Full Length Research Article

INVESTIGATING INTER-DISTRICT DISPARITY IN RCH CARE UTILIZATION STATUS IN INDIA, 2002-2007

*Malay Das

Department of Economics, Naba Barrackpur Prafulla Chandra Mahavidyalaya, New Barrackpore, Kolkata-700131, India

ARTICLE INFO	ABSTRACT
	Using data from the District Level Household and Facility Survey (DLHS) of 2002-04 and 2007-08, and 61st round of National Sample Survey (2004-05), this paper examines the district-level (inter-district) disparity in reproductive and child health (RCH) care utilization status in India. Ranking of districts is done and coefficient of variation is used to assess the degree of district-level variation in RCH care status. Lorenz curve is drawn to examine the district-level inequality in RCH care utilization. The ordinary least-square regression technique is applied to examine the factors explaining the district-level variation in RCH care utilization. Results suggest that economically backward districts in India were lagged behind in health care utilization. The degree of inequality in this dimension was found to be large among economically well-off districts. The women's education and women's awareness to health care utilization were found to have greater role in promoting the use of RCH services.

INTRODUCTION

Improving the quality of life of mothers and children by increasing the use of reproductive and child health (RCH) care services has been the prime objective of family welfare programme in India. In 1952, India was the first country to launch the family welfare programme with the objective of controlling birth rates and thereby stabilizing the population (MOHFW, 2000). Since then, the family welfare programme of India underwent several changes (Srinivasan, 1998). In 1996, the Government of India adopted the family welfare Programme as a national Programme following the recommendation of International Conference on Population and Development (ICPD) held in 1994 at Cairo to address the issues of RCH care services throughout the country. Following the recommendations of ICPD, the utilization of RCH care services has been given major priority and considered as an integral part of RCH programme in India (Srinivasan, 1998). Additionally, the National Population Policy 2000 was introduced by the Government of India with the prior objective of improving the quality of health of mothers and children throughout the country.

*Corresponding author: Malay Das,
Department of Economics, Naba Barrackpur Prafulla Chandra Mahavidyalaya, New Barrackpore, Kolkata-700131, India

This called for immediate needs of addressing the unmet need for contraception, health care infrastructure, and health personnel, and to provide integrated service delivery for basic RCH care (MOHFW, 2000). Utilization of RCH care services has major implication for safe motherhood, health of children, unwanted pregnancies and fertility. The use of RCH services such as the use of ante-natal care (ANC) and safe delivery services may reduces the chances of maternal and early childhood mortality, use of immunization services may reduce the risk of early childhood mortality, and use of family planning services may reduce the chance of unwanted pregnancies and thereby lowering fertility. Due to these benefits, possibly, the utilization of RCH care services has been given a major priority in health related agenda in India following the recommendation of ICPD, 1994 (Srinivasan, 1998).

The purpose of this paper was to examine the RCH care utilization status in and disparity in RCH care utilization across districts of India overtime. In the wake of decentralized planning in India, the lower administrative provinces like districts are the central focus of effective planning and program implementation. Thus, in order to ensure a better quality of health of mothers and children throughout the country, the information on the utilization of RCH care services at the district level is needed. Existing studies on the

utilization of RCH services in India have been carried out at the national and state level. Though some studies analyzed socio-economic differentials in different RCH care indicators and examined the factor determining RCH care utilization at the state or national level (Salam and Siddiqui, 2006; Gupta *et al.*, 2007; Mohanty, 2009; Mohanty and Pathak, 2009; Kumar and Mohanty, 2011), there have been less efforts to put light on the factors determining the district-level variation in RCH care utilization in India. It may be mentioned that two past studies in India made attempts to analyze district-level disparities in maternal health care (Ghosh, 2011) and RCH care (Gulati and Sharma, 2004) and their determinants. One of the major reasons for limited number studies on RCH care utilization at the district level in India was possibly due to non availability of data for districts of India. Though now, some population based surveys in India have bridged this gap and made the scope for researchers to carry out analyses at the district level, very less effort has been made to carry out analysis on the present subject in India.

