

Chapter 3: Economics of Dialysis

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

Table 3.2: Prevalence of renal replacement therapy (RRT), dialysis and renal transplant among various regions in the world [2] and by Countries' per capita Gross National Income (GNI) according to World Bank classification [3]

AARegion/ 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	512	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 Sources: 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

Figure 3.2(a) Prevalence of renal replacement therapy (RRT) among various regions in the world 2005 and by countries' per capita GNI according to World Bank classification

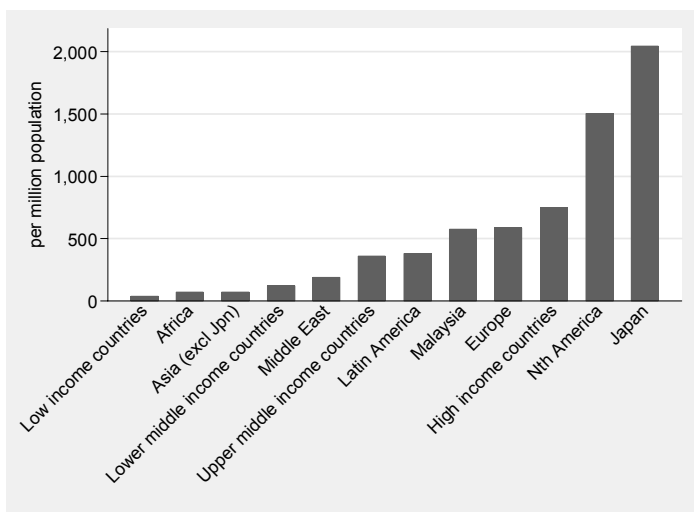
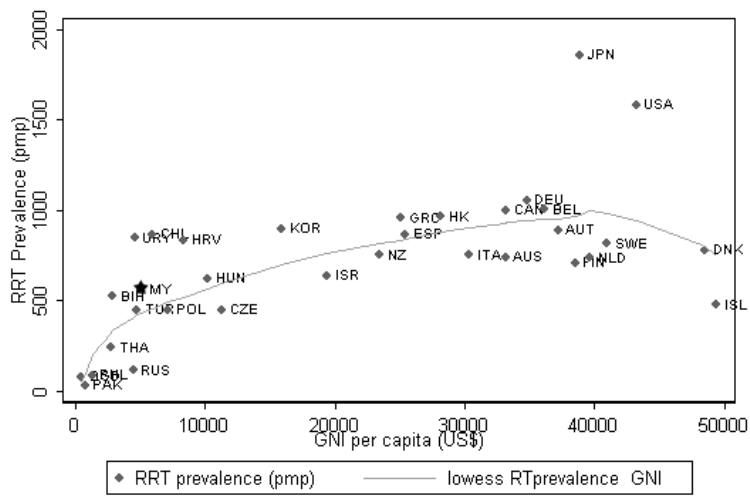
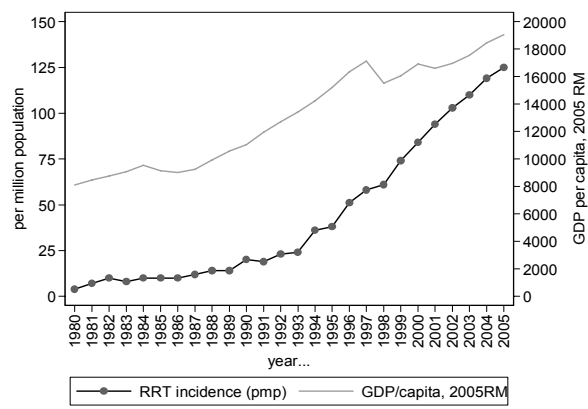


Figure 3.2(b): International comparison of income & RRT treatment prevalence, 2005



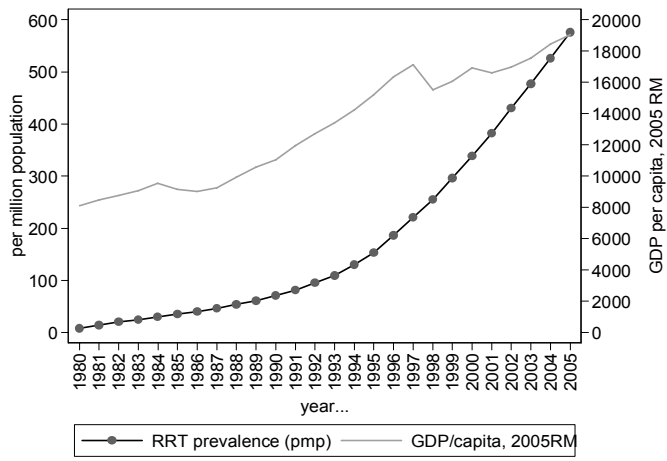
Data: USRDS Annual Data Report 2007, World Bank World Development Indicators

