcomes was higher about 11 percent in other category (general category) as compared to SC/ST community and other backward classes (OBC). Results also show that prevalence was higher about 10 percent in Muslim religion as compared to Hindu and other religions. Prevalence was higher among overweight and obese females about 13.5 percent as compared to underweight and normal BMI females. Prevalence of adverse pregnancy outcomes was higher among those who have severe and moderate anemia as compared to those who have mild anemia [Table 2]. Thus, all the selected determinants age of mother (P <0.001), education (P <0.001), type of residence (P <0.001), wealth status (P <0.001), caste (P <0.001), religion (P <0.001), BMI (P <0.001), anemia level (P <0.001) under study were significantly associated with adverse pregnancy outcomes [Table 2]. The results of the adjusted binary logistic regression revealed that women aged (35 & above) was highly responsible (OR = 1.15; 95% CI: 1.076–1.226) for adverse pregnancy outcomes. Women having secondary education were higher risk for adverse pregnancy outcomes (OR = 1.25; 95% CI: 1.196–1.306) as compared to those who had no education.

Table 1: Distribution of the women aged 15-49 years by selected background characteristics in India, 2015-2016 (n=195,455)

Background characteristics	Percentage	95% CI	*n*
Age (years)			
Below 20	8.2	7.5-10.6	16,027
20-24	26.5	26.1-26.9	51,796
25-29	36.8	36.4-37.2	71,927
30-34	18.6	18.2-19.0	36,355
35 and above	9.9	9.3-10.6	19,350
Education			
No education	27.5	27.1-27.9	53,750
Primary	13.3	12.9-13.7	25,996
Secondary	36.2	35.8-36.6	70,755
Higher secondary and above	23.0	22.6-23.4	44,955
Type of residence			
Urban	30.2	29.8-30.6	59,027
Rural	69.8	69.6-70.0	136,428
Wealth status			
Poor	44.1	43.8-44.4	86,196
Middle	19.9	19.5-20.3	38,896
Rich	36.0	35.6-36.4	70,364
Caste			
SCs/STs	31.3	30.9-31.7	61,177
OBC	43.5	43.2-43.8	85,023
Others	21.4	21.0-21.8	41,827
Missing/don't know	3.8	2.8-4.8	7427
Religion			
Hindu	78.9	78.7-79.1	154,214
Muslim	16.1	15.6-16.6	31,468
Others	5.0	4.1-5.9	9773
BMI			
Underweight	23.3	22.9-23.7	45,541
Normal	58.2	57.9-58.5	113,755
Overweight and obese	16.3	15.8-16.8	31,859
Missing	2.2	0.9-3.5	4300
Anemia level			
Severe	0.9	-1.2-3.0	1759
Moderate	13.5	13.0-14.0	26,386
Mild	40.1	39.8-40.4	78,377
Not anemic	43.1	42.8-43.4	84,241
Missing	2.4	1.1-3.7	4691
Total	100.0		195,455

CI: Confidence interval, BMI: Body mass index

Table 2: The prevalence of pregnancy end in abortion, miscarriage, and stillbirth by selected background characteristics among women aged 15-49 years in India, 2015-2016

Background characteristics	Pregnancy end in miscarriage, abortion, or stillbirth		*P*-Value
	No, *n* (%)	Yes, *n* (%)	
Age (years)			
Below 20	14,113 (88.2)	1888 (11.8)	<0.001
20-24	47,327 (91.4)	4475 (8.6)	
25-29	65,995 (91.7)	5987 (8.3)	
30-34	32,266 (88.9)	4021 (11.1)	
35 and above	16,567 (85.5)	2816 (14.5)	
Education			
No education	49,093 (91.3)	4659 (8.7)	<0.001
Primary	23,366 (89.9)	2628 (10.1)	
Secondary	63,698 (89.9)	7148 (10.1)	
Higher secondary and above	40,111 (89.4)	4751 (10.6)	
Type of residence			
Urban	52,108 (88.3)	6891 (11.7)	<0.001
Rural	124,160 (91.0)	12,296 (9.0)	
Wealth status			
Poor	78,733 (91.4)	7406 (8.6)	<0.001
Middle	34,975 (89.9)	3915 (10.1)	
Rich	62,561 (88.8)	7866 (11.2)	
Caste			
SCs/STs	55,586 (91.0)	5523 (9.0)	<0.001
OBC	76,764 (90.3)	8252 (9.7)	
Others	37,144 (88.7)	4731 (11.3)	
Religion			
Hindu	139,079 (90.2)	15,047 (9.8)	<0.001
Muslim	28,236 (89.6)	3278 (10.4)	
Others	8953 (91.2)	862 (8.8)	
BMI			
Underweight	41,861 (92.0)	3622 (8.0)	<0.001
Normal	102,946 (90.5)	10,861 (9.5)	
Overweight and obese	27,560 (86.5)	4295 (13.5)	
Anemia level			
Severe	1622 (88.9)	203 (11.1)	<0.001
Moderate	23,806 (90.0)	2639 (10.0)	
Mild	71,374 (91.1)	7004 (8.9)	
Total	176,268 (90.2)	19,187 (9.8)	