MATERIALS AND METHODS

Data

Data from the District Level Household and Facility Survey-2 (DLHS-2), 2002-04, District Level Household and Facility Survey-3 (DLHS-3), 2007-08 and 61st round of National Sample Survey (NSS), 2004-05 are used in the analyses. Disparity in RCH care utilization across districts of India is examined over two periods namely, 2002-04 and 2007-08. The RCH care utilization status of each district is determined by RCH care index (RCHCI) value. The RCHCI is constructed for 587 districts from 33 states of India (except for the districts of Jammu and Kashmir, and Nagaland) based on four selected RCH care indicators namely, percentage of currently married women having at least three ANC visits during last pregnancy, percentage of currently married women having safe delivery for last birth, percentage of children aged 12-23 months fully immunized and percentage of currently married women using any modern contraceptive methods. The data on these four RCH indicators for 2002-04 and for 2007-08 are obtained from second and third rounds of District Level Household Survey (DLHS) i.e. from DLHS-2 (2002-04) and DLHS-3 (2007-08), respectively. In DLHS-2, the data were collected from 6, 20,107 households covering 593 districts from all states of India whereas in DLHS-3 the data was collected from 7, 20,320 households covering 601 districts from 34 states

(excluding Nagaland) of India. In DLHS-2, the information on ANC visits, delivery and current use of contraception were collected from currently married women aged 15-44 years (N=5,07,622) whereas in DLHS-3 the information on ANC visits and delivery were collected from ever married women aged 15-49 years (N=6,43,944) and the information on current use of contraception was collected from currently married women aged 15-49 years (N=6,04,804). Moreover, in DLHS-2, the information on child immunization was collected for youngest living children born to currently married women aged 15-44 years since January 1, 1999/2001 whereas in DLHS-3 the same information was collected for youngest living children born to ever married women aged 15-49 years since January1, 2004. For the sake of similarity, all the selected indicators are restricted to currently married women aged 15-44 years only. The detailed descriptions and inclusion criteria of four selected RCH care indicators are given in Appendix 1. The household consumption expenditure data from Schedule 1.0 of 61st round of NSS is used to estimate the monthly per capita consumption expenditure (MPCE) (in…) ₹ for each district. The district-level MPCE is used to understand the district-level differentials in RCH care utilization by economic well-being. The monthly household consumption expenditure is divided by total household size to obtain the MPCE at the district level. The estimates of MPCE were derived for 581 districts and used to examine the economic differentials in RCH care utilization.

Computation of reproductive and child health care index (RCHCI)

The RCH care index for districts of India for the periods 2002-04 and 2007-08 is computed by applying Principal Component Analysis (PCA) and the following Aggregation Method (Raychaudhuri and Haldar, 2009).

$$I = \sum_{i=1} NV_i \left(\sum_{j=i} |L_{ij}| . E_j \right) / \sum_i \left(\sum_{j=1} |L_{ij}| . E_j \right)$$

where, I is the index, NV_i is the normalized value of *i-th* indicator, L_{ij} is the factor loading of *i-th* indicator on *j-th* factor, E_j is the Eigen value of the *j-th* factor.

The PCA is applied to obtain the factor loadings and weights of the selected indicators. To obtain the factor loadings and weights, it is necessary to choose only factors having associated Eigen values of more than one, explaining variance

---

Appendix 1
Description and inclusion criteria of four selected RCH care indicators.

RCH care indicators used	Inclusion criteria
1. Percentage of currently married women having at least 3 ANC visits during last pregnancy	All currently married women aged 15-44 years, who had live or still births since January1, 2004 (in case of DLHS-3) and January1, 1999/2001 (in case of DLHS-2)
2. Percentage of currently married women having safe delivery (institutional delivery or home delivery assisted by any skilled health personnel) for last birth	All currently married women aged 15-44 years, who had live or still births since January1, 2004 (in case of DLHS-3) and January1, 1999/2001 (in case of DLHS-2)
3. Percentage of children aged 12-23 months fully immunized (full immunization includes-one dose of BCG, three injections of DPT, three doses of Polio excluding Polio 0, and one dose of measles)	The youngest living children aged 12-23 months born to currently married women after January1, 2004 (in case of DLHS-3) and January1, 1999/2001 (in case of DLHS-2)
4. Percentage of currently married women currently using any modern contraceptive methods (contraceptives other than rhythm/withdrawal methods)	All currently married women aged 15-44 years

by more than 10 per cent individually and explaining variance by more than 60 per cent collectively (OECD, 2008). Running the PCA on the data of 587 districts for the period 2002-04, only one Eigen value of more than one (3.304) is identified which explains 82.6 percent of the total variance in the selected variables included in the analysis. Similarly, running the PCA on the data of 587 districts for the period 2007-08, only one Eigen value of more than one (3.029) is identified which explains 75.7 percent of the total variance in the selected variables. Here, the necessary conditions for computing the factor loadings and weights are satisfied. The Eigen value of more than one is then applied to the loading (also known as factor loading) of each RCH care indicator on the extracted component to compute the weight of each indicator. The estimated factor loadings and weights of four selected RCH care indicators for the periods 2002-04 and 2007-08 are presented in Table 1.

