

TABLE 28. Hepatitis B virus surface antigen (HBsAg) prevalence and treatment methods (all dialysis patients)

Method of dialysis	HBs antibody: -			HBs antibody: +			HBs antibody: unspecified			HBs antibody: no information available			Subtotal	No information available	Total	HBsAg prevalence (%) [†]						
	HBsAg: -			HBsAg: +			HBsAg: unspecified			HBsAg: no information available												
	HBsAg: +	HBsAg: unspecified	HBsAg: no information available	HBsAg: -	HBsAg: +	HBsAg: unspecified	HBsAg: no information available	HBsAg: -	HBsAg: +	HBsAg: unspecified	HBsAg: no information available	HBsAg: -					HBsAg: +	HBsAg: unspecified				
Facility hemodialysis	102 263	1850	970	1198	16 152	627	78	341	47 508	723	1749	229	19 049	464	19	184 972	3664	188 636	1.94	193 220	42 740	235 960
Hemodiafiltration	7 958	133	54	90	1 328	51	2	47	3 206	59	43	16	1 686	42	3	14 178	285	14 463	1.97	14 718	3 041	17 759
Hemofiltration	110	2	0	0	5	0	0	1	17	0	0	0	4	0	0	136	2	138	1.45	139	164	303
Hemoadsorption	659	28	5	12	154	7	1	3	344	10	6	11	96	3	0	1 253	48	1 301	3.69	1 339	204	1 543
Home hemodialysis	89	2	0	0	14	0	0	0	8	0	4	0	4	0	0	115	2	117	1.71	121	40	161
Peritoneal dialysis	2 237	29	28	12	128	7	0	6	1 888	29	282	49	680	11	9	4 933	76	5 009	1.52	5 395	3 235	8 630
Total	113 316	2044	1057	1312	17 781	692	81	398	52 971	821	2084	305	21 519	520	31	205 587	4077	209 664	1.94	214 932	49 424	264 356

[†]HBsAg prevalence (%) = Subtotal-2 ÷ (Subtotal-1 + Subtotal-2).

TABLE 29. Hepatitis B virus surface antigen (HBsAg) prevalence and genders (all dialysis patients)

Gender	HBs antibody: -			HBs antibody: +			HBs antibody: unspecified			HBs antibody: no information available			Subtotal	No information available	Total	HBsAg prevalence (%) [†]						
	HBsAg: -			HBsAg: +			HBsAg: unspecified			HBsAg: no information available												
	HBsAg: +	HBsAg: unspecified	HBsAg: no information available	HBsAg: -	HBsAg: +	HBsAg: unspecified	HBsAg: no information available	HBsAg: -	HBsAg: +	HBsAg: unspecified	HBsAg: no information available	HBsAg: -					HBsAg: +	HBsAg: unspecified				
Male	69 324	1326	653	847	11 059	464	38	244	32 372	526	1296	193	13 209	346	23	125 964	2662	128 626	2.07	131 920	30 303	162 223
Female	43 992	718	404	465	6 722	228	43	154	20 597	295	788	112	8 291	174	8	79 602	1415	81 017	1.75	82 991	19 121	102 112
Subtotal	113 316	2044	1057	1312	17 781	692	81	398	52 969	821	2084	305	21 500	520	31	205 566	4077	209 643	1.94	214 911	49 424	264 335
No information available	0	0	0	0	0	0	0	0	2	0	0	0	19	0	0	21	0	21	0.00	21	0	21
Total	113 316	2044	1057	1312	17 781	692	81	398	52 971	821	2084	305	21 519	520	31	205 587	4077	209 664	1.94	214 932	49 424	264 356

[†]HBsAg prevalence (%) = Subtotal-2 ÷ (Subtotal-1 + Subtotal-2).

TABLE 30. Hepatitis B virus surface antigen (HBsAg) prevalence and durations of dialysis (all dialysis patients)

Duration of dialysis (years)	HBs antibody: -				HBs antibody: +				HBs antibody: unspecified				HBs antibody: no information available				Subtotal	HBsAg prevalence (%) ¹	No information available	Total		
	HBsAg: +		HBsAg: -		HBsAg: +		HBsAg: -		HBsAg: +		HBsAg: -		HBsAg: +		HBsAg: -							
	HBsAg: +	HBsAg: no information available	HBsAg: -	HBsAg: no information available	HBsAg: +	HBsAg: no information available	HBsAg: -	HBsAg: no information available	HBsAg: +	HBsAg: no information available	HBsAg: -	HBsAg: no information available	HBsAg: +	HBsAg: no information available	HBsAg: -	HBsAg: no information available						
<2	26 996	404	318	250	3 362	124	8	65	12 977	189	625	48	114	15	48 315	831	49 146	1.69	50 475	11 663	62 138	
2-4	29 327	481	290	317	4 472	158	15	110	13 653	215	543	95	5 737	7	53 189	973	54 162	1.80	55 539	13 031	68 570	
5-9	28 262	507	284	309	4 573	182	20	96	13 075	175	493	71	5 451	7	52 348	987	52 348	1.89	53 628	12 448	66 076	
10-14	13 933	275	79	160	2 303	96	12	45	6 416	106	217	47	2 486	1	25 138	550	25 688	2.14	26 249	6 021	32 270	
15-19	7 035	142	38	105	1 269	58	8	32	3 244	59	113	18	1 323	45	12 871	304	13 175	2.31	13 489	2 983	16 472	
20-24	4 086	94	27	70	825	43	6	18	1 803	32	46	11	792	24	7 506	193	7 699	2.51	7 878	1 725	9 603	
≥25	3 677	141	21	101	977	31	12	32	1 803	45	47	15	750	22	7 207	239	7 446	3.21	7 674	1 553	9 227	
Total	113 316	2044	1057	1312	17 781	692	81	398	52 971	821	2084	305	21 519	520	31	205 587	4077	209 664	1.94	214 932	49 424	264 356
Mean	6.73	8.15	8.60	8.60	7.89	8.20	11.59	8.71	6.69	7.50	5.68	7.72	6.77	7.69	3.19	6.84	6.84	6.67	6.81	6.67	6.81	6.81
SD	6.88	8.03	8.40	8.40	7.71	7.55	9.47	8.72	6.93	7.71	6.26	7.71	6.94	7.53	4.34	7.01	7.01	6.84	6.84	6.84	6.84	6.84

¹HBsAg prevalence (%) = Subtotal-2 ÷ (Subtotal-1 + Subtotal-2).

TABLE 31. Hepatitis B virus surface antigen (HBsAg) prevalence and ages (all dialysis patients)

Age (years)	HBs antibody: -				HBs antibody: +				HBs antibody: unspecified				HBs antibody: no information available				Subtotal	HBsAg prevalence (%) ¹	No information available	Total		
	HBsAg: +		HBsAg: -		HBsAg: +		HBsAg: -		HBsAg: +		HBsAg: -		HBsAg: +		HBsAg: -							
	HBsAg: +	HBsAg: no information available	HBsAg: -	HBsAg: no information available	HBsAg: +	HBsAg: no information available	HBsAg: -	HBsAg: no information available	HBsAg: +	HBsAg: no information available	HBsAg: -	HBsAg: no information available	HBsAg: +	HBsAg: no information available	HBsAg: -	HBsAg: no information available						
<15	34	0	2	0	0	0	0	0	0	11	8	0	13	0	58	0	58	0.00	68	38	106	
15-29	775	7	12	4	4	19	6	6	1	354	1	20	148	1	1 296	15	1 311	1.14	1 351	346	1 697	
30-44	7 765	95	64	104	457	34	0	11	142	45	142	10	1280	27	12 752	201	12 953	1.55	13 285	3 136	16 421	
45-59	29 404	694	246	381	3 970	215	18	95	13 065	266	526	89	5547	159	51 986	1334	53 320	2.50	54 683	12 758	67 441	
60-74	48 761	950	463	548	8 487	311	47	186	23 404	383	899	151	9311	250	89 863	1894	91 757	2.06	94 067	21 254	115 321	
75-89	25 508	289	257	264	4 626	120	16	99	12 471	117	465	50	5000	76	47 605	602	48 207	1.25	49 363	11 365	60 728	
≥90	1 067	9	13	11	222	6	6	6	6	515	9	24	220	7	2 024	31	2 055	1.51	2 112	524	2 636	
Subtotal	113 314	2044	1057	1312	17 781	692	81	398	52 970	821	2084	305	21 519	520	31	205 584	4077	209 664	1.94	214 929	49 421	264 350
No information available	2	0	0	0	0	0	0	0	0	1	0	0	0	0	3	0	3	0.00	3	3	6	
Total	113 316	2044	1057	1312	17 781	692	81	398	52 971	821	2084	305	21 519	520	31	205 587	4077	209 664	1.94	214 932	49 424	264 356
Mean	64.53	62.89	65.06	63.58	67.17	63.66	66.25	66.93	65.07	62.83	64.07	63.83	64.90	63.21	65.94	63.21	65.94	64.78	64.89	64.78	64.87	
SD	12.86	11.10	13.21	12.64	11.09	11.68	10.07	11.39	12.68	11.39	13.69	11.53	12.72	11.51	10.64	12.66	12.66	12.89	12.66	12.66	12.71	

¹HBsAg prevalence (%) = Subtotal-2 ÷ (Subtotal-1 + Subtotal-2).

