Increase of Urban-Rural Disparities in Child Health in Peru between 1991 and 2000

Heeju Shin (University of Wisconsin-Milwaukee)

Myungho Paik (Northwestern University)

ABSTRACT

This study examines why health disparities by region increases over time and how regional development explains increasing health disparities between urban and rural areas in Peru. The gaps of child health outcomes between prosperous urban and poor rural areas have been widened continuously in Peru during 1990s although health reform which was targeting poor rural population has enhanced children health in rural areas in absolute term. Using Peruvian Demographic and Health Survey conducted in 1991/2 and 2000, we will examine that an extent of improvement of child health is associated with the level of regional development that the child resides, and significant portion of increased gaps in child health outcomes over time is explained by unequal distribution of economic and social resources among regions in Peru.

BACKGROUND

Geographic inequalities in health are major public concerns that have attracted attention of many researchers as well as health workers. Many studies about health inequalities have focused on regional inequality in health using various socioeconomic factors (Deaton and Paxson 2001; Fuchs 2001) or changes of health outcome using time-series data (reference). However, few studies have explained the gaps in health among geographic regions changing over time.

In Peru, the gaps of the proportions of children malnutrition and stunting has been widened between rural and urban, or more prosperous and poor areas Peru during 1990s (Rogers et al 2002). Peru is divided into three distinctive geographic zones. While urban coastal area where Lima is located and national and political activities are concentrated is the most prosperous area, Andean highland or Amazon River basin contains substantial numbers of people living below poverty line (Rogers et. Al 2000; Webrouck 2004). Peru's cultural and geographic diversity provides a challenging environment for improving health. Regional differentials in child health reflect variations in living conditions, socioeconomic infrastructure and distribution of health-care services.

The Peruvian government has implemented rigorous reform in the health care system, targeting the poor since 1994 (Cotlear 2000). Nevertheless, access to health care facilities still varies among regions. Moreover, privatization of public health services since the early 1990s has also widened the gaps in access to and quality of Peruvian health-care services between poor rural and wealthy urban areas (Kim, Sharkow, and Bayona 1999).

Recently, several studies emphasize the regional variation and community characteristics as important predictors of health outcomes arguing that a comprehensive policy to improve the overall living environments of poor people is crucial to reduce the gaps in child health outcomes among regions (Shin 2007). In other words, increasing gaps in health outcomes among regions in spite of targeted health care programs in rural areas might be explained by increasing inequality in living condition or regional development over time. The purpose of this research is to examine why health disparities by region increases over time and the extent to which regional development explains increased health disparities between urban and rural areas in Peru.

DATA & METHOD

For this study, Peruvian Demographic and Health Survey (DHS) of reproductive-age women (15-49) conducted in 1991/2 and 2000 are used. The sample used in this research is based on ever-married women and their children born during the last five years (from 1to 59 months old). We selected only the ever-married women and the most recently born children, because some key variables are available only for them, yielding a total of 8,399 children from 2000 data, and 7,696 from 1991/2 survey for this study. This study uses pooled regressions with interaction terms of time and regional variables and Oaxaca decomposition analysis.

PRELIMINARY RESULTS

Table 1 shows the changes of weight-for-age of reference median of Peruvian children in urban costal and other regions between 1991 and 2000. From the table, the mean weight-for-age of reference median of children in urban coastal area (including Lima metropolitan area) was 99.5 percent in 1991/2 and has increased to 103.5 percent in 2000, resulting in 4.0 percent of increase. Weight-for-age of other regions presents only 2.1 percent of increase during the same time period. This result indicates that there health disparities between these two regions have increased during 1990s.

Table 1. Changes of weight for age by regions in Peru between 1991/2-2000

	Urban Coastal	**Other Regions**	**Regional Gap**
1991/1992	99.5 [14.2]	91.3 [13.3]	**8.2** t=22.65
2000	103.5 [13.5]	93.4 [13.6]	**10.1** t=28.05
Change over Time	**4.0** t=9.17	**2.1** t=8.15	**1.9** t=3.66

To further investigate the factors affecting increased disparities, we run a pooled regression model which includes individual characteristics, mother's and father's demographic characteristics, and household variables in addition to regional variables and their interactions

terms with time variable. The result shows that community wealth effect is significant in both years, and more interestingly, the wealth effect becomes stronger in 2000, as reported in Table 2. This finding implies that overall community development levels might be a crucial factor in the expansion of health disparities among regions. More rapid change in weight for age is observed in Urban Coastal. To examine the effect of changes in community wealth on the increase in weight for age, we adopt the decomposition analysis (Oaxaca 1973). Table 3 reports that the changes in community wealth level explains 25% (=1.014 / 4.0) of the increase in weight for age in Urban Coastal, and the changes in wealth effect parameters explains 20% (=0.836 / 4.0) of the increase.