independent variables namely, proportion of female literates (i.e. female literacy rate), female workforce participation rate, proportion of Muslim population, proportion of combined scheduled caste and scheduled tribe (SC/ST) population, proportion of poor (i.e. level of poverty), proportion of urban population (i.e. level of urbanization), women's awareness to RCH programmes and MPCE are used in the analysis. Additionally, five regional dummy variables, namely, north dummy (1 for the districts of Bihar, Uttar Pradesh, Chhattisgarh, Madhya Pradesh and Rajasthan), south dummy (1 for the districts of Andhra Pradesh, Karnataka, Kerala and Tamil Nadu), east dummy (1 for the districts of Jharkhand, Odisha and West Bengal), west dummy (1 for the districts of Gujarat and Maharashtra) and north-east dummy (1 for the districts of the districts of Arunachal Pradesh, Assam, Manipur, Mizoram, Tripura and Meghalaya) are used to understand the regional pattern in the dependent variable.

Table 1. Estimated factor loadings and weights of four selected RCH care indicators based on the data of 587 districts, India, 2002-04 and 2007-08

RCH care indicators	2002-04		2007-08	
	Factor loadings on the extracted component	Estimated Weights	Factor loadings on the extracted component	Estimated Weights
Percent CMW having at least 3 ANC visits during last pregnancy	0.941	3.1098	0.924	2.7997
Percent CMW undergone safe delivery for last birth	0.928	3.0660	0.900	2.7266
Percent children aged 12-23 months fully immunized	0.904	2.9880	0.858	2.5979
Percent CMW using any modern contraceptive methods	0.860	2.8398	0.793	2.4034
Eigen value	3.304		3.029	

Note: Extraction method-Principal Component Analysis. Only one component was extracted.

Analyzing inter-district disparity in RCH care utilization

Ranking of districts is done and coefficient of variation (CV) is calculated based on RCHCI to assess the degree of district-level variation in RCH care utilization status. Moreover, the districts are classified by categories of RCHCI to see the distribution of districts and thereby assess the district-level variation in RCH care utilization. Four categories of RCH care status are defined based on the minimum cut-off point below the mean value and maximum cut-off point above the mean value in RCHCI of 2002-04. The same cut-off points are applied to the index of 2007-08 to see the change in the distribution of districts overtime. Beside, the districts are cross classified by categories of RCHCI and MPCE class to understand the district-level variation in RCH care utilization by economic well-being. The Lorenz curve for RCHCI with respect to MPCE class is also drawn to assess the degree and pattern of district level inequality in RCH care utilization. The classification of districts by both MPCE class and RCHCI is done based on the estimates of 581 districts. Four MPCE class are defined based on the minimum cut-off point below the mean value and the maximum cut-off point above the mean value in district level MPCE as of 2004-05. The standard deviation (SD) in district level MPCE is considered as an interval to determine the minimum and maximum cut-off points.

Statistical analysis

In order to examine the factors determining RCH care utilization status in districts of India, the ordinary least-square (OLS) regression analysis is carried out. The OLS regression is applied to the estimates of 581 districts, where the RCHCI, as of 2007-08, is the dependent variable. A set of eight

The MPCE is transformed into logarithmic form to normalize its distribution and linearize its relationship with the dependent variable. Before applying OLS regression, a correlation analysis is carried out to understand the pattern of association between all included variables.