TABLE 32. Hepatitis B virus surface antigen (HBsAg) prevalence and primary diseases (all dialysis patients)

Primary disease	HBs antibody: -				HBs antibody: +				HBs antibody: unspecified				HBs antibody: no information available				Subtotal-1 (HBsAg -)	Subtotal-2 (HBsAg +)	Subtotal-1 + Subtotal-2	HBsAg prevalence (%)†	Subtotal	No information available	Total
	HBsAg -	HBsAg +	HBsAg: unspecified	HBsAg: no information available	HBsAg -	HBsAg +	HBsAg: unspecified	HBsAg: no information available	HBsAg -	HBsAg +	HBsAg: unspecified	HBsAg: no information available	HBsAg -	HBsAg +	HBsAg: unspecified	HBsAg: no information available							
Kidney and urinary tract tuberculosis	158	7	0	0	33	2	1	1	84	2	3	0	22	0	0	0	297	11	308	3.57	313	79	392
Nephropathy of pregnancy/pregnancy toxemia	772	17	8	13	137	7	4	7	314	9	14	1	155	8	0	0	1,378	41	1,419	2.89	1,466	309	1,775
Gouty kidney	549	10	3	6	100	6	0	0	242	4	11	1	113	2	0	0	1,004	22	1,026	2.14	1,047	210	1,257
Other nephritides that cannot be classified	512	11	3	4	77	4	0	2	212	4	10	1	114	1	0	0	915	20	935	2.14	955	259	1,214
Polycystic kidney	3,858	72	32	40	657	21	1	14	1,866	33	54	7	735	29	0	0	7,116	155	7,271	2.13	7,419	1,501	8,920
Others	2,111	49	21	24	311	9	1	3	851	14	49	8	323	6	0	0	3,596	78	3,674	2.12	3,780	945	4,725
Chronic glomerulonephritis	45,532	892	397	603	7,356	306	46	151	21,333	336	826	151	8,592	223	13	13	82,813	1,757	84,570	2.08	86,757	19,947	106,704
Obstructive urinary tract disease	285	6	3	2	52	1	0	0	145	1	5	0	46	3	0	0	528	11	539	2.04	549	143	692
Undetermined	8351	140	78	67	1,357	52	1	15	3,555	71	234	12	1,429	30	3	3	14,692	293	14,985	1.96	15,395	4,058	19,453
Reintroduction after transplantation	782	17	12	8	111	4	0	4	384	6	30	4	152	1	0	0	1,429	28	1,457	1.92	1,515	379	1,894
Myeloma	87	1	1	0	10	1	0	0	39	1	1	1	19	0	0	0	155	3	158	1.90	161	46	207
Diabetic nephropathy	38,088	656	396	425	5,615	216	19	140	17,888	268	656	95	7,448	164	9	9	69,039	1,304	70,343	1.85	72,083	16,175	88,258
Chronic pyelonephritis	1,442	26	8	18	237	5	0	5	556	9	14	1	215	2	1	1	2,450	42	2,492	1.69	2,539	599	3,138
Systemic lupus erythematosus, nephritis	944	11	12	11	117	6	0	5	437	8	13	4	215	4	1	1	1,713	29	1,742	1.66	1,788	473	2,261
Hypoplastic kidney	243	3	4	1	23	2	0	0	107	1	9	1	46	1	0	0	419	7	426	1.64	441	107	548
Nephrosclerosis	7,208	99	64	66	1,218	37	6	35	3,749	46	119	11	1,413	37	2	2	13,588	219	13,807	1.59	14,110	3,034	17,144
Malignant hypertension	875	12	2	14	139	5	1	9	333	3	8	3	151	4	0	0	1,498	24	1,522	1.58	1,559	397	1,956
Renal failure due to congenital abnormality of metabolism	103	3	4	0	16	0	0	0	56	0	1	0	19	0	0	0	194	3	197	1.52	202	60	262
Kidney and urinary tract tumor	298	6	1	3	43	2	0	3	138	0	5	0	54	0	0	0	533	8	541	1.48	553	91	644
Amyloid kidney	200	2	1	1	32	0	1	1	115	1	4	1	43	1	0	0	390	4	394	1.02	403	110	513
Rapidly progressive glomerulonephritis	656	3	7	4	100	3	0	3	410	3	13	2	160	4	2	2	1,326	13	1,339	0.97	1,370	372	1,742
Kidney and urinary tract stone	236	1	0	2	37	2	0	0	130	0	4	1	54	0	0	0	457	3	460	0.65	467	85	552
Subtotal	113,290	2044	1057	1312	17,778	691	81	398	52,944	820	2083	305	21,518	520	31	31	205,530	4075	209,605	1.94	214,872	49,379	264,251
No information available	26	0	0	0	3	1	0	0	27	1	1	0	1	0	0	0	57	2	59	3.39	60	45	105
Total	113,316	2044	1057	1312	17,781	692	81	398	52,971	821	2084	305	21,519	520	31	31	205,587	4077	209,664	1.94	214,932	49,424	264,356

†HBsAg prevalence (%) = Subtotal-2 ÷ (Subtotal-1 + Subtotal-2).

TABLE 33. Changes in pre-dialysis hemoglobin concentration (all dialysis patients)

	Pre-dialysis hemoglobin concentration (g/dL)										Subtotal	No information available	Total	Mean	SD
	<8.0	8.0-8.9	9.0-9.9	10.0-10.9	11.0-11.9	≥12.0									
Patients at the end of 2005 (%)	6564 (4.8)	12 707 (9.3)	33 785 (24.8)	45 231 (33.2)	26 608 (19.5)	11 298 (8.3)	136 193 (100.0)	31 919	168 112	10.23	1.37				
Patients at the end of 2006 (%)	9529 (4.4)	21 622 (10.0)	54 878 (25.4)	71 654 (33.1)	40 619 (18.8)	17 876 (8.3)	216 178 (100.0)	33 779	249 957	10.23	1.33				
Patients at the end of 2007 (%)	9604 (4.2)	21 294 (9.3)	55 658 (24.3)	77 395 (33.8)	45 918 (20.1)	18 973 (8.3)	228 842 (100.0)	35 514	264 356	10.27	1.32				

TABLE 34. Pre-dialysis hemoglobin and gender (all dialysis patients)

Gender	Pre-dialysis hemoglobin concentration (g/dL)										Subtotal	No information available	Total	Mean	SD
	<7.0	7.0-7.9	8.0-8.9	9.0-9.9	10.0-10.9	11.0-11.9	12.0-12.9	≥13.0							
Male (%)	1790 (1.3)	3788 (2.7)	11 927 (8.5)	31 750 (22.6)	47 152 (33.6)	30 461 (21.7)	9 823 (7.0)	3733 (2.7)	140 424 (100.0)	21 799	162 223	10.36	1.35		
Female (%)	1189 (1.3)	2836 (3.2)	9 363 (10.6)	23 899 (27.0)	30 237 (34.2)	15 456 (17.5)	4 257 (4.8)	1160 (1.3)	88 397 (100.0)	13 715	102 112	10.13	1.27		
Subtotal (%)	2979 (1.3)	6624 (2.9)	21 290 (9.3)	55 649 (24.3)	77 389 (33.8)	45 917 (20.1)	14 080 (6.2)	4893 (2.1)	228 821 (100.0)	35 514	264 335	10.27	1.32		
No information available (%)	0	1	4	9	6	1	0	0	21	0	21	9.5	0.88		
Total (%)	2979 (1.3)	6625 (2.9)	21 294 (9.3)	55 658 (24.3)	77 395 (33.8)	45 918 (20.1)	14 080 (6.2)	4893 (2.1)	228 842 (100.0)	35 514	264 356	10.27	1.32		

TABLE 35. Pre-dialysis hemoglobin concentrations and age (all dialysis patients)

Age (years)	Pre-dialysis hemoglobin concentration (g/dL)											Total	Mean	SD
	Less than 7	7-	8-	9-	10-	11-	12-	13-	Subtotal	No information available	Total			
<15 (%)	3 (4.9)	4 (6.6)	6 (9.8)	16 (26.2)	10 (16.4)	11 (18.0)	6 (9.8)	5 (8.2)	61 (100.0)	45	106	10.29	2.09	
15-29 (%)	15 (1.1)	26 (1.8)	97 (6.8)	305 (21.4)	466 (32.7)	365 (25.6)	116 (8.1)	34 (2.4)	1 424 (100.0)	273	1 697	10.5	1.31	
30-44 (%)	126 (0.9)	284 (2.0)	1 026 (7.3)	2 901 (20.5)	4 744 (33.6)	3 415 (24.2)	1 181 (8.4)	456 (3.2)	14 133 (100.0)	2 288	16 421	10.51	1.32	
45-59 (%)	664 (1.1)	1 385 (2.4)	4 546 (7.8)	13 038 (22.3)	19 962 (34.2)	12 754 (21.8)	4 365 (7.5)	1 661 (2.8)	58 375 (100.0)	9 066	67 441	10.41	1.34	
60-74 (%)	1 284 (1.3)	2 858 (2.9)	9 391 (9.4)	24 844 (24.8)	34 269 (34.2)	19 779 (19.7)	5 806 (5.8)	1 963 (2.0)	100 194 (100.0)	15 127	115 321	10.25	1.3	
75-89 (%)	844 (1.6)	1 964 (3.7)	5 931 (11.3)	13 957 (26.6)	17 222 (32.9)	9 230 (17.6)	2 521 (4.8)	752 (1.4)	52 421 (100.0)	8 307	60 728	10.09	1.31	
≥90 (%)	43 (1.9)	104 (4.7)	297 (13.3)	596 (26.7)	720 (32.3)	364 (16.3)	85 (3.8)	22 (1.0)	2 231 (100.0)	405	2 636	9.96	1.34	
Subtotal (%)	2 979 (1.3)	6 625 (2.9)	21 294 (9.3)	55 657 (24.3)	77 393 (33.8)	45 918 (20.1)	14 080 (6.2)	4 893 (2.1)	228 839 (100.0)	35 511	264 350	10.27	1.32	
No information available	0	0	0	1	2	0	0	0	3	3	6	10.27	0.35	
Total (%)	2 979 (1.3)	6 625 (2.9)	21 294 (9.3)	55 657 (24.3)	77 393 (33.8)	45 918 (20.1)	14 080 (6.2)	4 893 (2.1)	228 842 (100.0)	35 514	264 356	10.27	1.32	
Mean	66.91	67.31	66.82	65.87	64.76	63.63	62.43	61.33	64.88	64.79	64.87			
SD	12.51	12.48	12.49	12.42	12.50	12.83	12.92	12.82	12.65	13.08	12.71			

iron-binding capacity, transferrin saturation level, and serum ferritin concentration in all the dialysis patients over the past three years. To easily understand the changes, the percentages of the mean values in each year with respect to those in 2005 are also given.

