CHAPTER 4

RESULTS AND DISCUSSION

Results

This descriptive study was designed to describe and examine the relationships between coping strategy and quality of life of patients with chronic renal failure undergoing hemodialysis and their spouses. In this chapter, the study results are presented as follows:

1. Subjects' characteristics
2. Coping strategies frequently used by the subjects
3. Subjects' quality of life
4. The relationships between coping and quality of life of the subjects

1. Subjects' Characteristics

During the data collection period, a total of 110 couples of hemodialysis patients and their spouses were approached to participate in this study. Five patients declined to participate because of their fatigue and dyspnea, and one couple refused with the reason they had no confidence to fill in the questionnaire. Consent was given by 104 couples, yet at the end of the data collection period, there were only 91 couples who returned the questionnaire (83% response rate). Fifty-three (58.2%) couples were recruited from Hasan Sadikin Hospital, eighteen couples (19.8%) from Muhammadiyah and twenty (22%) couples from Al Islam Hospital.

1.1 Patients' and Spouses' Demographic Characteristics

Table 1 shows the patients' and spouses' demographic characteristics. The mean patients' age was 52.13 years (SD = 10.41), ranging from 23 to 73 years, and the mean age of spouses was 51.36 years (SD 10.36), ranging from 22 to 77 years. The majority of patients were male, Muslim, and retired government employees (53.8%, 96.7%, and 33.0%, respectively). More than half of the spouses were female (53.8%), Muslim (96.7%), and worked as a housewife (40.7%) which is unpaid employment. Most of both patients and spouses had completed senior high school or higher. Nearly sixty percent (59.4%) of patients earned a monthly income of between 500.000 to 2,000,000 rupiahs. More than fifty percent of patients paid part of the cost of the hemodialysis treatment by themselves. The average length of marriage was 29.11 years, with the highest single category 31 to 40 years (37.4%).

Table 1 Patients' and spouses' demographic characteristics (N = 91)

Characteristics	Patients N (%)	Spouses N (%)
1. Age group (years)		
- 20 - 30	2 (2.2)	2 (2.2)
- 31 - 40	12 (13.2)	14 (15.4)
- 41 - 50	27 (29.7)	26 (28.6)
- 51 - 60	27 (29.7)	28 (30.8)
- 61 - 70	22 (24.2)	19 (20.9)
- >70	1 (1.1)	2 (2.2)
Patients: M = 52.13, SD = 10.41, R = 23 – 73		
Spouses: M = 51.36, SD = 10.36, R = 22 – 77		
2. Gender		
- Male	49 (53.8)	42 (46.2)
- Female	42 (46.2)	49 (53.8)
3. Religion		
- Islam	88 (96.7)	88 (96.7)
- Christian	3 (3.3)	3 (3.3)

Table 1 (Continued)

Characteristics	Patients	Spouses
	N (%)	N (%)
4. Education level		
- No formal education	- -	1 (1.1)
- Elementary school	13 (14.3)	12 (13.2)
- Junior high school	13 (14.3)	19 (20.9)
- Senior high school	36 (39.6)	34 (37.4)
- College/University	29 (31.9)	25 (27.5)
5. Occupation		
- Unemployed	4 (4.4)	2 (2.2)
- Farmer	- -	1 (1.1)
- Government employee	23 (25.3)	18 (19.8)
- Private company	4 (4.4)	5 (5.5)
- Business	4 (4.4)	4 (4.4)
- Retired government worker	30 (33.0)	21 (23.1)
- Housewife	24 (26.4)	37 (40.7)
- Others	2 (2.2)	3 (3.3)
6. Income level per month (Indonesian Rupiah)		
- No income	26 (28.6)	37 (40.7)
- < 500,000	7 (7.7)	9 (9.9)
- 500,000 – 1,000,000	27 (29.7)	20 (22.0)
- 1,000,001 – 2,000,000	27 (29.7)	21 (23.1)
- > 2,000,001	4 (4.4)	4 (4.4)
7. Method of treatment payment		
- Total reimbursed	25 (27.5)	
- Partial reimbursed	52 (57.1)	
- Total self paid	14 (15.4)	
8. Length of marriage (years)		
- 1 – 10	4 (4.4)	
- 11 – 20	17 (18.7)	
- 21 – 30	25 (27.5)	
- 31 – 40	34 (37.4)	
- > 40	11 (12.1)	
M = 29.11, SD = 10.76, R = 1 – 48		

1.1 Patients' and Spouses' Health Characteristics

Table 2 shows patients' health characteristics regarding other illness concerns, illness symptoms experienced, length of time on hemodialysis, and frequency of hemodialysis. Nearly fifty percent of the patients (47.3%) involved in

this study reported other illness concerns. The most common symptoms experienced by patients in this study were hypertension, followed by diabetes mellitus, cardiovascular, gastrointestinal tract, and neuromuscular symptoms (20.9%, 7.7%, 6.6%, 4.4%, and 2.2% respectively). Nearly half of the patients had been on hemodialysis from one to five years (46.2%), with a mean of 2.5 years (SD = 2.80), ranging from 1 month to 11 years. The majority (90.2%) of the patients were undergoing hemodialysis twice a week. More than half of the patients (51.6%) received only hemodialysis as a recent therapy. Six patients (6.6%) used herbal medicine and lingzhi (a Chinese herb) as a complementary therapy, two patients used massage and acupressure (2.2%), and two patients used juice therapy and honey (2.2%).

