

CHAPTER 3

Economics of Dialysis

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Introduction

Malaysia has experienced rapid economic development over the past 30 years which have brought higher real incomes, improved population health and greatly expanded provision of chronic dialysis treatment. (Table 3.1)

Table 3.1: Trends in Malaysian GDP, population health and dialysis provision, 1980-2005

	1980	1990	2000	2005
GDP per capita (in 2005RM)	8114	10049	16914	19057
Life expectancy at birth (years)	66.9	70.3	72.6	73.7
Under 5 mortality (per 1,000)	42	22	14	12
Urban population (% of total)	42	49.8	61.8	67.3
Treated RRT incidence	4	20	84	123
Treated RRT prevalence	8	71	338	574

Data: International Monetary Fund, World Economic Outlook Database, World Bank HNP Stats, Malaysian National Renal Registry.

Dialysis and income

Dialysis provision in Malaysia has increased rapidly since the mid-1990s, preceded by rapid economic growth since the late 1980s. Provision growth remained robust through the economic crisis of 1997 (Figure 3.1). Higher income enables a country to fund more dialysis treatment (Figure 3.2). With a developing country level of gross national income (GNI) of USD 5,070 per capita, Malaysia has been able to achieve RRT provision commensurate to many developed countries (Table 3.2).

Figure 3.1(a): Dialysis incidence and GDP per capita, 1980-2005

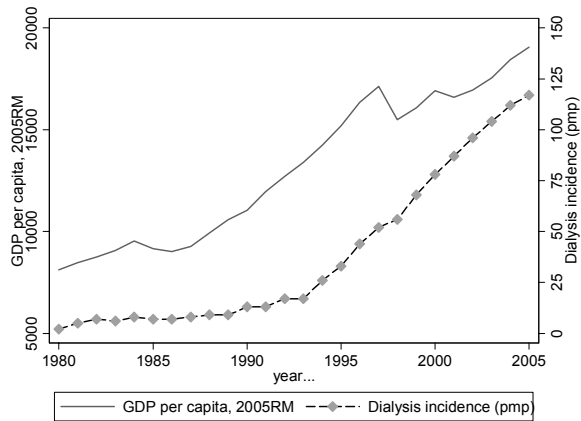
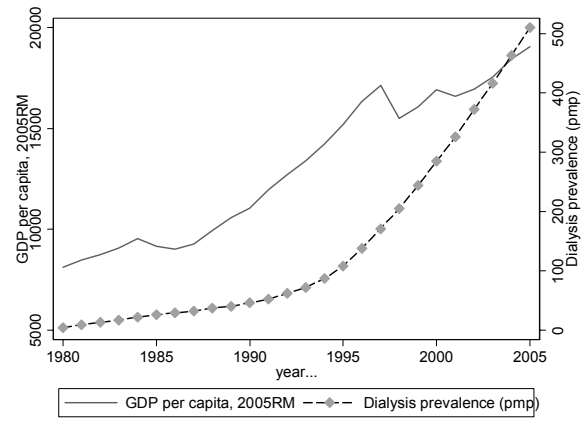
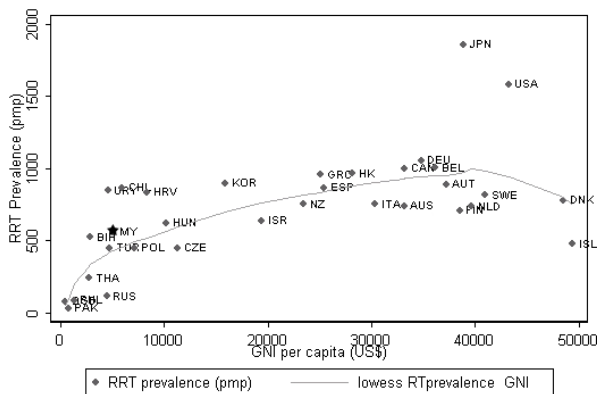


Figure 3.1(b): Dialysis prevalence and GDP per capita, 1980-2005



Data: International Monetary Fund, World Economic Outlook Database, Malaysian National Renal Registry

Figure 3.2: International comparison of income & RRT treatment prevalence, 2005



Data: USRDS Annual Data Report 2007, World Bank World Development Indicators

Table 3.2: Prevalence of renal replacement therapy (RRT) among various regions in the world and by Countries' per capita Gross National Income (GNI) according to World Bank classification

