A Study of Factors Related to Hope, Depression, and Quality of Life in Dialysis Patients

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Article

A Study of Factors Related to Hope, Depression, and Quality of Life in Dialysis Patients

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Abstract: This is a survey study that dialysis patients were randomly sampled from a medical center in northern Taiwan, and those who gave their consent to participate were included in this study. The purpose of this study was to explore the correlation between depression, hope, and quality of life of dialysis patients. All subjects agreed to take "Beck's Depression Inventory", " The Chinese version of Herth Hope Index" and " The Chinese version of Kidney Disease Quality of Life" (KDQOL-SF™). Data were processed using SPSS for descriptive and inferential statistics. The results showed that patients were 12.45±SD 9.03, which was mild depression, the mean score of hope was 34.25, which was equivalent to 72.60%, and was at the middle level. In KDQOL-SF™, the score in mental composite (M=42.65, SD=8.81) was higher than in physical composite (M=37.38, SD=9.28), and the score was at the intermediate quality of life, and hope and depression were significantly and negatively correlated. This study suggests that dialysis case managers provide nursing guidance to help dialysis patients learn comfortable care methods and support the resilience they need.

Keywords: dialysis patients; nursing guidance; resilience

1. Introduction

Patients with the end-stage renal disease need to receive dialysis, which will lead to physical discomfort. In addition, they need to wait for a long time for kidney transplantation to disengage dialysis. The physical and psychological impacts caused by long-term waiting could lead to huge negative influences in their daily life. Depression is a common negative emotion in patients with chronic kidney disease [1,2]. "Hope" is an optimistic and positive attitude towards life, so "hope" is an important factor for coping with troubles, overcoming obstacles and of intrinsic motivation. Therefore, motivating patients to increase their "hope" can help them face challenges and change their lives. Four stressors of dialysis patients namely dietary restriction, sleep disturbance, dialysis access surgery (fistula surgery, catheter implantation), and fatigue significantly affect their quality of life [3]. Literature shows that stressors of dialysis patients face may appear as various physical and mental symptoms, they may experience uncomfortable symptoms during treatment, such as cramps, nausea, and needle pain, treatment also increases their family economic burden, greatly affects their works, and creates fears in dialysis access obstruction and multiple complications, all the above make them fall into depression quickly. Individuals need to develop resilience to increase resilience in the face of stress [4]. In view of this, the main purposes of this study are as follows: 1. Understanding the current situation of dialysis patients in terms of depression, hope and quality of life. 2. Exploring factors affecting depression, hope and quality of life in dialysis patients. This study's findings will suggest what dialysis case managers provide nursing guidance to help dialysis patients learn comfortable care methods and support the resilience they need.

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2. Materials and Methods

2.1. Design and Sample

In order to establish the validity and reliability of the questionnaire, a pre-test was conducted before the actual start of the study. Some dialysis patients in a medical center in northern Taiwan were the pre-test subjects. After expert validity, 20 internal consistency criterion analyses were conducted, followed by pre-test on 20 dialysis patients for reliability analysis, and then came up with a questionnaire for the study. 1. Sampling method: After being granted consent from the hospital and patients, subjects were randomly sampled from dialysis patients of the medical center in northern Taiwan. 2. Excel was used for random sampling, and the steps are summarized as follows: Step 1 determining population, and assigned numbers after sampling; Step 2 determining sample size; Step 3 sampling with a computer program. 3. Inclusion criterion was patients undergoing hemodialysis or peritoneal dialysis. 4. Patients were conscious and able to communicate in Mandarin or Taiwanese. 5. Exclusion criteria: hospitalized dialysis patients, those who are unconscious and unable to communicate, and unwilling to cooperate.

2.2. Measurements

2.2.1. Depression Inventory: Chinese version of the second edition of the Beck's Depression Inventory [5]. The higher the score represents the severer the depression. The inventory is suitable for adults of all ages.

2.2.2. Hope Index: Chinese version of HHI (Herth Hope Index) translated by Chen and Wang [6]. The higher the score represents the higher the hope.

