Decomposition of Rural-Urban Differential in Low Birth Weight in India: An Evidence from NFHS-4

Introduction:

Reproductive health is an important issue, especially in women of childbearing age. Infant birth weight is a significant predictor of the immediate and future health status of a newborn where low birth weight (LBW) and is a major public health concern and one of the strongest single risk factors for early neonatal mortality and morbidity. Birth weight also represents an endpoint of intrauterine growth, which depends on maternal, placental, and fetal factors, as well as a sequence of constitutional and environmental influences. Overall, it is estimated that 15% to 20% of all births worldwide are LBW, representing more than 20 million births a year. In both developed and developing countries, low birth weight is the most important predictor of neonatal mortality and is a significant determinant of postneonatal mortality and morbidity. The objective of this study is to understand to understand the inequalities between rural and urban in low birth weight among women in India.

The rationale for this study

The health of women and children are important to measure to see the standard of health of a country. Family welfare program launched in India as five decades ago and still continues to contribute almost a quarter of the global estimate of maternal morbidity and mortality. After launching of National rural health mission in India, quality of health has been improved due to various policy, planning of the Nationals health programs. Child health plays a vital role in the development of the country. The first five years of life constitutes the crucial span of life. The latest survey on children brought out by the Ministry of Women and Child Development titled “Rapid Survey on Children - 2013-2014” shows the poor condition of children in the country. Rural areas also being disadvantages in case of child health. So here need to explore those factors that rural-urban differentials and factors associated with low birth weight after live births.

Data Source and Methodology

The latest National Family Health Survey (NFHS-4), 2015-16, data has been used for this study, provides information on population, health, and nutrition for India and each state and union territory. Decomposition method used to estimates from a logit or probit model was first described in Fairlie's (1999). In this study, the decomposition technique has been used to show the rural-urban differentials and the contribution of a set of variables to low birth weight. A bi-variate technique has been used to show the percent distribution of low birth weight among women in India as well as in rural and urban.

Results

Result suggests that rural disadvantages in terms of birth weight of child among women compared with mothers from urban area especially in lower and Middle Ages of mothers at the time of birth. Further, 50 percent contribution from cooking fuel and 84 percent from mother's education to widening the rural-urban gap in low birth weight. Whereas drinking water and birth interval of the mother is reducing the gap in rural-urban in low birth weight.

Conclusion: The study investigated the risk factors in the rural and urban area. Some risk factors identified as lower and advanced ages of the mother, illiteracy, poorest wealth quintile, tobacco and smoking, less birth interval.

Tables:

Table 1: Rural Urban gap in Low birth weight among women by their socio-economic and demographic characteristics in 2015-16 in India

	Rural		Urban	
Background characteristics	**Low Birth weight**	**Total last births in last five years**	**Low Birth weight**	**Total last births in last five years**
Mother age at birth				
<20	20.9	15724	18.5	3,532
20-24	17.9	56379	16.7	17,419
25-29	16.6	36500	16.4	14,329
30-35	17.4	15444	15.9	5,826
35+	18.4	4933	19.3	1,211

Mother's education				
No education	19.5	43632	19.9	6,005
primary	19.3	19127	21.2	4,194
secondary	17.5	57121	16.9	22,111
Higher	13.5	9098	13.3	10,006
Religion				
Hindu	18.2	104701	16.8	30,419
Muslim	16.5	17263	16.8	9,252
others	16.7	5205	15.5	2,281
Caste				
SC/ST	19.2	45799	17.6	9,515
OBC	17.4	55607	16.6	18,726
Other	16.6	21250	15.7	12,147
Wealth Index				
poorest	19.1	19137	19.8	1,625
poorer	17.9	17318	19.0	3,491
middle	18.6	21725	18.6	7,166
richer	17.2	15576	18.4	13,320
richest	15.6	13164	14.1	16,714
Region				
North	20.1	15371	18.4	4,937
Central	19.5	35073	20.3	9,883
East	16.0	38851	14.7	6,447
North East	14.0	6066.3	13.4	860
West	19.9	13722	16.7	8,468
South	16.9	19897	14.8	11,722
Total	**17.8**	**128,979**	**16.7**	**42,315**

Table 2: Rural Urban gap in Low birth weight among women by their maternal characteristics in 2015-16 in India

	Rural		**Urban**	
Background characteristics	**Low Birth weight**	**Total last births in last five years**	**Low Birth weight**	**Total last births in last five years**
Type of Delivery				
Home	20.4	29,648	17.5	4,025
Institutional	17.7	99,249	16.7	38,272
Maternal smoking habit				
No	17.8	127,521	16.7	42,156
Yes	18.3	1,458	13.0	159
ANC Visit				
No ANC	19.8	26,829	21.4	4,460
Less than 4	18.1	44,789	18.5	9,855
4 or More than 4	17.2	57,360	15.5	27,999
Tobacco use				

No	17.7	121,690	16.7	41,014
Yes	20.6	7,289	18.0	1,302
IFA tablet				
No	19.7	34,123	20.3	7,615
Less than 100	18.1	72,338	17.4	20,726
100 or more	15.4	22,517	14.1	13,974
Pregnancy intension				
Wanted	17.7	116,768	16.4	38,773
Unwanted	19.3	12,130	19.9	3,523
Birth Interval				
None (First birth)	19.7	39,901.72	17.1	16,276
Less than 2 years	18.2	23,182.10	18.0	5,939
2-3 years	16.5	45,107.78	15.9	11,723
More than 3 years	16.2	20,787.92	15.9	8,379
Parity of mother's				
First parity	19.2	39,549	16.5	16,106
2-3	16.8	65,674	16.6	22,276
4 and more	18.5	23,756	19.4	3,935
Tetanus Injection				
No	21.9	11,150	19.5	3,117
Yes	17.5	116,943	16.5	38,866
Total	**17.8**	**128,979**	**16.7**	**42,315**

Table 3: Rural-Urban Decomposition of risk of low birth weight, National Family Health Survey 2015-16

	Coefficient	**Standard error**	**contribution**
Cooking fuel	0.006	0.003	**49.57****
Open defecation	0.003	0.002	**23.85***
Drinking water	-0.005	0.001	**-39.96*****
Mother education	0.010	0.001	**83.89*****
Ifa tab	0.001	0.000	**6.43*****
Antenatal care visit	0.002	0.001	**16.65*****
Pregnancy intention	0.000	0.000	**0.75****
Birth interval	-0.002	0.000	**-13.67*****
Age at birth	0.001	0.000	**7.50****
Religion	0.001	0.001	**7.40***
Caste	0.001	0.001	**12.03****
Wealth	0.000	0.002	**-2.11**