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Maternal health care utilisation among the currently married tribal women of rural Jharkhand.

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ABSTRACT: India as a developing nation, made an enormous and extensive effort to reduce maternal mortality and to also increase the accessibility of reproductive health services. Despite of all the efforts, progress is uneven and inequitable as many women still lack the access. The factors associated with the utilisation of maternal health care services among 919 currently married women (15-31 years) belonging to Santal, Mahli, Oraon and Ho tribe of Purbi Singhbhum district of rural Jharkhand is discussed. Three components of maternal and child health care service utilization was measured: adequate pregnancy care, institutional delivery and full immunization of the new born. Selected demographic factors like women's education, autonomy, son preference, and waiting time to conception influencing outcome events were considered as predictor variables. Overall, 64.9 percentage of women received an adequate pregnancy care, 59.5 percentage had institutional delivery and 25.6 percentage of women had their child fully immunized. The results from both bivariate and multivariate analyses confirmed the importance of women's education and women's age and autonomy for the utilization of maternal and child health care services.

Keywords: maternal health, adequate pregnancy care, autonomy.

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I. INTRODUCTION

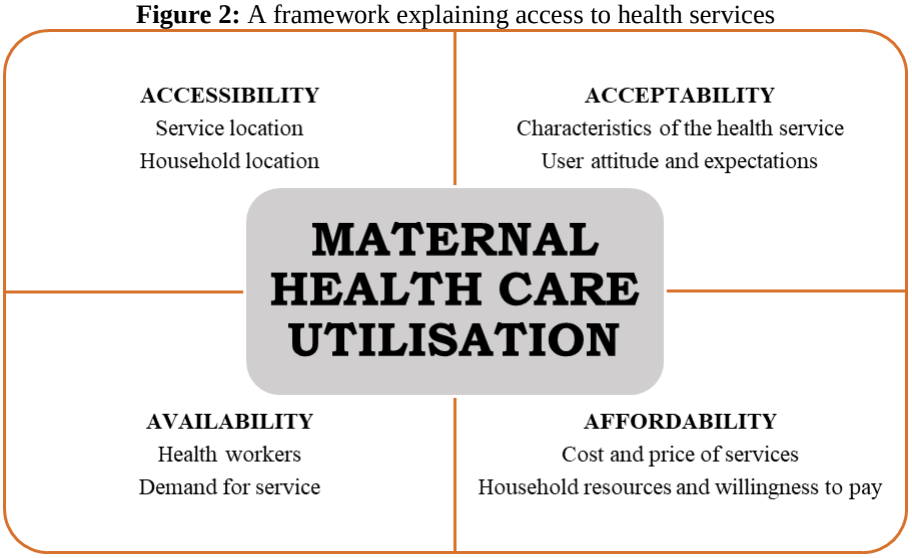
The physical, social and mental well being of women during pregnancy configures the maternal health. Several disparities in the health of the population can be seen in developing countries which is accounted for 99 percent of maternal deaths, out of which sub Saharan Africa and South Asia adds to 86 percent of global maternal deaths[32]. Considerable attention has been paid to strengthen maternal and child health services in India as it contributes to one third i.e., 19 percent where the state level estimate ranged from 517 maternal deaths per 100,000 live births in Uttar Pradesh to 110 deaths per 100,000 live births in Kerala. Acknowledging to the issue of maternal health care and morbidity, the 5th Millennium Development Goals (MDG) incorporated by United Nations focused on reducing maternal mortality and achieving universal access to reproductive health care[10]. The latest estimates of maternal mortality rate (MMR) in India, from 2011 to 2013[8] showed a national average of 167 deaths /100,000 live births, a decline of 45 deaths per 100,000 live births since 2007-2009[8].

Figure 1: Utilization of Maternal health care services among selected states (Rapid survey on children, Ministry of women and child development, 2013-2014 and National Family Health Survey-4, 2015 2016)

*In the above graph the data highlights are in the rural region of the selected states of India. The data highlights for maternal health care utilization for Uttar Pradesh is taken from the Rapid Survey (2013-2014) conducted by Ministry of women and child development and for all the remaining states (Kerala, Nagaland, Jharkhand and Gujarat) is taken from NFHS-4 (2015-2016). The figure was constructed in Adobe Photoshop 7.0.1.

