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Utilisation of Delivery Care Services in Haryana

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ABSTRACT

Despite being a relatively smaller state, Haryana's per capita Gross State Domestic Product (GSDP) is quite high. However, the statistical data on the status of women has a different story to share. This study analyses the maternal healthcare situation in Haryana to examine the differences in utilisation of maternal health care service, i.e. delivery care on the basis of socio-economic and socio-demographic indicators such as women's age at birth, birth order, education, residence, religion, wealth index and caste. The study uses the third round of the National Family Health Survey (NFHS) data which is similar to the Demographic and Health Surveys (DHS). The findings reveal that women who have taken antenatal care utilise these services much more than women who have not taken antenatal care services. The utilisation pattern is in conjugation with the hypotheses. The results demonstrate that several socio-economic and demographic factors affect the utilisation of delivery care services in Haryana. Efforts need to be taken at community and household level to improve utilisation the utilisation of these services.

Keywords: Maternal health; Antenatal care; Delivery care; Socio-economic status; Accessibility; Haryana; India.

1.0 Introduction

Maternal health is a significant feature for the development of any country to increase equity and also foremost in solving broader, economic, social and developmental challenges. Every day, approximately nearly 830 women die from preventable causes related to pregnancy and childbirth. Sustainable Development Agenda's target is to reduce the global maternal mortality ratio to less than 70 per 100 000 live births by 2030 (WHO, 2015).

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Utilisation of antenatal, delivery care and postnatal care can save the lives of women and newborn babies. India's share among global maternal deaths has declined significantly from 27.3% in 1990 to 16.4% in 2011 (NRHM, 2014), still India could not meet the target of bringing it down to 100 as set in millennium development goals. Maternal death is defined as "the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes". The causes of maternal deaths may be either direct-such as obstetric complications of pregnancy, delivery etc. or indirect such as pre-existing diseases or diseases developed during the pregnancy that are worsened by the pregnancy.

The 10th International Classification of diseases (ICD-10) noted that modern life-sustaining procedures can delay death. Therefore, a new category of late maternal death was introduced, defined as the death of a women from direct or indirect obstetric causes more than 42 days but less than one year after termination of pregnancy. The definition of maternal death cannot be applied when the precise cause of death is not known. Therefore, maternal deaths are generally under-reported even in countries with relatively good vital registration systems and record-keeping. Deaths in early pregnancy are especially more likely to be missed. Maternal Mortality Ratio (MMR) is defined as the number of maternal deaths per 1,00,000 live births, and is derived from the total number of maternal deaths in an area during a given year over total number of live births in that area during the year, multiplied by 1,000 is the most commonly used measure to calculate maternal mortality. In this formula, replacement of 'live births' by 'total number of pregnancies', provides an even more accurate measure for MMR as it covers deaths during abortions and still births (Ravindran and Berer, 1988). It is also one of the measures used to monitor progress towards the achievement of the UNDP millennium development goal 5 aims at reducing maternal mortality ratio by 3 quarters between 1990 and 2015.

The WHO Preamble (1948) states, 'The enjoyment of the highest attainable standard of health is one of the Fundamental Rights of every human being without distinction of race, religion, political belief, economic or social condition'. Good health is not only a right but also an asset for the country as it contributes to the growth of the country. The performance of health care system shows the quality of health services provided by the country. The WHO conference held at Alma Ata in 1978 accepted primary health care as the best approach to achieve the goal of 'Health for All' by 2000. They defined it as an attainment of a level of health that can make individuals more productive. The fundamental focus of this approach was on universality, comprehensiveness and equity in health. Primary health care, often abbreviated as PHC,

is essential health care based on practical, scientifically sound and socially acceptable methods and technology that are universally accessible to individuals and families in the community through their full participation and at a cost that the community and the country can afford to maintain at every stage of their development in the spirit of self-determination (WHO, 1978). The global goal as stated in the Alma Ata Declaration is Health for all by the year 2000 through self-reliance, even distribution among the population of whatever resources for health are available and essential health services will be accessible to all individuals and families in an acceptable and affordable way. The main strategies for achieving these were accessibility, availability, affordability and acceptability of health services, provision of quality, basic and essential health services, community participation, self-reliance, recognition of interrelationship of health and development, social mobilization and decentralisation.