BMI: Body mass index

The risk of adverse pregnancy outcomes was higher among women those were residing in urban area (OR = 0.86; 95% CI: 0.827–0.892) as compared to rural area. The risk of adverse pregnancy outcomes was higher among women who had above normal BMI (OR= 1.51; 95% CI: 1.432-1.588) as compared to underweight and normal. The odds of adverse pregnancy outcomes was higher (OR = 0.78; 95% CI: 0.677–0.908) among women who belonged to severe level of anemia as compared to mild and moderate level of anemia. The risk of adverse pregnancy outcomes was higher in rich and middle class women (OR = 1.19; 95% CI: 1.135-1.237) as compared to poor families. The odds of adverse pregnancy outcomes were higher in Hindu religion as compared to Muslims and others. The risk of adverse pregnancy outcomes were higher among women belonging to other categories (general) as compared to SC/ST and OBC women (OR=1.19; 95% CI: 1.137-1.243) [Table 3].

Table 3: Results of adjusted binary logistic regression of pregnancy outcome by selected background characteristics among women aged 15-49 years in India, 2015-2016

Background characteristics	OR	95% CI
Age (years)		
Below 20®	1.00	1-1
20-24	0.62***	0.588-0.662
25-29	0.60***	0.568-0.637
30-34	0.79***	0.740-0.836
35 and above	1.15***	1.076-1.226
Education		
No education®	1.00	1-1
Primary	1.23***	1.164-1.292
Secondary	1.25***	1.196-1.306
Higher secondary and above	1.19***	1.124-1.250
Type of residence		
Urban®	1.00	1-1
Rural	0.86***	0.827-0.892
Wealth status		
Poor®	1.00	1-1
Middle	1.19***	1.135-1.237
Rich	1.12***	1.068-1.170
Caste		
SCs/STs®	1.00	1-1
OBC	1.09***	1.050-1.132
Others	1.19***	1.137-1.243
Religion		
Hindu®	1.00	1-1
Muslim	0.95*	0.908-0.997
Others	0.71***	0.668-0.744
BMI		
Underweight®	1.00	1-1
Normal	1.12***	1.095-1.186
Overweight and obese	1.51***	1.432-1.588
Anemia level		
Severe®	1.000	1-1
Moderate	0.78**	0.677-0.908
Mild	0.72***	0.620-0.826

®Reference category, **P*<0.05, ***P*<0.01, ****P*<0.001. CI: Confidence interval, BMI: Body mass index, OR: Odds ratio

Discussion

This study explores the risk factors of adverse pregnancy outcomes abortion miscarriage and stillbirth. The secondary data of women aged 15-49 was taken from NFHS-4 (2015-16) for analysis purpose. The government has executed different health programs to improve the health of women and children in India.

But, there is a high variability of adverse pregnancy outcomes in states of India. The various studies show that women aged (35 & above) have higher risk of adverse pregnancy outcomes and other pregnancy problems.[4-5] This study explains the highest prevalence of adverse pregnancy outcomes is associated with the determinants such as secondary, higher secondary and above educated mothers, (35 & above) aged mothers, urban resides, rich family women, upper caste females, Hindu religions, overweight and obese mothers and severe anemia level. An educated woman has good understanding of children health and pregnancy related perspectives. The health programs impact on adverse pregnancy outcomes in India and other countries.[7,14] The association between rich mothers and adverse pregnancy outcomes was found significant.[15] The results indicate that place of delivery is a significant factor which influences the adverse pregnancy outcomes. The study shows that pallor disease is contributing a significant role in adverse pregnancy outcomes and frailty during pregnancy is increasing the risk of adverse pregnancy outcomes.[16] The pregnancy difficulties such as delayed work, seizure, vaginal drying, hypertension, and extreme stomach torment etc. had faced by mothers; but there is no association found between these factors and adverse pregnancy outcomes. Our finding shows that all selected factors of the mother have a statistically significant relationship with adverse pregnancy outcomes. Low BMI and severe anemia level during pregnancy is significantly associated with the increasing high risk of pregnancy termination.[15,16] In NFHS-4 (2015-16), 12 percent of women aged 15-49 has experienced stillbirth, miscarriage, or abortion in their lifetime as compared to 14 percent in NFHS-3 (2005-06). Among them, 8.5 percent of pregnancies in the past 5 years that ended with stillbirth in NFHS-4 (2015-16) as compared to 10.4 percent of pregnancies in NFHS-3 (2005-06). The need of efficient and effective health care facilities in Primary Health Centre (PHC) and Community Health Centre (CHC) to reduce the burden of adverse pregnancy outcomes.

Conclusion

This study revealed the high prevalence of adverse pregnancy outcomes was found in India. The association between sociodemographic variables and the pregnancy outcomes are attributed to the fact that there is a lack of availability of fundamental health-care services for young women. These findings appeal for action to guarantee contraceptives, clinical monitoring, and guidance to decrease the risk of unplanned pregnancies.

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Conflicts of interest

There are no conflicts of interest.

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