Despite of multiple Indian policies aiming at delaying marriage, 47 percent of the women in the age group of 20-24 years reported marrying before 18 years of age[10]. India predominantly remains a rural nation, with 71 percentage area inhabiting the rural area (Census and RGI, 2013). The recent National Family Health Survey-4 for the year 2015-2016 reportedly highlighted an increased rate in the utilisation of antenatal checkup (ANC), post natal care (PNC), institutional delivery and full immunization (Fig 1). The proportion of women receiving three or more ANC check-ups varied between 91.7 percent in Kerala to 19.8 percent in Nagaland. In all southern states, most deliveries (more than 90 percent) were assisted by skilled health providers. The state of Jharkhand and Uttar Pradesh had an institutional delivery of 57.3 percent and 62.1 percent respectively. The survey further confirmed a poor and inadequate utilization of maternal and health services in Nagaland in the North Eastern states of India[24]. In a theoretical framework utilization of health treatment (Fig 2), cost and quality of health services governed by 4 A's were the crucial factor to seek health care[2,22].

Figure 2: A framework explaining access to health services



In India, substantial inequities in gender power disfavors women and hinders in the adequate pregnancy care utilization[27]. The program of action adopted at the 1994 International conference on Population and development claimed that by improving the status of women, one enhances the decision making capacity in all spheres of her life, especially in the areas of sexuality and reproduction. A high autonomy seeks her health related resources and helps in maintaining and improving her health [4]. These reproductive decisions enabled her to decide freely and independently about spacing births and the desired number of children. Recent studies[19,5,17,26] have highlighted the status of women as an important determinant of maternal health care utilization. Women with great freedom of movement were more likely to receive antenatal care and delivery care[17]. Autonomy of women varied regionally as better health care utilization was reflected in South Indian women as they had greater autonomy as compared to women in north India[19]. Women utilizing the antenatal services were more likely to have institutional delivery attended by trained health professionals[21,29].

II. MATERIALS AND METHODS

The data for the present study was collected in a cross sectional survey through interview schedule method from 919 currently married women in the age group of 15-31 years. At the time of the first stage of sampling all the villages were arranged according to their size of population out of which thirty eight villages of Golmuri cum Jugsalai block of Purbi Singhbhum district, Jharkhand were selected on the basis of PPS Sampling (Probability Proportional to the size of the population). The present study examined the utilization of maternal health care services among the currently married women belonging to Santal, Oraon, Mahli and Ho tribe of rural Jharkhand. The term currently married women in the present study is referring to those women who had been married for last three years and had at least one live birth. The study used a contextual, conceptual and analytic approaches to 1) assess whether autonomy on making decisions, freedom of movement and financial autonomy were associated with the utilisation of maternal health care services and identify the best predictor variable and its impact on utilisation of maternal health care services.

2.1.Construction of Variables

2.1.1.Measuring outcome variables

Three aspects of dichotomous dependent variables were used to measure the utilization of maternal health care services during pregnancy and the birth of the child. They are:

2.1.1.1.Antenatal Care***:*** Information on antenatal care for all children born during the last three years prior to the survey included: whether antenatal care was obtained, who provided the antenatal care (e.g. Health professional or trained/traditional birth attendant), duration of pregnancy at the first antenatal check-up, and the number of antenatal check-up. A novel measure of *Adequate prenatal care utilization* (APCU) adapted from the recommendations of the Ministry of Health and Family Welfare (Department of Welfare, Government of India, 1997) and World Health Organization (Department of Making Pregnancy Safer, 2006)[31]. APCU consisted of two components: *adequate number of prenatal care visit* (ANPCV) and *adequate timing of the first prenatal care visit* (ATFPCV). A recommendations of at least 3 visits for prenatal care were used to define *adequate number* and having the first visit during 0-4 months of pregnancy as per WHO organizational guidelines were defined as *adequate timing*. Later ANPCV and ATFPCV were used to create a composite measure of adequate prenatal care utilization.

2.1.1.2.Full Immunization*:* Children who received one dose each of the BCG, measles and three doses of each of the DPT and polio vaccines were considered to be fully immunized.
2.1.1.3.Institutional delivery*:* The place of delivery is an important determinant for reducing the risk of infant and maternal death[33]. Women were asked whether their babies were born at home or at any health institution by a trained person (public hospitals, private hospitals or other health care institutions). Deliveries attended by trained person were defined as those assisted by a doctor, Auxiliary Nurse Midwife (ANM), nurse or midwife, trained traditional birth attendant) and deliveries attended by untrained person were assisted by non-health personnel, untrained traditional birth attendant, friends or relatives.