Maternal health care is a matter of concern not only for developing countries but also developed countries. According to World Health Organization estimates, 5, 36,000 maternal deaths occur globally every year (WHO, 2005). India accounts for one fourth of maternal deaths around the globe. Looking at the statistics, India's decadal growth rate is 21% with total fertility rate of 2.7% and maternal mortality ratio is 254 (NHM). According to a health official, India may miss the target of reducing the MMR to 109 per 1, 00,000 live births, but it is expected to come down to 135 by 2015 (government, 2010). In India, due to differences in geographical, cultural, political and economic characteristics the MMR varies across states. These differences need a special focus aiming at social justice or fairness. Health and socio-economic development of any country are interdependent. Levels of maternal mortality tell us about the risk attributable to pregnancy and child birth as well as the performance of health systems in terms of access to health care and quality of care provided. Yet the economic development in India has gained momentum over the last decade, but the public health system is lagging behind. In Haryana, rural population accounts for 71 percent of the state's population. Haryana's per capita income is amongst the highest and fastest growing in the country (Haryana.gov.in). But the Anthropological Survey of India reports that the position of women in Haryana continues to be bad. Women have lagged behind in all the sectors. Haryana is the second richest state in India in per capita income but sex ratio in Haryana continues to be highly unfavourable to females.

1.1 Significance of the study

The use of National Family Health Survey-III data allows for a comprehensive analysis of maternal healthcare usage for antenatal, delivery and post natal care. This study is critical in enhancing the quality and effectiveness of national programs for

maternal and child health. Secondly, not many studies have focused on Haryana State *per se* and not much literature is available despite unfavourable sex ratio. Hence, this topic is worthy to be taken in consideration. This study provides a comprehensive analysis of maternal healthcare utilisation in Haryana and fills a critical gap in understanding this public health issue in this state and will help in future planning and implementation of such maternal health programmes which will aim at improving the health system.

1.2 Research objective

The main objective of this study is to identify factors associated with utilisation of delivery care services in Haryana. Anderson's Behavioural Theory is used as a conceptual framework for the analysis of maternal health care use based on the socio-economic characteristics as potential correlates. The Anderson behavioural model postulates that the use of maternal healthcare services is influenced by three sets of individual characteristics (a) Predisposing characteristics (i.e. age, parity, woman's education, her husband's education, woman's autonomy); (b) Enabling characteristics (i.e. household wealth, place of residence, woman's employment); (c) Need characteristics (i.e. antenatal care, delivery care, postnatal care). Considering the Anderson's Behavioral theory model, predisposing factors are socio-demographic that would predispose women to use maternal healthcare services, while the enabling factors are the socio-economic factors that may make women to use healthcare services. In this study, the Anderson's model is not tested; rather the association between explanatory variables (demographic and social) and utilisation of maternal healthcare indicators will be explored.

2.0 Review of Literature

Srivastava and Das (2014) have studied utilisation by using RCH, Round I, phase II involving four states namely Gujarat, Tamil Nadu, Punjab and Orissa. The study shows that incidence of safe delivery is much higher in the southern and western states (Tamil Nadu and Gujarat) as compared with northern and eastern states (Punjab and Orissa). The study reveals some of the factors governing utilisation are education of women, education of husband, standard of living, pregnancy related problems and delivery related complications. There is consensus among studies regarding the positive impact of antenatal care attendance on delivery care use. It has been suggested that one of the advantages of antenatal care is to influence women to seek care for child birth because antenatal care can raise awareness about the importance of care at delivery.

Further antenatal care makes women more familiar with health facilities which enable them to seek care more efficiently for child birth (AbouZahr & Wardlaw, 2003).

Using the data from six African countries, Stephenson et al. (2006) demonstrated that women who had at least four antenatal visits were most likely to give birth at a health facility. According to them, counselling during pregnancy and during antenatal care, increased comfort with the health system or greater confidence in health facility may explain the observed association. Likewise, research conducted in Rwanda reveals that the number of antenatal visits is an important determinant of delivery use. In fact, women who did not attend antenatal care were less likely to use health care services for child birth compared to women who had taken antenatal care (Chandrashekhara et al., 2010). Magadi et al. (2000), show that women who did not receive antenatal care or who did not have adequate antenatal care were less likely to deliver at a health facility. They argue that antenatal care is an important entry point for delivery care. In India, Bloom, Lippeveld, and Wypij (1999) have argued that adequacy of antenatal care was positively associated with trained assistance at delivery and delivery at a medical facility.