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



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

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



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

Table 3.3: Trends in dialysis funding and provider mix

	1990	1995	2000	2005
Dialysis incidence	13	33	78	119
Dialysis prevalence	44	108	285	512
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

Note on total cost: expenditure estimate based on private sector inflation adjusted HD prices from 1990 to 2005 and govt HD/CAPD inflation adjusted costs in 1996 & 2001.

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

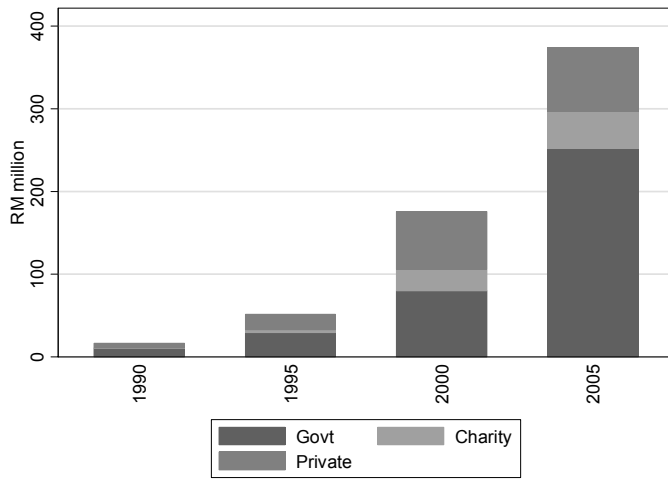


Figure 3.3(b): Dialysis funding by sector, 1990-2005 (%)

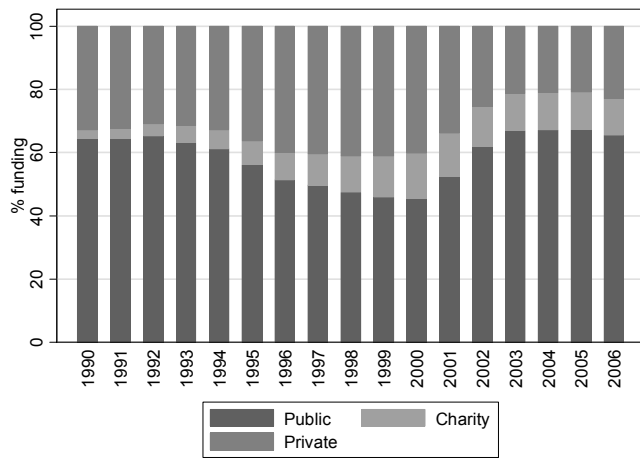


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Table 3.4: Trends in resource generation for dialysis treatment 1990-2005

	1990	1995	2000	2005
Resource generation for Dialysis				
Trained nephrologists, No.	5	8	33	89
Trained dialysis nurses and medical assistants[^], number per year (%)				
Public	32	15	96	124 (89)
Private				16 (11)
Total	32 (100)	15 (100)	96 (100)	140 (100)
HD facilities by sector, No. (%)				
Public	22 (9)	30 (42)	56 (35)	153 (39)
NGO	0 (0)	12 (17)	51 (32)	99 (25)
Private	15 (41)	30 (42)	54 (34)	144 (36)
Total	37 (100)	72 (100)	161 (100)	396 (100)
HD machine by sector, No. (%)				
Public			664 (30)	1142 (29)
NGO			830 (37)	1427 (37)
Private			750 (33)	1317 (34)
Total			2244 (100)	3886 (100)

[^]Trained by Ministry of Health and National Kidney Foundation.

