Impact of Intra Household Gender Representationon Maternal Health Care in Rural India

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ABSTRACT *This paper examines the determinants of maternal healthcare utilisationin rural India. The impact of a various socio-demographic variables on full antenatal care, safe delivery and postnatal care, which are considered as important interventions for safe motherhood, have been analysed.The study utilises the DLHS-3 conducted during 2007-08 and Binary logistic regression to carry out the analysis. The results confirmed that wealth level, women's education level, age at first birth and gender representation in the household are consistent predictors of maternal health careutilisation. Moreover, awareness about health services significantly improves its utilisation among mother's.*

I. Introduction

It is widely accepted that improving the coverage of maternal healthcare services, such as antenatal care (ANC), safe delivery by skilled health personnel and postnatal care,improves the reproductive outcome indicators, including maternal mortality ratio (WHO, 2002; Jowett, 2000).According to an estimate by WHO, UNICEF, UNFPA, The World Bank and the United Nations Population Division, globally there were 289,000 maternal deaths in 2013. Of the total estimated maternal deaths, India accounted for 17% maternal deaths with 50,000 cases in the year 2013 (WHO, 2014).

Table 1 shows the comparison of maternal mortality ratio (MMR) and maternal deaths among WHO South-East Asia Region (SEAR) countries in the year 1990 and 2013[xv]. Table 1 highlights that the MMR as well as maternal deaths had declined by nearly 66 % in India in 2013 over 1990. However, neighbouring countries of India like Bangladesh, Bhutan and Nepal had witnessed a faster reduction in both MMR and maternal deaths during the same period. In India the maternal mortality in nearly 2 decades had declined from 560 to 190 per 1,00,000 live births, but still far from the MDG 5 target of 109 MMR by 2015.

Table 1: Maternal mortality ratio and maternal deaths in WHO South-East Asia Region (SEAR)

Countries	Maternal mortality ratio (Per 100,000 live births)			Maternal deaths		
	1990	2013	% Change	1990	2013	% Change
Bangladesh	550	170	-69	21,000	5,200	-75
Bhutan	900	120	-87	180	17	-91
Democratic People's Republic of Korea	85	87	2	360	310	-14
India	**560**	**190**	**-66**	**148,000**	**50,000**	**-66**
Indonesia	430	190	-56	20,000	8,800	-56
Maldives	430	31	-93	38	2	-95
Myanmar	580	200	-66	6,600	1,900	-71
Nepal	790	190	-76	5,400	1,100	-80
Sri Lanka	49	29	-41	180	110	-39
Thailand	42	26	-38	450	180	-60
Timor-Leste	1200	270	-78	400	110	-73

Source: WHO, 2014

The Government of India had implemented several policies and programs, such as the Reproductive and Child Health (RCH) Program 1997, the National Rural Health Mission (NRHM) 2005 to improve the coverage of ANC, safe delivery and postnatal care. The overall utilisation of maternal healthcare services in India has though improved over time, but still below any acceptable level. Moreover, utilisation of maternal health care services among rural women is poor compared to their urban counterparts.

The third round of the District Level Household Survey suggests that in India only 14.7 % of rural women utilised full ANC whereas it was 29.5% for urban women; 43.3% of rural women reported safe delivery, whereas it was 75.6%for urban women and 41.7% women reported postnatal care within two weeks in rural areas which was 69.7% in urban areas (IIPS, 2010)[xvi]. In India nearly 69% of the female population reside in rural areas (Census, 2011). Therefore, low utilisation of maternal health care in rural India is an important area of concern in achieving the universal safe motherhood.