Women's involvement in gainful employment not only increased their financial ability to use quality health services but also gave them autonomy to participate in decision making process regarding healthcare issues in the household (Chowdhary et al., 2006). A study based on Uttar Pradesh suggests that women's autonomy plays an equally important role in maternal health care utilisation as women's educational status. The analyses show that women with greater freedom of movement are more likely to use safe delivery care and obtain higher levels of antenatal care. So, policies directed towards maternal healthcare utilisation should not only focus on education of women but also on improving their status in family by giving them control over finances, freedom of movement and decision making power (Bloom, Wypij, & Dasgupta, 2001). This study shows the differentials in utilisation of maternal healthcare services i.e. antenatal, delivery care and post natal in Haryana on the basis of various socio-economic factors such as woman's age at child birth, woman's education level, her husband's education level, mass media exposure, autonomy, wealth, place of residence, meeting with a health worker, work status, religion and caste

3.0 Research Methodology

3.1 Data source

The present study uses the third round of the National Family Health Survey (NFHS) data which is similar to the Demographic and Health Surveys (DHS). DHS collects, disseminates national data on health and population in developing countries.

The NFHS is a large scale, multi round survey conducted in a representative sample of households throughout India. The NFHS-III was conducted in 2005-06 and is the third in the series of surveys. The first (NFHS-I) was conducted in 1992-93 and second (NFHS-II) was conducted in 1998-99. All three NFHS surveys were conducted by the Ministry of Health and Family Welfare (MOHFW), Government of India. Indian Institute of Population Sciences was selected as the nodal agency for carrying out the survey. The funding for NFHS-III survey was provided by the United States Agency for International Development (USAID) the United Kingdom Department for International Development (DFID), the Bill and Melinda Gates Foundation, UNICEF, UNFPA and the Government of India. The technical assistance was provided by Macro International, Maryland, USA. NFHS-III covers information on nationally representative sample of 1, 09,041 Households, 1, 24,385 (both married and unmarried) Women age 15-49 years and 74,369 Men (both married and unmarried) age 15-54 years from all 29 states. In addition to indicators covered in NFHS-I and NFHS-II, the third round includes information on HIV/AIDS related behaviour, perinatal mortality, men's involvement in maternal healthcare, attitudes towards family life education for girls and use of ICDS programme.

3.2 Sampling plan

The sampling plan and design explained in this study is done by International Institute of Population Sciences (IIPS), Mumbai who conducted NFHS –III survey. NFHS-III adopted a two stage sample design in most rural areas and three stage sample design in most urban areas in all the 29 states. In each state, the rural sample was typically selected in two stages: the first stage involved selected of primary sampling units (PSUs), which are villages with probability proportional to population size (PPS), the second stage involved the systematic selection of households within each PSU. Stratified sampling was adopted. In rural areas, list of villages was taken from 2001 census and it served as the sampling frame. Stratification was done to ensure the inclusion of villages with different socio-economic characteristics in the sample. The first level of stratification was geographic, with districts being subdivided into contiguous regions. Within each of these regions, villages were further stratified using selected variables from the following list: village size, percentage of males working in non-agricultural sector, percentage of population belonging to scheduled castes (SCs) or scheduled tribes (STs) and female literacy. The number of PSUs selected from each stratum was proportional to the stratum size. In each stratum, an independent sample of PSUs was drawn using PPS sampling.

A household listing provided the necessary frame for selecting households at the second stage. The households to be interviewed were selected with equal probability

from the household list in each area using systematic random sampling. In urban areas, the sampling frame for the first stage of selection was the list of all the wards in a state. The list was arranged by geographical regions and then by female literacy. A sample of urban wards was drawn from the list of wards by PPS sampling. Two-stage sampling was adopted for selecting sample of households from a ward. A sample of households from a ward was drawn in two stages. One enumeration block (CEB) was selected from each selected ward at the first stage. Then in each selected CEB, a household listing operation was carried out. The household listing provided the necessary frame for selecting households at the third stage. The selection of required number of households from the list of households was done using systematic sample. The overall response rate for women was 92.4 percent whereas for men it was 84.9 percent.

3.3 Study population and sample size

The present study examines the pattern of utilisation of maternal health services among currently married women age (15-49) years in Haryana. In Haryana, NFHS-III is based on a sample of 2,302 households that is representative at the state level and within state at the urban and rural levels. The study interviewed 2,790 women age 15-49 years from all sample households and 1,083 men age 15-54 from a sub sample of households for obtaining information related to population, health and nutrition in the state. The household response rate in the state as a whole was 99 percent and the individual response rates were 96 percent for eligible women and 85 percent for eligible men. In this study data related to currently married women (15-49) years of age is examined and a total of 2134 currently married women from both rural and urban areas is included.