2.2.3. Quality of Life Scale: Lai translated it into the Chinese version of the Kidney Disease Quality of Life-Short Form (KDQOL-SF™) [7]. The scale was divided into three parts: the physical composite, the mental composite and the kidney disease composite. The peritoneal dialysis catheter and the hemodialysis double-lumen catheter were added after granted permission from the author of the Chinese version, Mei-Li Lai. Seven experts were invited to validate the supplementary items, and the revised contents were calculated using CVI on demand, appropriateness and importance, which showed 96% in demand, 93% in appropriateness and 94% in importance, and the Cronbach's α was .90.

2.3. Data Analysis

SPSS 18.0 for windows was used for data processing, and the questionnaire processing is described as follows:

2.3.1. Organizing, coding and filing of the questionnaires: Conducted initial check manually on the data. Any questionnaires that are incomplete or not answered in accordance with the guidance will be regarded as invalid.

2.3.2. Analysis of variables: descriptive statistics, inferential statistics, t test, Pearson Product-Moment Correlation Coefficient analysis and regression analysis.

2.3.3. To avoid the reliability and validity of the questionnaire being affected by post-dialysis fatigue, hemodialysis patients were asked to take the questionnaire 1 to 2 hours before dialysis, and peritoneal dialysis patients took questionnaire in the discussion room after the outpatient clinic. Nursing problems were evaluated during interview, and nursing guidance was provided immediately after the interview. If the patient felt uncomfortable, he/she could ask to stop at any time.

2.4. Ethical Considerations

This study was approved by the Institutional Review Board (IRB) of Shin Kong Wu Ho Su Memorial Hospital (No. 20131104R). The participants were informed that the research process would not involve any risk or comorbidity. The study was conducted after obtaining signed informed

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consent from each participant. Completed questionnaires were placed into a questionnaire return box in each department to be retrieved by the research assistant.

3. Results

3.1. Demographic Characteristics of the Participants

235 patients were randomly sampled using Excel, except the 20 in the pre-test, 210 questionnaires were distributed. The number of valid questionnaires was 175 (excluding pre-test, and study and control group) with recovery rate of 83.33%. Table 1 showed demography, and the mean number of years on dialysis was 6.54±5.49. The demography showed that the mean age was 60.17 ± SD 12.77 years old, and 49.14% (n=86) were 45-64 years old, which is similar to the 2016 Annual Report on Kidney Disease in Taiwan with average age of 63 years old, and 47.1% was 40-64 years old (n=35559). The results of the study are the same as those of Li, Huang, Wu, and Chen, showing that over 90% of the dialysis patients lived with family, 42.86% (n=74) had highest education level of primary school, more than 50% (n=134) were unemployed, source of income was mostly social welfare subsidies, most occupations were light or medium-loading works, over 50% (n=91) had monthly household income of ≥20,000 to <60,000, and those who had registered as renal transplantation recipients were under the age of 55, the main reasons of unwilling to register as kidney transplantation recipients were that they were satisfied with current dialysis treatment, and they did not wish to have someone else's kidney implanted in the body, and thus do not want to change treatment [8].

Table 1. Demography of Dialysis Patients, N=175.

Variable		No. of Patients	Percentage %	Mean	SD
Age		175		60.17	12.77
No. of Years on Dialysis		175		6.54	5.49
Type of Dialysis	Hemodialysis	131	74.86		
	Peritoneal Dialysis	44	25.14		
Gender					
	Male	78	44.57		
	Female	97	55.43		
Religion					
	Yes	148	84.58		
	No	27	15.42		
	Buddhism or Taoism	141	80.57		
Marital Status					
	Married	112	64		
	Single (Single, Divorced, Separated or Widowed)	63	36		
Living Status					
	Solitary	15	8.57		
	with Family	160	91.43		
Employment Status					
	Unemployed	134	76.57		
	employed	41	23.43		
Monthly Household Income (NT$)					

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	0~<20,000	10	5.7
	20,000~<60,000	91	52
	60,000~<100,000	46	26.3
	≥100,000	13	7.4
	Unknown	15	8.6
Economic Status			
	Insufficient Income	56	32
	Sufficient Income	76	43.4
	Comfortable Income	43	24.6

