

CHAPTER 2

DIALYSIS IN MALAYSIA

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2.1: PROVISION OF DIALYSIS IN MALAYSIA (registry report)**2.1.1 Dialysis treatment provision**

In 2003, 2540 new patients commenced dialysis, giving a treatment rate of 101 per million population, an increase of 7.5% from the year before and slightly more than 3-fold increase over the 9 years shown in table 2.1.2. At year end 2003, a total of 10342 patients were on dialysis treatment giving a prevalence rate of 413 per million per year.

Table 2.1.1: Stock and flow – Dialysis Patients 1995 – 2004

| Year | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004* |
|-----------------------|------|------|------|------|------|------|------|------|-------|-------|
| New Dialysis patients | 684 | 952 | 1133 | 1249 | 1542 | 1833 | 2071 | 2310 | 2540 | 2538 |
| Died | 178 | 222 | 315 | 373 | 486 | 583 | 801 | 908 | 1128 | 1115 |
| Transplanted | 36 | 56 | 59 | 61 | 69 | 106 | 133 | 143 | 121 | 140 |
| Lost to Follow-up | 5 | 5 | 5 | 8 | 7 | 10 | 15 | 23 | 43 | 80 |
| Dialysing at 31st Dec | 2232 | 2919 | 3694 | 4534 | 5536 | 6690 | 7830 | 9079 | 10342 | 11554 |

*preliminary results

Table 2.1.2: Dialysis Treatment Rate per million population 1995 – 2004

| Year | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004* |
|-----------------|------|------|------|------|------|------|------|------|------|-------|
| Acceptance rate | 33 | 45 | 52 | 56 | 68 | 78 | 86 | 94 | 101 | 99 |
| Prevalence rate | 108 | 138 | 171 | 204 | 244 | 285 | 326 | 370 | 413 | 452 |

*preliminary results

2.1.3. Geographic distribution (registry report)

The economically advantaged states of Malaysia – Melaka, Pulau Pinang, Negeri Sembilan, Johor, Selangor and W. Persekutuan of Kuala Lumpur, and Perak - have dialysis treatment rates exceeding 100 per million state population since year 2000. Dialysis provision rate for Kedah was nearly 100 per million in 2003. The East Coast states of West Malaysia and Sabah and Sarawak averaged treatment rates of about 63 per million. Melaka continued to have the highest treatment rate at 180 in 2003 and Sabah the lowest at 45 per million.

Table 2.1.3: Dialysis Treatment Rate by State, per million state population 1995-2004

| State | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004* |
|---------------------------|------|------|------|------|------|------|------|------|------|-------|
| Negeri Melaka | 74 | 82 | 95 | 109 | 91 | 150 | 156 | 169 | 180 | 201 |
| Pulau Pinang | 73 | 72 | 85 | 113 | 124 | 106 | 122 | 147 | 138 | 169 |
| Negeri Sembilan | 48 | 74 | 74 | 92 | 94 | 118 | 112 | 131 | 148 | 154 |
| Johor Darul Takzim | 43 | 58 | 79 | 71 | 104 | 131 | 137 | 146 | 145 | 141 |
| Selangor & W. Persekutuan | 62 | 81 | 76 | 91 | 102 | 121 | 118 | 126 | 133 | 128 |
| Perak Darul Redzuan | 28 | 58 | 61 | 64 | 75 | 106 | 104 | 115 | 125 | 114 |
| Kedah & Perlis | 19 | 26 | 54 | 47 | 59 | 69 | 66 | 86 | 99 | 85 |
| Terengganu Darul Iman | 18 | 27 | 36 | 34 | 36 | 37 | 77 | 88 | 69 | 78 |
| Pahang Darul Makmur | 21 | 16 | 44 | 36 | 46 | 49 | 52 | 52 | 66 | 66 |
| Sarawak | 20 | 36 | 46 | 33 | 44 | 51 | 67 | 58 | 62 | 66 |
| Kelantan Darul Naim | 9 | 6 | 12 | 15 | 26 | 31 | 59 | 61 | 72 | 63 |
| Sabah | 12 | 18 | 16 | 24 | 32 | 25 | 36 | 36 | 45 | 48 |

*preliminary results

2.2: DIALYSIS PROVISION IN MALAYSIA (Centre survey report)

2.2.1 Dialysis provision

Data submission of individual dialysis and transplant patients to the National Renal Registry is entirely voluntary and completeness cannot be ascertained. Dialysis centre surveys have been conducted in December of each year since 1999. This annual cross-sectional survey was carried out to describe the most current level and distribution of dialysis provision at the end of each year. This section reports the results of the centre survey carried out in December 2004. Dialysis provision is expressed in terms of number of centres, machines, treatment capacity (one HD machine to 5 patients) and patients.

At the end of 2004, there were a total of 11554 dialysis patients, one third receiving dialysis treatment provided by the Ministry of Health (MOH) hospitals, another third by non-governmental organization (NGO) centres and about 28% by the private sector. Almost all private dialysis patients received centre haemodialysis treatment compared to the MOH sector where chronic PD patients and home haemodialysis comprised 30% of all dialysis patients. (Table 2.2.1)

Table 2.2.1: Number of dialysis centres, HD machines and treatment capacity by sector, December 2004

| Sector | Centre (No.) | Centre HD machines (No.) | Centre HD capacity (No.) | Centre HD patients (No.) | Centre HD capacity: patient ratio | All dialysis patients (No.) |
|-------------------|--------------|--------------------------|--------------------------|--------------------------|-----------------------------------|-----------------------------|
| MOH | 112 | 920 | 4600 | 2791 | 1.65 | 3979 |
| NGO | 93 | 1316 | 6580 | 3628 | 1.81 | 3977 |
| Private (PRV) | 124 | 1105 | 5525 | 3681 | 1.5 | 3273 |
| University (UNI) | 8 | 30 | 150 | 42 | 3.57 | 229 |
| Armed Forces (AF) | 10 | 42 | 210 | 94 | 2.23 | 96 |

Of the 3 main sectors, the private sector had the largest number of dialysis centres but the NGO centres had the largest HD capacity. (Figure 2.2.1 a & b)