Table 2 Patients' health characteristics (N = 91)

Characteristic	Frequency	Percentage
1. Other illness concerns		
- No	48	52.7
- Yes, with symptoms experienced:	43	47.3
- Hypertension	19	20.9
- Respiratory	2	2.2
- DM	7	7.7
- Cardiovascular	6	6.6
- GI tract	4	4.4
- Cervical cancer	1	1.1
- Neuromuscular	2	2.2
- BPH	1	1.1
- Ocular	1	1.1
2. Length of time on hemodialysis (years)		
- < 1	35	38.5
- 1.1 - 5	42	46.2
- 5.1 - 10	11	12.1
- > 10	3	3.3
(M = 2.5, SD = 2.80, R = 1 month – 11 years)		

Table 2 (Continued)

Characteristic	Frequency	Percentage
3. Frequency of hemodialysis (a week)		
- Once	4	4.4
- Twice	82	90.1
- Three times	5	5.5
4. Recent therapy		
- Hemodialysis (HD)	47	51.6
- HD and some medicines	34	37.4
- HD and traditional medicine	10	11.0
5. Traditional therapy used		
- None	81	89.0
- Herbal, lingzi	6	6.6
- Massage, acupressure	2	2.2
- Juice therapy, honey	2	2.2

Table 3 presents the spouses' health characteristics. More than half of the spouses (65.9%) reported no chronic illness concerns. Nearly fifty percent of the spouses perceived his/her self as having good health. However, thirty-one spouses (34.1%) reported particular illness concerns with various symptoms including hypertension, neuromuscular, gastrointestinal, cardiovascular, or respiratory problems or diabetes mellitus (14.3%, 7.7%, 6.6%, 3.3%, 1.1%, and 1.1%, respectively). Nearly ninety percent of the spouses reported that the family relationships were good.

Table 3 Spouses' health characteristics (N = 91)

Characteristic	Frequency	Percentage
1. Having particular chronic illness		
- No	60	65.9
- Yes, with symptoms experienced:	31	34.1
- Hypertension	13	14.3
- Respiratory	1	1.1
- DM	1	1.1
- Cardiovascular	3	3.3

Table 3 (Continued)

Characteristic	Frequency	Percentage
- GI tract	6	6.6
- Neuromuscular	7	7.7
2. Perception on her/his own health		
- Good	45	49.5
- Fair	36	39.6
- Poor	10	11.0
3. Family relationship		
- Good	80	87.9
- Fair	11	12.1
- Poor	-	-

1.3 Additional Analysis of the Subjects' Demographic Characteristics

As the number of subjects from each hemodialysis unit was unequal, additional analysis was performed and examined to see if there were any differences of subjects' characteristics among the three hemodialysis units. The results of chi-square and ANOVA tests are presented in Tables A1-A3 (Appendix A). It was found that the distributions of subjects' demographic characteristics with regard to age, gender, religion, education, occupation, and income were not significantly different among the three-hemodialysis units. The subjects' health characteristics were also not significantly different among the three-hemodialysis units, with regard to illness concerns and length of time on hemodialysis.

2. Coping Strategies Used by the Subjects

Table 4 shows the means, standard deviations, ranges, skewness, kurtosis, and coefficients of variance patients' and spouses coping strategies. The mean scores of patients' affective coping, problem solving coping, and total coping were 59.33 (SD = 10.35), 45.88 (SD = 9.225), and 105.21 (SD = 16.46) respectively, whereas the mean scores for spouses' were 58.03 (SD = 9.64), 46.48 (SD = 8.97), and 104.52 (SD = 15.41) respectively. The mean coping scores of patients and spouses did not look much different. The skewness of patients' and spouses' data did not much deviate from zero, which indicated that normality data could be assumed for both patients and spouses coping scores. The negative kurtosis indicated a flat distribution. The coefficients of variance of scores were not wide, below 20 percent, which indicated small variability of data.

Table 4 Means, standard deviations, ranges, skewness, kurtosis, and coefficients of variance of sub-scale and total scores of patients' and spouses' coping strategies

Coping strategy	Mean	SD	Range	Skews	Kurtosis	C.V (%)
Patients:						
Affective focus	59.33	10.35	42 – 83	.37	- .67	17
Problem solving focus	45.88	9.22	27 – 70	.02	- .51	20
Total score	105.21	16.46	73 - 146	.25	- .20	16
Spouses:						
Affective focus	58.03	9.64	37 – 81	.28	- .28	17
Problem solving focus	46.48	8.97	18 – 67	-.20	.21	19
Total score	104.52	15.41	55 - 138	.23	.21	15

Mean scores of affective focus, coping strategy and problem solving focus coping strategy were converted to proportional scores because of the unequal numbers of affective and problem solving items. Table 5 presents proportional converted scores of the mean and standard deviation of patients' and spouses' coping strategies. Both patients and spouses scored higher on problem solving focus coping (M = 3.10, SD = .62; M = 3.10, SD = .60) than the affective focus coping subscale (M = 2.37, SD = .41; M = 2.32, SD = .38).