2.1.2.Defining Predictor variables

The socioeconomic and demographic predictors such as age of women, educational attainment of women, waiting time to conception, women's autonomy, sex of last child, sex preference, exposure to mass media and distance to a health facility were included as the predictor variables for maternal health care services utilization in the present study. Maternal age was categorized into ≤18 years, 19-29 years and ≥30 years. The educational attainment of the women was defined using years of schooling and were grouped into illiterate, literate but below primary school education, primary but below middle school education, middle but below high school education and high school education and above. Women's autonomy was computed by taking into account three dimensions, namely, decision making authority, women's mobility (freedom to visit places unescorted) and control over finances. The NFHS-III (2005-06)[15] provides a scope to construct an autonomy index in order to assess the women's autonomy on the basis of above stated dimensions. The autonomy index was computed from the information obtained with regard to decision to visit health facility, decision to make celebrations at home and avail family planning practices. Autonomy to control over finances was computed by obtaining information on making purchases of daily household chores, access to money to own and own a bank account by women. A higher score, i.e., 2 was given if the decision was made by the women, 1 if the decision was made by both the husband and wife and 0 score was given if the decision was made by someone else other than her. The autonomy, high, medium and low were designated on the basis of score 2, 1 and 0 respectively. Similarly, a relative index for sex preference was calculated on the basis of high, low and no preference for sons. The variable waiting time to conception is categorized into ≤ 3months, 4 months- 1 year and ≥ 1 year. Mass media exposure has been assessed by considering how often the respondents read the newspaper, watching television or listening to the radio. The sex of last child born is scored 1 if it was a male and 2 if it was female.

2.2.Statistical analysis

Data was entered, edited, sorted and analyzed using SPSS version 20 software. To identify the factors associated with maternal health care utilization among currently married tribal women, one way ANOVA and multivariate analyses were performed. The statistical tests were performed to examine the nature of the association between maternal health care utilization and selected socioeconomic and demographic background characteristics. In order to examine the best predictor for the utilization of maternal health care services, multinomial regression analysis was used.

III. IRESULTS AND DISCUSSIONS:

Table 1 shows differences in some selected indicators among rural women who had delivered in the last two years in the age group of 15-31 years. Among the currently married women, the mean age of marriage for the women in the age group of 15- 18 years and 19 years and above was found to be 15.98 years and 20.37 years respectively. The mean age of first birth for women in the age group of 15-18 years was observed to be 20.37 years and for women in the age group of 19 years and above was found to be 21.13 years. The mean waiting time for conception for the currently married women was found to be 4.8 months.

Table1. Comparison of selected characteristics of currently married women by age.

S.No.	Selected Indicators	Maternal Age (years)		
		15-18	19-31	Total
1	Age at Marriage	15.98±9.06 years	20.37±7.2 years	19.37±8.1 years
2	Age at first birth	20.37±3.6 years	21.13±3.8 years	20.37±3.2 years
3	Waiting time to conception	4.79±2.3 months	4.56±2.1 months	4.8±1.8 months
4	Years of schooling	7.8 years	6.5 years	7.1 years
5	Contraceptive prevalence rate	11%	22%	33%
6	Abortion Rate	9%	14%	23%

The abortion as well as the contraceptive prevalence rate for the women in the age group of 15-18 years was 9 percent and 11 percent respectively. The mean years of schooling were observed to be 7.1 years. The comparison of utilization of Maternal Healthcare between India, Jharkhand and the present study is shown in Fig 2. The data from National Family Health Survey-4 (2015-2016) highlights the antenatal care utilization of Rural India and Rural Jharkhand as 54.2 percent and 47.4 percent respectively. The data for fully immunized children in the age group of 12-23 months in India, Jharkhand and the present study was found to be 61.3 percent, 60.7 percent and 26.7 percent respectively. The data for institutional delivery is high in India (75.1 percent) in comparison to Rural Jharkhand (57.3 percent) and Present study (59.5 percent). The maternal health care utilization among currently married women in the present study is high when compared to the utilization of the health care services in rural Jharkhand.