Figure 2.2.1(a): Distribution of dialysis centres by Sector, December 2004

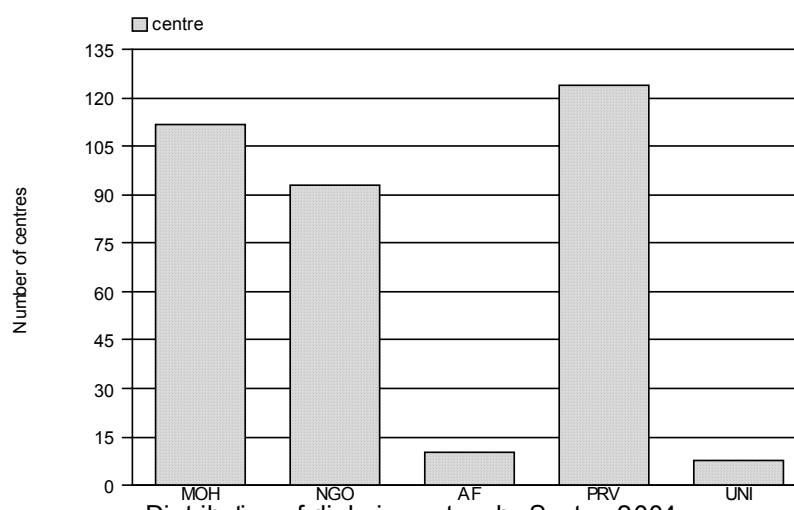


Figure 2.2.1(b): Distribution of HD capacity by Sector, December 2004

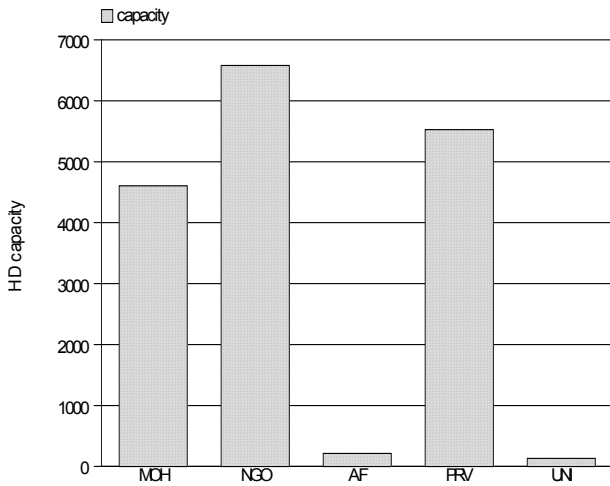
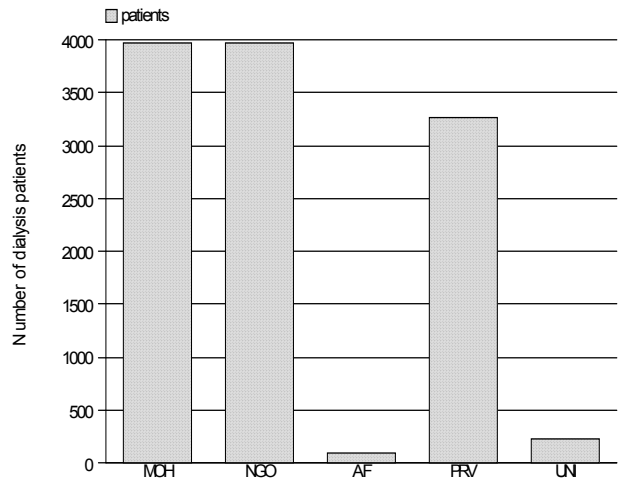
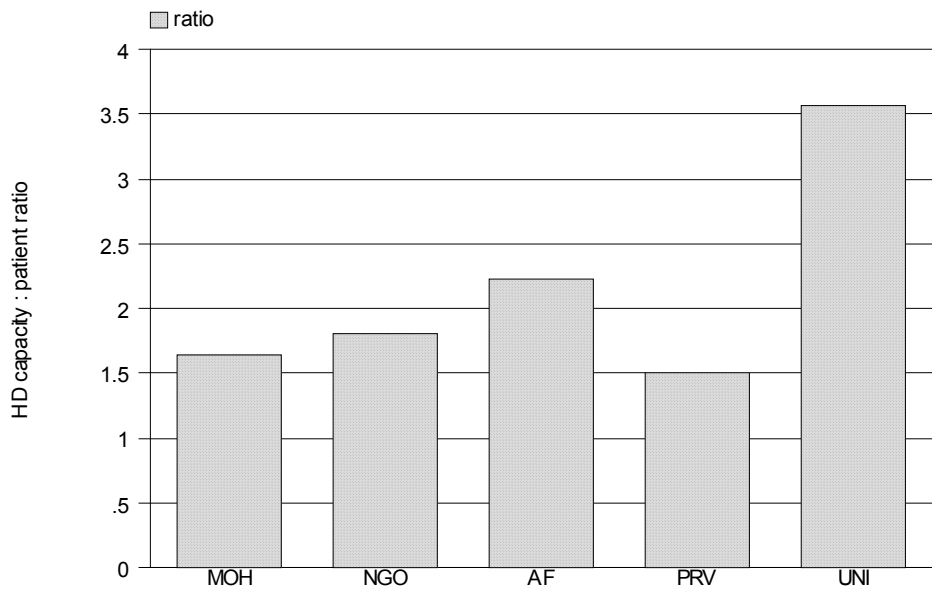


Figure 2.2.1(c): Distribution of dialysis patients by Sector, December 2004



The private sector had the lowest HD treatment capacity to patient ratio at 1.5 and the NGO sector the highest at 1.81. (Figure 2.2.1d)

Figure 2.2.1(d): HD capacity: patient ratio by Sector, December 2004



2.2.2. Geographic distribution (centre survey)

The economically advantaged states have the highest number of dialysis centres, treatment capacity, patients and treatment rate. However, other than Perak which had the highest HD capacity to patient ratio at 2.01, the less economically developed states of Terengganu, Sabah and Pahang had capacity to patient ratios > 1.8, higher than many of the economically developed states. (Table and Figure 2.2.2.).