Table 5 Proportional converted score of the means and standard deviations of patients' and spouses' coping strategies

Coping strategy	Mean	Standard deviation
Patients:		
Affective focus coping	2.37	.41
Problem solving focus coping	3.10	.62
Spouses:		
Affective focus coping	2.32	.38
Problem solving focus coping	3.10	.60

Table 6 shows the top ten affective coping strategies that were 'often and almost always' used by the subjects. Four of the top rank of affective coping strategies used by patients and spouses were the same. Both patients and spouses often or almost always used coping strategies of 'pray; put your trust in God (91.2%, 94.5%). hope that things will get better (84.6%, 86.8%), meditate (dzikir); find the calm mind by using relaxation techniques (63.8%, 67.1%), and seek comfort or help from family or friends (47.3%, 49.5%). Five other coping strategies were similarly used with different levels of rank between patients and spouses. One of the other

common coping strategies used by patients was, 'do nothing in the hope that the situation will improve or that the problem will take care of itself' (22%), which was different from the spouses, who often used 'Work off tension with physical activity or exercise' (34.1%).

Table 6 The top ten patients' and spouses' affective coping strategies 'often and almost always' used by the subjects (N = 91)

Patients		Spouses	
Coping strategies	(%)	Coping strategies	(%)
Pray; put your trust in God	91.2	Pray; put your trust in God	94.5
Hope that things will get better	84.6	Hope that things will get better	86.8
Meditate (dzikir); find the calm mind by using relaxation techniques	63.8	Meditate (dzikir); find the calm mind by using relaxation techniques	67.1
Seek comfort or help from family or friends	47.3	Seek comfort or help from family or friends	49.5
Go to sleep, figuring things will look better in the morning	42.9	Worry about the problems due to the disease and treatment	46.2
Worry about the problems due to the disease and treatment	40.7	"Don't worry about it everything will probably work out fine	36.3
Figuring that things could be worse	36.3	Work off tension with physical activity or exercise	34.1
Get prepared to expect the worst	35.2	Figuring that things could be Worse	33
"Don't worry about it everything will probably work out fine	33	Go to sleep, figuring things will look better in the morning	31.9
Do nothing in the hope that the situation will improve or that the problem will take care of itself	22	Get prepared to expect the worst	29.7

Table 7 presents the top-ten problem focus coping strategies 'often and almost always' used by the majority of the subjects in this study. Nine of the top ten problem

focus coping strategies were used by both patients and spouses, with a different rank of percentage. For the patient group, 'try to maintain some control over the situation' was the highest rank (62.7%), while 'Settling for the next best thing to what you really wanted' was the highest rank for the spouse group (72.6%). The patients used 'accept the situation as it is' as the third highest rank of using problem solving focus coping, which was not found in the spouses group (58.3%). Conversely, the spouses group more frequently used 'try to look at the problem objectively and see all sides' than the patient group (50.6%).

Table 7 The top ten patients' and spouses' problem solving coping strategies, that 'often and almost always' used by the subjects (N = 91)

Patients		Spouses	
Methods	(%)	Methods	(%)
Try to maintain some control over the situation	62.7	Settle for the next best thing to what you really wanted	72.6
Settle for the next best thing to what you really wanted	59.4	Try to find out more about the situation so you can handle it better	58.3
Accept the situation as it is	58.3	Try to maintain some control over the situation	58.3
Try to find out more about the situation so you can handle it better	57.2	Try to find purpose or meaning in the situation	57.2
Try to find purpose or meaning in the situation	55	Try to draw on past experience to help you handle the situation	56.1
Talk the problem over with someone who has been in the same type of situation	55	Think through different ways to solve the problem or handle the situation	56.1
Try to draw on past experience to help you handle the situation	52.8	Talk the problem over with someone who has been in the same type of situation	51.7
Think through different ways to solve the problem or handle the situation	50.6	Actively try to change the situation	50.6

Table 7 (Continued)

Patients		Spouses	
Methods	(%)	Methods	(%)
Actively try to change the situation	48.4	Try to look at the problem objectively and see all sides	50.6
Try out different ways of solving the problem to see which works the best	47.3	Try out different ways of solving the problem to see which works the best	49.5

1. Subjects' Quality of Life (QoL)

Table 8 presents the distribution of the subjects according to level of overall quality of life and general health. Fifty-two patients (57.1%) in this study scored their quality of life as very poor to fair. Different from the patients, more than fifty percent of spouses (51.7%) rated their overall quality of life as good to very good. Most of the patients (56.1%) perceived their general health as dissatisfactory to very dissatisfactory, whereas in the spouse group, more than fifty percent (50.6%) of them perceived their general health as satisfactory to very satisfactory.