RESULTS

Distribution of districts by categories of RCHCI

The percent distribution of districts by categories of RCHCI in India for 2002-04 and 2007-08 shows that proportion of districts with low RCH care status has decreased from 22per cent (127 out of 587) in 2002-04 to 12per cent (69 out of 587) in 2007-08 while that in the lower middle category has increased from 30per cent in 2002-04 to 36per cent in 2007-08 and in the higher middle category has increased from 28per cent in 2002-04 to 31per cent in 2007-08. On the contrary, the proportion of districts with high RCH care status remained almost same (21per cent) during 2002-07. From this analysis it can be argued that only some districts with lower RCH care status might have shown little improvement in RCH care utilization during 2002-07. However, a large variation in RCH care utilization continues to exist among districts of India. In 2007-08, about 50per cent of the districts (279 out of 587) were in the low and lower middle categories of RCH care status.

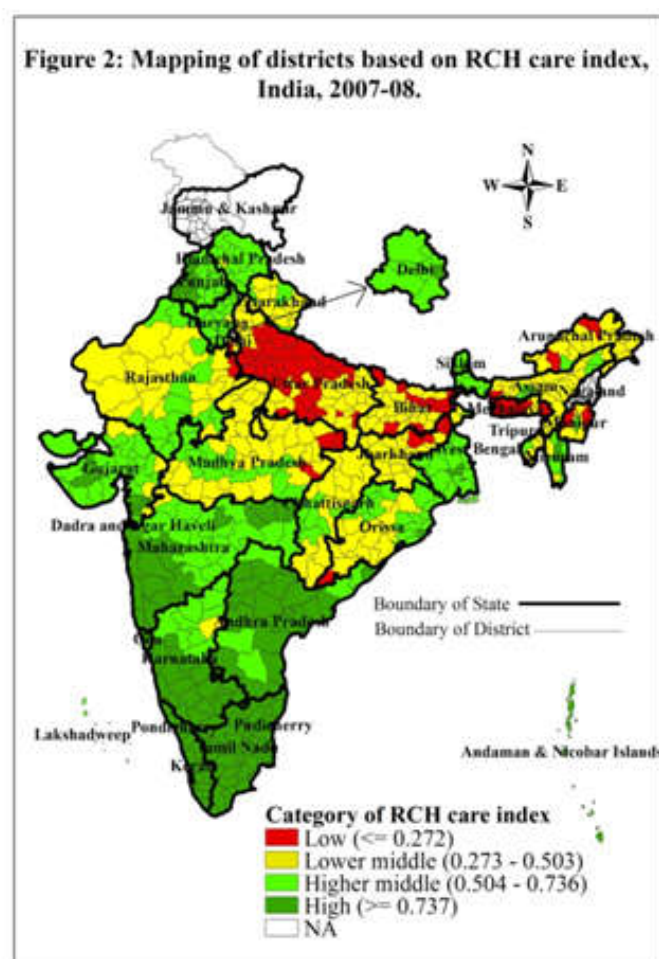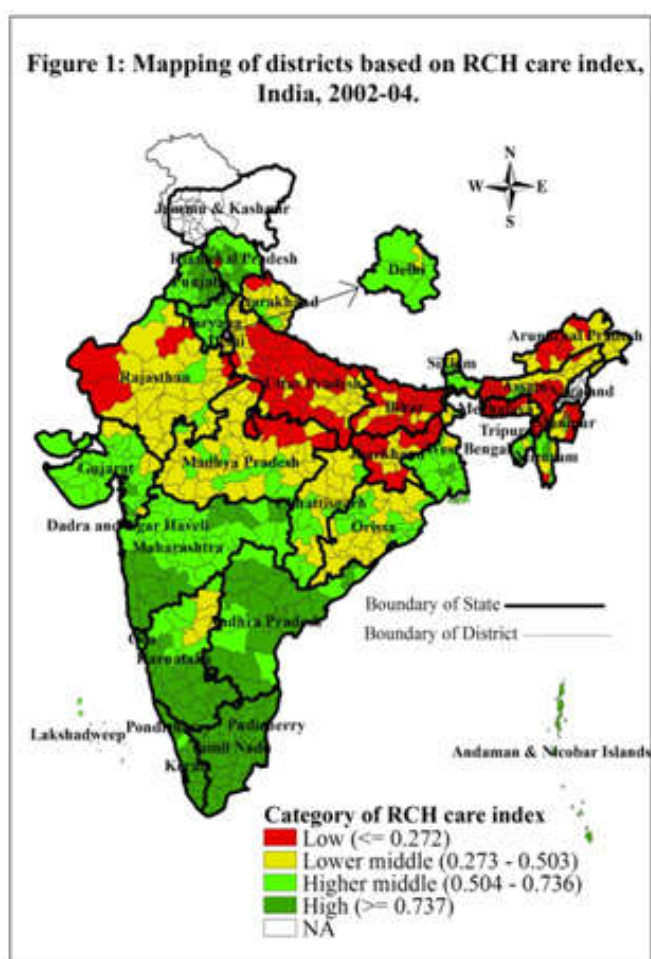**Inter-district disparity in RCH care utilization status in India**