As mentioned above, little change was observed in hemoglobin concentration; however, the serum iron concentration, transferrin saturation level, and serum ferritin concentration tended to increase from 2005 to 2006. In contrast, the total iron-binding capacity decreased. These changes may be due to the inclusion of the price of erythropoietin in the artificial kidney technical fee, which was determined on the basis of the system for medical treatment fee revised in 2006. That is, with the revision of the system, it was considered that a sufficient amount of iron has been supplemented to dialysis patients.

6. Transferrin saturation level

Table 38 shows the relationship between hemoglobin concentration and transferrin saturation level. Patients with high hemoglobin concentrations tended to have high transferrin saturation levels.

7. Serum ferritin concentration

Table 39 shows the relationship between hemoglobin concentration and serum ferritin concentration. Patients with high hemoglobin concentrations tended to have low serum ferritin concentrations.

In anemia therapies, both the serum ferritin concentration and transferrin saturation level are regarded as indices reflecting iron sufficiency. In general, it is understood that the decrease in either of the indices indicates the necessity of iron supplementation. Results of this survey, however, showed that the transferrin saturation level increased with increasing hemoglobin concentration, whereas the serum ferritin concentration decreased with increasing hemoglobin concentration. These findings suggest differences in the roles of iron metabolism between the transferrin saturation level and serum ferritin concentration.

8. Serum C-reactive protein concentration

Table 40 shows the relationship between hemoglobin concentration and serum C-reactive protein (CRP) concentration. For patients with hemoglobin concentrations <10.0 g/dL, the percentage of patients with a high serum CRP concentration increased with decreasing hemoglobin concentration.

D. History of hip fracture

Conventionally, the history of fracture in dialysis patients has not been surveyed; this survey was the

TABLE 36. Pre-dialysis hemoglobin concentrations and primary disease (all dialysis patients)

Primary disease	Pre-dialysis hemoglobin concentration (g/dL)										Subtotal	No information available	Total	Mean	SD
	<7.0	7.0-7.9	8.0-8.9	9.0-9.9	10.0-10.9	11.0-11.9	12.0-12.9	≥13.0							
Chronic glomerulonephritis	1047 (1.1)	2424 (2.6)	7903 (8.5)	22 132 (23.9)	31 863 (34.4)	19 189 (20.7)	6113 (6.6)	2071 (2.2)	92 742 (100.0)	13 962	106 704	10.33	1.31		
Chronic pyelonephritis	31 (1.1)	80 (3.0)	256 (9.4)	654 (24.1)	918 (33.9)	547 (20.2)	172 (6.3)	53 (2.0)	2 711 (100.0)	427	3 138	10.27	1.32		
Rapidly progressive glomerulonephritis	23 (1.6)	57 (3.9)	132 (9.1)	357 (24.6)	466 (32.2)	293 (20.2)	95 (6.6)	26 (1.8)	1 449 (100.0)	293	1 742	10.23	1.34		
Nephropathy of pregnancy/pregnancy toxemia	16 (1.0)	38 (2.4)	135 (8.6)	423 (26.9)	558 (35.5)	301 (19.2)	81 (5.2)	18 (1.1)	1 570 (100.0)	205	1 775	10.22	1.18		
Other nephritides that cannot be classified	12 (1.1)	36 (3.4)	91 (8.6)	231 (21.8)	352 (33.2)	241 (22.8)	73 (6.9)	23 (2.2)	1 059 (100.0)	155	1 214	10.35	1.35		
Polycystic kidney	77 (1.0)	181 (2.3)	611 (7.8)	1 843 (23.4)	2 592 (32.9)	1 670 (21.2)	605 (7.7)	301 (3.8)	7 880 (100.0)	1 040	8 920	10.45	1.38		
Nephrosclerosis	199 (1.3)	456 (3.1)	1 455 (9.7)	3 787 (25.4)	5 119 (34.3)	2 892 (19.4)	767 (5.1)	260 (1.7)	14 935 (100.0)	2 209	17 144	10.20	1.30		
Malignant hypertension	21 (1.3)	42 (2.5)	161 (9.8)	397 (24.1)	564 (34.2)	315 (19.1)	105 (6.4)	45 (2.7)	1 650 (100.0)	306	1 956	10.29	1.38		
Diabetic nephropathy	1118 (1.5)	2388 (3.1)	7 796 (10.2)	18 979 (24.7)	25 626 (33.4)	14 771 (19.3)	4471 (5.8)	1553 (2.0)	76 702 (100.0)	11 556	88 258	10.22	1.33		
Systemic lupus erythematosus nephritis	31 (1.6)	67 (3.5)	194 (10.1)	504 (26.3)	632 (33.0)	362 (18.9)	96 (5.0)	32 (1.7)	1 918 (100.0)	343	2 261	10.14	1.30		
Amyloid kidney	4 (0.9)	17 (3.9)	46 (10.6)	107 (24.8)	134 (31.0)	94 (21.8)	24 (5.6)	6 (1.4)	432 (100.0)	81	513	10.21	1.32		
Gouty kidney	11 (1.0)	30 (2.7)	94 (8.5)	238 (21.5)	374 (33.8)	247 (22.3)	81 (7.3)	33 (3.0)	1 108 (100.0)	149	1 257	10.41	1.34		
Renal failure due to congenital abnormality of metabolism	3 (1.4)	4 (1.8)	19 (8.6)	51 (23.1)	71 (32.1)	52 (23.5)	15 (6.8)	6 (2.7)	221 (100.0)	41	262	10.38	1.39		
Kidney and urinary tract tuberculosis	2 (0.6)	10 (3.0)	42 (12.7)	100 (30.1)	97 (29.2)	54 (16.3)	19 (5.7)	8 (2.4)	332 (100.0)	60	392	10.14	1.29		
Kidney and urinary tract stone	9 (1.9)	15 (3.1)	45 (9.4)	125 (26.0)	160 (33.3)	92 (19.2)	27 (5.6)	7 (1.5)	480 (100.0)	72	552	10.17	1.30		
Kidney and urinary tract tumor	12 (2.1)	26 (4.6)	82 (14.4)	133 (23.4)	173 (30.4)	124 (21.8)	16 (2.8)	3 (0.5)	569 (100.0)	75	644	9.99	1.28		
Obstructive urinary tract disease	14 (2.3)	20 (3.4)	46 (7.7)	137 (23.0)	215 (36.1)	104 (17.4)	40 (6.7)	20 (3.4)	596 (100.0)	96	692	10.29	1.40		
Myeloma	16 (9.1)	12 (6.9)	31 (17.7)	48 (27.4)	37 (21.1)	23 (13.1)	6 (3.4)	2 (1.1)	175 (100.0)	32	207	9.45	1.57		
Hypoplastic kidney	5 (1.1)	8 (1.7)	40 (8.5)	98 (20.8)	162 (34.3)	114 (24.2)	34 (7.2)	11 (2.3)	472 (100.0)	76	548	10.43	1.30		
Undetermined	220 (1.4)	523 (3.2)	1 589 (9.8)	4 003 (24.7)	5 420 (33.5)	3 251 (20.1)	898 (5.5)	296 (1.8)	16 200 (100.0)	3 253	19 453	10.22	1.32		
Reintroduction after transplantation	26 (1.6)	54 (3.3)	130 (8.1)	357 (22.1)	527 (32.7)	259 (22.3)	119 (7.4)	40 (2.5)	1 612 (100.0)	282	1 894	10.35	1.39		
Others	82 (2.1)	134 (3.4)	391 (9.9)	935 (23.6)	1 304 (33.0)	812 (20.5)	221 (5.6)	77 (1.9)	3 956 (100.0)	769	4 725	10.20	1.37		
Total	2979 (1.3)	6622 (2.9)	21 289 (9.3)	55 639 (24.3)	77 364 (33.8)	45 907 (20.1)	14 078 (6.2)	4891 (2.1)	228 769 (100.0)	35 482	264 251	10.27	1.32		
No information available	0	3	5	19	31	11	2	2	73	32	105	10.22	1.20		
Total	2979 (1.3)	6625 (2.9)	21 294 (9.3)	55 658 (24.3)	77 395 (33.8)	45 918 (20.1)	14 080 (6.2)	4893 (2.1)	228 842 (100.0)	35 514	264 356	10.27	1.32		

TABLE 37. Changes in the iron metabolism-related indices over the past three years (facility hemodialysis, hemodiafiltration, hemoadsorption)

	Hemoglobin concentration (g/dL)			Serum iron concentration (µg/dL)			Total iron-binding capacity (µg/dL)			Transferrin saturation level (%)			Serum ferritin concentration (ng/mL)		
	Mean	SD	vs. 2005† (%)	Mean	SD	vs. 2005† (%)	Mean	SD	vs. 2005† (%)	Mean	SD	vs. 2005† (%)	Mean	SD	vs. 2005† (%)
The end of 2005	10.23	1.37	100.00	62.31	29.38	100.00	246.05	64.38	100.00	26.50	13.82	100.00	191.29	329.38	100.00
The end of 2006	10.23	1.33	100.00	64.65	30.28	103.76	236.96	60.73	96.31	28.39	14.60	107.13	239.59	383.29	125.25
The end of 2007	10.27	1.32	100.39	63.42†	29.54†	101.78	236.85	60.73	96.26	28.09	14.42	106.00	227.54	349.56	118.95

†The percentages of the mean values in each year with respect to those in 2005.