It is argued that the utilisation of maternal health services is guided by a complex range of factors like socio-demographic characteristics, accessibility to health services as well as perception and culture (Andersen and Newman, 1973; Kroeger, 1983; Becker et al., 1993; Sarin, 1997). Several studies from developing countries have recognised socio-demographic factors like early age at childbirth or age at marriage, low education levels, low economic status of household, family structure, lack of awareness and low social status of women have been found to be associated with the utilisation maternal care services (Edmonds, Paul and Sibley, 2012; Gabrysch and Campbell, 2009; Joshi et al., 2014; Masters et al., 2013; Nair et al., 2014; Sepehri et al., 2008; Sharma et al., 2014; Tsegay et al., 2013; Yamashita et al., 2014). Studies have found that adolescents often lacks experience and tend to be psychologically as well as emotionally less mature, which lead to poor maternal health outcome (Legrand and Mbacke, 1993). Mother's age may sometimes serve as a proxy for the women's accumulated knowledge of health care services, which may have a positive influence on the use of health services (Chakraborty *et al.*, 2003). Therefore, age at birth can be an important determinant of utilisation of maternal health care. Mother's education has been found to have a positive impact on health care utilization in several earlier studies (Elo, 1992; Becker et al., 1993; Fosu, 1994; Costello et al., 1996). The education of the mother is considered as an effective means of achieving autonomy and awareness regarding maternal health services (Acharya et al., 2010; Bloom, Wypij and Gupta, 2001). It is argued that better educated women are more aware of health problems, know more about the availability of health care services, and use this information more effectively to maintain or achieve good health status. Mother's education may also act as a proxy variable of a number of background variables representing women's higher socioeconomic status, thus enabling her to seek proper medical care whenever she perceives it necessary (Chakraborty *et al.*, 2003).Women exposure to mass media also results in greater awareness and dissemination of knowledge about existing programs and policies related to health care (Asp et al., 2014; Ghosh, 2006; Retherford and Mishra, 1997; Valente and Saba, 2010). The husband's level of education may also contribute to maternity care through a change in attitude. Husband awareness and knowledge towards health needs of his wife may improve by his level of education and therefore his attitude may shift towards pro-maternal health care.

Several studies have documented the fact that the household wealth has a positive effect on the use of maternal healthcare (Babalola and Fatusi, 2009; Fosu, 1994; Gage, 2007; Kesterton et al., 2010; Rahman, Haque and Zahan, 2011). Women from richer households may more likely to use maternal care compared to women from the poorest households due to differences in availability of resources. Richer households can easily bear the healthcare and transportation expenditure which may be difficult for the poor households. Poor households earnings are often, so little that after spending on basic necessities of life, they are left with little or no amount of money for healthcare (Bonu et al., 2009). Moreover, poorer households due to lack of awareness, may assign little or no seriousness to maternal health conditions. On the other hand, regular interactions of richer households with mass media may improve their knowledge regarding maternal healthcare and therefore they give due importance to maternal health care during and after pregnancy.

The household structure has been also considered as an important determinant for maternal health care. It is argued that larger families cause resource constraints, which have a negative effect on health care utilisation (Wong et al., 1987). Moreover, in rural India, family members generally depend upon the head of the household for most of their needs. Therefore, in a larger family woman may find difficulties in communicating their maternal care needs to the household head and in availing them. In addition to this, in larger families, women may be more engaged with household chores and therefore they may under utilise maternal health care services due to time constraint.

Another important aspect of household structure is the intra-household gender representation, which has not been discussed in the earlier studies. How the gender representation within a household affects the maternal healthcare utilisation? This is an important aspect from the viewpoint of maternal health care in rural India, where the female has a low social status. Moreover, female voices and their welfare needs remain subdued in the family decision. Therefore, in such a society, it is not hard to believe that improved gender representation (i.e. percentage of female in the family) within the family may strengthen the subdued woman's voice, and empower them to seek adequate care and attention during and after

pregnancy. Therefore, we argue that improved gender representation within the family may improve maternal healthcare utilisation in rural India mainly due to following reasons:(i) increased female representation in the family may frequently sensitise the males and head of the household towards the importance of maternal health care,(ii) it may empower the women within the family and improve their bargaining power which may result in increased utilisation of maternal healthcare and (iii) increased female representation in the family may ease the household workload during and after the pregnancy and mothers can give adequate attention to their own healthcare.

Several studies in India have examined factors affecting maternal care utilisation (Arokiasamy and Pradhan, 2013; Jat et al., 2011; Pathak et al., 2010; Mistry et al., 2009; Sunil et al., 2006, Pallikadavath et al., 2004). However, none of these studies have focused on the intra household gender representation as a determinant for maternal healthcare. Moreover, past researchers have focused on exposure to mass media rather than awareness regarding healthcare services. Therefore, in this in addition to the existing socio-demographic parameters studied by the past researchers, we introduce the concept of intra-household gender representation and its impact on demand for maternal health care services as well as a proxy of awareness regarding maternal healthcare services. The remainder of the paper is organized as follows. Section (ii) defines the data and the empirical methodology. Section (iii) presents the empirical results and Section (iv) presents the conclusion and possible policy directions.