In order to examine the disparity in RCH care utilization among districts of India, the CV is calculated based on RCHCI and also the districts are ranked based on RCHCI. The CV in

RCHCI was 0.461 in 2002-04 and 0.413 in 2007-08, indicating that the reduction of inter-district disparity in this dimension in India was marginal. However, the district-wise RCHCI and ranking of districts based on RCHCI indicate that a large disparity in RCH care utilization continues to exist among the districts of India. The value of RCHCI, as of 2007-08, ranges from a lowest of 0.060 in the district of Budaun of Uttar Pradesh to a highest of 0.936 in the district of Puducherry of Pondicherry. Essentially, the district of Puducherry in Pondicherry placed the first rank in the RCH care status while the district of Budaun of Uttar Pradesh placed the lowest rank in the RCH care status in India. The district of Thiruvananthapuram of Kerala with RCHCI value of 0.930 and the district of Mandya of Karnataka with RCHCI value of 0.921 placed the second and third position in the RCH care status, respectively. More interestingly, the six districts of Uttar Pradesh namely, Budaun, Bahraich, Shrawasti, Farrukhabad, Balrampur and Shahjahanpur placed the bottom six positions in the RCH care status in India.

India (Uttar Pradesh, Bihar, Jharkhand, Rajasthan, Assam, Arunachal Pradesh and Meghalaya) have shown little improvement in RCH services utilization. However, the utilization of RCH care services was persistently low in the districts of northern and north-eastern parts compared to that in the districts of other parts of India.

Economic differentials in RCH care utilization status

The economic differentials in RCH care utilization status across districts of India are examined by distribution of districts by MPCE class (in….) ₹ and categories of RCH care status. Table 2 presents the percent distribution of districts by MPCE class and RCH care status categories in India. It is observed that the RCH care utilization largely varies among the districts of different MPCE class categories. More than two-fifth of the districts (42per cent) in low MPCE class were in the low RCH care status compared to only 4per cent districts in high MPCE class category.

Figure 1: Mapping of districts based on RCH care index, India, 2002-04.

Category of RCH care index
- Low (<= 0.272)
- Lower middle (0.273 - 0.503)
- Higher middle (0.504 - 0.736)
- High (>= 0.737)
- NA

Figure 2: Mapping of districts based on RCH care index, India, 2007-08.

Category of RCH care index
- Low (<= 0.272)
- Lower middle (0.273 - 0.503)
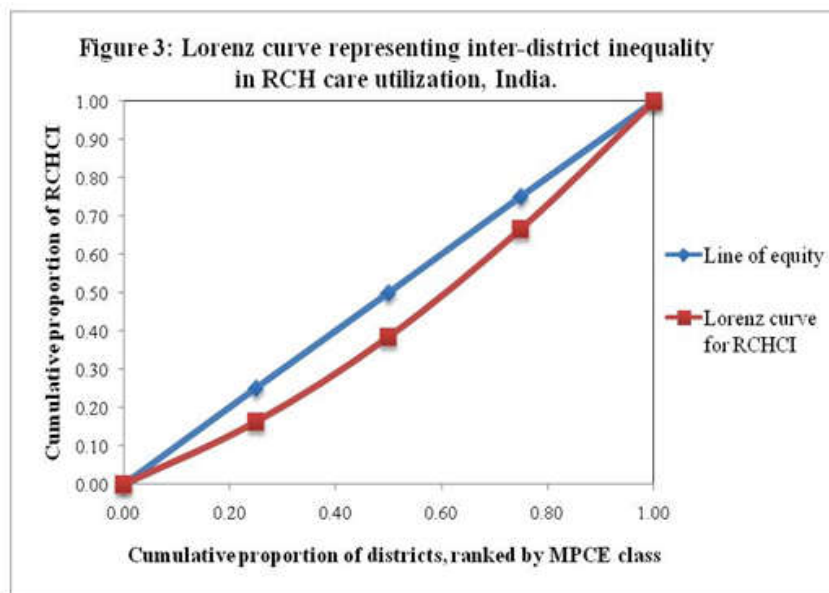- Higher middle (0.504 - 0.736)
- High (>= 0.737)
- NA