Figure 3: Maternal Health Care Utilization in India, Jharkhand (NFHS-4, 2015-16) and the Present Study

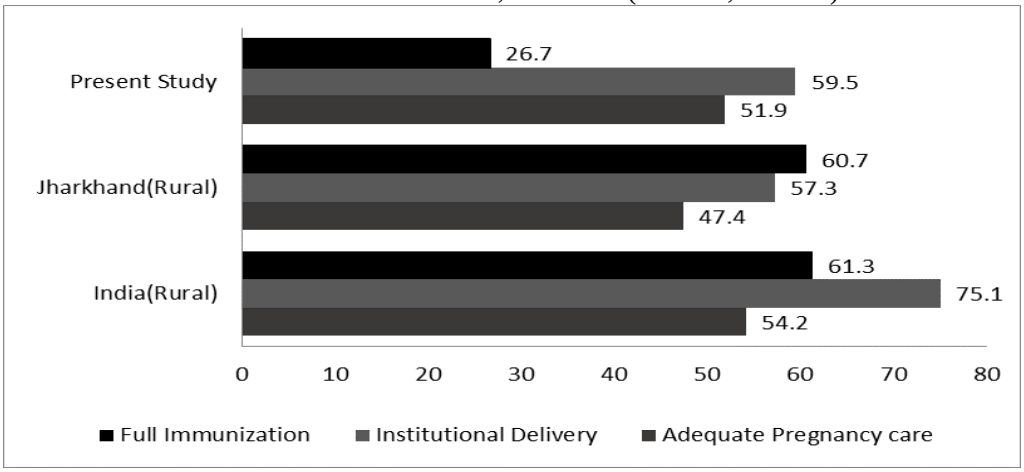


Table 2 showed the percentage distribution of currently married women with their maternal health care utilization and selected background characteristics. The adequacy of pregnancy care and full immunization for their children was higher for women in the age group of 19-29 years. Figure 4 showed that the pattern of maternal and child health care utilization by women in the age group 15-31 years does not seem to be linear, because women in the age group 19-29 years utilized more full antenatal care, institutional delivery and full immunization for their children than their elder and younger counterparts. Utilization of these services was observed to be higher among women who were educated. The rate of adequate pregnancy care and institutional delivery is 25 percent and 29 percent respectively for women with primary school education. The currently married women had a very low exposure to mass media. Utilization of all the three services was higher for women with waiting time to conception between 4 months and 12 months. It was also reported that 17.08 percent, 16.4 percent and 11. 09 percent of women with high autonomy had received an adequate pregnancy care, institutional delivery and full immunization of their children respectively.

The utilization of all the three maternal health care services was reported to increase with an increasing preference for sons. Likewise, 31.45 percent, 32.5 percent and 16.3 percent of women giving birth to a male child received an adequate pregnancy care, institutional delivery and full immunization of their children respectively.

Table 2- Percentage distribution of currently married women who had at least one live birth by background characteristics and Maternal Health Care Utilization (N= 919).

Background Characteristics	Adequacy of Pregnancy Care		Institutional Delivery		Full Immunization	
	N	**Percentage**	**N**	**Percentage**	**N**	**Percentage**
Maternal Age						
≤18 years	157	17.08	311	33.8	104	11.3
19-29 years	247	26.88	120	13.05	130	14.1
>30 years	73	7.94	116	12.6	12	1.3
Total	477	51.90	547	59.05	246	26.7
Education						

Illiterate	12	1.31	13	1.4	5	0.54
Literate but below primary school	8	0.87	6	0.07	12	0.2
Primary but below middle school	231	25.14	260	29	124	13.4
Middle but below high school	133	14.47	152	16.5	63	6.85
High school and above	93	10.12	116	12.6	42	4.57
Total	477	51.90	547	59.5	246	26.7
Conception Wait						
≤3 months	133	14.47	18	1.95	48	5.2
4 months-12 months	126	13.71	417	45.3	171	18.6
>12 months	218	23.72	112	12.1	27	2.9
Total	477	51.90	547	59.5	246	26.7
Autonomy						
Low	190	20.67	117	12.7	66	7.18
Medium	130	14.15	280	30.4	78	8.48
High	157	17.08	150	16.4	102	11.09
Total	477	51.90	547	59.5	246	26.7
Sex of Last Child						
Male	289	31.45	302	32.5	150	16.3
Female	188	20.46	245	27	96	10.4
Total	477	51.90	547	59.5	246	26.7
Son Preference						
Low preference	152	16.54	47	5.14	58	6.3
Equal Preference	101	10.99	200	21.76	96	10.4
High Preference	224	24.37	300	32.6	92	10
Total	477	51.90	547	59.5	246	26.7
Exposure to Mass Media						
Yes	88	9.58	221	24.1	136	14.8
No	389	42.33	326	35.4	110	11.9
Total	477	51.90	547	59.5	246	26.7
Distance from health facility						
<2 km	162	17.63	162	17.6	140	15.2
2-5 km	203	22.09	238	25.8	71	7.7
≥6 km	112	12.19	147	16.1	35	3.8
Total	477	51.90	547	59.5	246	26.7