Table 1. *Cont.*

Variable		No. of Patients	Percentage%	Mean	SD
Educational Background					
	Primary School or under	75	42.86		
	Secondary School or under	24	13.71		
	High School	48	27.43		
	College & University	28	16.00		
Chronic Comorbidities					
	No	57	32.57		
	Yes	118	67.43		
Diabetes					
	No	115	65.71		
	Yes	60	34.29		
Hypertension					
	No	130	74.29		
	Yes	45	25.71		
Smoking					
	No	145	82.86		
	Yes	19	10.86		
	Quit	11	6.28		
Alcohol Intake					
	No	131	74.86		
	Yes	25	14.29		
	Quit	19	10.86		
Received Dialysis Introduction	No	23	13.14		
	Yes	152	86.86		
Self-decision on Type of Dialysis					
	Yes	113	64.58		
	No	62	36.42		
Registered as Renal Transplantation Recipients					
	Yes	31	17.71		
	No	144	82.29		

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3.2. Analysis of Hope in Dialysis Patients

The item with the highest score in the hope scale was "I am able to give and receive caring/love" 3.37±0.46, and the one with the lowest score was "I feel alone" 2.38±, 0.72.

3.3. Analysis of Depression in Dialysis Patients

Regarding depression scores, 38.14% had various severity of depression, such that 18.29% (n=32) was mild, 8% (n=23) was moderate and 5.71% (n=10) was severe. As per the depression intervention, 1.17% (n=3) was reported for needs of caring and accompanying, preventing gloom, reducing suicidal ideation, and living alone with severe depression. Immediate support was required to assist them on crisis intervention.

3.4. Analysis of Quality of Life in Dialysis Patients

Score in mental composite was 42.65±8.81, which was higher than that in physical composite of 37.38±9.28. The item with the lowest score was role restriction caused by physical health 25.42± 38.97. In terms of sexual function, 24 patients (13.71%) had sexual life, and the score of sexual function satisfaction was over 50, which indicated that dialysis patients with normal sexual life had good satisfaction on sexual function. The results were similar to Finkelstein & Finkelstein study which indicated that lack of sexual activity did not represent problems existing in sexual life, and the main reasons for lack of sexual activity were lack of partners 39%, lack of interest 43%, and sexual dysfunction 2% [9].

3.5. Analysis of Physical Symptom Distress in Dialysis Patients

As shown in Table 2, the mean total score of physical symptom distress was 76.6±26.03, which represented moderate distress. Top 3 symptoms were chest pain 90.00±15.40, shortness of breath 85.71±20.84 and access or catheter site 82.29±21.62, and the least symptom was dry skin 64.86±13.062.

Table 2. Level of Physical Symptom Distress of Dialysis Patients, N=175.

Variable	Mean	±	SD	T Value	Sig (Two-Tailed)	Ranking (High to Low)
1.Soreness in Muscles	71.29	±	28.12	1.15	.25*	
HD	72.71	±	27.47			
PD	67.05	±	29.91			
2.Chest Pain	90.00	±	15.40	-0.16	.86	1
HD	89.89	±	15.44			
PD	90.34	±	15.45			
3.Cramps	76.71	±	25.65	-0.33	.73	
HD	76.34	±	26.73			
PD	77.84	±	22.37			
4.Itchy Skin	66.00	±	29.86	2.08	.03*	
HD	68.70	±	28.65			
PD	57.95	±	32.25			
5.Dry Skin	64.86	±	30.10	13.06	.00**	
HD	69.47	±	28.30			
PD	51.14	±	31.42			
6.Shortness of Breath	85.71	±	20.84	6.33	.13	2
HD	87.98	±	19.94			
PD	78.98	±	22.19			
7.Faintness or Dizziness	81.86	±	24.48	-8.7	.38	4
HD	80.92	±	26.82			
PD	84.66	±	15.45			