Additionally, the bottom 100 districts in RCH care status are mainly from twelve (12) states of India namely, Arunachal Pradesh, Assam, Bihar, Gujarat, Haryana, Jharkhand, Madhya Pradesh, Manipur, Meghalaya, Odisha, Rajasthan and Uttar Pradesh, of which 77 districts are from three of the socio-economically poorer states namely, Uttar Pradesh, Bihar and Jharkhand. The district level variation in RCH care utilization over the periods 2002-04 and 2007-08 can also be noticed from Figures 1 and 2. Figures 1 and 2 clearly show that only some districts in some northern and north-eastern states of

On the other hand, about two-fifth of the districts in high MPCE class depicts high RCH care status. However, no district in the low MPCE class was in the high RCH care status. A major proportion of the districts (69per cent) in low and lower middle MPCE class categories were in the low and lower middle RCH care status categories compared to only 27per cent districts in higher middle and high MPCE class categories. This clearly indicates that the utilization of RCH services was lower in economically backward districts but higher in economically better-off districts of India.

Table 2.Percent distribution of districts by MPCE class and RCH care status categories, India

MPCE Class (₹)	Categories of RCH care status				Total
	Low	Lower middle	Higher middle	High	
Low (<= 433)	41.8 (28)	52.2 (35)	6.0 (4)	--	100.0 (67)
Lower middle (434-681)	23.9 (65)	39.0 (106)	24.3 (66)	12.9 (35)	100.0 (272)
Higher middle (682-930)	6.7 (11)	29.7 (49)	33.9 (56)	29.7 (49)	100.0 (165)
High (>= 931)	3.9 (3)	3.9 (3)	54.6 (42)	37.7 (29)	100.0 (77)
All India*	18.4 (107)	33.2 (193)	28.9 (168)	19.5 (113)	100.0 (581)

*Excluding the districts of Jammu and Kashmir, and Nagaland, and four districts of Delhi (North, East, New Delhi and Central), one district of Maharashtra (Mumbai) and one district of Andaman and Nicobar Islands (Nicobar). ¨Not available. Note: Figures in the parentheses represent the number of districts.

Figure 3: Lorenz curve representing inter-district inequality in RCH care utilization, India.

Table 3. Results of OLS regression analysis for reproductive and child health care index (RCHCI) based on the data of 581 districts of India

Independent variables	Model1	Model2	Model3	Model4
MPCE[@]	0.344***	0.025	0.029	0.006
	(14.61)	(0.97)	(1.13)	(0.26)
Proportion of poor	--	-0.317***	-0.319***	-0.224***
		(8.23)	(8.54)	(6.32)
Proportion of urban population	--	0.182***	0.172***	0.091***
		(5.68)	(5.55)	(3.10)
Female workforce participation rate	--	0.149***	0.099**	0.105***
		(4.13)	(2.40)	(2.76)
Proportion of Muslims	--	--	-0.265***	-0.194***
			(6.49)	(5.11)
Proportion of SC/ST population	--	--	-0.070**	-0.039
			(2.37)	(1.45)
RCH program awareness index	--	--	--	0.234***
				(6.83)
Female literacy rate	--	--	--	0.315***
				(6.40)
North dummy	--	-0.098***	-0.083***	-0.071***
		(4.62)	(4.01)	(3.68)
South dummy	--	0.212***	0.231***	0.222***
		(11.41)	(12.14)	(12.73)
East dummy	--	0.067***	0.093***	0.063***
		(2.67)	(3.74)	(2.76)
West dummy	--	0.084***	0.102***	0.105***
		(4.11)	(5.06)	(5.69)
North-east dummy	--	-0.165***	-0.121***	-0.149***
		(8.77)	(5.79)	(7.27)
Constant	-1.696	0.410	0.437	0.157
R^2	0.27	0.74	0.76	0.80
Number of districts	581	581	581	581

[@]Used in logarithmic form. ***Significant at 1per cent level (p< 0.01). **Significant at 5per cent level (p< 0.05). Note: The RCHCI, as of 2007-08, is the dependent variable. Figures in parentheses represent absolute t-ratios.