Table 3 showed the results of one way ANOVA, applied for studying variation among currently married women in the utilization of maternal health care with respect to maternal age, educational level, conception wait, autonomy, the sex of the last born, son preference, exposure to mass media and distance from a health facility. The F values are statistically non significant for adequacy in pregnancy care with respect to son preference, maternal age and waiting time to conception, thereby suggesting no significant variations between and within groups. A statistically significant F values are found for full immunization with respect to maternal age, waiting time to conception, autonomy of women and sex for the last birth. A statistically significant difference in the group means was found among the illiterate women and women with varied educational levels for Adequacy in Pregnancy Care (10.72, $p<0.01$) and Institutional Delivery ($F=27.9$, $p<0.01$). The variables for different categories of autonomy of women were statistically significant for adequacy in pregnancy care ($F=3.34$, $p<0.01$), institutional delivery ($F=6.65$, $p<0.01$) and full Immunization ($F=12.51$, $p<0.01$). A statistical

significant difference in the utilization of maternal health care was found between women who had male as their last born. The categories of women who were exposed and who were not exposed to mass media for adequacy of pregnancy care (F= 18.31, p<0.01) and institutional delivery (F=3. 1, p<0.05) were statistically significant.

Table 3-Variation in the Utilization of Maternal Health care among currently married women with respect to selected background characteristics

Maternal Health care utilization	Adequacy of Pregnancy care	Institutional delivery	Full Immunization
Maternal Age	1.72	1.49*	2.215*
Education	10.72**	27.9**	1.15
Conception wait	0.08	1.87	3.657**
Autonomy	3.34**	6.65**	12.61**
Sex of the last Birth	5.751**	8.35**	2.8*
Son Preference	0.004	0.082	0.076
Exposure to mass media	18.31**	3.1**	1.09
Distance from health facility	9.7 **	6.87**	1.12

A statistically significant difference in adequacy of pregnancy care (F= 9.7, p<0.01) and institutional delivery (F=6. 87, p<0.01) exists in the three categories of distance from a health facility. A multinomial regression was performed in the preceding section to identify the best predictor for the utilization of maternal health care.

3.1.Determinants of Adequate pregnancy care.

The results of multinomial regression for determinants of adequate pregnancy care are presented in Table 4. The results show that maternal age, maternal education, women's autonomy, sex of last child, son preference and distance from health facility are among the significant determinants of the utilization of an adequate pregnancy care. Women of 30 years and above were five times (OR=5.07***, CI= 1.12-22.84) more likely to avail an adequate pregnancy care than women under 18 years of age. Women with middle and higher education were twice (OR=2. 5***, CI=1. 7-3.7) as likely to utilize full antenatal care as illiterate women.

Table 4- Multinomial Regression showing odds and 95 % confidence Interval for receiving adequate pregnancy care among currently married women.

Background Characteristics	Odds	95 % C.I.
Maternal Age		
≤18 years®	1.00	
19-29 years	1.792***	(1.353-2.372)
>30 years	5.07**	(1.127-22.843)
Education		
Illiterate®	1.00	
Literate but below primary school	1.895	(0.155-5.084)
Primary but below middle school	0.712	(0.226-2.243)
Middle but below high school	2.5***	(1.75-3.723)
High school and above	1.47	(0.145-2.521)
Conception Wait		
≤3 months®	1.0	
4 months-12 months	1.153	(0.833-1.596)
>12 months	0.886	(0.275-1.122)
Autonomy		
Low®	1.0	
Medium	2.177***	(1.604-3.954)
High	1.686*	(0.275-1.122)
Sex of Last Child		
Male	4.1***	(0.657-5.891)
Female®	1.0	
Son Preference		
Low preference	0.995	(0.756-1.309)