3.4 Measurement

3.4.1 Dependent variables

The study measures outcome variable namely delivery care to explore inequities in utilisation pattern of maternal healthcare services in Haryana. The selected indicator of maternal healthcare utilisation and its components are examined on the basis of guidelines laid by the Ministry of Health and Family Welfare (MOHFW), Government of India and World Health Organization (WHO). For this study, 'Place of Delivery' assesses whether woman delivered at a medical institution or at home. In this analysis, place of delivery was measured as binary outcome, assuming a value 1 if the woman has delivered at a medical institution and a value 0 if the women has delivered at home.

3.4.2 Independent variables

The independent variables used in this study are socio-economic and socio-demographic. Considering the Anderson's Behavioural theory model predisposing factors are socio demographic that would predispose women to use maternal healthcare services, while the enabling factors are the socioeconomic factors that may make women prove to use healthcare services. This study examines the extent to which the use of maternal health services, antenatal care, place delivery, assistance at delivery and postnatal care is attributable to the set of enabling and predisposing variables.

Predisposing Factors

The predisposing factors used in the analysis are mainly socio-demographic variables such as woman's age at child birth, woman's education level, husband's education level, religion, social group, autonomy, mass media exposure, antenatal care.

Women's age at child birth: is defined as women's age in years. A variable named 'womanage' was created. Womanage was coded as 0 if women's age was less than 18 years and was coded as 1 if women's age is greater than 18 years.

Women's and their husband's education level: is defined using highest education level. Variables 'Womeneduc' and 'Husbandeduc' were created and were categorised into 0,1,2,3. It was coded as 0 if they had no education, coded as 1 if the woman had studied till primary, coded as 2 if till secondary and coded as 3 if till higher level of education.

Religion: of the woman was categorised as Hindu, Muslim, and Sikh. Religion was coded as 0 if Hindu, coded as 1 if Muslim and coded as 2 if Sikh.

Caste: is defined according to the social group that woman belongs to as per the categorization and identification done in NFHS-3 data. Variable caste is coded as 0 if women belong to none of them, coded as 1 if women belong to scheduled castes (SCs), coded as 2 if women belong to scheduled tribes (STs) and coded as 3 if women belong to other backward classes (OBCs).

Women's autonomy: was computed by taking into account decision-making and women's mobility. Decision making was computed on the basis of decision about healthcare for yourself, decision about making major household purchases, decision about making purchases for daily household and decision about visits to your family or relatives. These four factors were combined and were coded as 0 if respondent and respondent plus husband take decisions and were coded 1 if someone else is taking decision on respondent's behalf. Women's mobility was computed by taking into account following factors whether women is allowed to go to market, allowed to go to health facility, allowed to visit places outside the village/community. These three factors were combined and were coded as 0 if women were allowed to go alone or with someone else and were coded as 1 if they were allowed to go anywhere. Both decision

making and women mobility were combined to construct a variable 'wautonomy' using information from NFHS-3 data. 'Wautonomy' was coded as 0 if women were allowed to go out and were involved in decision making and was coded as 1 otherwise.

Mass media exposure: was computed by taking into account how often respondents read magazine, listen to radio and watch television. They were coded as 0 if they don't read magazine, listen to radio and watch television and coded as 1 otherwise. All three factors were combined to create variable media and then from media we created media exposure and coded it as 0 if they had no exposure and coded as 1 if they had some exposure.

Antenatal care: includes those women who had a minimum of three antenatal care visits. Whether women have taken antenatal care services are coded as 1 otherwise 0.

Enabling Factors

The enabling factors include place of residence, wealth index, visit of health provider, work status.

Place of residence: is defined as the place of stay. It is coded as zero if the woman stays in urban area and is coded as 1 if woman stays in rural area.

Wealth index: is defined as woman falls into which category (poorest, poorer, middle, richer and richest) and this categorisation is taken from NFHS-3 data. Poorest is coded as 0, poorer as 1, middle as 2, richer as 3 and richest as 4.

Met with ANM/Community health worker: is defined as whether in last 3 months woman has met any ANM/Community health worker. It is coded as 0 if not met and coded as 1 if otherwise.

Work status: is defined whether the woman is working or not. If the woman is not working it is coded as 0 and 1 otherwise.