Region/ Country	Prevalence rate in per million population		
	RRT	Dialysis	Transplant
North America	1505	1030	470
Europe	585	400	185
Japan	2045	1945	100
Asia (excluding Japan)	70	60	10
Latin America	380	320	65
Africa	70	65	5
Middle East	190	140	55
Malaysia (GNI USD5070)	574	510	64
High income countries (GNI>USD 9386)	748	-	-
Upper middle income countries (GNI USD3036- 9385)	360	-	-
Lower middle income countries (GNI USD766- 3035)	120	-	-
Low income countries (GNI< USD 766)	37	-	-

Data: Grassmann A, Gioberge S, Moeller S et al. ESRD patients in 2004: global overview of patient numbers, treatment modalities and associated trends. *Nephrol Dial Transplant* 2005; 20: 2587–2593
White SL, Chadban SJ, Jan S, Chapman JR, Cass A. How can we achieve global equity in provision of renal replacement therapy? *Bull World Health Organ.* 2008;86:229-37

Dialysis prices and affordability

Affordability of dialysis (measured as proportion of household income to HD cost) has declined due to the combined effects of increasing real incomes and declining price of HD (Table 3.3). The Public sector has been an important provider and funder of dialysis (Figure 3.3a) but Public sector provision has not kept pace with treatment growth. Public sector funding has rebounded following policy changes regarding reimbursement and subsidies for dialysis patients at the government and social welfare organisations in 2001. (Table 3.4).

Table 3.3: Trends in dialysis market prices

	1990	1995	2000	2005
Dialysis prevalence	71	153	338	574
Price per HD (current RM)	170 ^c	159 ^d	163 ^e	168 ^f
Price per HD (2005RM)	286 ^c	225 ^d	191 ^e	168 ^f
Average Household monthly income (2005RM)	1963	2855	3012a	3356 ^b
HD cost to monthly HH income (%)	186	103	83	65

Note: a1999, b2004, c1992-5, d1996-9, e2000-2, f2003-5

Data: Private sector HD prices were from a 2007 survey of 12 private HD centres in Peninsular Malaysia, Malaysia Plan reports.

Figure 3.3(a): Dialysis funding by sector, 1990-2005 (RM million)

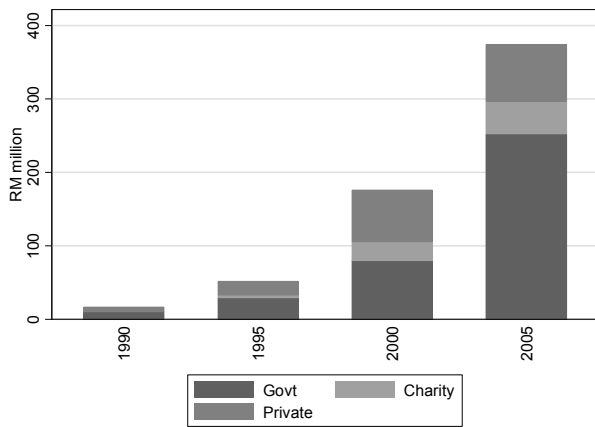


Figure 3.3(b): Dialysis funding by sector, 1990-2005 (%)

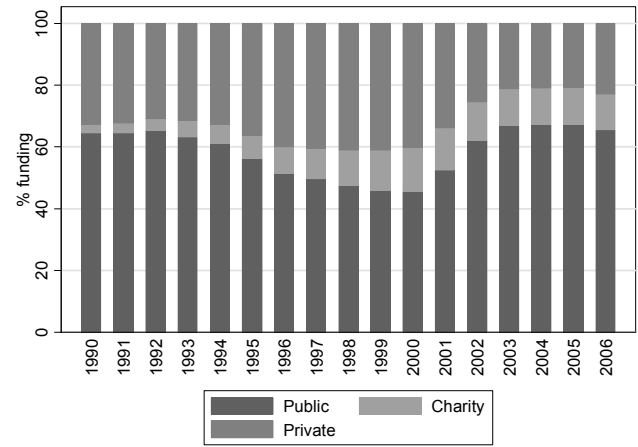


Table 3.4: Trends in dialysis funding & provider mix

	1990	1995	2000	2005
Dialysis incidence	20	38	84	123
Dialysis prevalence	71	153	338	574
Sectoral share of provision (%)				
% Public	88	65	43	37
% NGO	5	20	34	32
% Private	7	15	23	30
Funding for dialysis (2005 RM million)				
Public	15.4	39.4	92.2	255.2
Charity	0.6	5.3	29.2	45.3
Private	7.9	25.5	81.0	78.6
Total	23.9	70.2	202.4	379.1
Funding for dialysis (%)				
% Public	64	56	46	67
% Charity	3	8	14	12
% Private	33	36	41	21

Dialysis access and equality

There is persistent inequality in treatment rates across different states related to the greater ability to pay for services in economically advanced states (Figure 3.4). Inequality of dialysis treatment has declined across all sectors of providers as treatment expanded (Figure 3.5). Public services have switched from favouring the well off to favouring the poor (Figure 3.5.1 and 3.5.2).