District-level inequality in RCH care utilization: Exploration by Lorenz curve

The inequality in RCH care utilization among districts of India has been examined with the help of Lorenz curve for RCHCI as of 2007-08. The Lorenz curve for RCHCI is drawn by plotting the cumulative proportion of RCHCI (on Y axis) against the cumulative proportion of districts ranked by MPCE class (on X axis) (Figure 3). It is observed that there is a significant gap between the line of equity and the Lorenz curve for IMR, indicating that there was a sharp inequality in utilization of RCH services among districts of India. It is further noticed that the Lorenz curve for RCHCI lies below the line of equity, indicating that the degree of inequality in this dimension was lower among economically backward districts compared to that among economically well-off districts in India.

Factors determining RCH care utilization status

The OLS regression is carried out to examine the factors determining RCH care utilization status in districts of India where the reproductive and child health care index (RCHCI), as of 2007-08, is the dependent variable. The results of OLS regression analysis for RCHCI are presented in Table 3. Under regression analysis, four alternative regression models are developed, the RCHCI, as of 2007-08, being the dependent variable in all models. In Model1, only the MPCE is included. It is found that the MPCE is significant in this model and it alone accounts for 27 per cent of the explained variation (R^2=0.27) in the dependent variable. The coefficient for MPCE is found to be positive (0.34), indicating that the MPCE is positively associated with RCH care status. In Model2, poverty, level of urbanization, female workforce participation rate and five regional dummy variables (north, south, east, west and north-east dummies) in addition to MPCE are included. In Model2, all variables except MPCE are significant. The MPCE remains insignificant while controlling for poverty and level of urbanization. This is most likely because of its strong correlation with these two variables. The poverty has negative association while level of urbanization and female workforce participation rate have positive association with RCH care status. Interestingly, the coefficients for the north and north-east dummies are found to be negative while that for south, east and west dummies are positive, indicating that the RCH care utilization status is likely to be low in northern and north-eastern regions and high in southern, western and eastern regions in India. In Model3, proportion of Muslim population and proportion of SC/ST population are included along with variables used in Model2. The MPCE remains insignificant in Model3 also. However, all the remaining variables are significant in this model. The coefficients for proportion of Muslim population and proportion of SC/ST population are negative, indicating that these two variables are negatively associated with RCH care utilization status. The coefficients for other significant variables in this model remain in the same direction as in Model2. In Model4, RCH program awareness index and female literacy are included in addition to the variables used in Model3. All the variables in Model4 explain 80 per cent variation (R^2=0.80) in the dependent variable. In this model, all variables except MPCE and proportion of SC/ST

population are significant. Both RCH program awareness index and female literacy are found to have positive association with RCH care status. The association of other significant variables (including regional dummies) with RCH care status remains in the same direction as in previous two models.

Summary and Conclusion

Over the decades, India has made significant progress in economic growth, reduction in poverty, and improvement in female literacy and health and health care utilization. However, large disparities in health and health care utilization exist among and within the states of India. The progress in health and health care aspects of a state or nation largely depends on that of its sub-regions. Therefore, widening regional disparities in health care progress within a state or nation may be an obstacle to the development of the state or nation as a whole. In India, the lower administrative provinces like districts are considered as the basic units for effective planning and program implementation. The district-level information on health care aspects is often useful for the implementation of planning for comprehensive development. Existing studies on disparity in health care utilization in India have been limited to national and state level or even to micro-level analysis.

Using data from population based surveys, this paper examines the extent of disparity in RCH care utilization status across districts of India, considering the district as the unit of analysis. The disparity in RCH care utilization status among districts of India has been examined over two periods, namely, 2002-04 and 2007-08. Results indicate that there has been not much improvement in RCH care utilization status in the districts of India during period under consideration. A wide variation in this dimension continued to exist among the districts of India. The value of RCHCI, as of 2007-08, ranges from a lowest of 0.060 in the district of Budaun of Uttar Pradesh to a highest of 0.936 in the district of Puducherry of Pondicherry. The majority of the districts (258 out of 279) in the lower and lower middle categories of RCH care status are mainly from some northern and north-eastern states of India (Bihar, Chhattisgarh, Jharkhand, Madhya Pradesh, Odisha, Rajasthan, Uttar Pradesh, Uttaranchal, Arunachal Pradesh, Assam, and Meghalaya). The degree of inter-district disparity in this dimension in India remains unchanged during 2002-07. However, the inter-district disparity in this dimension continued to be large in some northern and north-eastern states of India (Uttar Pradesh, Jharkhand, Odisha, Manipur, Meghalaya and Assam).