Table 8 Frequency and percentage of the subjects according to level of overall quality of life and general health (N = 91)

	Patients	Spouses
	N (%)	N (%)
Overall quality of life:		
Very poor	4 (4.4)	0 (0)
Poor	29 (31.9)	24 (26.4)
Fair	19 (20.9)	20 (22.0)
Good	38 (41.8)	45 (49.5)
Very good	1 (1.1)	2 (2.2)

Table 8 (Continued)

	Patients	Spouses
	N (%)	N (%)
General health:		
Very dissatisfied	14 (15.4)	6 (6.6)
Dissatisfied	37 (40.7)	20 (22.0)
Fair	23 (25.3)	19 (20.9)
Satisfied	14 (15.4)	38 (41.8)
Very satisfied	3 (3.3)	8 (8.8)

Table 9 shows the mean, standard deviation, range, skewness, kurtosis, and coefficient of variance for each dimension of the patients' and spouses' quality of life. The mean scores of patients' quality of life were slightly lower than spouses. The mean scores of physical health, psychological health, social relationships, environmental dimension, and total quality of life of patients were 18.49 (SD = 4.55), 19.05 (SD = 3.79), 9.25 (SD = 2.10), 24.33 (SD = 4.22), and 76.67 (SD = 12.77) respectively, whereas for spouses, they were 23.95 (SD = 4.94), 21.15 (SD = 3.36), 9.93 (SD = 1.76), 25.75 (SD = 3.91), and 80.78 (SD = 11.29) respectively. The skewness was varied from normal, low, and high. Although the skewness tended to the left side, it did not much deviate from zero, which indicates a normal distribution. Usually negative kurtosis, such in the patients' data, indicates a flat distribution, whereas positive kurtosis as in the spouses' data indicates a peaked distribution. The coefficients of variance of the scores indicate hat the variability of the data was not wide below 25 percent.

Table 9 Means, standard deviations, ranges, skewness, kurtosis, and coefficients of variance for each dimension of patients' and spouses' quality of life

	Mean	SD	Range	Skews	Kurtosis	C.V (%)
Patients:						
Physical health	18.49	4.55	9 -31	.25	-.28	25
Psychological health	19.05	3.79	9 -27	-.29	-.17	20
Social relationship	9.25	2.10	5 -15	-.04	-.40	23
Environment dimension	24.33	4.22	16 -36	-.03	-.41	17
Total score	76.67	12.77	42 -110	.08	-.26	17
Spouses:						
Physical health	23.95	4.94	10-34	-.64	.14	21
Psychological health	21.15	3.36	12-28	-.54	.23	16
Social relationship	9.93	1.76	6-15	-.18	-.24	18
Environment dimension	25.75	3.91	15-36	-.31	.29	15
Total score	80.78	11.29	51-104	-.52	.06	14

Table 10 presents the mean scores and standard deviations of five items of quality of life which patients and spouses ranked at a very low level. The five lowest mean scores reflect the aspect of quality of life that was least satisfactory. The five lowest quality of life aspects for patients were 'working capacity', 'money to meet the needs', 'sexual activity', 'performing activities of daily living', and 'need of medical treatment'. The five lowest rank of the spouses' quality of life aspects were 'money to meet the needs', 'sexual activity', 'availability of the needed information', 'opportunity for leisure activities', and 'ability to accept bodily appearance'. Both patients and spouses identified two similar items they were least satisfied with; 'money to meet the needs' and 'satisfied with sexual activity', however they put them in a different rank

Table 10 The mean scores and standard deviations of the five lowest items of patients' and spouses' quality of life

Patients			Spouses		
Items of quality of life	M	SD	Items of quality of life	M	SD
Satisfied with working capacity	2.21	.99	Money to meet the needs	2.48	.70
Money to meet the needs	2.24	.78	Satisfied with sexual activity	2.58	1.12
Satisfied with sexual activity	2.49	1.11	Availability of the needed information	2.85	.91
Satisfied with performing activity daily living	2.58	1.01	Opportunity for leisure activities	2.91	.72
Need of medical treatment	2.60	.88	Ability to accept bodily appearance	3.20	.98

Note: range on each item was 1 – 5; a higher score reflected a better quality of life

Table 11 shows the mean scores and standard deviations of five items of quality of life which patients and spouses ranked at a very high level, reflecting the aspects of quality of life that were most satisfactory. The higher scores indicate better quality of life in particular aspects. The five highest patients' quality of life aspects were 'support from friends', 'condition of living place', 'enjoying life', 'meaning of life', and 'safety in daily life'. The five highest spouses' quality of life aspects were 'condition of living place', 'support from friends', 'enjoying life', 'satisfied with self', and meaning of life'. Four items were identified by both patients and spouses as similar, while patients and spouses identified one item as different. The patients identified 'safety in daily life', whereas the spouses identified 'satisfied with self' as the fifth highest quality of life aspect.