Figure 3.4(a): Dialysis human resources, 1990-2005

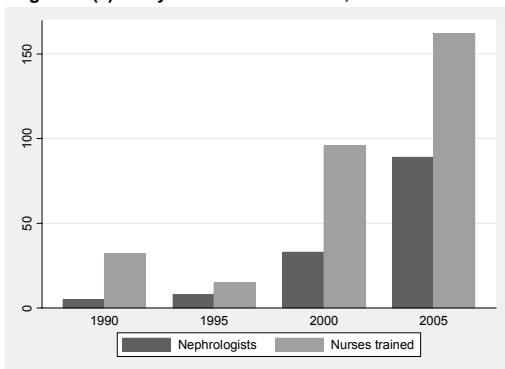


Figure 3.4(b): Haemodialysis centres by sector, 1990-2005

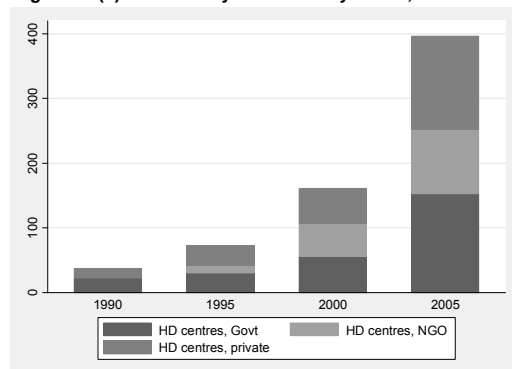


Figure 3.4(c): HD machines by sector, 2000-2005

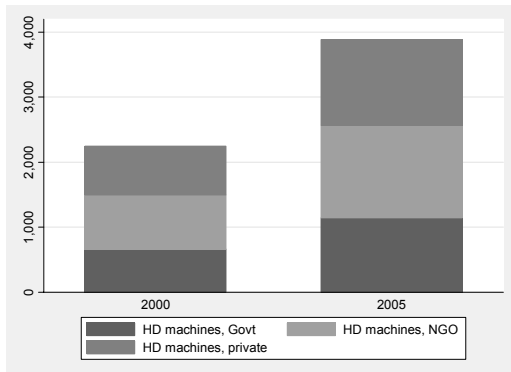


Table 3.5: Trends in dialysis market prices

	1990	1995	2000	2005
Dialysis prevalence	44	108	285	512
Price per HD (current RM)	170c	159d	163e	168f
Price per HD (2005RM)	286c	225d	191e	168f
Average Household monthly income (2005RM)	1963	2855	3012a	3356b
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 3.5(a): Trends in dialysis cost-efficiency (HD price in 2005 RM)

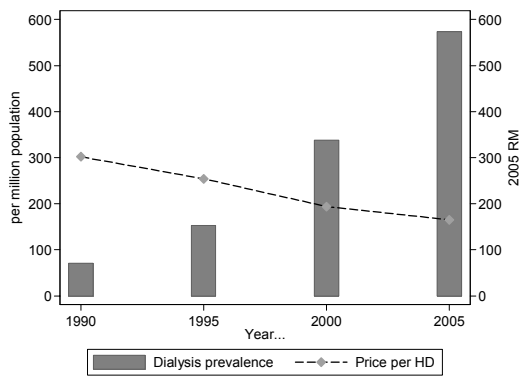


Figure 3.5(b): Trends in dialysis cost-efficiency (HD price as % of household income)

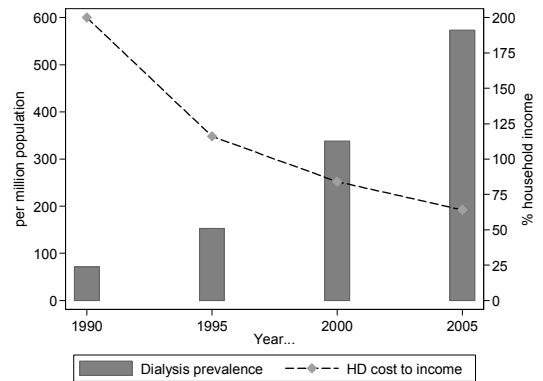


Figure 3.5(c): Trends in dialysis costs: Actual and assuming no efficiency gained

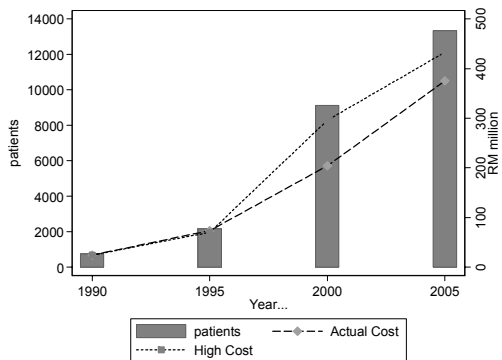


Table 3.6: International comparison of dialysis cost efficiency, 2005

	M'sia	US	UK	Aust
Dialysis incidence	119	294	89	81
Dialysis prevalence	512	1105	375	424
Price per HD (2005RM/US\$/£/A\$)	168	150	168	163
Mean Household monthly income (2005RM/US\$/£/A\$)	3356	5279	2732	5670
HD cost* to monthly HH income (%)	65%	37%	80%	37%