3.5 Statistical Methods

Univariate analytic techniques were used to provide a description of all variables used in the analysis. The NFHS -3 dataset was used to extract information and STATA 10 was used to correctly estimate population means, proportions and standard deviations. To identify factors associated with maternal healthcare utilisation, bivariate and multivariate analyses were performed. Bi-variate analyses were performed to examine the nature of association between utilisation of maternal healthcare services by selected socioeconomic and demographic background characteristics.

Multivariate analyses were performed to examine the nature of predictor variables and their relative contribution in explaining the dependent variables. Since both outcomes in this analysis are dichotomous in nature, logistic regression was used to predict the association between the dependent variables and the independent variables. Ordinary least square regression would be inappropriate as it assumes error variances

(residuals) to be normally distributed. The binary response(y) for each individual was related to a set of categorical predictors (X); logit of the probability of each outcome can be modeled as:

$$\text{Logit}(\pi_i) = \log(\pi_i / 1 - \pi_i) = \beta_0 + \beta(X) + \varepsilon$$

The probability of an individual who had received antenatal care or had safe delivery or received assistance in postnatal care is π_i . β_0 estimates the log odds of antenatal care or had safe delivery or received assistance in postnatal care for the reference group, and the parameter β estimates with maximum likelihood, the differential log odds of full antenatal care or had safe delivery or received assistance in postnatal care are associated with the predictor X, in comparison to reference group. E represents the error term. Odds ratio and confidence intervals for each independent variable were presented for the interpretation of the coefficients. This analysis was performed using STATA10.

Before running the analysis, the models were checked for multicollinearity using the variance inflation factor (VIF). The VIF measures how much of the variance of the coefficient estimate is being by multicollinearity. VIF values greater than 10 indicate multicollinearity. The models used in this study satisfy this condition and this indicates that covariates are not collinear. Therefore, no explanatory variable was dropped from the analysis.

Anderson's Behavioral Theory (Anderson, 1968, Anderson and Newman, 1973) is used as a conceptual framework for the analysis of maternal health care use based on the socio-economic characteristics as potential correlates. The Anderson behavioral model postulates that the use of maternal healthcare services is influenced by three sets of individual characteristics (a) Predisposing characteristics (i.e. age, parity, woman's education, her husband's education, woman's autonomy); (b) Enabling characteristics (i.e. household wealth, place of residence, woman's employment); (c) Need characteristics (i.e. antenatal care, delivery care, postnatal care).

Based on previous empirical research, the following associations are expected. Younger mothers (less than 18 years of age) have lower odds of using delivery care than mothers above 18 years of age. Higher level of education for both the woman and her husband will be positively associated with delivery care. Women who have high autonomy (decision making power and mobility) are more likely to utilise these maternal healthcare services compared to women with low autonomy. Women with any mass media exposure (read magazine, watch Television and listen to radio) will utilise these maternal healthcare services more than women with no mass media exposure. Women with lower levels of household wealth will be less likely to use delivery care services. Rural residence will be negatively associated with delivery care. Women who have a job

are more likely to have adequate delivery care. Women who have met with an auxiliary nurse midwife (ANM) or community health worker are more likely to utilise maternal healthcare services. Women who take antenatal care services utilize delivery care services more.

4.0 Data Analysis

4.1 Profile of the respondents

Table 1 represents the percentage of women (15-49 years of age) who had at least one live birth during the last five years preceding the survey by selected background characteristics. Majority of women were above 18 years of years. With regard to education, 46% of women had no education but 57% of Husband's were educated till secondary level. Most of the women 88% were Hindu. As per the social group most women were from other backward classes (OBCs).around 63% women enjoy high autonomy and 74% have exposure to any of the mass media. Most of the women are not working and residing in rural areas. 24% and 29% of women fall in middle and richer wealth index respectively. 92% of women had not met any health worker in the past three months.