Equal Preference®		
High Preference	2.073**	(0.194-5.930)
Exposure to Mass Media		
Yes	1.56	(0.9-2.2)
No®	1.0	
Distance from health facility		
<2 km	2.77*	1.1-3.5
2-5 km	1.77*	0.6-3.1
≥6 km®	1.0	

Women with a medium autonomy, i.e., having an equal say to her husband in all financial and movement decisions were two times (OR= 2.1, CI=1.6-3.9) as likely to avail the health facility when compared with women of low autonomy. Women delivering a male child were four times (OR= 4.1, CI=0.6-5.8) more likely to have an adequate pregnancy care than women with a female as last birth. Women's distance of less than 2 kilometres and a distance between 2 kilometres and 5 kilometres to access a health facility were twice (OR=2.7*, CI= 1.1-3.5) more likely to avail a health facility than woman having a distance of more than 5 kilometres to a health facility. A woman with a high preference for son is two times (OR= 2.0, CI=0. 1-5.9) more likely to avail the facility than women having an equal preference for both sons and daughters. Waiting time to conception and exposure to mass media had no statistically significant effect on the utilization of an adequate pregnancy care.

3.2. Determinants of Institutional Delivery.

The results of multinomial regression for determinants of institutional delivery are presented in Table 5. It can be shown that maternal age, maternal education, women's autonomy, sex of last child, son preference and distance from health facility are found to be significant determinants of having an institutional and safe delivery. Women in the age group of 19-29 years were twenty times (OR= 20.2***, CI= 12-32.4) more likely to have an institutional delivery than women above 30 years. Utilization of a health facility during delivery increases with an increase in the educational level. Compared to an illiterate woman, women with higher education were thrice (OR=3. 2**, CI=0. 8-4.7) as likely to have an institutional delivery. Women with a high autonomy were eight times (OR=8.0, CI=0.8-9.8) more likely to have an institutional delivery than women with low autonomy. Women who had an exposure to mass media were two times (OR= 2.7, CI= 1.2-4.3) more likely to have institutional delivery than women with no mass media exposure. The likelihood of having an institutional delivery was observed to be low if the distance to health facility was more than 6 kilometers.

Table 5-Multinomial Regression showing odds and 95 % confidence Interval for receiving safe delivery care among currently married women (n=547).

Background Characteristics	Odds	95 % C.I.
Maternal Age		
≤18 years®	1.0	
19-29 years	20.406***	(12.831-32.451)
>30 years	21.205***	(6.920-64.978)
Education		
Illiterate®	1.0	
Literate but below primary school	0.556	(0.115-2.679)
Primary but below middle school	1.529	(0.185-2.511)
Middle but below high school	1.412	(0.142-2.195)
High school and above	3.247**	(0.83-4.736)
Conception Wait		
≤3 months®	1.0	
4 months-12 months	0.591	(0.429-0.814)
>12 months	1.179	(0.581-2.394)
Autonomy		
Low®		
Medium	4.583	(3.424-6.135)
High	8.044***	(0.831-9.893)
Sex of Last Child		
Male	1.795***	(1.358-2.372)
Female®		

Son Preference		
Low preference	1.033	(0.790-1.351)
Equal Preference®	1.0	
High Preference	2.3	(1.39-4.231)
Exposure to Mass Media		
Yes	2.78*	1.2-4.3
No®	1.0	
Distance from health facility		
<2 km	2.7*	(1.1-3.7)
2-5 km	1.1	(0.7-2.1)
≥6 km®	1.0	

3.3.Determinants of receiving full immunization

Table 6 shows the results of multinomial regression on receiving full immunization of the new born of currently married women. The findings show that maternal education, autonomy, waiting time to conception, son preference, exposure to mass media and distance from health facility are the significant factors affecting the full immunization of the new born. The odds of receiving full immunization by women with middle (OR=1.75**, CI=0.2-3.2) and higher school education (OR=2.1**, CI=0.2-3.4) was more as compared to illiterate women. Full immunization of the newborn was seen higher among women having waiting time to conception of more than a year (OR=1. 8*, CI=0. 4-2.4). Effect of sex of last child on receiving full immunization was seen statistically significant (OR=1.9*, CI=0.6-2.9). As a male child were fully immunized when compared to a female child. The odds of receiving full immunization were high for high autonomous women (OR= 2.8**, CI= 0.3-30) and also for women strongly preferring for son (OR= 2.9*, CI= 0.5-14). Similarly, women having a nearby access to a health facility were two times (OR= 2.2*, CI= 0.4-3.9) more likely to have a fully immune child than women having health facility far to their place.