Table 2.2.2: Number of dialysis centres, number of HD machines and treatment capacity, HD capacity to patients ratio and number of dialysis patients by state in December 2004

| State | Centre (No.) | Centre HD machines | Centre HD machines pmp | Centre HD capacity (No.) | Centre HD capacity pmp | Centre HD patients (No.) | Centre HD patients pmp | HD capacity: patient ratio | All dialysis patients (No.) | Dialysis treatment rate pmp |
|-----------------------------------|--------------|--------------------|------------------------|--------------------------|------------------------|--------------------------|------------------------|----------------------------|-----------------------------|-----------------------------|
| Melaka (Me) | 13 | 184 | 263 | 920 | 1314 | 549 | 784 | 1.68 | 521 | 744 |
| Penang (Pe) | 37 | 347 | 241 | 1735 | 1203 | 1056 | 732 | 1.64 | 1010 | 700 |
| Johor (Jo) | 50 | 535 | 177 | 2675 | 883 | 1671 | 552 | 1.6 | 1862 | 615 |
| Selangor & Federal Territory (SF) | 96 | 1004 | 163 | 5020 | 817 | 2983 | 486 | 1.68 | 3467 | 564 |
| Negeri Sembilan (Ne) | 13 | 128 | 138 | 640 | 688 | 386 | 415 | 1.66 | 500 | 538 |
| Perak (Pe) | 40 | 386 | 173 | 1930 | 867 | 961 | 432 | 2.01 | 1184 | 532 |
| Kedah & Perlis (KP) | 27 | 235 | 116 | 1175 | 578 | 854 | 420 | 1.38 | 786 | 386 |
| Sarawak (Sw) | 17 | 187 | 83 | 935 | 413 | 647 | 286 | 1.45 | 732 | 324 |
| Trengganu (Tr) | 9 | 76 | 77 | 380 | 384 | 197 | 199 | 1.93 | 277 | 280 |
| Pahang (Pa) | 13 | 97 | 69 | 485 | 347 | 268 | 191 | 1.81 | 385 | 275 |
| Kelantan (Ke) | 15 | 104 | 70 | 520 | 351 | 311 | 210 | 1.67 | 355 | 240 |
| Sabah (Sb) | 17 | 130 | 45 | 650 | 227 | 353 | 123 | 1.84 | 475 | 166 |
| Malaysia | 347 | 3413 | 133 | 17065 | 667 | 10236 | 400 | 1.67 | 11554 | 452 |