TABLE 38. Pre-dialysis hemoglobin concentrations and transferrin saturation levels (all dialysis patients)

Transferrin saturation level (%)	Pre-dialysis hemoglobin concentration (g/dL)												Subtotal	No information available	Total	Mean	SD
	Pre-dialysis hemoglobin concentration (g/dL)																
	<7.0	7.0-7.9	8.0-8.9	9.0-9.9	10.0-10.9	11.0-11.9	12.0-12.9	≥13.0									
<10 (%)	210 (2.9)	500 (7.0)	1168 (16.3)	1855 (25.9)	1903 (26.5)	1064 (14.8)	364 (5.1)	111 (1.5)	7175 (100.0)	55	7230	9.83	1.47				
10-19 (%)	530 (1.4)	1270 (3.4)	3930 (10.5)	9616 (25.7)	12110 (32.3)	6961 (18.6)	2227 (5.9)	811 (2.2)	37455 (100.0)	280	37735	10.2	1.34				
20-29 (%)	455 (0.9)	1059 (2.0)	4011 (7.5)	12659 (23.8)	19267 (36.2)	11424 (21.5)	3226 (6.1)	1055 (2.0)	53156 (100.0)	378	53534	10.36	1.23				
30-39 (%)	318 (1.0)	568 (1.8)	2199 (6.9)	7242 (22.9)	11608 (36.6)	7099 (22.4)	2035 (6.4)	617 (1.9)	31686 (100.0)	204	31890	10.4	1.25				
40-49 (%)	140 (1.1)	241 (1.9)	997 (7.9)	2791 (22.1)	4411 (34.9)	2860 (22.6)	894 (7.1)	299 (2.4)	12633 (100.0)	85	12718	10.41	1.31				
50-59 (%)	60 (1.2)	125 (2.5)	444 (8.9)	1150 (23.1)	1652 (33.2)	1056 (21.2)	356 (7.2)	131 (2.6)	4974 (100.0)	26	5000	10.36	1.35				
≥60 (%)	159 (2.9)	265 (4.8)	609 (11.0)	1332 (24.1)	1665 (30.1)	1022 (18.5)	371 (6.7)	110 (2.0)	5533 (100.0)	33	5566	10.1	1.48				
Subtotal (%)	1872 (1.2)	4028 (2.6)	13358 (8.8)	36645 (24.0)	52616 (34.5)	31486 (20.6)	9473 (6.2)	3134 (2.1)	152612 (100.0)	1061	153673	10.3	1.3				
No information available	1107	2597	7936	19013	24779	14432	4607	1759	76230	34453	110683	10.21	1.36				
Total (%)	2979 (1.3)	6625 (2.9)	21294 (9.3)	55658 (24.3)	77395 (33.8)	45918 (20.1)	14080 (6.2)	4893 (2.1)	228842 (100.0)	35514	264356	10.27	1.32				
Mean	28.89	26.48	26.78	27.59	28.32	28.73	28.95	28.53	28.10	26.88	28.09						
SD	20.17	18.34	16.06	14.50	13.67	13.69	14.67	14.58	14.43	13.62	14.42						

TABLE 39. Pre-dialysis hemoglobin concentrations and serum ferritin concentrations (all dialysis patients)

Serum ferritin concentration (ng/mL)	Pre-dialysis hemoglobin concentration (g/dL)											Subtotal	No information available	Total	Mean	SD
	<7.0	7.0-7.9	8.0-8.9	9.0-9.9	10.0-10.9	11.0-11.9	12.0-12.9	≥13.0								
<25 (%)	288 (1.2)	627 (2.7)	2268 (9.6)	5521 (23.3)	7517 (31.8)	4885 (20.6)	1793 (7.6)	759 (3.2)	23658 (100.0)	180	23838	10.36	1.38			
25-49 (%)	240 (1.0)	545 (2.3)	1742 (7.5)	5119 (22.0)	7848 (33.8)	5205 (22.4)	1759 (7.6)	767 (3.3)	23225 (100.0)	154	23379	10.45	1.35			
50-99 (%)	352 (1.0)	688 (2.0)	2474 (7.4)	7781 (23.1)	11883 (35.4)	7471 (22.2)	2221 (6.6)	744 (2.2)	33614 (100.0)	239	33853	10.39	1.27			
100-149 (%)	282 (1.0)	592 (2.2)	2141 (7.8)	6569 (24.0)	9920 (36.3)	5809 (21.2)	1580 (5.8)	460 (1.7)	27353 (100.0)	199	27552	10.32	1.23			
150-199 (%)	221 (1.1)	465 (2.3)	1707 (8.4)	5064 (24.8)	7222 (35.4)	4287 (21.0)	1146 (5.6)	288 (1.4)	20400 (100.0)	156	20556	10.29	1.24			
200-299 (%)	302 (1.1)	730 (2.7)	2487 (9.2)	6961 (25.6)	9590 (35.3)	5304 (19.5)	1421 (5.2)	379 (1.4)	27174 (100.0)	227	27401	10.22	1.24			
300-499 (%)	328 (1.4)	796 (3.3)	2526 (10.4)	6138 (25.4)	8250 (34.1)	4482 (18.5)	1300 (5.4)	355 (1.5)	24175 (100.0)	190	24365	10.17	1.3			
500-999 (%)	280 (1.9)	660 (4.5)	1750 (11.8)	3771 (25.5)	4561 (30.8)	2617 (17.7)	859 (5.8)	287 (1.9)	14785 (100.0)	142	14927	10.1	1.4			
≥1000 (%)	200 (3.8)	293 (5.6)	659 (12.7)	1164 (22.4)	1428 (27.5)	919 (17.7)	373 (7.2)	161 (3.1)	5197 (100.0)	57	5254	10.05	1.63			
Subtotal (%)	2493 (1.2)	5396 (2.7)	17754 (8.9)	48088 (24.1)	68219 (34.2)	40979 (20.5)	12452 (6.2)	4200 (2.1)	199581 (100.0)	1544	201125	10.29	1.31			
No information available	486	1229	3540	7570	9176	4939	1628	693	29261	33970	63231	10.11	1.39			
Total (%)	2979 (1.3)	6625 (2.9)	21294 (9.3)	55658 (24.3)	77395 (33.8)	45918 (20.1)	14080 (6.2)	4893 (2.1)	228842 (100.0)	35514	264356	10.27	1.32			
Mean	361.73	325.41	268.15	228.58	216.2	209.14	216.83	217.12	227.18	273.71	227.54					
SD	631.31	562.23	404.59	320.89	324.95	314.91	341.85	420.43	348.01	510.53	349.56					

TABLE 40. Pre-dialysis hemoglobin concentrations and serum C-reactive protein (CRP) concentrations (all dialysis patients)

Serum CRP concentration (mg/dL)	Pre-dialysis hemoglobin concentration (g/dL)										Subtotal	No information available	Total	Mean	SD
	<7.0	7.0-7.9	8.0-8.9	9.0-9.9	10.0-10.9	11.0-11.9	12.0-12.9	≥13.0							
<0.2 (%)	784 (0.8)	1753 (1.8)	7 063 (7.1)	23 384 (23.6)	36 168 (36.5)	21 736 (22.0)	6 208 (6.3)	1862 (1.9)	98 958 (100.0)	665	99 623	10.39	1.21		
0.2-0.4 (%)	359 (1.0)	880 (2.5)	3 053 (8.8)	8 187 (23.5)	11 831 (34.0)	7 261 (20.9)	2 372 (6.8)	840 (2.4)	34 783 (100.0)	243	35 026	10.34	1.32		
0.5-0.9 (%)	246 (1.5)	641 (3.9)	1 771 (10.9)	4 125 (25.4)	5 243 (32.3)	2 955 (18.2)	936 (5.8)	338 (2.1)	16 255 (100.0)	130	16 385	10.16	1.36		
1.0-1.9 (%)	253 (2.4)	575 (5.5)	1 421 (13.6)	2 694 (25.8)	3 027 (29.0)	1 696 (16.2)	574 (5.5)	207 (2.0)	10 447 (100.0)	79	10 526	9.99	1.46		
2.0-3.9 (%)	197 (3.1)	452 (7.2)	1 073 (17.0)	1 633 (25.8)	1 746 (27.6)	826 (13.1)	278 (4.4)	113 (1.8)	6 318 (100.0)	47	6 365	9.79	1.48		
4.0-5.9 (%)	108 (4.6)	220 (9.3)	440 (18.6)	632 (26.8)	555 (23.5)	275 (11.6)	94 (4.0)	38 (1.6)	2 362 (100.0)	19	2 381	9.59	1.56		
6.0-7.9 (%)	64 (5.3)	144 (12.0)	232 (19.4)	289 (24.1)	283 (23.6)	122 (10.2)	40 (3.3)	23 (1.9)	1 197 (100.0)	11	1 208	9.47	1.59		
8.0-9.9 (%)	46 (6.6)	85 (12.2)	157 (22.5)	176 (25.3)	133 (19.1)	63 (9.0)	26 (3.7)	11 (1.6)	697 (100.0)	8	705	9.3	1.62		
10.0-14.9 (%)	59 (7.5)	108 (13.8)	139 (17.8)	181 (23.1)	167 (21.4)	85 (10.9)	31 (4.0)	12 (1.5)	782 (100.0)	6	788	9.39	1.68		
≥15.0 (%)	41 (7.3)	69 (12.4)	109 (19.5)	133 (23.8)	122 (21.9)	58 (10.4)	18 (3.2)	8 (1.4)	558 (100.0)	4	562	9.35	1.64		
Subtotal (%)	2157 (1.3)	4927 (2.9)	15 458 (9.0)	41 434 (24.0)	59 275 (34.4)	35 077 (20.4)	10 577 (6.1)	3452 (2.0)	172 357 (100.0)	1 212	173 569	10.28	1.31		
No information available	822	1698	5 836	14 224	18 120	10 841	3 503	1441	56 485	34 302	90 787	10.24	1.37		
Total (%)	2979 (1.3)	6625 (2.9)	21 294 (9.3)	55 658 (24.3)	77 395 (33.8)	45 918 (20.1)	14 080 (6.2)	4893 (2.1)	228 842 (100.0)	35 514	264 356	10.27	1.32		
Mean	1.98	1.70	1.10	0.66	0.50	0.45	0.49	0.58	0.64	0.82	0.64				
SD	3.99	3.34	2.80	2.09	1.65	1.60	1.70	1.80	2.02	4.11	2.04				