Table 1: Background Characteristics of Women (15-49 years) who had at least One Live Birth during the Last Five Years Preceding the Survey, NFHS-3 (2005-06)-Haryana

Background characteristics	N (Number)	% (Percentage)
Woman's age		
Less than 18 years	31	1.45
Greater than 18 years	2,103	98.55
Woman's education		
No Education	966	45.27
Primary	278	13.03
Secondary	758	35.52
Higher	132	6.19
Husband's education		
No Education	442	20.74
Primary	223	10.46
Secondary	1,225	57.48
Higher	241	11.31

Background characteristics	N (Number)	% (Percentage)
Religion		
Hindu	1891	88.78
Muslim	125	5.87
Sikh	114	5.35
Caste		
Others	1,181	55.39
Scheduled Castes(SC's)	488	22.89
Scheduled Tribes(ST's)	14	0.66
Other Backward Classes (OBCs)	449	21.06
Work Status		
Non-Working	1646	77.13
Working	488	22.87
Autonomy		
Low	794	37.21
High	1,340	62.79
Media Exposure		
No exposure	557	26.10
Any exposure	1,577	73.90
Wealth Index		
Poorest	72	3.37
Poorer	243	11.39
Middle	522	24.46
Richer	611	28.63
Richest	686	32.15
Place of residence		
Urban	553	25.91
Rural	1,581	74.09
Met with health worker in last 3 months		
No	1,948	91.28
Yes	186	8.72

Source: NFHS 3Haryana (2005-06)

4.2 Differentials in utilisation pattern of maternal healthcare services

This section identifies the factors associated with the utilisation of maternal healthcare services i.e. delivery care; we examined the bi-variate differential of the selected socio economic and demographic characteristics. This was done by finding the association between predisposing and enabling factors and the use of delivery care services. Chi-square statistics are used for differences in distribution of predisposing and

enabling factors among women (15-49) years of age who had at least one live birth in last five years utilising delivery care services.

Table 2 shows the pattern of utilisation for delivery care i.e. place of delivery assesses whether woman delivered at a medical institution or at home. The pattern of utilisation is lowest for women with primary education. Women belonging to scheduled castes and other backward class do not deliver at a health facility. Women staying in urban areas, women having no exposure and women having less autonomy tend to utilise delivery care services less than women staying in rural areas, women having any mass media exposure and women with more autonomy. Women who have met with a health worker in last three months and women who have taken antenatal care utilise delivery care services more and tend to deliver at health institutions.

Table 2: Delivery Care Utilisation by Women (15-49 years) who had at least One Live Birth during the Last Five Years preceding the survey, NFHS-3 (2005-06)-Haryana

Background characteristics	% (Percentage)
Woman's age	(2.5111) ^{ns}
Less than 18 years	1.69
Greater than 18 years	98.31
Woman's education	(21.9662)***
No Education	43.24
Primary	13.09
Secondary	36.32
Higher	7.39
Husband's education	(41.8107)***
No Education	18.63
Primary	9.47
Secondary	58.66
Higher	13.24
Religion	(120.2797)***
Hindu	90.84
Muslim	2.76
Sikh	6.40
Caste	(26.6499)***
Others	58.23
Scheduled Castes (SCs)	20.60
Scheduled Tribes (STs)	0.50
Other Backward Classes (OBCs)	20.66

Background characteristics	%(Percentage)
Work Status	(3.9819)**
Non- Working	76.08
Working	23.92
Autonomy	(10.1052)*
Low	39.14
High	60.86
Media Exposure	(38.7932)***
No exposure	22.67
Any exposure	77.33
Wealth Index	(160.0246)***
Poorest	1.94
Poorer	8.89
Middle	22.23
Richer	28.68
Richest	38.26
Place of residence	(63.7953)***
Urban	30.31
Rural	69.69
Met with health worker in last 3 months	(61.0868)***
No	48.92
Yes	51.08
Antenatal care	(691.7384)***
No	3.88
Yes	96.12

Note: Figures in parentheses are chi-square statistics; this test was applied for each variable

Level of significance: * $p < .10$; ** $p < .05$; *** $p < .01$; ns: not significant

Source: NFHS 3Haryana (2005-06)

4.3 Determinants of delivery care utilisation

Table 3 shows the results of multivariate analysis of delivery care among women (15-49) years of age who had at least one live birth during the past five years. The significant determinants for delivery care used in the analysis are woman's age at child birth, woman's education level, her husband's education level, mass media exposure, autonomy, wealth, place of residence, meeting with a health worker, work status, religion, caste and antenatal care. Women less than 18 years of age, women with no education, husband's with no education, women belonging to Hindu religion, women belonging to other social groups, women who are not working, women who have low autonomy, women who have no mass media exposure, women belonging to poorest

wealth index, women residing in urban areas, women who have not met any health worker in past 3 months and women who have not taken antenatal care are taken as reference category.