Figure 3.4: Dialysis treatment by state, 1997-2004

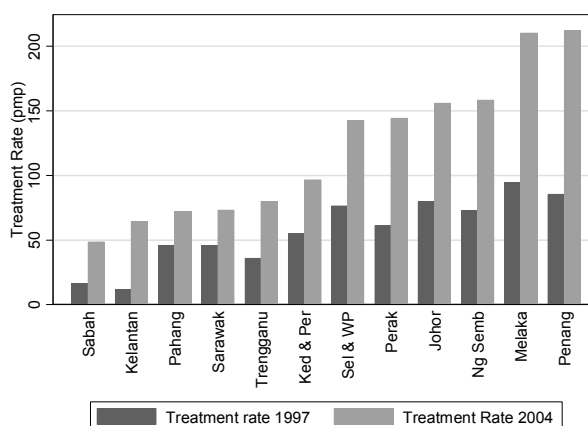


Table 3.5: Dialysis Treatment in Malaysia, 1997-2004

	1997	2004	Change (%)
Dialysis Incidence by state (pmp)			
Malaysia	56.3	119.1	112%
Minimum	11.8	48.3	309%
25th percentile	40.7	72.6	78%
Median	58	119.4	106%
75th percentile	77.8	157	102%
Maximum	94.5	212.1	124%
Concentration Index			
Malaysia	0.111	0.053	
Public sector	0.037	-0.047	
NGO sector	0.294	0.207	
Private sector	0.376	0.23	

Figure 3.5.1: Inequality of dialysis treatment by provider sector, 1997

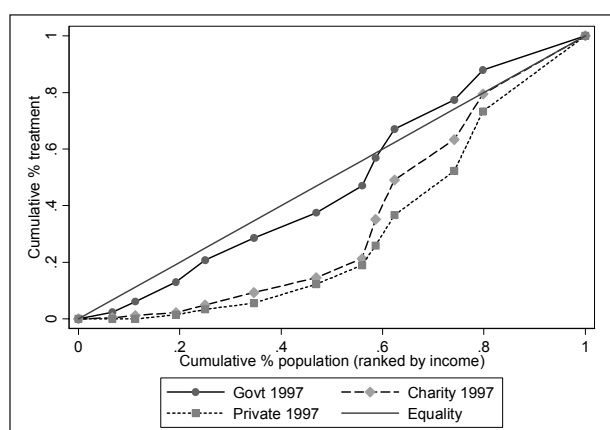
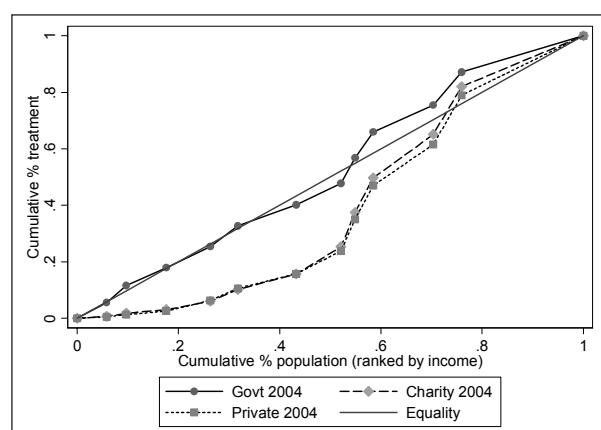


Figure 3.5.2: Inequality of dialysis treatment by provider sector, 2004



Note: Concentration index (CI) measures inequality. It has a range of values from -1 to 1 where zero is equal distribution of health services. A positive (negative) value services are unequally distributed towards the advantaged (disadvantaged). Values of C closer to 1 indicate greater inequality. Concentration curve illustrates inequality by plotting the cumulative proportion of the population ranked from by income against the cumulative proportion of healthcare. Equality in the distribution of health services is represented by a diagonal "Line of Equality".