The distribution of districts by MPCE class and RCHCI shows that more than two-fifth of the districts (42per cent) (i.e. 28 out of 67 districts) from low MPCE class had low RCH care status compared to only 4per cent districts in high MPCE class category. A major proportion of the districts (69per cent) (i.e. 234 out of 339 districts) from low and lower middle MPCE class categories were in the low and lower middle RCH care status categories compared to only 27per cent districts in higher middle and high MPCE class categories. This clearly indicates that the utilization of RCH services was lower in economically backward districts but higher in economically

better-off districts in India. Results of regression analysis indicate that the factors such as female literacy, awareness of RCH programs, level of urbanization and female workforce participation rate have a very significant and positive association while poverty and size of Muslim population have a very significant and negative association with RCH status in districts of India. The MPCE and the size of SC/ST population have no significant association with RCH care status, controlling for all variables. The regional locations play significant role in influencing utilization of RCH services. The coefficients for north and north-east dummies are negative while that for south, east and west dummies are positive, indicating that the utilization of RCH services is likely to be lower in the districts of northern and north-eastern regions compared to the districts in southern, western and eastern regions of India. This is most likely because the infrastructure development, availability and accessibility of health services and awareness of health care utilization among people are low in these regions. Based on the analysis, it may be concluded that most of the economically backward districts in India are lagging behind in health care utilization status.

On the contrary, the economically well-off districts are characterized by better health care status. The women's education and women's awareness to health care utilization have greater role in promoting the use of RCH services. The districts with higher proportion of Muslim population would have lower health care status. Thus, the targeted intervention in economically backward districts and the districts with higher proportion of Muslim population would be helpful to promote health care utilization and thereby improving maternal and child health situation in the country. The increase in people's awareness to health care utilization through various means (such as mass media, Government health personnel etc.) may enhance the use RCH services in the backward districts. Moreover, the involvement of community leaders, regular counseling of couples and, most importantly, the availability of RCH services at most affordable cost may increase the use of RCH services in the economically backward districts or the districts with low RCH care status.

REFERENCES

Ghosh, A. 2011. Maternal health care in Indian districts. Health *Policy*, 103, 290-296.

Gulati, S.C. and Sharma, S. 2004. Reproductive and Child Health Status in India. *Indian Journal of Regional Science*, XXXVI (1), 7-19.

Gupta, M., Thakur, J.S. and Kumar, R. 2007. Reproductive and Child Health Inequities in Chandigarh Union Territory of India. *Journal of Urban Health: Bulletin of the New York Academy of Medicine*, 85 (2), 291-299.

Kumar, A. and Mohanty, S.K. 2011. Intra-urban differentials in the utilization of reproductive health care in India, 1992-2006. *Journal of Urban Health,* 88 (2), 311-328.

Ministry of Health and Family Welfare (MOHFW). 2000. *National Population Policy 2000.* Government of India, New Delhi.

Mohanty, S.K. 2009.Alternate wealth index and health estimates in India. *Genus,* 65 (2), 113-137.

Mohanty, S.K.and Pathak, P. K. 2009. Rich-poor gap in utilization of reproductive and child health care services in India, 1992-2005. *Journal of Biosocial Sciences*, 41 (3), 381-398.

Organization of Economic Co-operation and Development (OECD). 2008. *Handbook on Constructing Composite Indicators: Methodology and User Guide.* JRC European Commission.

Raychaudhuri, A. and Haldar, S.K. 2009. An Investigation into the Inter-District Disparity in West Bengal, 1991-2005. *Economic and Political Weekly,* XLIV (26 & 27), 258-263.

Salam, A. and Siddiqui, A. 2006. Socioeconomic inequalities in use of delivery care services in India. *Journal of Obstetrics and Gynecology of India*, 56 (2), 123-127.

Srinivasan, K. 1998. Population Policies and Programmes since Independence: A Saga of Great Expectations and Poor Performance. *Demography India*, 27 (1), 1-22.

****