Figure 2.2.2(a): Distribution of dialysis centres by State, December 2004

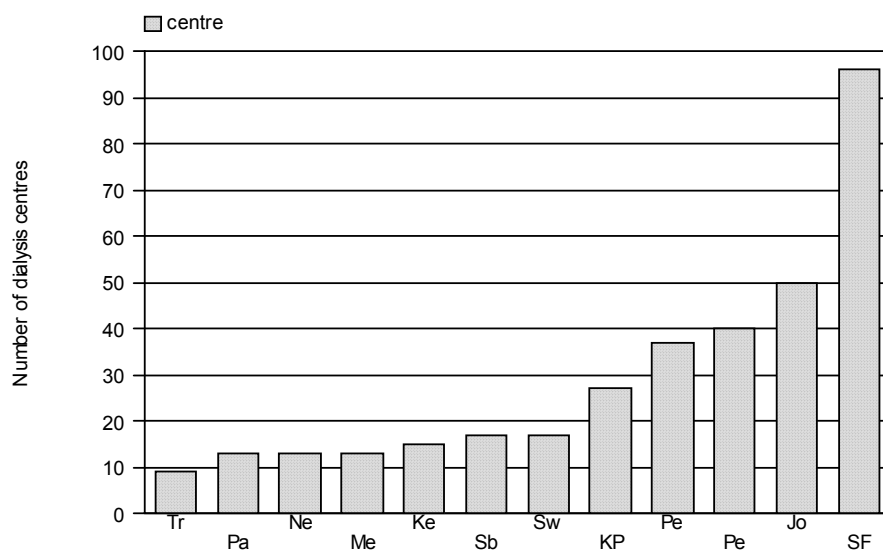


Figure 2.2.2(b): Distribution of dialysis patients by State, December 2004

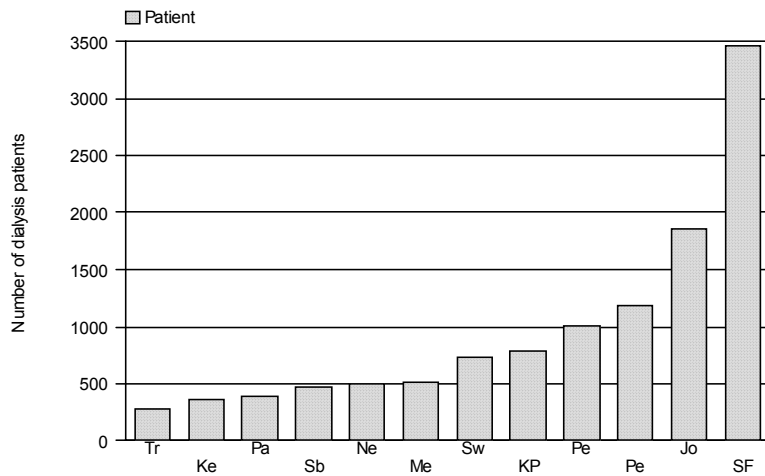


Figure 2.2.2(c): Distribution of dialysis treatment by State, December 2004

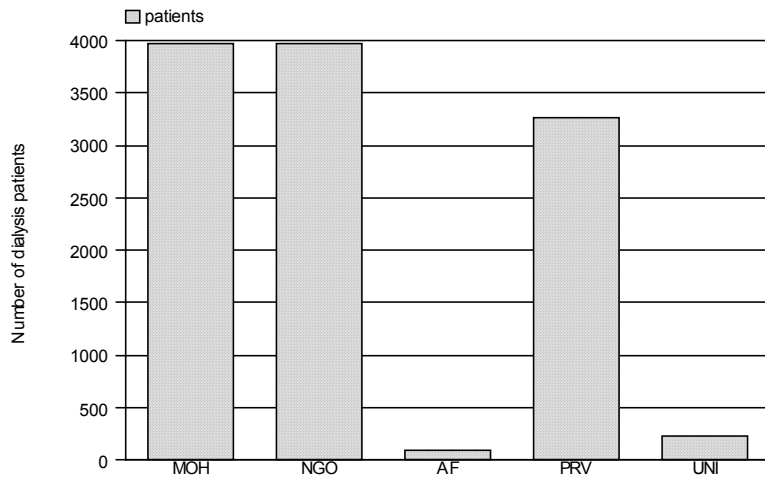
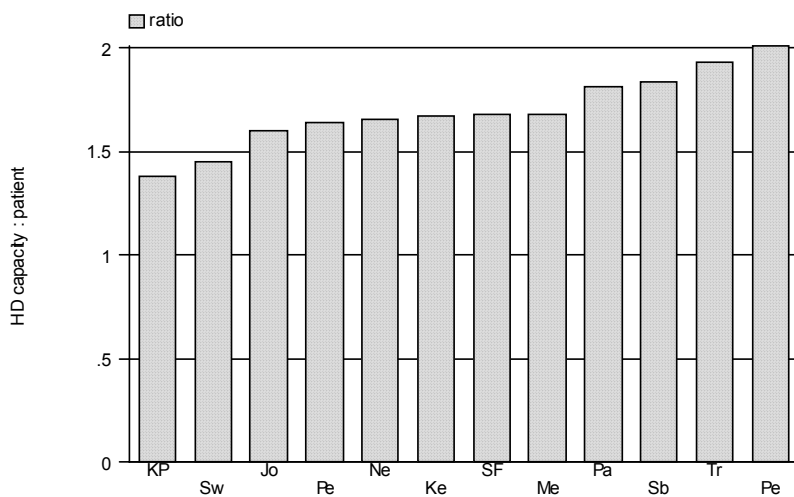


Figure 2.2.2(d): HD capacity to patient ratio by State, December 2004



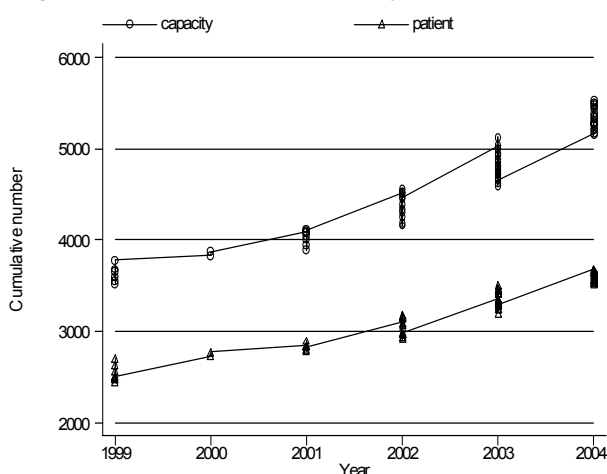
2.2.3 Growth in dialysis provision by sector (centre survey)

In the private sector, the number of patients paralleled the increase in HD capacity. HD capacity has increased rapidly in the MOH sector in line with official policy that every MOH hospital will have a HD centre by 2005. There was also a larger increase in HD capacity compared to patient numbers in the NGO sector.

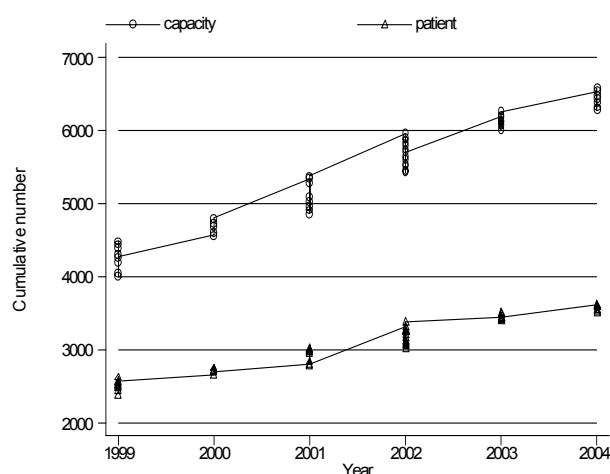
Table 2.2.3: Growth in HD capacity and HD patients in Private, NGO and MOH sectors, 1999-2004

| Sector | Private | | NGO | | MOH | |
|--------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| | Cumulative HD capacity | Cumulative HD patients | Cumulative HD capacity | Cumulative HD patients | Cumulative HD capacity | Cumulative HD patients |
| 1999 | 3780 | 2702 | 4485 | 2630 | 3070 | 2078 |
| 2000 | 3875 | 2772 | 4800 | 2756 | 3285 | 2221 |
| 2001 | 4125 | 2900 | 5370 | 3020 | 4020 | 2451 |
| 2002 | 4560 | 3184 | 5960 | 3385 | 4290 | 2656 |
| 2003 | 5130 | 3497 | 6260 | 3507 | 4470 | 2743 |
| 2004 | 5525 | 3681 | 6580 | 3628 | 4960 | 2927 |

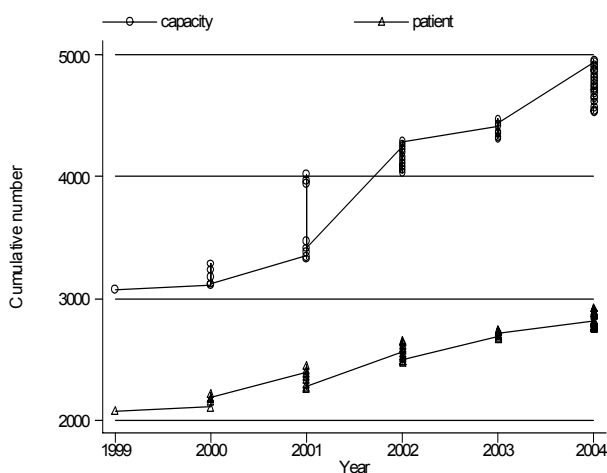
Figure 2.2.3: Growth in HD capacity and HD patients in Private, NGO and MOH sectors, 1999-2004



Growth in HD capacity and patient, private sector 1999-2004



Growth in HD capacity and patient, NGO sector 1999-2004



Growth in HD capacity and patient, MOH sector 1999-2004

2.3: DISTRIBUTION OF DIALYSIS TREATMENT

2.3.1 Gender distribution

The treatment gap between men and women has remained consistent over the years, suggesting this is a true reflection of the difference in ESRD incidence between the 2 sexes rather than any conscious or unconscious bias in treatment allocation.