Women who are not adolescents i.e. above 18 years of age do not show any significant (OR = .3900145 ; CI=.076545 – 1.987215) increase in utilisation of delivery care services in comparison to adolescent women i.e. below 18 years of age. Woman's education level primary, secondary or higher did not show any significant increase in utilisation of delivery care services in comparison to woman with no education. The odds of receiving delivery care were high (OR = 1.297833; CI=.6527101 – 1.580581) for women whose husbands have higher level of education in comparison to women whose husband had no formal education. There was difference in utilisation of delivery care services for Muslim women (OR = .3103318; CI=.1727127 - .557607) and Sikh women (OR = 2.710674; CI=1.253529 – 5.861654) The odds of receiving delivery care were highest for women belonging to other backward classes (OR = .9208427; CI=.655831 – 1.292942) in comparison to women belonging to scheduled castes (OR = .5861221; CI= .4248174 - .8086749) or scheduled tribes (OR = .5631658; CI=.1563311 – 2.028743). All three social groups did not made any notable impact on the utilisation of delivery care services. Work status of women had positive effect on utilisation of delivery care services (OR = 1.733402; CI=1.261003 – 2.382772)

The odds ratio suggests that woman's autonomy (OR= .9146858; CI=.6957412 – 1.202531) and media exposure (OR = .9227263; CI=.6595477 – 1.290921) did not have any significant effect on utilisation of delivery care services. Wealth index showed a notable effect on the utilisation of delivery care services. Women from middle and richer index are nearly two (OR = 2.193289; CI=1.053779 – 4.565015); (OR = 2.694302; CI=1.251544 – 5.800247) times more likely to utilise these services respectively compared to women belonging to poorer (OR= 1.642667; CI=.7754919 – 3.479539) wealth quintile. The considerable difference in utilisation was observed in richest index which is seven (OR =7.003942; CI=3.045914 – 16.10525) times more in terms of utilisation of services. Women residing in rural areas did not show any significant increase (OR =.4511484; CI=.312123 - .6520981) in utilisation of services than women staying in urban areas. Women who have met with a health worker in last three months did not suggest any increase in utilisation of delivery care services in comparison to women who have met with a health worker in last three months. The most eloquent factor which has shown positive association with increase in delivery care services is antenatal care. Women who have taken antenatal care utilize these services much more (OR= 21.79673; CI=15.53086 – 30.59056) than women who have not taken antenatal care services.

Table 3: Logistic Regression showing Odds Ratio and 95 % Confidence Interval for receiving Delivery Care among Women (15-49 years) who had at Least One Live Birth during the Last Five Years preceding the Survey, NFHS-3 (2005-06)-Haryana

Covariates	Odds ratio	95 % CI
Woman's age		
Less than 18 years*	1.000	
Greater than 18 years	.3900145	.076545 – 1.987215
Woman's education		
No Education*	1.000	
Primary	.6948476	.4604494 – 1.048569
Secondary	.5298576	.369856 - .7590766
Higher	.3423169	.1456385 - .8046008
Husband's education		
No Education*	1.000	
Primary	.7148412	.4453214 – 1.147481
Secondary	.7386526	.5049259 – 1.08057
Higher	1.297833	.6527101 – 1.580581
Religion		
Hindu*	1.000	
Muslim	.3103318	.1727127 - .557607
Sikh	2.710674	1.253529 – 5.861654
Caste		
Others*	1.000	
Scheduled Castes(SCs)	.5861221	.4248174 - .8086749
Scheduled Tribes(STs)	.5631658	.1563311 – 2.028743
Other Backward Classes (OBCs)	.9208427	.655831 – 1.292942
Work Status		
Non- Working*	1.000	
Working	1.733402	1.261003 – 2.382772
Autonomy		
Low*	1.000	
High	.9146858	.6957412 – 1.202531
Media Exposure		
No exposure*	1.000	
Any exposure	.9227263	.6595477 – 1.290921

Covariates	Odds ratio	95 % CI
Wealth Index		
Poorest *	1.000	
Poorer	1.642667	.7754919 – 3.479539
Middle	2.193289	1.053779 – 4.565015
Richer	2.694302	1.251544 – 5.800247
Richest	7.003942	3.045914 – 16.10525
Place of residence		
Urban*	1.000	
Rural	.4511484	.312123 - .6520981
Met with health worker in last 3 months		
No *	1.000	
Yes	.2817637	.1888336 - .4204273
Antenatal care		
No*	1.000	
Yes	21.79673	15.53086 – 30.59056

*Note: * = reference category*

The analysis suggests that significant factors affecting utilisation of delivery care services among women 15-49 years of age who had at least one live birth in last five years wealth index, husband's education, woman's work status, religion and antenatal care.