TABLE 41. History of hip fracture and age (all dialysis patients)

History of hip fracture	Age (years)										Subtotal	No information available	Total	Mean	SD	
	<20	20-29	30-39	40-49	50-59	60-69	70-79	80-89	≥90							
Male																
Without a history	87	743	4082	9 849	26 312	35 719	31 639	10 892	790	120 113	0	120 113	64.06	12.49		
With a history	1	2	13	51	226	435	621	328	40	1 717	0	1 717	70.51	11.11		
Subtotal	88	745	4095	9 900	26 538	36 154	32 260	11 220	830	121 830	0	121 830	64.15	12.49		
Fracture prevalence [†]	114.9	26.9	31.8	51.8	85.9	121.8	196.3	301.1	506.3	142.9	-	142.9				
Unspecified	0	7	40	77	214	345	354	109	7	1 153	0	1 153	65.22	12.29		
No information available	47	252	1299	3 206	8 474	11 581	10 410	3 660	307	39 236	4	39 240	64.17	12.60		
Total	135	1004	5434	13 183	35 226	48 080	43 024	14 989	1144	162 219	4	162 223	64.16	12.52		
Female																
Without a history	62	412	2052	5 165	14 909	20 877	19 726	9 801	996	74 000	1	74 001	65.75	12.83		
With a history	1	4	16	29	181	441	941	779	117	2 509	0	2 509	74.60	10.65		
Subtotal	63	416	2068	5 194	15 090	21 318	20 667	10 580	1113	76 509	1	76 510	66.04	12.86		
Fracture prevalence [†]	161.3	97.1	78.0	56.1	121.4	211.2	477.0	794.8	1174.7	339.0	0.0	339.0				
Unspecified	1	4	17	48	137	204	219	128	8	766	0	766	67.04	13.02		
No information available	33	147	716	1 777	4 968	6 847	6 584	3 392	371	24 835	1	24 836	65.78	13.10		
Total	97	567	2801	7 019	20 195	28 369	27 470	14 100	1492	102 110	2	102 112	65.98	12.92		

[†]Fracture prevalence: the rate of patients with a history of hip fracture per 10 000 dialysis patients.

TABLE 42. History of hip fracture and duration of dialysis (all dialysis patients)

History of hip fracture	Duration of dialysis (years)								Total	Mean	SD
	<2	2-4	5-9	10-14	15-19	20-24	≥25				
History of hip fracture											
Without a history	45 747	50 271	48 547	23 732	12 101	7082	6655	194 135	6.80	6.95	
With a history	895	1 099	1 044	459	242	159	328	4 226	7.83	8.34	
Subtotal	46 642	51 370	49 591	24 191	12 343	7241	6983	198 361	6.82	6.99	
Fracture prevalence [†]	195.6	218.6	215.0	193.4	200.0	224.5	492.9	217.7			
Unspecified	562	430	439	230	125	62	71	1 919	6.61	7.26	
No information available	14 934	16 770	16 046	7849	4 004	2300	2173	64 076	6.79	6.95	
Total	62 138	68 570	66 076	32 270	16 472	9603	9227	264 356	6.81	6.98	

[†]Fracture prevalence: the rate of patients with a history of hip fracture per 10 000 dialysis patients.

TABLE 43. History of hip fracture and presence or absence of diabetes mellitus (all dialysis patients)

History of hip fracture	Diabetic	Non-diabetic	Subtotal	No information available	Total
Male					
Without a history	43 751	76 330	120 081	32	120 113
With a history	704	1 013	1 717	0	1 717
Subtotal	44 455	77 343	121 798	32	121 830
Fracture prevalence [†]	160.9	132.7	143.0	–	142.9
Unspecified	499	654	1 153	0	1 153
No information available	14 116	25 085	39 201	39	39 240
Total	59 070	103 082	162 152	71	162 223
Female					
Without a history	21 223	52 769	73 992	9	74 001
With a history	859	1 649	2 508	1	2 509
Subtotal	22 082	54 418	76 500	10	76 510
Fracture prevalence [†]	404.7	312.5	339.0	1111.1	339.0
Unspecified	231	535	766	0	766
No information available	6 863	17 949	24 812	24	24 836
Total	29 176	72 902	102 078	34	102 112

[†]Fracture prevalence: the rate of patients with a history of hip fracture per 10 000 dialysis patients.

first to ask patients about the history of hip fracture as a fracture-related question. The rate of patients with a history of hip fracture per 10 000 dialysis patients is described as the "fracture prevalence" (equal to 100-fold of the percentage of patients with a history of fracture with respect to the total number of dialysis patients). It is known that bone metabolism markedly differs between male and female patients and between diabetic and non-diabetic patients; therefore, fracture prevalences were summarized according to gender, and then according to the presence or absence of diabetes mellitus.

1. Tabulation according to gender

a. Gender. Table 41 shows the relationship between the history of hip fracture and age in male and female patients. The fracture prevalence in all the male patients was 142.9, whereas that in all the female patients was 339.0, which was more than twice that in all the male patients.

b. Age. The relationship between the fracture prevalence and age was examined using the data shown in Table 41. In both male and female patients the fracture prevalence increased with age. The fracture prevalence in female patients was higher than that in male patients in all age groups. In particular, the gender difference was marked in patients aged 70 years or older.

c. Duration of dialysis. The fracture prevalences are summarized according to the duration of dialysis in Table 42. The total fracture prevalences in all the

patients are shown by each duration because the durations of dialysis are not tabulated according to gender. The fracture prevalence sharply and discontinuously increased with dialysis durations exceeding 25 years.

d. Presence or absence of diabetes mellitus. Table 43 shows the relationship between the history of hip fracture and the presence or absence of diabetes mellitus. In both males and females, the fracture prevalence in diabetic patients was higher than that in non-diabetic patients.

e. Body mass index (BMI). Table 44 shows the relationship between a history of hip fracture and BMI. In both male and female patients, the lower the BMI, the higher the fracture prevalence. This suggests that malnourished patients are more prone to fracture.

f. Pre-dialysis serum creatinine concentration. Table 45 shows the relationship between the history of hip fracture and pre-dialysis serum creatinine concentration. In both male and female patients, the fracture prevalence increased with decreasing serum creatinine concentration. This also suggests that, similar to BMI, malnourished patients are more prone to fracture.

g. Pre-dialysis serum albumin concentration prior to starting dialysis. Table 46 shows the relationship between the history of hip fracture and pre-dialysis serum albumin concentration prior to starting

TABLE 46. History of hip fracture and pre-dialysis serum albumin (all dialysis patients)

History of hip fracture	Pre-dialysis serum albumin concentration (g/dL)					Subtotal	No information available	Total	Mean	SD
	<3.0	3.0-3.4	3.5-3.9	4.0-4.4	≥4.5					
Male										
Without a history	5182	18 332	54 480	32 273	3226	113 493	6 620	120 113	3.74	0.44
With a history	199	410	731	258	21	1 619	98	1 717	3.52	0.49
Subtotal	5381	18 742	55 211	32 531	3247	115 112	6 718	121 830	3.74	0.44
Fracture prevalence [†]	384.0	223.7	134.2	79.9	65.1	142.7	148.0	142.9		
Unspecified	59	201	593	222	9	1 084	69	1 153	3.66	0.42
No information available	894	3 089	9 229	5 481	597	19 290	19 950	39 240	3.74	0.44
Total	6334	22 032	65 033	38 234	3853	135 486	26 737	162 223	3.74	0.44
Female										
Without a history	3419	12 636	35 564	17 286	1189	70 094	3 907	74 001	3.70	0.42
With a history	284	741	1 020	270	17	2 332	177	2 509	3.47	0.47
Subtotal	3703	13 377	36 584	17 556	1206	72 426	4 084	76 510	3.69	0.43
Fracture prevalence [†]	830.7	586.4	286.8	156.2	143.0	332.7	453.0	339.0		
Unspecified	64	166	385	116	4	735	31	766	3.57	0.46
No information available	595	2 248	6 233	2 933	239	12 248	12 588	24 836	3.70	0.43
Total	4362	15 791	43 202	20 605	1449	85 409	16 703	102 112	3.69	0.43

[†]Fracture prevalence: the rate of patients with a history of hip fracture per 10 000 dialysis patients.

dialysis. In both male and female patients the fracture prevalence increased with decreasing serum albumin concentration. This also suggests that, similar to BMI and serum creatinine concentration, malnourished patients are more prone to fracture.

h. Percutaneous ethanol injection therapy (PEIT). Table 47 shows the relationship between the history of hip fracture and the use of PEIT for secondary hyperparathyroidism. In both males and females, the fracture prevalence in patients who had been treated with PEIT was clearly higher than that in patients who had not been treated.

i. Parathyroidectomy (PTx). Table 48 shows the relationship between the history of hip fracture and treatment of secondary hyperparathyroidism with PTx. Similarly to the results for PEIT, the fracture prevalence was higher in patients who had been treated with PTx than in those who had not been treated.

j. Serum intact parathyroid hormone (iPTH) concentration. Table 49 shows the relationship between the history of hip fracture and serum iPTH concentration. The fracture prevalences in male patients with serum iPTH concentrations of 140–800 pg/mL were

TABLE 47. History of hip fracture and treatment with percutaneous ethanol injection therapy (PEIT) (all dialysis patients)

History of hip fracture	PEIT treatment		Subtotal	Unspecified	No information available	Total
	No	Yes				
Male						
Without a history	116 336	956	117 292	1441	1 380	120 113
With a history	1 534	74	1 608	39	70	1 717
Subtotal	117 870	1030	118 900	1480	1 450	121 830
Fracture prevalence [†]	131.9	774.1	137.1	270.6	507.2	142.9
Unspecified	159	8	167	980	6	1 153
No information available	955	62	1 017	2	38 221	39 240
Total	118 984	1100	120 084	2462	39 677	162 223
Female						
Without a history	71 424	781	72 205	924	872	74 001
With a history	2 270	74	2 344	59	106	2 509
Subtotal	73 694	855	74 549	983	978	76 510
Fracture prevalence [†]	317.8	947.5	324.6	638.5	1 215.6	339.0
Unspecified	143	1	144	619	3	766
No information available	598	50	648	0	24 188	24 836
Total	74 435	906	75 341	1602	25 169	102 112

[†]Fracture prevalence: the rate of patients with a history of hip fracture per 10 000 dialysis patients.