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8.Lack of Appetite	79.29	±	24.03	8.26	.00*	5
HD	82.25	±	21.59			
PD	70.45	±	28.67			
9.Washed out or Drained	72.86	±	22.72	4.73	.03*	
HD	75.00	±	21.48			
PD	66.48	±	25.26			
10.Numbness in Hands or Feet	76.29	±	26.97	0.78	0.78	
HD	75.95	±	26.75			
PD	77.27	±	27.92			
11.Nausea or Upset Stomach	81.43	±	23.48	5.32	.02*	
HD	83.78	±	22.56			
PD	74.43	±	24.99			
12.Access or Catheter Site	82.29	±	21.62	2.104	.14	3
HD	80.92	±	22.33			
PD	86.26	±	19.03			
13.Bodily Pain	69.20	±	25.34	0.231	0.91	
HD	69.31	±	24.93			
PD	68.86	±	26.83			
Grand Mean	76.67	±	26.03			

*p<0.05, **p<0.01.

3.6. Analysis of Variances of Demography and Disease Characteristics from Depression, Hope and Quality of Life in Dialysis Patients

3.6.1. The hope score of hemodialysis (33.62±3.34) was lower than that of peritoneal dialysis (34.50±4.30), however, there was no statistically significant difference. In terms of religions, F=.09, p=.76 >.05, t=-1.87, p=0.08 >.05; in receiving dialysis introduction, F=.32, p=.57 >.05, t=-2.21, p=.03 <.05.

3.6.2. The score of depression in patients undergoing hemodialysis was 11.53±8.12 which was lower than those on peritoneal dialysis 15.18±10.96. These results indicated that depression was severer in peritoneal dialysis patients than in hemodialysis ones. The results of F-test for hemodialysis and peritoneal dialysis showed that p=.005 <.05 which was significant and thus rejected H_0. The result indicated that the variance between the two groups was not equal. As for the significance of t value, p=.02 <.05, which meant that there was a significant difference in depression score between types of dialysis. In the analysis of employment status, t=2.68 and p=.00 <.05, which indicated a significant difference. The results of this study demonstrated that types of dialysis and employment status had significant influences on depression, which was similar to findings in the Bai study that unemployment lead to severer depression in hemodialysis patients [10].

3.6.3. The total score of quality of life in hemodialysis patients was 79.79±13.78, which was lower than that in peritoneal dialysis patients of 80.75±14.61, however, the difference was not statistically significant. The t value significance in employment status p=0.00 <0.05, in chronic comorbidities =0.01<.05, and in educational background p=.03 <.05 showed significant differences. The older and the lower the educational background were, the lower the physical and mental health scores in the quality of life were. In the ANOVA analysis results, monthly household income over NT$100,000 F=3.81, p=.02 <.05, indicated a statistically significant difference. Therefore, the quality of life of those with high monthly household income was better than that of those with no income.

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3.7. The Sign of Direction and Magnitude of the Correlation between Variables in Pearson Correlation

The physical symptoms of dialysis patients are shown in Table 3, which indicated that skin itching is significantly and negatively correlated with hope r=-.14, p<.05, i.e. severe skin itching caused lower hope score, and depression was significantly and positively correlated with exhaustion, nausea, or upset stomach. These findings were similar to those of Ottaviani, Betoni, Pavarini, Gramani Say, Zazzetta & Orlandi, which showed that depression in dialysis patients was negatively correlated with quality of life. Table 4 shows that age and quality of life of dialysis patients have a low negative correlation r=-.30, p<.01, i.e. the older, the lower the quality of life, and quality of life and physical health were highly positively correlated r=.78, p<.01, and quality of life and mental health are highly and positively correlated r=0.75, p<.01 [11].

Table 3. Correlation of Physical Symptom Distress with Hope Depression, Depression & Quality of Life, N=175.