5.0 Discussion and Conclusion

This study examine differentials in the use of delivery care in Haryana on the basis of various socio-economic factors such as woman's age at child birth, woman's education level, her husband's education level, mass media exposure, autonomy, wealth, place of residence, meeting with a health worker, work status, religion and caste. The results suggest that findings are consistent with hypotheses and previous empirical research for most of the variables. Bivariate analysis of delivery care suggests many factors have come out to be significant. The variables which have shown positive association with increase in delivery care services is Husband's education , working status of women , women belonging to richest , richer and middle wealth quintile and who utilize antenatal care services . The most eloquent factor is women who have taken antenatal care utilize these services much more than women who have not taken antenatal care services. A study by Pulok et al (2016) based on Bangladesh Demographic

and Health Survey found that women from the richest households were about 3 times more likely to have more than four Ante Natal Care visits, delivery at a health facility and skilled attendants at birth compared to women from the poorest households. Bhandari et al (2017) conducted a community-based cross-sectional study for assessing women's autonomy and utilisation of safe delivery care service in Kapilvastu district of Nepal. The analysis suggested that economic status of household and husband's education are other dominant predictors of the utilisation of safe delivery care services. Contributors to the utilisation pattern are in conjugation with the hypotheses.

5.1 Limitations of the Study

The study had some limitations, which need to be considered while interpreting the results.

- (i) The study used the data from a cross sectional survey and the association between explanatory variables and three indicators of the use of maternal health services was examined, could not draw conclusions about causality.
- (ii) It might be possible that the relationships found are due to the influence of unmeasured individual, community and district level variables that are associated with both the dependent and independent variables in our estimated models.
- (iii) Some correlates of maternal health care utilisation are missing from our analysis such as distance of health facilities from the locality of residence, and this could have influenced the patterns of utilisation of maternal health services. Since data on this variable was not available in the survey, they were not included.

5.2 Recommendations

Efforts need to be made at community as well as household level to improve maternal health care services. At community level, there should be call for action to reduce financial barriers while increasing awareness about the maternal healthcare services, particularly among women belonging to low wealth quintile. Efforts should be put to educate the men about the importance of maternal health care services. There should be more schemes for scheduled castes, scheduled tribes and other backward classes. Not just the literacy, there should be overall development of women. They should be exposed to newspapers, radio, television etc. the most important indicator of maternal health care is antenatal care as delivery care is linked to this indicator. So, more emphasis should be laid on improvement of antenatal care services. At Household level, Husband and mother in law should be used as targets for messages. There should be pregnant women groups and some incentive based competition among mothers to be model mother who can set an example for other mothers.

From the policy perspective, the following steps are highly desirable:

- (i) Improvement in health infrastructure and availability of health staff;
- (ii) Public Private Partnerships should be encouraged;
- (iii) Specific and evidence based strategies should be adopted to reduce maternal mortality rate;
- (iv) Vital registration system should be strengthened.

Standards of health infrastructure, equipment, logistical and administrative support differ as per the level of health facility. The facilities at the higher level such as medical colleges and district hospital are more equipped in terms of infrastructure, availability of equipment and trained staff in comparison to community health centres, primary health centres and sub centres. The quality of services depends on the upholding of the facilities. Emergency obstetric medical care is very important especially for maternal health care. It is necessary to have availability of staff and infrastructure. The availability of trained personnel and skilled birth attendants plays a very critical role. There should be proper monitoring of providers of maternal health care services like ANM is the first point of contact for the community in the primary health care system at the village level. She is the main provider of antenatal, delivery and post natal care services in rural areas. Efforts should be done to fill the vacancies and more focused programmes with respect to maternal health care. The staff nurses and health assistants at the PHC's and CHC's are not adequately staffed and are not available 24 hours for delivery care.

Government needs to establish a reliable vital registration system, especially for maternal and neo natal mortality and there should be proper monitoring of outcomes to know the actual position of maternal health situation. This will help in making further interventions for improving the maternal health. Public private partnership schemes like 'Chiranjeevi Yojana', which aims at encouraging institutional deliveries to reduce maternal mortality, should be introduced. Health is a social phenomenon whose determinants cannot be separated from other social and economic determinants. Haryana has progressed at some fronts but still large gaps persist between the need and provision of services. It will require monitoring and evaluation of ongoing programs and effective implementation.

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