TABLE 48. History of hip fracture and treatment with parathyroidectomy (PTx) (all dialysis patients)

History of hip fracture	PTx performed		Subtotal	Unspecified	No information available	Total
	No	Yes				
Male						
Without a history	112 956	5115	118 071	951	1 091	120 113
With a history	1 474	154	1 628	28	61	1 717
Subtotal	114 430	5269	119 699	979	1 152	121 830
Fracture prevalence [†]	130.5	301.1	137.9	294.4	559.1	142.9
Unspecified	263	10	273	874	6	1 153
No information available	1 425	288	1 713	3	37 524	39 240
Total	116 118	5567	121 685	1856	38 682	162 223
Female						
Without a history	68 115	4626	72 741	591	669	74 001
With a history	2 188	177	2 365	44	100	2 509
Subtotal	70 303	4803	75 106	635	769	76 510
Fracture prevalence [†]	321.2	382.6	325.1	744.5	1 494.8	339.0
Unspecified	166	12	178	585	3	766
No information available	835	284	1 119	0	23 717	24 836
Total	71 304	5099	76 403	1220	24 489	102 112

[†]Fracture prevalence: the rate of patients with a history of hip fracture per 10 000 dialysis patients.

relatively lower than those in the other male patients, and the fracture prevalences in female patients with serum iPTH concentrations of 60–600 pg/mL were relatively lower than those in the other female patients. Outside these serum iPTH concentration ranges the fracture prevalence tended to be high in both male and female patients.

(1) Tabulation considering BMI

As described above, the history of fracture is strongly related to BMI; therefore, the relationship between the history of hip fracture and serum iPTH concentration was examined by taking the classification according to BMI into consideration, which is shown in the three-dimensional graphs in Figure 3. Here, the graphs were prepared on the basis of the data collected as of June 2008 (2). In patients with a low BMI, a U-shaped relationship was observed between the serum iPTH concentration and the fracture prevalence, with both excessively high and low serum iPTH concentrations related to a high fracture prevalence. This tendency weakened with increasing BMI, showing little relationship between serum iPTH concentration and the fracture prevalence in patients with a high BMI.

(2) Tabulation considering serum albumin concentration

Similarly, the relationship between the history of hip fracture and serum iPTH concentration was examined by taking the classification according to serum albumin concentration into consideration, which is shown in three-dimensional graphs in Figure 4. These graphs were also prepared on the basis of the

data collected as of June 2008 (2). Similarly to the case of BMI, a U-shaped relationship was observed between serum iPTH concentration and the fracture prevalence in patients with low serum albumin concentrations. A weak relationship was observed between serum iPTH concentration and the fracture prevalence in patients with high serum albumin concentrations.

k. Pre-dialysis serum calcium concentration. Table 50 shows the relationship between the history of hip fracture and pre-dialysis serum calcium concentration. The serum calcium concentrations shown in this table were corrected using serum albumin concentrations using the equation shown below (when the serum albumin concentration is <4.0 g/dL):

$$\text{Corrected serum Ca concentration (mg/dL)} = \text{Serum Ca concentration (mg/dL)} + (4.0 - \text{Serum albumin concentration (g/dL)})$$

In male patients, it is clear that the fracture prevalence decreased with decreasing serum calcium concentration, and increased with increasing serum calcium concentration. A similar tendency was observed in female patients; however, the fracture prevalence was also high in female patients with serum calcium concentrations <7.0 mg/dL, which is different from the male patients.

2. Pre-dialysis serum phosphorus

Table 51 shows the relationship between the history of hip fracture and pre-dialysis serum phosphorus concentration. In both males and females, the fracture prevalence increased with decreasing

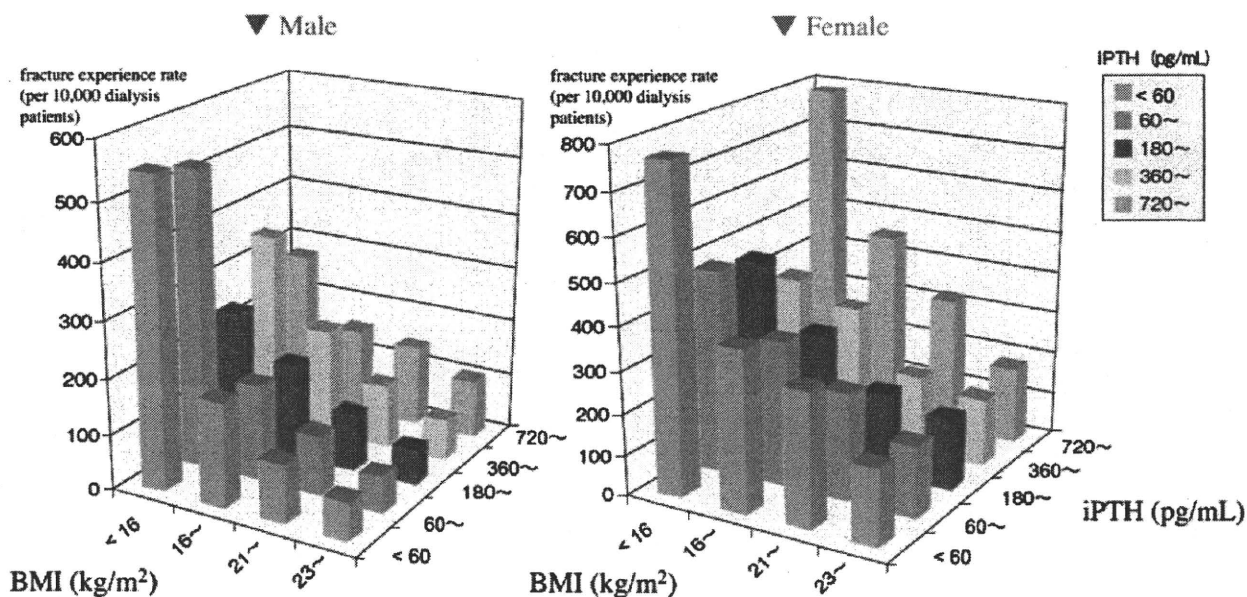


FIG. 3. Relationship between the history of hip fracture, serum intact parathyroid hormone concentration (iPTH), and body mass index (BMI) (all dialysis patients).

serum iPTH concentrations. The increase in the fracture prevalence in the high serum iPTH concentration region was significant.

For non-diabetic patients with low serum albumin concentrations there was also a clear relationship between serum iPTH concentration and the fracture prevalence; however, a marked increase in the

fracture prevalence was observed in non-diabetic patients with low serum iPTH concentrations, unlike in diabetic patients. For both diabetic and non-diabetic patients, the relationship between serum iPTH concentration and the fracture prevalence was weak in the region of high serum albumin concentration.

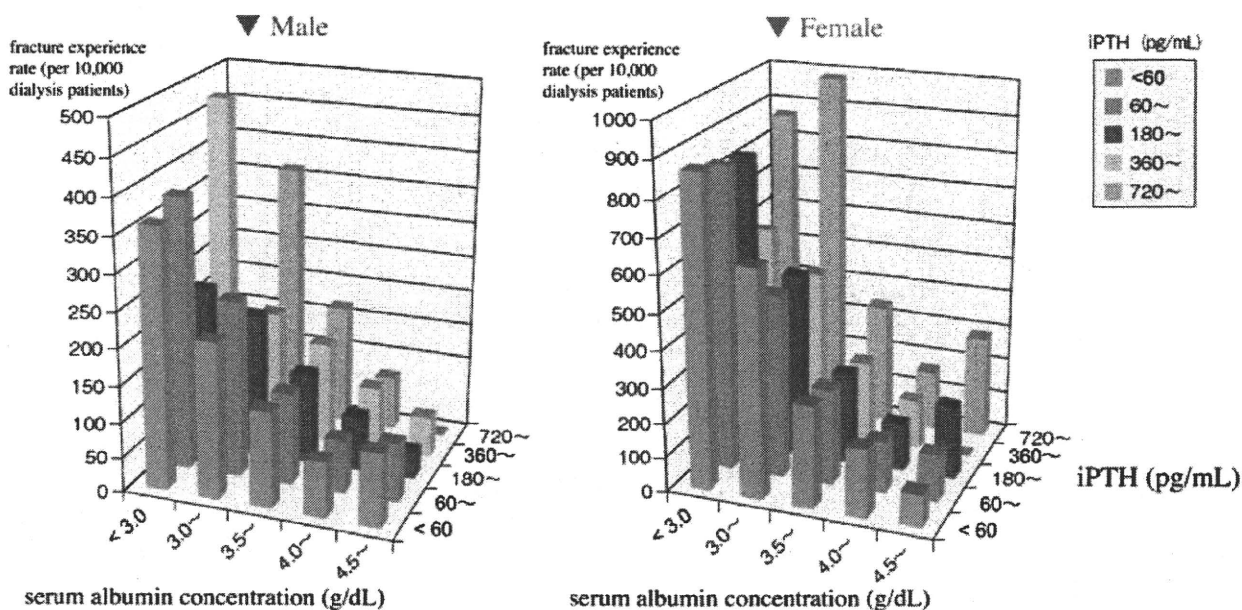


FIG. 4. Relationship between the history of hip fracture, serum intact parathyroid hormone concentration (iPTH), and serum albumin concentration (all dialysis patients).