Table 2.3.1 (a): Dialysis Treatment Rate by Gender, per million male or female population 1995– 2004

| Gender | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 |
|--------|------|------|------|------|------|------|------|------|------|------|
| Male | 39 | 51 | 63 | 63 | 81 | 92 | 97 | 109 | 120 | 114 |
| Female | 32 | 45 | 49 | 57 | 61 | 73 | 88 | 93 | 93 | 98 |

Figure 2.3.1 (a): Dialysis Treatment by Gender 1995 – 2004

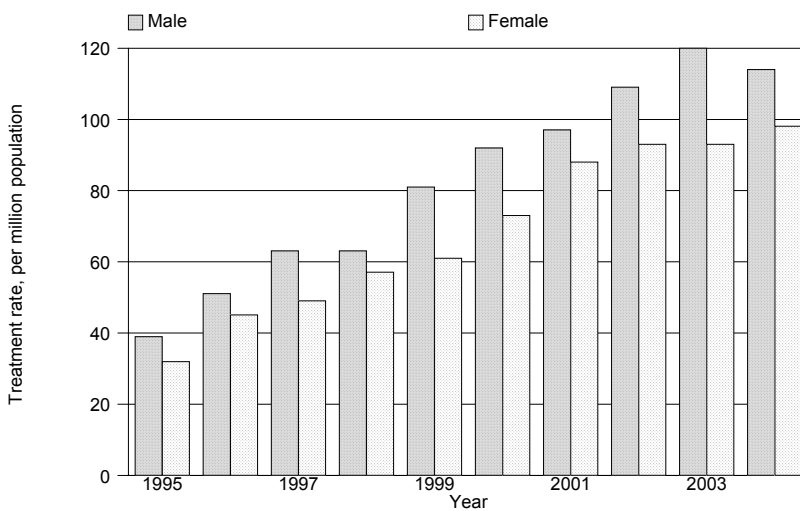


Table 2.3.2: Gender distribution of Dialysis Patients 1995-2004

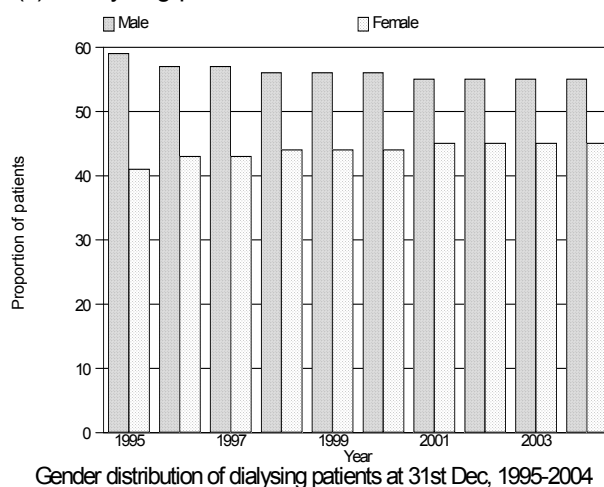
| Year | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 |
|----------------------------|------|------|------|------|------|------|------|------|-------|-------|
| New Dialysis patients | 684 | 952 | 1133 | 1249 | 1542 | 1833 | 2071 | 2310 | 2540 | 2538 |
| % Male | 56 | 53 | 57 | 53 | 58 | 57 | 54 | 55 | 58 | 55 |
| % Female | 44 | 47 | 43 | 47 | 42 | 43 | 46 | 45 | 42 | 45 |
| Dialysing at 31st December | 2232 | 2919 | 3694 | 4534 | 5536 | 6690 | 7830 | 9079 | 10342 | 11554 |
| % Male | 59 | 57 | 57 | 56 | 56 | 56 | 55 | 55 | 55 | 55 |
| % Female | 41 | 43 | 43 | 44 | 44 | 44 | 45 | 45 | 45 | 45 |

Figure 2.3.1 (b): Gender Distribution of Dialysis patients 1995 – 2004

(i) New Dialysis patients



(ii) Dialysing patients at 31st December



2.3.2 Age distribution

Dialysis treatment rates for those < 55 years of age have plateaued in the last few years, suggesting that almost all patients with ESRD in those age groups who were in need of dialysis were able to access treatment. However, the age groups 55-64 and >65 years continue to register increase in treatment rates, with the most rapid increase seen in those > 65 years. The treatment rate for patients 55 years and older has exceeded 550 per million since 2003. 51% of new dialysis patients were at least 55 years old

Table 2.3.2(a): Dialysis Treatment Rate by Age Group, per million age group population 1995 – 2004

| Age groups (years) | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 |
|--------------------|------|------|------|------|------|------|------|------|------|------|
| 1-14 | 1 | 3 | 3 | 3 | 3 | 4 | 4 | 5 | 4 | 4 |
| 15-24 | 10 | 13 | 15 | 15 | 16 | 18 | 22 | 28 | 25 | 25 |
| 25-34 | 31 | 39 | 39 | 41 | 42 | 46 | 47 | 53 | 50 | 47 |
| 35-44 | 59 | 67 | 80 | 81 | 86 | 98 | 102 | 100 | 99 | 104 |
| 45-54 | 120 | 153 | 166 | 173 | 224 | 247 | 249 | 268 | 273 | 270 |
| 55-64 | 158 | 230 | 289 | 310 | 369 | 430 | 508 | 530 | 576 | 522 |
| >=65 | 110 | 169 | 214 | 228 | 300 | 348 | 434 | 493 | 567 | 573 |