II. Data and Methodology

The present study utilises data from the third round of the District Level Household and Facility Survey (DLHS-3) conducted during 2007–08 by International Institute for Population Sciences. DLHS-3 is one of the largest ever demographic and health surveys carried out in India, designed to provide estimates on maternal and child health, family planning and other reproductive health indicators since January 1, 2004 to survey date. The data were collected from 34 states and union territories of India (excluding Nagaland). The survey covers a representative sample of 6,43,944 ever married women aged 15-49 years, of which 5,04,272 sample are from rural areas. The ever-married women's questionnaire contained information on women's characteristics, maternal care, immunization and childcare, contraception and fertility preferences, reproductive health including knowledge about RTI/STI and HIV/AIDS (IIPS, *Ibid*). More information about sampling employed in this survey can be found in the DLHS-3 National Report at http://www.rchiips.org. The present study examines the utilisation of maternal healthcare among the ever married women aged 15-49 years in rural areas. We have considered only those married women in the age-group 15-49, who had at least one pregnancy since January 1st 2004. Therefore, our sample size is about 1, 85,069 ever married rural women aged 15-49 years who have had at least one pregnancy since January 1st 2004. Moreover, in this study, we have considered the maternal healthcare utilization only for the most recent birth and excluded multiple births.

The study measures three dependent variables- full antenatal care, safe delivery and postnatal care within two weeks- separately. In this study, we have followed the definition of full antenatal care and safe delivery as defined by DLHS-3.The DLHS-3 defines full ANC as "at least three visits for ANC checkup, at least one tetanus toxoid (TT) injection received and 100+ iron and folic acid tablets/syrup consumed" and safe delivery as either institutional delivery or home delivery assisted by a skilled person.

Socio-demographic predictors such as age of the woman at first childbirth, women's education, husband's education, wealth quintile, family size, gender representation in the family, awareness about ANC and safe delivery, were included as predictor variables in the study. In India, due to prevailing customs, there can be a significant gap between age at marriage and age at which woman starts living with her husband. It is possible in India that a girl gets married as adolescent and delivers her first child when she is psychologically as well as emotionally matures. Therefore, in this study, we have preferred mother's age at first childbirth as a predictor variable over mother age at marriage. Mother's age at first childbirth were categorized into three groups <20 years, 20–25years and above 25 years of age. The educational level of the women and their husbands was defined using years of schooling and they were grouped into illiterate, 1-10 years of schooling and above 10 years of schooling.

Combining the household amenities, assets and durables, the DLHS-3 computed wealth index for every surveyed household and divided it into quintiles-poorest, poorer, middle, richer and richest. Family size was classified as <5 family members, 5-8 family members and above 8 family members.

Another aspect of household structure is gender representation within the family, which we have taken as a percentage of female members in the family[xvii]. To assess the impact of female representation on maternal healthcare at various levels, the percentage of femalesin the family have been classified in four categories: ≤ 20% female in the family, >20%-40% female in the family, >40%-60% female in the family and above 60% female in the family. The DLHS-3 captures the response for whether the respondent has heard about ANC

and safe delivery separately. Therefore, we consider the response for these two questions as aproxy for awareness about ANC and safe delivery. Since DLHS-3 do not ask whether respondent have heard about postnatal care, therefore the role of awareness for utilisation of postnatal care has not been estimated.

In this study Binary logistic regression has been applied to understand the net effect of predictor variables on the utilisation of maternal health care services-full antenatal care, safe delivery and postnatal care. We have chosen logistic regression because the response variables in our study are of dichotomous (i.e., binary) nature. The binary response (y, full antenatal care received or not; undergone safe delivery care or not; received postnatal care or not) for each individual was assessed to a set of categorical predictors.

III. Empirical Finding

The logistic results for full antenatal care utilisationare presented in Table2. Table 2 shows that some important factors such as women's education, age at first childbirth, family size, female representation in the family, awareness about ANC, economic statusof household are found to be significant determinants of the utilisation of antenatal care among rural women.

Table 2: Odds Ratio and 95% Confidence Interval (CI) for receiving full antenatal care among rural women, DLHS-3 (2007–08)

			95% CI	
	Odds ratio	**P-value**	**Lower**	**Upper**
Wealth quintiles				
Poorest	1.000			
Poorer	1.268	0.000	1.201	1.338
Middle	1.918	0.000	1.821	2.021
Richer	2.509	0.000	2.378	2.647
Richest	3.048	0.000	2.869	3.240
Mother's education				
Illiterate	1.000			
1-10 years education	2.381	0.000	2.293	2.474
Above 10 years education	4.174	0.000	3.942	4.420
Husband's education				
Illiterate	1.000			
1-10 years education	1.037	0.112	0.992	1.085
Above 10 years education	1.031	0.286	0.975	1.090
Age at first childbirth				
<20 years	1.000			
20–25 years	1.164	0.000	1.129	1.200
Above 25 years	1.638	0.000	1.549	1.731
Family size				
<5 family members	1.000			
5-8 family members	0.821	0.000	0.793	0.851
Above 8 family members	0.647	0.000	0.620	0.676
Female representation in the family				
≤ 20% female	1.000			
>20%-40% female	1.186	0.006	1.052	1.341
>40%-60% female	1.260	0.000	1.120	1.423
Above 60% female	1.247	0.000	1.106	1.410
Heard about ANC				
No	1.000			
Yes	2.813	0.000	2.638	3.003