Table 2. Community wealth effects on weight for age

	Coefficient	Std. Err.
Dummy (Year=2000)	2.571	1.410
Other Urban	**-2.678**	-5.980
Other Urban * Dummy2000	**-2.269**	-3.450
Rural	-1.052	-1.680
Rural * Dummy2000	-0.002	0.000
Community Wealth	**2.362**	5.970
Community Wealth * Dummy2000	**1.312**	2.170
Number of Observations	15,750	
R-squared	0.2457	

Notes. The regression model also includes child's age and sex as well as various demographic characteristics of his/her parents and household characteristics. The reference group of regional dummies is Urban Coastal. Significant results are in boldface (5%).

Table 3. Decomposition analysis over time: Urban Coastal

	1991/2			2000			Decomposition	
	Sample Mean	Coeff.	Std. Err.	Sample Mean	Coeff.	Std. Err.	$(X_{00}-X_{91})\,\beta_{00}$	$X_{91}(\beta_{00}-\beta_{91})$
Comm.Wealth	0.55	2.01	3.07	0.84	3.54	4.76	**1.014**	**0.836**
Sex	0.52	-1.10	-1.86	0.50	-0.04	-0.06	0.001	0.554
Age	29.78	-0.54	-7.03	30.88	-0.67	-7.82	-0.738	-3.784
Age2/100	11.75	0.73	5.86	12.47	0.97	7.18	0.697	2.859
age 20s	0.53	0.91	0.52	0.47	-0.55	-0.28	0.029	-0.771
age 30s	0.37	2.04	1.07	0.42	0.49	0.23	0.026	-0.563
age 40s	0.08	3.55	1.60	0.07	3.15	1.24	-0.017	-0.030
educat2	0.33	2.88	2.75	0.29	-1.33	-1.01	0.051	-1.400
educat3	0.54	3.62	2.97	0.62	-1.34	-0.91	-0.106	-2.670
choodres_t~n	0.20	-0.05	-0.06	0.17	0.04	0.04	-0.001	0.017
choodres_cs	0.11	0.50	0.49	0.10	0.41	0.40	-0.004	-0.010
spanish	0.99	3.13	1.45	1.00	-4.08	-1.17	-0.039	-7.122
profession	0.16	3.37	3.47	0.10	-0.95	-0.68	0.058	-0.699
cler_sales	0.33	1.18	1.60	0.29	-0.24	-0.31	0.009	-0.468
service	0.11	0.65	0.63	0.12	-0.27	-0.25	-0.003	-0.100

manual	0.08	3.95	3.05	0.04	0.93	0.51	-0.030	-0.228
pprofession	0.29	1.36	1.20	0.16	1.52	1.05	-0.193	0.047
pcler_sales	0.18	0.78	0.69	0.22	0.20	0.16	0.008	-0.107
pservice	0.07	0.41	0.30	0.22	0.76	0.63	0.111	0.025
pmanual	0.34	-0.01	-0.01	0.31	-0.62	-0.55	0.018	-0.207
peducat2	0.26	1.38	1.14	0.23	1.43	0.92	-0.052	0.013
peducat3	0.62	2.46	1.90	0.65	1.62	1.01	0.048	-0.526
precare2	0.89	1.03	1.04	0.80	0.15	0.09	-0.012	-0.784
Hospital Visit	6.46	0.19	2.20	7.32	0.38	3.21	0.328	1.251
No. of Children	2.78	-0.63	-2.68	2.41	-0.83	-2.70	0.303	-0.568
Poor	0.23	-0.47	-0.53	0.14	-0.44	-0.41	0.038	0.007
Number of Obs.		2,135			2,124			
R-squared		0.1397			0.1153			

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