Figure 2.3.2(a): Dialysis Treatment Rate by Age Group 1995 - 2004

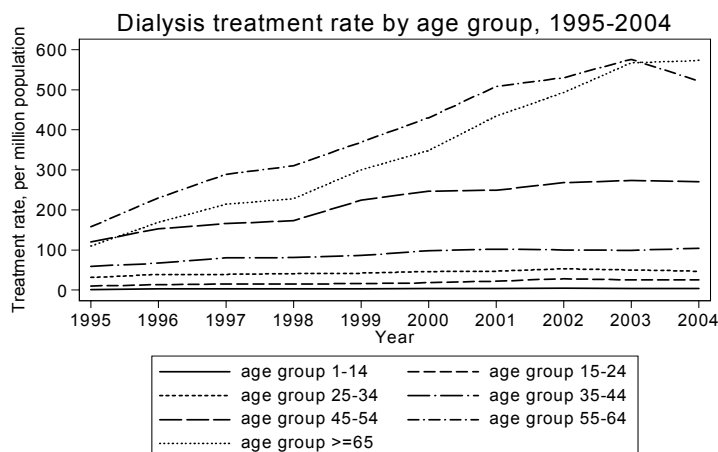
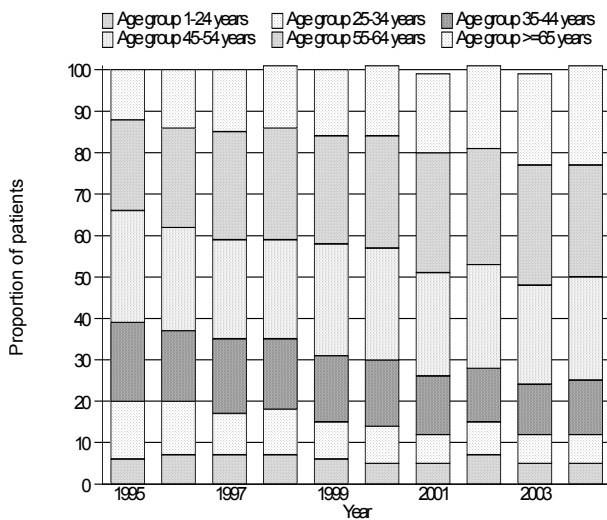


Table 2.3.2.(b): Percentage Age Distribution of Dialysis Patients 1995 – 2004

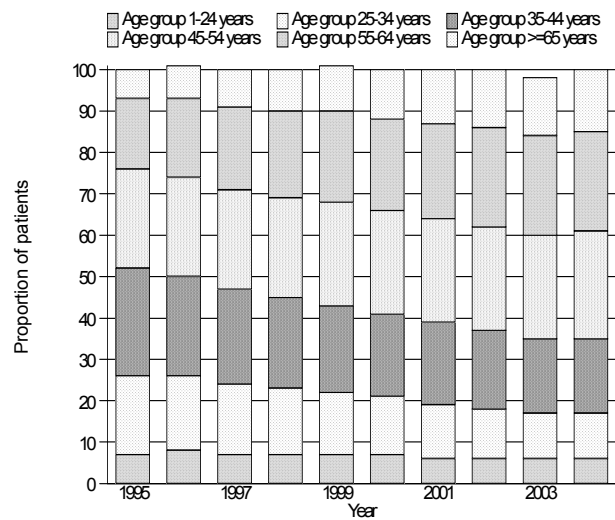
| Year | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 |
|----------------------------|------|------|------|------|------|------|------|------|-------|-------|
| New Dialysis patients | 684 | 952 | 1133 | 1249 | 1542 | 1833 | 2071 | 2310 | 2540 | 2538 |
| % 1-14 years | 1 | 2 | 2 | 2 | 2 | 1 | 1 | 2 | 1 | 1 |
| % 15-24 years | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 5 | 4 | 4 |
| % 25-34 years | 14 | 13 | 10 | 11 | 9 | 9 | 7 | 8 | 7 | 7 |
| % 35-44 years | 19 | 17 | 18 | 17 | 16 | 16 | 14 | 13 | 12 | 13 |
| % 45-54 years | 27 | 25 | 24 | 24 | 27 | 27 | 25 | 25 | 24 | 25 |
| % 55-64 years | 22 | 24 | 26 | 27 | 26 | 27 | 29 | 28 | 29 | 27 |
| % >=65 years | 12 | 14 | 15 | 15 | 16 | 17 | 19 | 20 | 22 | 24 |
| Dialysing at 31st December | 2232 | 2919 | 3694 | 4534 | 5536 | 6690 | 7830 | 9079 | 10342 | 11554 |
| % 1-14 years | 1 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 |
| % 15-24 years | 6 | 6 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| % 25-34 years | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 11 |
| % 35-44 years | 26 | 24 | 23 | 22 | 21 | 20 | 20 | 19 | 18 | 18 |
| % 45-54 years | 24 | 24 | 24 | 24 | 25 | 25 | 25 | 25 | 25 | 26 |
| % 55-64 years | 17 | 19 | 20 | 21 | 22 | 22 | 23 | 24 | 24 | 24 |
| % >=65 years | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 14 | 15 |

Figure 2.3.2(b): Age Distribution of New Dialysis patients 1995 – 2004

(i) New Dialysis patients



(ii) Dialysing patients at 31st December



2.3.3 Method and Location of dialysis

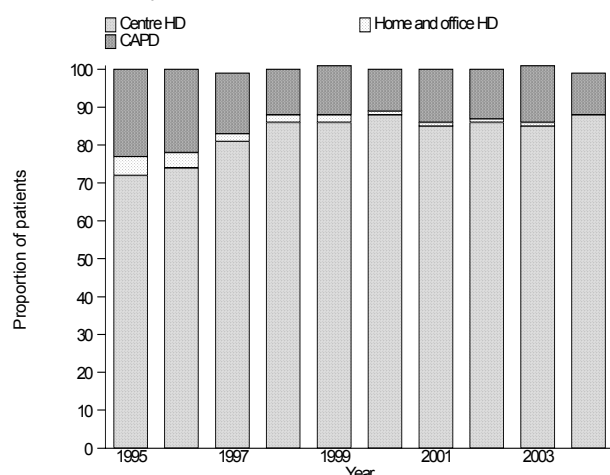
At least 85% of new patients were accepted into centre haemodialysis. The year 2004 finally saw the demise of home/office HD - a programme introduced at a time when dialysis treatment was not easily available. Chronic PD continued to account for about 10% of new and current dialysis patients. (Table & Figure 2.3.3)