TABLE 50. History of hip fracture and corrected pre-dialysis serum calcium concentration* (all dialysis patients)

History of hip fracture	Corrected pre-dialysis serum calcium concentration* (mg/dL)													Total	Mean	SD			
	<6.0	6.0-6.4	6.5-6.9	7.0-7.4	7.5-7.9	8.0-8.4	8.5-8.9	9.0-9.4	9.5-9.9	10.0-10.4	10.5-10.9	11.0-11.4	11.5-11.9				≥12.0	No information available	
Male																			
Without a history	114	147	308	958	3414	12307	26081	28119	20295	12279	5747	2081	774	566	113190	6923	120113	9.25	0.89
With a history	1	2	3	4	51	144	388	390	307	160	93	36	16	15	1610	107	1717	9.31	0.94
Subtotal	115	149	311	962	3465	12451	26469	28509	20602	12439	5840	2117	790	581	114800	7030	121830	9.25	0.89
Fracture prevalence†	87.7	136.1	97.4	41.8	149.4	117.0	148.8	138.7	151.3	130.3	161.8	173.0	206.7	265.0	142.2	154.6	142.9		
Unspecified	0	1	2	7	20	118	264	255	201	128	61	10	5	8	1080	73	1153	9.29	0.87
No information available	27	33	59	172	625	2106	4082	4557	3253	2052	1008	370	125	164	18633	20607	39240	9.28	1.03
Total	142	183	372	1141	4110	14675	30815	33321	24056	14619	6909	2497	920	753	134513	27710	162223	9.25	0.91
Female																			
Without a history	62	74	137	423	1381	4902	12785	17872	15152	9492	4724	1762	666	469	69901	4100	74001	9.44	0.91
With a history	3	2	6	12	36	170	466	576	466	272	183	69	33	29	2323	186	2509	9.46	0.98
Subtotal	65	76	143	435	1417	5072	13251	18448	15618	9764	4907	1831	699	498	72224	4286	76510	9.44	0.91
Fracture prevalence†	483.9	270.3	438.0	283.7	260.7	346.8	364.5	322.3	307.6	286.6	387.4	391.6	495.5	618.3	332.3	453.7	339.0		
Unspecified	0	1	1	2	9	45	133	189	163	109	44	26	6	7	735	31	766	9.49	0.91
No information available	10	16	30	63	221	839	2206	3020	2461	1612	877	297	117	115	11884	12952	24836	9.46	1.02
Total	75	93	174	500	1647	5956	15590	21657	18242	11485	5828	2154	822	620	84843	17269	102112	9.44	0.93

*When the serum albumin concentration is <4.0 g/dL: Corrected serum calcium concentration (mg/dL) = Serum calcium concentration (mg/dL) + (4.0 - Serum albumin concentration (g/dL)). †Fracture prevalence: the rate of patients with a history of hip fracture per 10 000 dialysis patients.

TABLE 51. History of hip fracture and pre-dialysis serum phosphorus concentration (all dialysis patients)

History of hip fracture	Pre-dialysis serum phosphorus concentration (mg/dL)													Total	Mean	SD			
	<3.0	3.0-3.9	4.0-4.9	5.0-5.9	6.0-6.9	7.0-7.9	8.0-8.9	≥9.0	No information available										
Male																			
Without a history	5198	15487	30054	32411	20541	8988	3695	2187	118561	1552	2187	18	1689	28	1552	120113	5.30	1.51	
With a history	140	299	466	416	233	85	32	18	1689	28	18	18	1689	28	1552	120113	4.90	1.50	
Subtotal	5338	15786	30520	32827	20774	9073	3727	2205	120250	1580	2205	36	1807	56	1804	121830	5.29	1.51	
Fracture prevalence†	269.3	193.1	155.1	128.4	113.4	94.6	86.6	82.3	142.5	180.4	82.3	14	1087	66	1153	142.9			
Unspecified	46	147	293	310	179	66	32	14	1087	66	14	14	1087	66	1153	142.9	5.20	1.43	
No information available	923	2535	4971	5430	3510	1537	574	358	19838	19402	358	19838	19402	358	19402	39240	5.29	1.51	
Total	6307	18468	35784	38567	24463	10676	4333	2577	141175	21048	2577	141175	21048	358	19402	162223	5.29	1.51	
Female																			
Without a history	3398	9463	19515	20557	12336	4981	1798	1019	73067	934	1019	19	2452	57	934	74001	5.22	1.46	
With a history	215	449	713	603	289	115	49	19	2452	57	19	19	2452	57	934	74001	4.80	1.46	
Subtotal	3613	9912	20228	21160	12625	5096	1847	1038	75519	991	1038	38	75519	991	934	76510	5.20	1.46	
Fracture prevalence†	632.7	474.5	365.4	293.3	234.3	230.9	272.5	186.5	335.6	610.3	186.5	8	745	21	339.0	766	5.03	1.47	
Unspecified	41	123	219	184	110	42	18	8	745	21	8	8	745	21	339.0	766	5.03	1.47	
No information available	663	1661	3176	3523	2288	860	285	172	12628	12208	172	12628	12208	172	12208	24836	5.21	1.46	
Total	4317	11696	23623	24867	15023	5998	2150	1218	88892	13220	1218	88892	13220	172	12208	102112	5.20	1.46	

†Fracture prevalence: the rate of patients with a history of hip fracture per 10 000 dialysis patients.

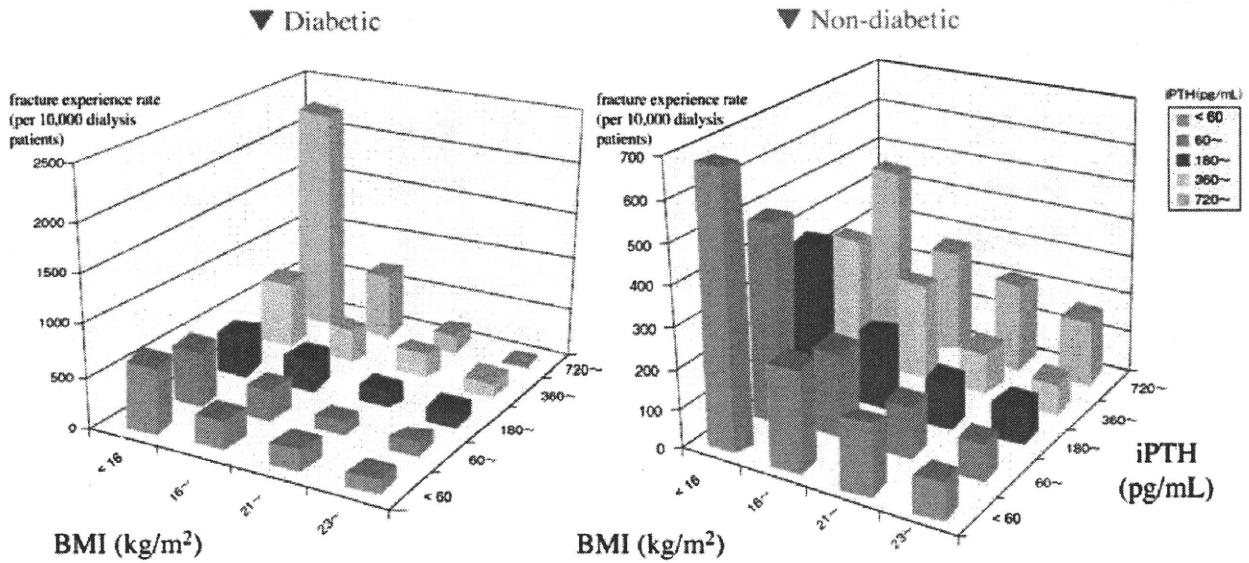


FIG. 5. Relationship between the history of hip fracture, serum intact parathyroid hormone concentration (iPTH), and body mass index (BMI) (all dialysis patients categorized into diabetic and non-diabetic groups). Note: the scale of fracture prevalence in the graph for diabetic patients is greater than that for non-diabetic patients.

c. Serum calcium and phosphorus concentrations. Figure 7 shows three-dimensional graphs obtained by summarizing the relationship between the serum calcium and phosphorus concentrations, and the fracture prevalence separately for diabetic and non-diabetic patients. No matter whether the patients are diabetic or non-diabetic, the fracture prevalence increased with decreasing serum phosphorus concen-

tration and with increasing corrected serum calcium concentration prior to the dialysis session.

E. Clinical condition of patients at the start of dialysis

In the survey conducted at the end of 2007, the clinical condition of the patients when dialysis was

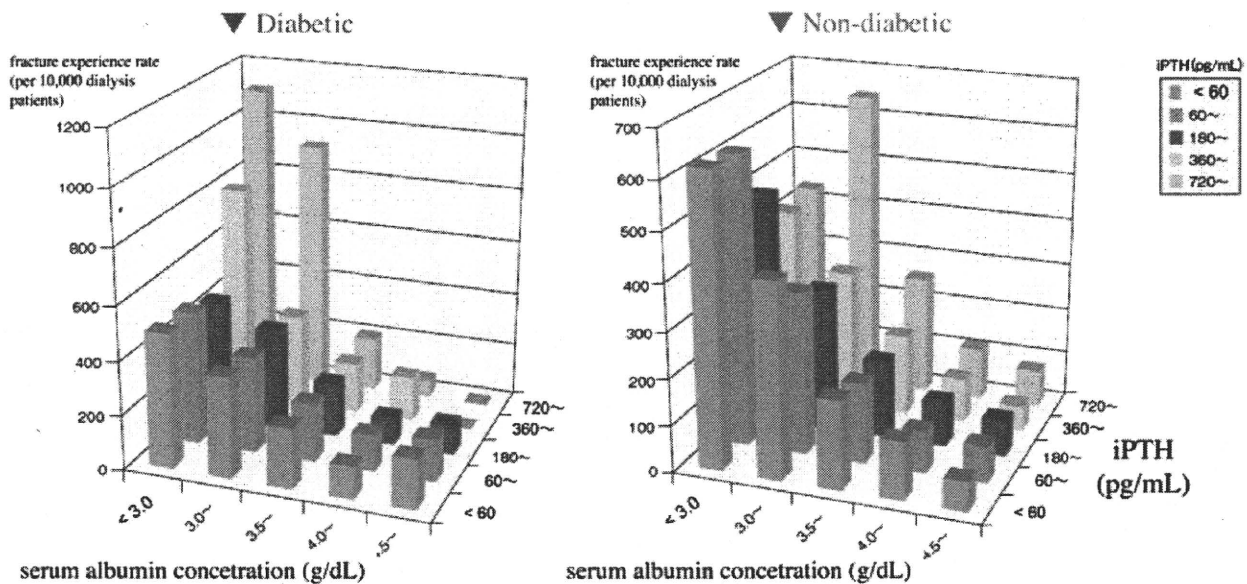


FIG. 6. Relationship between the history of hip fracture, serum intact parathyroid hormone concentration (iPTH), and serum albumin concentration (all dialysis patients categorized into diabetic and non-diabetic groups). Note: the scale of fracture prevalence in the graph for diabetic patients is greater than that for non-diabetic patients.