Table 11 The mean scores and standard deviations of the top five items of patients' and spouses' quality of life

Patients			Spouses		
Items of quality of life	M	SD	Items of quality of life	M	SD
Satisfied with the support from friends	3.71	.81	Satisfied with the conditions of living place	3.81	.74
Enjoying life	3.66	.94	Satisfied with the support from friends	3.78	.85
Satisfied with the conditions of living place	3.66	.88	Enjoying life	3.76	. 87
Meaning of life	3.57	.92	Satisfied with self	3.68	.89
Safety in daily life	3.32	.80	Meaning of life	3.65	.89

Note: range on each item was 1 – 5; a higher score reflected a better quality of life

4. Additional Analysis of Subjects' Coping Strategies and Quality of Life

The differences in coping and quality of life scores between patients and spouses were analyzed using the t-test as shown in Table A4. There were no significant differences ($p>.05$) between patients and spouses regarding affective, problem solving, and total coping scores. However, there was a significant difference ($p<.01$) between patients and spouses regarding quality of life. The mean score of patients' quality of life was lower than spouses (76.67 vs. 87.3).

5. The Relationship between Coping and Quality of Life of the Subjects

The results of the bivariate correlational analysis using Pearson correlation coefficients are presented in Table 12. The affective coping score was negatively correlated with quality of life score in both patient and spouse groups (r = - 0.26; $P <$ 0.05, r = - 0.28; $P < 0.01$, respectively). The correlations remained significant after

controlling for age, education, and income variable. Problem solving coping was positively correlated with the quality of life score in the spouse group ($r = 0.21$; $P < 0.05$), but the correlation become statistically insignificant when controlling for age, education, and income variables in partial correlation. There was no significant correlation between total coping score and quality of life score in both patient and spouse groups. Age, education, and income were controlled in partial correlation based on previous findings that the three variables were associated with coping (Blake & Courts, 1996) and quality of life (Suet-Ching, 2001). These variables could be a confounding factor in the relationship between coping and quality of life.

Table 12 Correlation between coping and quality of life scores for patients and spouses

	Coping strategies		
	Affective focus coping	Problem solving focus coping	Total score coping
	Bivariate correlations		
Patients' Qol score	-.26*	.08	-.12
Spouses' Qol score	-.28**	.21*	-.05
	Partial correlations controlling for age, education, income		
Patients' Qol score	-.27*	.02	-.16
Spouses' Qol score	-.29**	.18	-.08

**P<0.01, *P<0.05

Discussion

This study aimed to explore coping strategies and quality of life, and to examine the relationship between coping strategies and quality of life among hemodialysis patients and their spouses. Ninety-one couples of patients and their

spouses participated in this study. They were purposively recruited from three hospitals in Bandung, West Java Province of Indonesia.

Subjects' Characteristics

Although the number of subjects selected from the hemodialysis units of the three hospitals was unequal, the results of additional analysis showed that there were no significant differences in the subjects' characteristics among the three settings. This was expected since most of the subjects lived in the same geographical area and had a similar cultural background. The higher proportion of males in the patient group was congruent with the literature that shows the number of males is higher than females among patients with end stage renal disease (Ignatavicius, 1995; Verrelli, 2002). This inequality can be explained from previous studies, which found that men show a greater decline with age in the arterial wall structure than women (Cheng, et al 2002). Furthermore, changes in the arterial wall impair the vascular integrity, leading to an increased stiffness in the vascular system, including the renal vascular system. Miller, et al. (1999) and Schade-Serin, et al. (2002) also reported that men have a more rapid progression to chronic renal failure than women.

The majority (84.7%) of patients in this study were over 40 years (M = 52.13). A progressive loss of nephron units with age has been well documented. According to Ali (1996), the kidney has lost about 20% of its mass in people 40 to 80 years of age. This natural involutionary process is represented histologically by a decrease in the renal vasculature (especially in the renal cortex), an increase in the number of obsolescent glomeruli, tubular atrophy and dilatation, and interstitial scarring. In spite

of compensatory hyperfiltration and hyperfunction by the remaining nephron units, the glomerular filtration rate (GFR) declines with age, beginning about age 35 to 40.

The subjects' common characteristics, such as senior high educated, retired government employee with monthly income between 500,000 to 2,000,000 Rupiah (equal US $ 60.24 to 241) represented a characteristic middle socioeconomic class who could afford hemodialysis treatment. In Indonesia, as in many developing countries, hemodialysis remains an expensive procedure, which most people cannot afford. In 2003 there were about 60,000 ESRD patients in Indonesia, but only 10% could afford hemodialysis (Soedarsono, 2003).

As the treatment cost of hemodialysis is quite expensive for most people, those who cannot afford hemodialysis seek for alternative treatments. Zhang (1995) stated that many people in developing countries still rely on traditional practitioners and local medicinal plants to satisfy their primary health care needs. However, this study found only a few patients used traditional medicine as a complement to hemodialysis therapy. This may be related to the strongly adherence of most patients to the physicians' advice regarding a safe diet for renal disease. As Luyckx et al. (2002) reported, one of the most serious complications resulting from use of traditional remedies is acute renal failure. Seemingly, the patients in this study were not much interested in using traditional remedies because of a lack of scientific evidence on the efficacy of traditional remedies, and also some remedies, particularly herbs could be nephrotoxic.