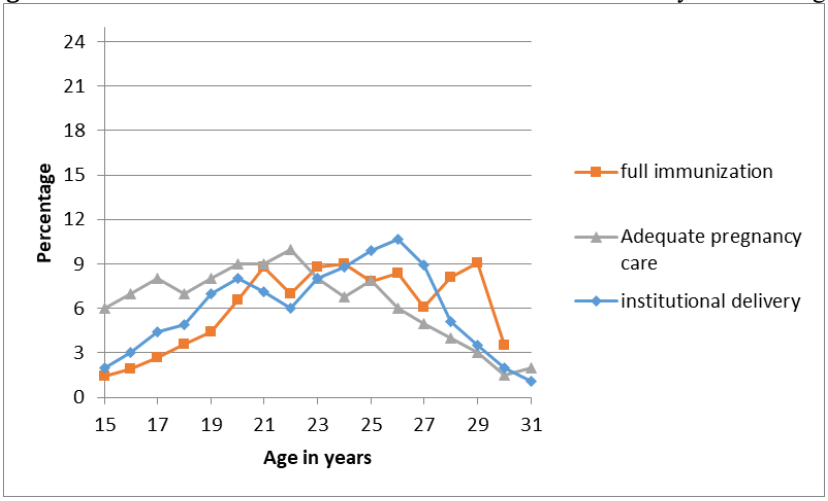
Table6- Multinomial Regression showing odds and 95 % confidence Interval for receiving full immunization among currently married women (n=236).

Background Characteristics	Odds	95 % C.I.
Maternal Age		
≤18 years®	1.0	
19-29 years	0.651	(0.480-0.881)
>30 years	0.339	(0.075-1.528)
Education		
Illiterate®	1.0	
Literate but below primary school	0.489	(0.257-2.212)
Primary but below middle school	0.754	(0.257-2.212)
Middle but below high school	1.75**	(0.253-3.264)
High school and above	2.1**	(0.259-3.407)
Conception Wait		
≤3 months®	1.0	
4 months-12 months	1.276	(0.884-1.842)
>12 months	1.892*	(0.482-2.471)
Autonomy		
Low®		
Medium	0.899	(0.656-1.232)
High	2.803**	(0.391-20.064)
Sex of Last Child		
Male	1.921**	(0.681-2.846)
Female®		
Son Preference		
Low preference	1.41	(0.749-2.364)
Equal Preference®		
High Preference	2.931*	(0.582-14.753)
Exposure to Mass Media		
Yes	1.6	(0.2-3.7)
No®	1.0	
Distance from health facility		
<2 km	2.2*	(1.2-3.9)
2-5 km	1.8	(0.9-2.4)
≥6 km®	1.0	