Table 2.3.3: Method and Location of Dialysis 1995 – 2004

| Year | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 |
|----------------------------|------|------|------|------|------|------|------|------|-------|-------|
| New Dialysis patients | 684 | 952 | 1133 | 1249 | 1542 | 1833 | 2071 | 2310 | 2540 | 2538 |
| % Centre HD | 72 | 74 | 81 | 86 | 86 | 88 | 85 | 86 | 85 | 88 |
| % Home and office HD | 5 | 4 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 0 |
| % CAPD | 23 | 22 | 16 | 12 | 13 | 11 | 14 | 13 | 15 | 11 |
| Dialysing at 31st December | 2232 | 2919 | 3694 | 4534 | 5536 | 6690 | 7830 | 9079 | 10342 | 11554 |
| % Centre HD | 72 | 75 | 79 | 83 | 85 | 87 | 87 | 88 | 88 | 89 |
| % Home and office HD | 13 | 9 | 7 | 6 | 4 | 3 | 3 | 2 | 2 | 2 |
| % CAPD | 15 | 15 | 14 | 12 | 11 | 10 | 10 | 10 | 10 | 10 |

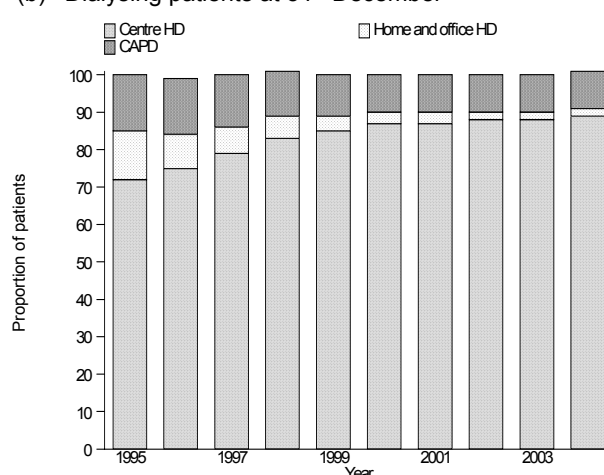
Figure 2.3.3: Method and Location of Dialysis Patients 1995 – 2004

(a) New Dialysis patients



Method and Location of New Dialysis Patients, 1995-2004

(b) Dialysing patients at 31st December



Method and Location of Dialysing Patients at 31st Dec, 1995-2004

2.3.4 Funding for Dialysis Treatment

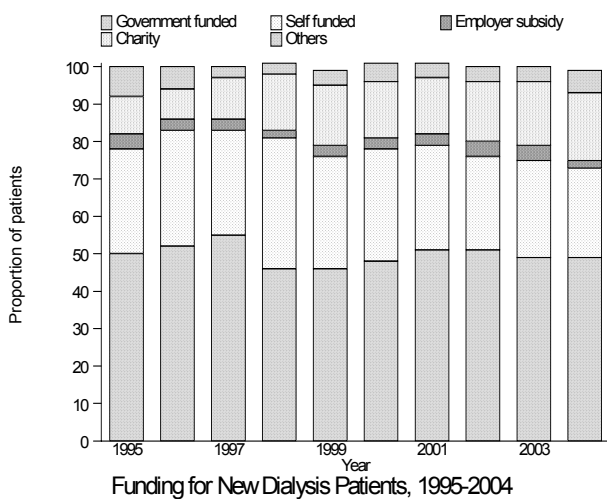
The government continued to provide almost fully subsidised dialysis treatment to about 50% of dialysis patients. The proportion of new patients who paid for their dialysis treatment shows a gradual decline over the years from about 30% in the late 1990's to about 24-26% in the last 3 years. There appear to be a corresponding increase in funding provided by NGO centres. (Table and Figure 2.3.6)

Table 2.3.4: Funding for Dialysis Treatment 1995 – 2004

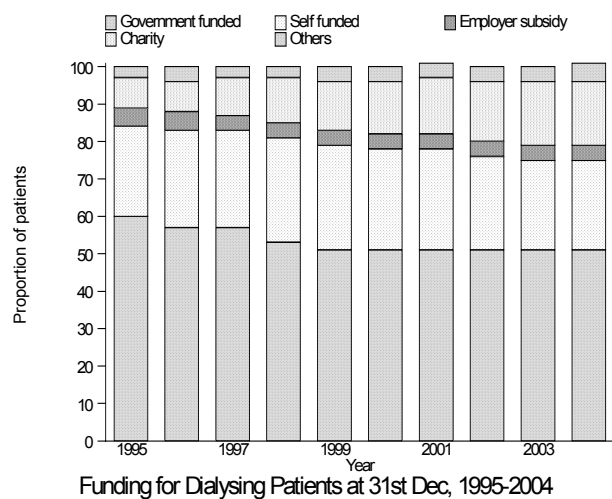
| Year | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 |
|----------------------------|------|------|------|------|------|------|------|------|-------|-------|
| New Dialysis patients | 684 | 952 | 1133 | 1249 | 1542 | 1833 | 2071 | 2310 | 2540 | 2538 |
| % by Government | 50 | 52 | 55 | 46 | 46 | 48 | 51 | 51 | 49 | 49 |
| % self funded | 28 | 31 | 28 | 35 | 30 | 30 | 28 | 25 | 26 | 24 |
| % subsidized by Employer | 4 | 3 | 3 | 2 | 3 | 3 | 3 | 4 | 4 | 2 |
| % by Charity | 10 | 8 | 11 | 15 | 16 | 15 | 15 | 16 | 17 | 18 |
| % Others | 8 | 6 | 3 | 3 | 4 | 5 | 4 | 4 | 4 | 6 |
| Dialysing at 31st December | 2232 | 2919 | 3694 | 4534 | 5536 | 6690 | 7830 | 9079 | 10342 | 11554 |
| % by Government | 60 | 57 | 57 | 53 | 51 | 51 | 51 | 51 | 51 | 51 |
| % self funded | 24 | 26 | 26 | 28 | 28 | 27 | 27 | 25 | 24 | 24 |
| % subsidized by Employer | 5 | 5 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| % by Charity | 8 | 8 | 10 | 12 | 13 | 14 | 15 | 16 | 17 | 17 |
| % Others | 3 | 4 | 3 | 3 | 4 | 4 | 4 | 4 | 4 | 5 |