The wealth quintile show a significant positive effect on the utilisation of full antenatal care among rural women. Women from the middle wealth quintile are nearly two times, women from the richer quintile are two and a half times and women from richest quintile are nearly three times more likely to utilise full antenatal care than poorest women. Women with 1-10 years of educationare more than two times, and

women with more than 10 years of education arenearly fourtimes more likely to utilise full antenatal care than uneducated women. The finding suggests that husband'seducation is not a significant predictor of women utilisation of full antenatal care (p-value >0.05). The women age at first childbirth is a significant determinant of receiving full antenatal care. Women who deliver first child in less than 20 years of age are less likely to use full ANC compared with those who deliver her first child at ≥20 years of age. Women with smaller family sizes are more likely to seek full ANC compared to women from larger family.The results show that improvement in gender parity in terms of representation in the household improves the likelihood of using full ANC. Women from a household having >20-40% female in the household, >40-60% female in the household and above 60% percent female in the household are more likely to get ANC compared to women belonging to households having ≤ 20% female. This finding goes well with our argument that the genderpresence in the family improves the utilisation of ANC. Another significant finding is that if women have heard about ANC then it improves the likelihood of getting full ANC. The results show those women who have heard about ANC are nearly three times more likely to use full ANC. Therefore, we argue that awareness about ANC bears a significant impact on its utilisation.

The results of the logistic analysis for safe delivery are presented in Table 3. Compared to the poorest, women from the middle wealth quintile are two times, women from the richer quintile are nearly three times and women from richest quintile are nearly five times more likely to go for safe delivery. Women's education was found to be an important significant determinant in the utilisation of safe delivery. Women with 1-10 years and above 10 years of education are 1.7 and 3.3 times more likely to use safe delivery care respectively compared to those uneducated women. Husband's education also positively contributes to women safe delivery. Women having husband education 1-10 years and above 10 years are 1.2 and nearly 1.4 times more likely to use safe delivery care respectively compared to those having uneducated husband. Women delivering first child in the age 20-25 years and above 25 years are more likely to use safe delivery compared to those delivering below the age of 20 years.

Table 3:

Odds Ratio and 95% Confidence Interval (CI) for safe delivery among rural women, DLHS-3 (2007–08)

			95% CI	
	Odds ratio	**P-value**	**Lower**	**Upper**
Wealth quintiles				
Poorest	1.000			
Poorer	1.427	0.000	1.383	1.472
Middle	2.011	0.000	1.947	2.077
Richer	2.936	0.000	2.834	3.042
Richest	5.121	0.000	4.877	5.378
Mother's education				
Illiterate	1.000			
1-10 years education	1.740	0.000	1.698	1.783
Above 10 years education	3.324	0.000	3.148	3.511
Husband's education				
Illiterate	1.000			
1-10 years education	1.228	0.000	1.195	1.262
Above 10 years education	1.436	0.000	1.379	1.494
Age at first childbirth				
<20 years	1.000			
20–25 years	1.220	0.000	1.194	1.247
Above 25 years	1.791	0.000	1.705	1.882
Family size				
<5 family members	1.000			
5-8 family members	0.763	0.000	0.742	0.784
Above 8 family members	0.709	0.000	0.687	0.733
Female representation in the family				
≤ 20% female	1.000			
>20%-40% female	1.282	0.000	1.185	1.389
>40%-60% female	1.286	0.000	1.189	1.391

Above 60% female	1.319	0.000	1.219	1.429
Heard about safe delivery				
No	1.000			
Yes	2.128	0.000	2.074	2.183

The probability of safe delivery care was found to be less likely among women with family size 4-8 and above 8 members. In case of utilisation of safe delivery also we find that gender representation in terms of female percentage in the household significantly improves the likelihood of using safe delivery. Women who have heard about safe delivery are two times more likely to go for safe delivery compared to those who have not heard about it. Therefore, in case of safe delivery also awareness regarding the same improves its utilisation

Table 4:

Odds Ratio and 95% Confidence Interval (CI) for post natal care among rural women, DLHS-3 (2007–08)