Variable	Correlation Coefficient		
	Hope	Depression	Quality of Life
1.Soreness in Muscles	.10	-.31**	.34**
2.Chest Pain	.02	-.25**	.23**
3.Cramps	.09	-.07	.00
4.Itchy Skin	-.14*	-.14*	.07
5.Dry Skin	-.11	-.23**	.08
6.Shortness of Breath	-.06	-.28**	.12
7.Faintness or Dizziness	-.09	-.18*	-.18*
8.Lack of Appetite	.01	-.33**	-.34**
9.Washed out or Drained	-.05	.47**	-.44**
10.Numbness in Hands or Feet	.00	-.26**	.24**
11.Nausea or Upset Stomach	.04	.28**	-.31**
12.Access or Catheter Site	.10	-.19*	.17*
13.Bodily Pain	-.02	-.30**	.43**

*p< .05, **p< .01.

Table 4. Correlation among Hope, Depression & Quality of Life of Dialysis Patients N=175.

Variable	Correlation Coefficient		
	Hope	Depression	Quality of Life
Demography			
Age	-.00	.44	-.30**
Gender	-.13	-.14	-.12
Employment Status	-.12	-.19**	.37**
Household Income	.07	-.15*	.76
Economic Status	.05	-.05	.03
Marital Status	.06	-.07	.03
Educational Background	.13	-.11	.24**
Religion	.10	.02	.00
No. of Years on Dialysis	.03	-.04	-.10
Living Status	.08	-.01	-.41
Chronic Comorbidities	-1.07	.11	-.18*
Hypertension	-.18	.00	-.70
Diabetes	-.61	.81	-.12
Smoking (after Illness)	-.42	.94	-.00
Alcohol Intake (after Illness)	-.50	.75	.21
Received Dialysis Introduction	.16*	-.78	.06

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Registered as Renal Transplantation Recipients	.103	-.03	.06
Type of Dialysis	.16	.17*	.03
Self-decision on Type of Dialysis	-.11	.21	-.12
Hope		-.34**	.34**
Current Feeling about Future	.79**	-.11	.14
Positive Preparations and Expectations	.83**	-.28**	.26**
Correlation	.68**	.03	-.05
Depression	-.43**		-.55**
Guilty	-.21**	.54**	-.41**

Table 4. *Cont.*

Variable	Correlation Coefficient		
	Hope	Depression	Quality of Life
Being Punished	-.27**	.61**	-.27**
Hate Oneself	-.16*	.40**	-.17*
Blame Oneself	-.125	.62**	-.30**
Suiciding	.04	.46**	-.22**
Crying	-.04	.48**	-.13
Irritated	-.12	.60**	-.26**
Loss of Interests	.00	.55**	-.23**
Unable to Make Decisions	-.08	.36**	-.30**
Feeling Failure	.00	.47**	-.02**
Dissatisfied or Bored	-.10	.56**	-.26**
Change in Sleep Patterns	-.05	.53**	-.29**
Short-tempered	-.05	.58**	-.37**
Loss of Appetite	-.22**	.67**	-.36**
Difficult to Concentrate	-.06	.70**	-.38**
Tiredness	-.08	.46**	-.31**
Loss of Interests in Sex	-.13	.50**	-.28**
Sad & Unhappy	-.11	.47**	-.30**
Feeling Hopeless	-.07	.58**	-.38**
Failed Experience	-.06	.55**	-.41**
Loss of Fun	-.03	.34**	-.31**
Quality of Life	.34**	-.58**	
Symptoms/Problems	-.03	-.43**	.36**
Effects of CKD in the Daily Life	.07	-.45**	.46**
Overload Imposed of CKD	.17*	-.46**	.46**
Work Condition	.05	-.29**	.27**
Cognitive Function	-.07	-.21**	.28**
Social Interaction	.19*	-.28**	.48**
Sexual Function	.16	-.71**	.61**
Sleep	.21**	-.41**	.35**
Social Support	.19*	-.31**	.38**
Dialysis Team Stimuli	.27**	-.05	.07
Overall Health	.09	-.45**	.34**
Patient Satisfaction	.28**	.013	.101
Functional Capacity	.11	-.38**	.70**
Physical Aspects	.09	-.37**	.67**
Pain	-.02	-.37**	.59**

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General Health	.21**	-.51**	.54**
Emotional Happiness	.21**	-.51**	.67**
Emotional Aspects	.04	-.32**	.69**
Social Aspects	.02	-.44**	.66**
Energy/Fatigue	.20**	-.48**	.71**
Physical Composite	.11	-.47**	.78**
Mental Composite	.16*	-.38**	.75**

*p< .05, **p< .01.