Forty-two patients (46.2%) in this study had been on hemodialysis for one to five years (M = 2.5). The majority (90.1%) of patients underwent hemodialysis as a major treatment twice a week. Nearly fifty percent (47.3%) of patients reported other

illness concerns such as hypertension, or diabetes mellitus, or cardiovascular, gastrointestinal tract, or neuromuscular symptoms. An association between chronic renal failure and hypertension has been noted widely. Hypertension can cause renal failure, or conversely, renal failure can lead to hypertension (Roesma, 2002). Hypertension is a common symptom and occurs in approximately 80% of chronic renal failure patients (Maillonx, 2002).

The common respiratory symptoms among hemodialysis patients in this study were cough and dyspnea. Coughing was probably associated with upper or lower respiratory infection due to low immunity among the subjects, as in a uremic condition white blood cells are slow to defend against invading microorganisms. The dyspnea might have been associated with congestive heart failure, which is commonly found in patients with chronic renal failure and hypertension. Diabetes mellitus is the most common cause of ESRD (Abrass, 2002). Prolonged exposure to hyperglycemia is a major factor in the pathogenesis of arteriosclerosis. Hyperglycemia induces a number of vascular tissue alterations that can promote arteriosclerosis. Arteriosclerosis, hypertension, hypervolemia, anemia, and uremia are common risk factors to the cardiac damage in chronic renal disease (Donald et al., 2004). Gastrointestinal (GI) symptoms commonly found in this study were nausea and vomiting. Most nausea/vomiting during dialysis treatment was probably due to hypotension, which decreases the blood supply to the GI, resulting in slow motility of the GI and hyperacidity of the stomach. Muscle cramping is a common neuromuscular symptom during hemodialysis, probably associated with electrolyte imbalance, such as hyponatremia ("Problem Associated," 2004).

Ferrans and Powers (1993) reported that patients undergoing dialysis usually experience certain disease-specific symptoms including fatigue, hypertension, and muscle cramp. Lok (1996) pointed out that the length of dialysis was associated with physiological and psychological stressors on dialysis patients. It is accepted that those with longer period of hemodialysis usually have more symptoms.

Most of the spouses in this study reported no particular chronic illness, good health, and good family relationships. This is different from a previous study that found almost two-thirds of hemodialysis patients' spouses had comorbidities, experienced more psychopathological states than physical disorders, and had poor health (Belasco & Sesso, 2002). Good health and satisfaction of the spouses in this study might have resulted from good support from their extended families and friends. They were also in the middle class of society who socioeconomically were better off than lower class patients.

Coping Strategies

Both hemodialysis patients and spouses in this study used predominantly problem-solving coping strategies. This is consistent with the findings of previous studies (Baldree et al., 1982; Mok & Tam, 2001; Wech & Austin, 2001). Problem-focused efforts are often directed at defining the problem, generating alternative solutions, weighting the alternatives in terms of their costs and benefits, choosing among them, and acting (Lazarus & Folkman, 1984). Initially, affective coping strategies were used by the subjects in the adaptation process to deal with the overwhelming distress evoked by the diagnosis and by the beginning of maintenance hemodialysis. Later, more problem solving coping strategies may be called on to deal

with the specific problems associated with the illness and treatment. Most patients had been on hemodialysis for 1 – 5 years. The longer period of time on hemodialysis gave more opportunity for the patients and spouses to learn how to deal with and overcome difficulties related to the disease and hemodialysis treatment. As Lazarus and Folkman (1984) pointed out, that the duration of a stressful event is a situational factor which influence appraisal of coping strategy.

Both patients and spouses identified nine of the top ten problem solving coping methods similarly. They used similar problem solving coping because they shared the same problems and difficulties. Maintaining some control over the situation, settling for the next best thing to what they really wanted, and accepting the situation as it is, were most common problem solving coping strategies used by hemodialysis patients in this study. The first two techniques mentioned were also reported as common in previous studies (Baldree, et al., 1982; Gurlis & Menke, 1988; Lok, 1996; Mok & Tam, 2001). It is possible that the degree of the patient's dependency drives patients and spouses to demonstrate a strong sense of hope, control, good planning for the future life, and constructive problem oriented focus coping strategies.

Four of the top ten affective coping strategies of patients and spouses were also similar, while the other five were also similar but at different ranks. Only one of the top ten coping methods was different between patients and spouses. The four common coping methods were prayer and putting trust in God, hoping that things will get better, meditation (dzikir) or finding the calm mind by using relaxation techniques, and seeking comfort or help from family or friends. Prayer; put your trust in God, and hope that things will get better, were similar to previous studies (Lok, 1996, Gurlis & Menke, 1988, Baldree et al., 1982), even though these studies were

carried out in western societies. The similar findings could be a result of all populations being studied believing in God.

Coping effectiveness must be examined in the context in which problems occur. Preferred coping methods must be appraised with reference to the individual, and their social and cultural background (Lazarus & Folkman, 1984). The study findings support cultural and values notions about prayer and putting trust in God in Islamic belief as the majority of patients and spouses were Muslim. Sickness is viewed by Muslims as a test from God (Allah), as said by an Islamic scholar, Dr. Mahmud Es'ad Cosan (as cited in Mills, 1996) "Sickness wakes people up from heedlessness, guides them to give up their sins, makes them think about the Hereafter, leads them to pious foundations; makes them more thankful to Allah, teaches them the necessity of taking better care of their health and making better use of their life (something they didn't realize before), and teaches them to understand other sick people better in order to feel sorry for them and to help them".