			95% CI	
	Odds ratio	**P-value**	**Lower**	**Upper**
Wealth quintiles				
Poorest	1.000			
Poorer	1.371	0.000	1.329	1.415
Middle	1.971	0.000	1.908	2.036
Richer	2.915	0.000	2.813	3.021
Richest	5.141	0.000	4.904	5.389
Mother's education				
Illiterate	1.000			
1-10 years education	1.549	0.000	1.511	1.587
Above 10 years education	2.568	0.000	2.440	2.704
Husband's education				
Illiterate	1.000			
1-10 years education	1.145	0.000	1.114	1.177
Above 10 years education	1.157	0.000	1.112	1.205
Age at first childbirth				
<20 years	1.000			
20–25 years	1.120	0.000	1.096	1.145
Above 25 years	1.480	0.000	1.411	1.551
Family size				
<5 family members	1.000			
5-8 family members	0.814	0.000	0.793	0.836
Above 8 family members	0.710	0.000	0.687	0.733
Female representation in the family				
≤ 20% female	1.000			
>20%-40% female	1.170	0.000	1.083	1.265
>40%-60% female	1.171	0.000	1.085	1.264
Above 60% female	1.151	0.000	1.065	1.245

The results of the logistic analysis for postnatal care (PNC) are presented in Table 4. Findings show that all the predictor variables used in the analysis significantly determines the utilisation of postnatal care. Compared to the poorest, women from the middle wealth quintile are two times, women from the richer quintile are nearly three times and women from richest quintile are nearly five times more likely to go for PNC. Women's education was found to be an important significant determinant in the utilisation of PNC. Women with 1-10 years and above 10 years of education were 1.5 and 2.5 times more likely to use PNC respectively compared to those uneducated. Husband's education also positively contributes to women utilising PNC. Women delivering first child in the age 20-25 years and above 25 years are more likely to use PNC compared to those delivering below the age of 20 years. The probability of using PNC is found to be less

likely among women with family size 4-8 and above 8 members. We find that improvement in gender representation in the household significantly improves the likelihood of using PNC.

The above analysis suggests that wealth level, female education, age at first childbirth, family size and gender representation in terms of female percentage in the family significantly predicts the maternal healthcare utilisation in rural India. However, though husband education was found significantly predicting safe delivery and postnatal care but insignificant for antenatal care utilisation. The information variable considered in the study for antenatal care and safe delivery is found to be significantly predicting utilisation of these healthcare services.

IV. Conclusion and Possible Policy Directions

In this paper authors have examined a number of socio-demographic factors that influence the use of maternal health care services. The results show that wealth level, female education, age at first childbirth, family size and gender representation in terms of female percentage in family are consistent predictor of maternal healthcare utilisation i.e. ANC, safe delivery and PNC.

The wealth level in rural India turns out to be a very important determinant for utilising maternal healthcare services in rural India and richer mothers are more likely to use maternal healthcare services. Moreover, Singh *et al.* (2012) found that in rural India the advice provided to pregnant women on the seven components during antenatal sessions in India was far from universal and the rich were more likely than the poor to receive advice vital to improving maternal and child health from public health workers. Though Government of India has taken a number of initiatives to improve the maternal and child healthcare in rural India, a more focused approach for equitable healthcare services across income class will improve the maternal healthcare among more disadvantaged i.e. among poor women.

The results from logistic analysis confirmed the importance of mother's education on the utilisation of health care services. The results also suggest that female attaining more than 10 years of schooling is more likely to use maternal healthcare compared to illiterate and women having 1-10 years of schooling. This indicates that in rural India bymotivating females for higher education the penetration of maternal healthcare use can be significantly improved. Therefore, the government should target improving the average years of schooling among females in rural India and not merely "*Universalization of Elementary Education (UEE)*". Male attaining a higher level of education is equally important.

The findings suggest that the utilisation of maternal healthcare services declines as the family size increases which is contrary to the finding Chakraborty *et al.* (2003) that there is a U-shaped relation between family size and the use of health services for treating any complications during pregnancy. Gender representation in household retains a net effect on maternal healthcare service use, independent of other background characteristics and household's economic status.As discussed above, this could be because of reasons cited above like improvement in female bargaining power, strong concern for female in the family and sharing of the workload related to household chores.

The results for ANC and safe delivery highlighted that women who have heard about these maternal healthcare services are more likely to use these services compared to those who have not heard about them. Therefore, a broader dissemination of information related to maternal health, irrespective of mode, are vital for improving utilisation of maternal healthcare services.

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