Note: *assuming 13 HD procedures per month

Table 3.8 Geographic distribution of dialysis Treatment in Malaysia, 1990-2005

	1990	1995	2000	2005
Dialysis prevalence	44	108	285	512
Johor	30.4	114	395.3	689
Kedah & Perlis	20.8	69.8	226.1	453
Kelantan	12.6	31.2	102.8	285
Melaka	43.1	182	420.7	773
Negeri Sembilan	35	129	336	595
Pahang	26.6	68.9	195.2	326
Perak	53.7	124	349	631
Penang	50.1	149	442	814
Sabah	14	34.7	95.5	172
Sarawak	45	74.8	201.8	365
Selangor & WP	97.7	191	373.8	632
Trengganu	14	46.6	140.7	332

Figure 3.8: Distribution of Dialysis treatment in Malaysia by state, 1990-2005

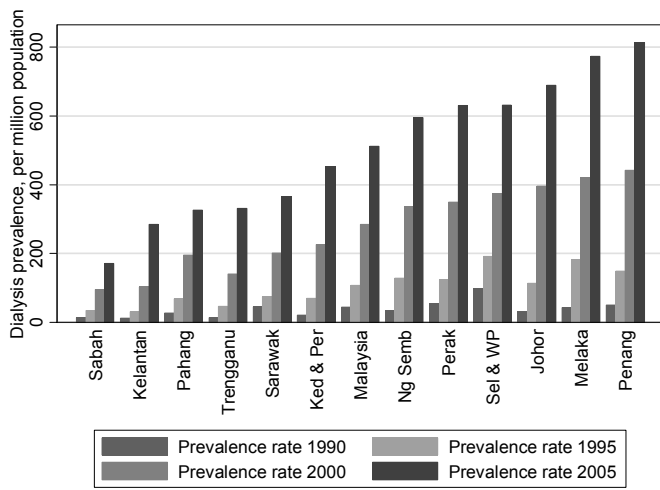


Table 3.9: Trends in dialysis geographic equity as measured by concentration indices

	1990	1995	2000	2005
Dialysis incidence	13	33	78	119
Dialysis prevalence	44	108	285	512
Overall Concentration Index (CI) of dialysis provision	0.091	0.065	-0.02	-0.04
CI of Public provision	0.067	-0.009	-0.116	-0.203
CI of NGO provision	0.164	0.184	0.106	0.076
CI of Private provision	0.285	0.25	0.118	0.063
Household Income inequality (Gini coefficient)	0.442	0.456	0.443*	0.462#

Figure 3.9(a): Trends in dialysis geographic equity in Malaysia, 1990-2005

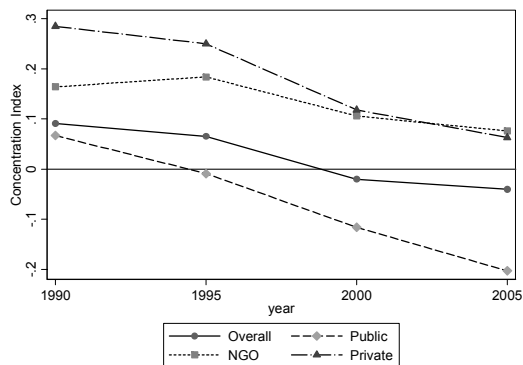


Figure 3.9(b): Concentration curves of geographic distribution of dialysis treatment by provider sector, 2005

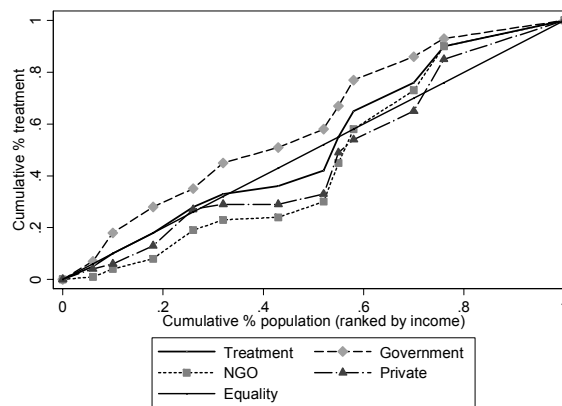


Table 3.7: Dialysis financing equity, 2005

Sector	Index	
	Concentration	Kakwani
Public	0.41	-0.053
Private	0.02	-0.443
Overall	0.28	-0.18

Figure 3.7: Dialysis financing equity as measured by Kakwani index, 2005