IV. DISCUSSION

The present study examined the utilization of maternal and child health care services among women who had their childbirth in last three years. Ever since the integration of safe motherhood program with reproductive health programme for women, several efforts have been made to improve the maternal health care utilization. Pointing to the important segments and considering the agendas of programs, the present study aimed to examine the factors significantly affecting the utilization of maternal health care among the currently married women belonging to Santal, Mahli, Oraon and Ho tribe of Purbi Singhbhum district of rural Jharkhand. The utilization of maternal health care is categorized into adequate pregnancy care, institutional delivery and full immunization. Scheduled tribes, which are considered a socially and geographically disadvantaged group, have a higher probability of living under adverse conditions[20]. Furthermore, scheduled tribes mostly receive benefits from the primary health care programme, where the government spends most of the public funds[23]. Thus, the utilization of health care services such as antenatal care and full immunization could be more conducive. However, delivery practices among the scheduled tribes have been severely affected by a shortage of trained birth attendants, who are the key personnel who ensure proper and timely delivery care services in the community[30]. The findings of the present study show an unacceptably low coverage of full immunized children while women having an institutional delivery and an adequacy in pregnancy care was much higher than the Rural Jharkhand[14]. As only 51.90 percent, 59.5 percent and 26.7 percent of currently married women received an adequate pregnancy care, safe delivery care and the full immunization respectively. The study identified several determinants that posed to have a significant influence on the utilization of maternal and child health care services in India. These included women's education, autonomy, waiting time for conception and son preference. The findings are in conformity with the findings of developing countries[30,6,11,1]. However, the effect of education served as the most important determinant of health care utilization. The effect of education on maternal and child health care utilization for adolescent women is much more pragmatic than that for older women[26]. Like for instance, women in the age group of 15-19 years in the present study had a high percentage of institutional delivery than women of 20 years and more. Despite several programmatic efforts, early marriage continues to characterize the lives of large proportions of young women in India and also in some developing countries[6]. At the national level, 31.5 percent of the women aged 20–24 were married by the time they were 18 years old[3] and this proportion is as high as 44.3 percent among Rural Jharkhand[14]. Early marriage tends to curtail young women's educational opportunities[9,25]. A further decline in fertility levels in past years has been attributed to the changing marriageable age, which further shortens the birth interval among women in the reproductive age group[3]. Serious efforts in the past have been taken to increase the number of trained birth attendants in tribal communities, provide proper training to existing human resources, and strengthen Emergency Medical Obstetric Care (EMOC) at primary health care centers in tribal areas[20]. Women with higher education are more likely to know the long-term benefits of the utilization of services compared with women with less education or uneducated women. Educated mothers are more likely to take advantage of public health care services[28], seek high-quality services and have greater ability to use health care inputs that offer improved care than women with no education[10]. The results from both bivariate and multivariate analyses confirmed the importance of women's education for the utilization of maternal and child health care services. Women's autonomy after her educational status was found to be a significant factor affecting the utilization of maternal health care services. The same pattern was reflected in the case of full immunization among children, where women with a waiting time to conception of 4 months to 12 months were twice times more likely to receive full immunization than the women with waiting time to conception of less than 3 months. The effect of sex of last child born was consistent with other studies that indicated that women were significantly more likely to use maternal health care services for their first child[16,26]. Despite of multiple national policies focussing against early marriage and increasing the childbearing age, 49 percentage of women in the present study were married before the legal age of 18 years and had mean years of schooling as 7.1 years. Reproductive histories of young women clearly reflected the continuing trends of early childbearing and high fertility. A recent cross sectional survey conducted in six states of (Jharkhand, Andhra Pradesh, Bihar, Maharashtra, Tamil Nadu and Rajasthan) India revealed that 47 percentages of women residing in rural areas utilized safe delivery care[13]. Janani Suraksha Yojna[7], a conditional cash incentive scheme launched by the Government of India in the year 2005 under the broad umbrella of National Rural Health Mission (NRHM) encouraged pregnant women to deliver in health institutions and promote late marriage for women under 19 years of age. However, states like Rajasthan in North, Jharkhand and Orissa in the east, UP, Chattisgarh and MP in central region required a special attention as one in four women in the age group of 15-19 years reported childbirth with the lower contraceptive rate[7]. A curvilinear pattern was evident between age and the utilization of selective maternal and child health care services (Fig 4). Women in the middle childbearing ages in rural areas seemed to utilize more maternal and child health services compared with their peers in the early or late childbearing ages[33]. The effect of the sex of last child appears to be consistent with the utilization of all the three maternal health care services. Women with a male child are more cautious and attentive during their pregnancy and at the time of delivery.

Figure 4- Utilization of maternal and child health care services by women's age.



V. CONCLUSION

This study concluded that the utilization of maternal and child health services by currently married women is satisfactory with a very low proportion of women with fully immunized children. Moreover, the low coverage of the maternal and child health services will lead to an adverse pregnancy outcome and poor maternal health. The present study added to the evidence that concentrating on the need for programs will help in catering for the needs of young mothers which may differ from those of married adults. Education can be considered as the strongest parameter to address the low coverage of these services. If the government could implement and support higher education for girls more effectively, women would be more conscious about proper and timely utilization of health care services both for themselves and for their children. In a country like India, where women's autonomy is very low, along with the rigid cultural traditions and family norms, access to education among married adolescents could be promoted by working effectively with the existing community structure. It is essential to bring recognition to communities about the importance of female education in improving the health of mothers and their children as well as generating financial support for the family. Finally the approach of the health needs must be recognized and lie in cohesion with the main agendas of the Millennium Development Goals in order to achieve the committed targets on time.

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