Islamic teaching teaches human beings how to face difficulties in life, such as fear, hunger, illness, suffering, loss of goods, and death. Muslims view these problems as tests from God, which should be received with patience and prayers. They consider an illness, as well as other tests, as atonement for their sins to achieve the best life in the Hereafter. Despair, hopeless, and frustration are a sins in Islamic belief because everything that happens on the earth is with God's supervision. Hope and optimism for the best life in the future is embedded in Islamic philosophy (Mills, 1996). Meditation is equal with term 'dzikir' that commonly was practiced by Muslims as a ritual worship to achieve a peaceful mind. A previous study documented that greater perception of spirituality and religiosity correlated with

increased perception of quality of life, and less negative perceptions of illness effects and depression (Patel et al. 2002). A beliefs system, including religious belief, as a coping resource was also acknowledged by Lazarus and Folkman (1984).

The results from additional analysis by using t-test shows that there were no significant differences between the mean scores of patients and spouses with regard to affective, problem solving, and total coping ($p > .05$). Most of the couples (87.9%) had a good family relationship, through which they shared happiness and difficulties. Most of them were in the same age group and had a similar socioeconomic background to the patients. These factors could contribute to very little differences in coping strategies between patients and spouses.

Quality of Life

Most hemodialysis patients in this study rated their overall of quality of life as very poor to fair, and their general health dissatisfactory to very dissatisfactory. These findings were congruent with a previous study reporting poor to fair quality of life in hemodialysis patients, in which also health and functioning were the areas that the hemodialysis patients were least satisfied (Ferrans & Powers, 1993).

Many studies on hemodialysis patients have revealed that hemodialysis patients experience many health problems; such as reduction in physical functioning, weight loss, changes in skin color, edema, anemia, and diminished sexual drive (Suet-Ching, 2001, Ferrans & Powers, 1993). Although almost half of the patients in this study had no other disease, they still faced health problems resulting from chronic renal failure and hemodialysis treatment. Health is a factor influencing a person's sense of well-being, and is therefore an aspect of quality of life (Sarvimaki & Hult, 2000). It is also

understandable that those who perceived their health as very dissatisfactory or dissatisfactory would rate their quality of life as poor to fair.

In contrast to the patients, most spouses rated their overall of quality of life as good to very good, and the general health as satisfactory. The results were not congruent with a previous study that found most spouses of hemodialysis had poor health and reported more comorbidity, associated chronic disease and depression (Belasco & Sesso, 1992). Most spouses in this study reported no particular chronic illness and they perceived themselves as having good health. Seemingly, spouses' ability in using coping strategies, good social support, and better self-care resulting better health of the spouses, which effected their perception of the overall quality of life.

With reference to Table 10, the patients identified 'satisfied with working capacity', as the lowest quality of life aspect. This was not surprising, because living with CRF and hemodialysis, they did not have enough energy to work due to anemia. Decreased physical functioning, experiencing illness symptoms associated with renal disease, and dependency on a hemodialysis machine, had really interrupted the patients' ability to work. This was also the finding of a previous study, that commonly hemodialysis patients were unhappy with their decreased working capability (Suet-Ching, 2001).

Both patients and spouses scored 'money to meet the needs' among the five lowest quality of life aspects. As working capacity decreases, ability to earn money also decreases. *Although the patients received partial reimbursement from health* insurance, they had to pay some of the cost for their hemodialysis treatment as well as the medicines. Reduced income and the cost of hemodialysis can impose many

difficulties in managing money to meet family needs, particularly for spouses, most of whom were housewives.

Both patients and spouses were least satisfied with sexual activity. Renal failure affects both sexual desire and the ability to engage in sexual intercourse. Auer (2002) explained that this problem could be influenced by many factors, such as hormone imbalance, anemia leading to tiredness, drug effects, vascular problems, depression, and role changes leading to dependence and lack of confidence in sexual identity. It is has been noted that 70% of male patients suffer from a degree of impotence, and a similar proportion of female patients have problems with arousal and reaching orgasm (Auer, 2002). Sexual dysfunction was not only a problem of patients but also their spouses. A previous study also reported spouses of hemodialysis patients scoring their sexual functioning lower than other aspects of their quality of life (Lindqvist, et al., 2000).

Satisfaction with performing daily activities and need of medical treatment were also scored in the five lowest patients' quality of life aspects. The majority of the patients underwent hemodialysis twice a week, at about 3 to 4 hours for each dialysis. Some of them came from far away, even needing up to 5 hours to reach the hemodialysis clinic. Therefore, time required for dialysis, physiological limitations, and psychological changes, may contribute to the intention and ability to perform daily activities. Poor health has a great impact on quality of life as it prevents people from doing what they want to do (Ferrans & Powers, 1993). In addition, poor health and dependence on the hemodialysis machine contributes to a high demand for medical assistance.

Most of the spouses identified availability of needed information, opportunity for leisure activities, and ability to accept bodily appearance in the five lowest quality of life aspects. As a caregiver of a hemodialysis patient, the spouse needed to understand what was going on with the patient. She/he needed information and knowledge as well as skill in caring for the patient. Based on information from some nurses and the spouses in the three hemodialysis units, the three hemodialysis units did not have an education program to prepare patients and spouses to deal with problems of CRF and hemodialysis. Nurses or physicians might talk personally to the spouses while they visited the patients. Therefore, the spouses perceived the low availability of needed information as a lower aspect of quality of life. Opportunity for leisure activities was scored lower than other aspects by the spouses, which was not surprising because the spouses had to spend much time to accompany as well as look after the patients undergoing hemodialysis. Less satisfaction with bodily appearance might be due to menopause, as most of the spouses were approaching middle age. Women in the menopausal period might also be confronted with various physical, psychological, and social changes (Perz, 1997).

The five highest ranking patient and spouse quality of life aspects are presented in Table 11. Both patients and spouses identified satisfaction with support from friends, satisfaction with the conditions of their living place, enjoying life, and meaning of life, in the five highest quality of life aspects with different ranks. These findings supported a previous study, which found that most hemodialysis patients were positive about their social support (Gurklis & Menke, 1995). Family, friends, environment, and health care providers are sources of support.

In some case, spiritual support from God, a spiritual leader, and religious members would be important (Gurklis & Menke, 1995). In Islamic society, providing support to a sick person and his/her family is viewed as a part of worship, as is suggested by the Prophet Muhammad PBUH. Having lived with a patient who has a life-threatening illness, the spouse may be faced with uncertainty, and a positive outlook, optimism, and religious belief may provide sense for a meaningful life (Caress, Luker, & Owens, 2001).

Relationship between Coping Strategies and Quality of Life

The present study found a negative association between affective focus coping and total quality of life scores in both patients and spouses. These relationships remained after controlling for possible confounders such as age, education, and income. This finding is congruent with previous studies conducted in both hemodialysis and non-dialysis patients. Lok (1996) found that affective coping methods were negatively related to total quality of life in hemodialysis patients. Coelho, et al. (2003) reported that avoidance coping (one type of affective coping) was related to worse quality of life among diabetic patients, due to various types of diabetic complications such as eye/vision, sexual dysfunction, sensory/motor, renal function, and gastrointestinal complications, which lead to the use of more avoidance coping methods. In other words, affective focus coping could be a result of poor quality of life, since the actual problems could not be solved.

Affective focus coping strategies consist of cognitive processes directed at lessening emotional distress without changing the objective situation (Lazarus & Folkman, 1984). The strategies include avoidance, minimization, distancing, selective

attention, positive comparisons, and wresting positive value from negative events. As the stressful encounter unfolds, coping becomes extremely important as a mechanism to sustain a positive sense of well-being. Affective focus coping as one type of coping mechanism may result in a positive or negative emotion, as an outcome of the coping mechanism. Lazarus and Folkman (1984) stated that emotion is closely related to subjective well-being. The positive and negative emotions that are experienced during a stressful encounter are reflections of the person's momentary evaluation of his/her well-being or quality of life (Ferrans & Powers, 1993). Using affective focus coping in the initial phase of a stressful encounter would be beneficial to lessen stress and maintain well-being. However, this study suggested that more the affective focus coping was used, the worse the quality of life, because the problem could not be resolved by affective focus coping alone. Therefore, the findings of this study support knowledge about the relationship between affective coping and a sense of well-being or quality of life.

This study found no association between problem solving coping and quality of life in the patient. Some association was found in the spouse group but was not significant. This suggests that no matter how often the subjects use a problem approach coping, their quality of life is not affected. Theoretically, problems should be solved when the patients or the spouses used problem solving coping. Practically, some problems remain, and the quality of life is not improved. Patients and spouses have to learn to live with these problems. It would be interesting to further investigate which problems can be solved or not be solved by which coping methods.

The total coping score was not correlated with the total quality of life score, in either the patient or spouse groups, which again was congruent with previous studies.

Lok (1996); Gregor and Herbert (1997) did not find significant correlation between total coping strategies and quality of life in their studies. Lok's study reported negative correlation of affective coping with quality of life, and positive correlation of problem-solving coping with quality of life. A global coping scale combining the two subscales, affective and problem solving coping, were then not correlated with quality of life. Based on Lazarus & Folkman (1984), problem-focus and affective-focus coping can both facilitate and impede each other in the coping process, depending on the context of an event. As mentioned previously, affective focus coping might be good when used in the initial phase of encountering stressful situations to lessen stress and resolve uncomfortable feelings. Later, problem-solving coping might be good when it is directed to resolve problems. Nevertheless, not all problems or difficulties can be eliminated.

Knowing the patterns of coping methods used by hemodialysis patients and their spouses with different age groups and length of time on hemodialysis could be interesting for further study. The present study, which focused on coping strategies and quality of life at one moment in time, has certain weaknesses. This approach neglects the dynamic process of coping and quality of life. It would therefore be useful to study a variety of specific coping strategies and quality of life in a longitudinal design to investigate which patterns of disease-related coping are related to different disease stages and outcomes.