Based on the above findings, factors such as age, number of years on dialysis, types of dialysis, educational background, employment status, economy, religion, living with family, chronic comorbidities and receiving dialysis introduction had statistically significant influences on hope, depression and quality of life.

4. Discussion

4.1. Hope

Study results showed that the score of hope in dialysis patients was at a moderate level (34.25 points, or 72.60%), and was close to the results of the chronic kidney disease patient study by Ottaviani, Souza, de Mendiondo, & Pavarini of 38.06±4.32. Most patients interviewed in this study expressed fear of losing their jobs due to insufficient physical strength by the disease and unable to work ordinarily due to treatment needs. They hoped to "live with the disease both physically and mentally" [12].

4.2. Depression

The dialysis patients in this study were at mild depression (mean score 12.45±SD 9.03, or 19.76%), and the score of peritoneal dialysis patients (15.18±10.96) was higher than that of hemodialysis patients (11.53±8.12). These results differ from the Shafi, S. T, & Shafi, T. study, in which 80.2% of subjects were patients with end-stage renal failure [13], and also differ from the Kalender, Ozdemir, Dervisoglu, & Ozdemir study, which indicated that peritoneal dialysis patients had significantly lower levels of depression than hemodialysis ones [14]. Dialysis patients included in this study were at the honeymoon phase, such that arrangement of dialysis beds was not needed for peritoneal dialysis patients, i.e. patients can choose dialysis time to fit in their daily lives. However, after honeymoon phase, quantity of peritoneal dialysis fluid increased, abdominal discomfort, difficult to bear with multiple fluid changes, unable to go to work and adjust the fluid change time, and gradually deteriorated health, would lead to depression. Analysis by Farrokhi, Abedi, Beyene, Kurdyak, Jassal showed that dialysis patients had a 50% increased risk of depression and death (HR = 1.51, 95% CI: 1.35–1.69), different type of dialysis would cause different severity of depression, and risk of death would be different, increasing the frequency of patient visiting and counseling could help improve adaptation [15].

4.3. Quality of Life

The overall score of the quality of life of dialysis patients was 80.84 ± SD 13.96, which was at the middle level of quality of life. In physical pain, the score of peritoneal dialysis patients was 68.86±26.83, and was lower than that of hemodialysis patients of 69.31±24.93. The studies analysis of Tannor et al of South Africa and Liem et al of USA. showed no difference in quality of life score between hemodialysis and peritoneal dialysis patients [16,17]. Namdar from Iran and others scholars had stated in their publications that peritoneal dialysis patients had better quality of life [18,19]. The reasons for the differences may have been that studies were conducted in different regions, at different time, using different questionnaires, and on patients with different demography and disease characteristics. Patients with high educational background, been employed, with incomes, and

without chronic comorbidities have higher overall quality of life scores. Those with low educational background are more likely to engage in part-time jobs, and middle-aged and above with high education are more active in the labor market and have stable incomes [20]. As Erikson stated in the psychosocial developmental theory, different stage needs included in physical, psychological, spiritual and social. Therefore, factors influencing quality of life are very complex, and hence, results of studies can be different.

Types of dialysis, physical symptoms, hope, and depression will affect quality of life of patients and treatment results. "Hope" is one of the psychological adaptive behaviors for end-stage renal disease patients, and a major element of future support [21], so dialysis patients need to learn to live with the disease and accept that different types of dialysis can complement each other and improve treatment efficacy.

In consideration of human and financial resources, subjects of this study were limited to dialysis patients in a medical center in northern Taiwan, and the results cannot be inferred to dialysis patients in other regions.

5. Conclusions

According to the findings of this study, it is recommended that dialysis case managers provide nursing guidance to help dialysis patients learn comfortable care methods and support the resilience they need [22–26].

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Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: All relevant datasets in this study are described in the manuscript.

Conflicts of Interest: The authors declare no conflict of interest.

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