Figure 2.3.4: Funding for Dialysis Treatment 1995 – 2004

(a) New Dialysis Patients



(b) Dialysing patients at 31st December



2.3.5 Distribution of dialysis patients by sector

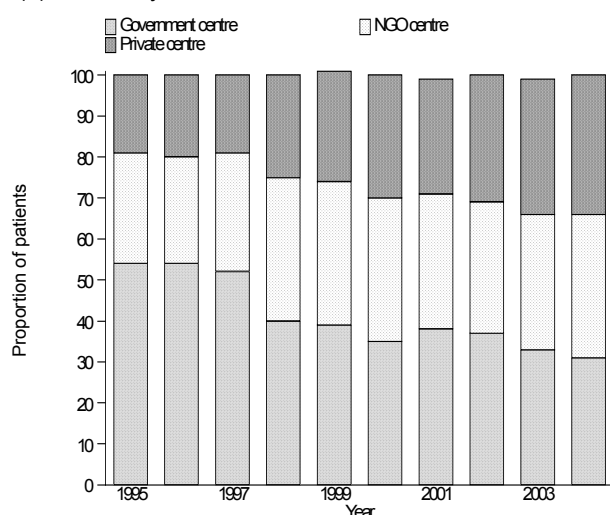
The proportion of new patients dialysed in private and NGO centres continued to increase while the proportion dialyzing in government centres has progressively declined. In 2003, intake of new dialysis patients was distributed equally between the 3 sectors. The year 2004 may perhaps be the first year that the proportion of new patients accepted for dialysis into government centres was lower than the other 2 sectors.

Table 2.3.5: Distribution of Dialysis Patients by Sector 1995 – 2004

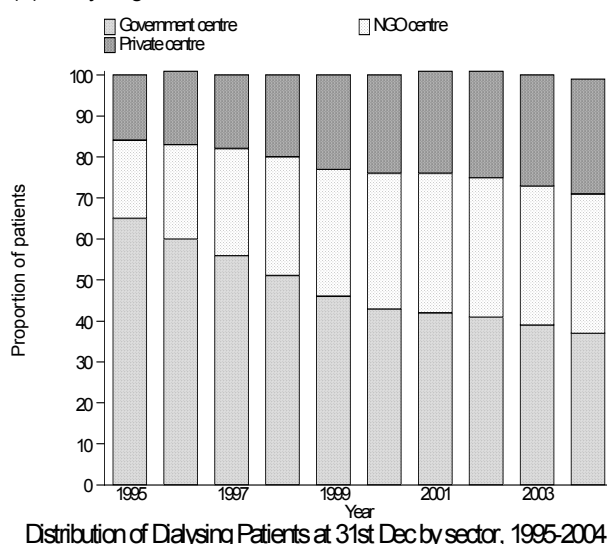
| Year | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 |
|----------------------------|------|------|------|------|------|------|------|------|-------|-------|
| New Dialysis patients | 684 | 952 | 1133 | 1249 | 1542 | 1833 | 2071 | 2310 | 2540 | 2538 |
| % Government centre | 54 | 54 | 52 | 40 | 39 | 35 | 38 | 37 | 33 | 31 |
| % NGO centre | 27 | 26 | 29 | 35 | 35 | 35 | 33 | 32 | 33 | 35 |
| % Private centre | 19 | 20 | 19 | 25 | 27 | 30 | 28 | 31 | 33 | 34 |
| Dialysing at 31st December | 2232 | 2919 | 3694 | 4534 | 5536 | 6690 | 7830 | 9079 | 10342 | 11554 |
| % Government centre | 65 | 60 | 56 | 51 | 46 | 43 | 42 | 41 | 39 | 37 |
| % NGO centre | 19 | 23 | 26 | 29 | 31 | 33 | 34 | 34 | 34 | 34 |
| % Private centre | 16 | 18 | 18 | 20 | 23 | 24 | 25 | 26 | 27 | 28 |

Figure 2.3.5: Distribution of Dialysis Patients by Sector 1995 – 2004

(a) New Dialysis Patients



(b) Dialysing Patients at 31st December



2.4: PRIMARY RENAL DISEASE

Diabetes mellitus continues to be the commonest cause of ESRD. Alarminglly the percentage continued to increase and accounted for 54% of all new ESRD patients in 2004. Hypertension as a cause of primary renal disease has been included in this report and was the second commonest cause of ESRD at about 7-12%. The proportion of patients with unknown primary renal disease was still very high at 28% in 2004. Only 4% ESRD was attributable to chronic glomerulonephritis excluding SLE nephritis.

Table 2.4.1: Primary Renal Disease 1995– 2004

| Year | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 |
|---------------------------|------|------|------|------|------|------|------|------|------|------|
| New Dialysis patients | 684 | 952 | 1133 | 1249 | 1542 | 1833 | 2071 | 2310 | 2540 | 2538 |
| % Unknown cause | 40 | 37 | 33 | 32 | 29 | 28 | 30 | 30 | 29 | 28 |
| % Diabetes Mellitus | 26 | 29 | 36 | 41 | 40 | 45 | 46 | 50 | 52 | 54 |
| % GN | 13 | 13 | 13 | 10 | 10 | 9 | 6 | 6 | 5 | 4 |
| % SLE | 1 | 2 | 2 | 1 | 2 | 2 | 1 | 1 | 1 | 1 |
| % Polycystic kidney | 3 | 2 | 2 | 1 | 1 | 1 | 2 | 1 | 1 | 1 |
| % Obstructive Nephropathy | 7 | 7 | 5 | 5 | 4 | 3 | 3 | 3 | 3 | 3 |
| % Toxic Nephropathy | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 |
| % Hypertension | 8 | 9 | 9 | 8 | 11 | 12 | 9 | 7 | 7 | 8 |
| % Others | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

Figure 2.4.1: Primary Renal Disease for New Dialysis Patients 1995– 2004