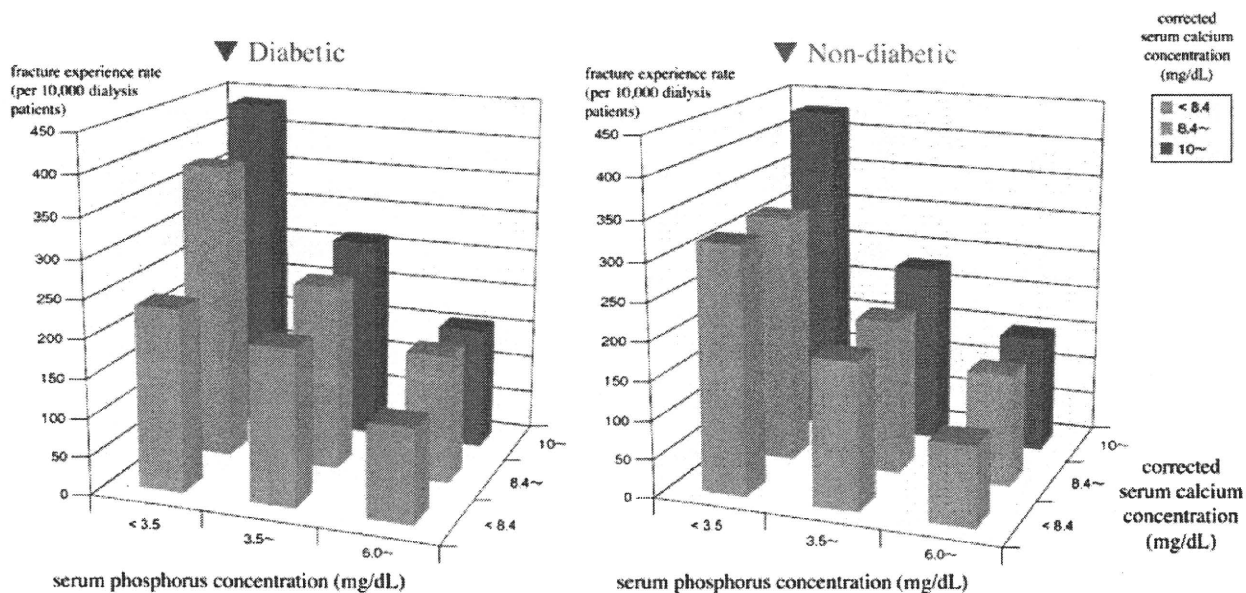


FIG. 7. Relationship between the history of hip fracture, corrected serum calcium concentration, and serum phosphorus concentration prior to the introduction to dialysis (all dialysis patients). Note 1: fracture prevalence for diabetic patients is greater than that for non-diabetic patients. Note 2: when the serum albumin concentration is <4.0 g/dL, the following equation is used: Corrected serum calcium concentration (mg/dL) = Serum calcium concentration (mg/dL) + $(4.0 - \text{Serum albumin concentration [g/dL]})$.

fist carried out was examined following the previous survey. The subjects of the survey on the clinical condition should be the patients who were newly begun on dialysis in 2007 and responded to the questionnaire using floppy disks concerning their clinical condition. The number of patients who satisfied these criteria was 30 510 (male, 19 748; female, 10 762). The survey results regarding renal function were analyzed for the 17 765 patients whose data were available at the start of dialysis.

The following are the summaries of the treatment methods for end-stage renal failure, the renal function of the patients when beginning dialysis, as well as major symptoms experienced at the start of dialysis.

1. Treatment methods at the end of the first year of dialysis

Table 52 shows a summary of treatment methods for renal failure examined at the end of 2007 for all subject patients. The following are the treatment methods examined at the end of 2007 for the patients who began dialysis in 2007, of whom 92.0% underwent hemodialysis. The percentages of patients who underwent hemodiafiltration (2.5%) and peritoneal dialysis (5.4%) were slightly higher than those in the previous year (the results of the 2006 survey were: facility hemodialysis, 92.4%; hemodiafiltration, 2.2%; hemofiltration, 0.2%; hemoabsorption, 0.0%; home

hemodialysis, 0.0%; continuous ambulatory peritoneal dialysis (CAPD), 5.0%; and intermittent peritoneal dialysis (IPD), 0.2% (1)).

2. Clinical symptoms and signs of patients at the introduction of dialysis

Table 53 shows a summary of the various clinical symptoms and signs and disorders experienced by the patients with respect to the items related to the clinical symptoms included in the criteria for the introduction of dialysis in patients with chronic renal failure (CRF) (12), which was provided by a renal failure research group of the Ministry of Health, Labor and Welfare, and those related to the calculation of Carlsson's scores (13). Regarding the symptoms related to the criteria for the introduction of dialysis in CRF patients, digestive symptoms, retention of body fluid, and fluid abnormalities were observed in approximately one-half of the patients. Following these symptoms, blood abnormalities and cardiovascular symptoms were observed in approximately 40% of the patients; moreover, impaired eyesight was observed in 22.9%, and nervous disorder symptoms in 13.8% of the patients. The percentages of these symptoms were almost the same as those in the 2006 survey. Regarding the items related to Carlsson's score, diabetes mellitus, congestive cardiac failure, and brain infarction were observed as major contributing factors.

TABLE 52. Pre-dialysis serum creatinine concentrations of the first dialysis and treatment methods used at the end of 2007 (only patients begun on dialysis in 2007 who responded to the questionnaire using floppy disks)

Method of dialysis (%)	Pre-dialysis serum creatinine concentration of the first dialysis (mg/dL)																	Subtotal	No information available	Total	%	Mean	SD				
	<2.0	2.0-2.9	3.0-3.9	4.0-4.9	5.0-5.9	6.0-6.9	7.0-7.9	8.0-8.9	9.0-9.9	10.0-10.9	11.0-11.9	12.0-12.9	13.0-13.9	14.0-14.9	15.0-15.9	16.0-16.9	17.0-17.9							18.0-18.9	19.0-19.9	≥20.0	
Facility hemodialysis (%)	91	308	623	1116	1625	1971	2310	2510	1837	1251	827	553	367	221	176	112	82	66	45	170	16 261	91.5	11 798	28 059	92.0	8.32	3.55
Hemodiafiltration (%)	7	13	19	46	64	72	82	96	53	38	24	18	6	9	4	3	4	6	0	9	573	3.2	193	766	2.5	8.16	3.85
Hemofiltration (%)	0	0	0	2	2	2	1	1	1	0	0	1	0	0	0	0	0	0	0	0	10	0.1	12	22	0.1	6.99	2.32
Hemodesorption (%)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	3	3	0.0	-	-
Home hemodialysis (%)	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	2	0.0	1	3	0.0	12.35	1.63
Peritoneal dialysis (%)	6	10	22	41	61	121	118	185	99	80	60	34	24	19	9	10	3	1	2	14	919	5.2	738	1 657	5.4	8.77	3.34
Total (%)	104	331	664	1205	1752	2166	2511	2792	1990	1369	912	606	398	249	189	125	89	73	47	193	17 765	100.0	12 745	30 510	100.0	8.34	3.55

*Percentage of the left cell value relative to the total number of its column. Values in parentheses below each figure represent the percentage relative to the total of each row.

3. Pre-dialysis serum creatinine concentration of the first dialysis

The pre-dialysis serum creatinine concentration of the first dialysis (hereafter, serum creatinine concentrations at the introduction of dialysis) are summarized below.

a. *Treatment method at the end of the first year of dialysis.* The relationship between the treatment method at the end of the first year of dialysis and the serum creatinine concentration at that time is already shown in Table 52. No clear difference in the trend of serum creatinine concentration at the start of dialysis was observed between the treatment methods.

b. *Gender.* Table 54 shows the relationship between the serum creatinine concentration at the introduction to dialysis and gender. The mean serum creatinine concentrations in male and female patients at the introduction to dialysis were 8.69 and 7.69 mg/dL, respectively; the level was higher in male patients than in female patients. Both levels were nearly the same as those in the 2006 survey.

c. *Age.* Table 55 shows the relationship between the serum creatinine concentration at the introduction to dialysis and age. The serum creatinine concentration at the introduction to dialysis in patients aged less than 15 years was low, and that in patients aged 15 years or older tended to decrease with age.

d. *Primary disease.* Table 56 shows the relationship between the serum creatinine concentration at the introduction to dialysis and primary disease. The serum creatinine concentration at the introduction to dialysis in patients with diabetic nephropathy as the primary disease was lower than that in patients with chronic glomerulonephritis.

4. Estimated glomerular filtration rate of patients at the introduction to dialysis. The estimated glomerular filtration rate (eGFR) (mL/min/1.73 m²) of patients was calculated and tabulated in terms of gender, age, and serum creatinine concentration of the patients at the introduction to dialysis. The eGFR was obtained by multiplying the value obtained using the modification of diet in renal disease (MDRD) equation by the Japanese factor (14).

When the serum creatinine concentration was measured by the Jaffe method, the following equation was used: