

# Factors Affecting the Psychosocial Adjustment of Patients with Peritoneal Dialysis

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**Abstract: Background/ Objectives** The purpose of this study was to investigate the relationship between psychosocial adjustment, knowledge, and self - efficacy in patients with peritoneal dialysis. **Methods/Statistical analysis:** A cross-sectional survey was conducted. J also visited the artificial kidney room with the cooperation of one senior general hospital in S city, and 93 participants were selected. Structured questionnaires were used as learning tools, including general characteristics, socio-psychological adaptation, knowledge, self-efficacy. **Independent t-test, one-way ANOVA, Pearson correlation coefficient and multiple regression were used for analysis.** **Findings:** The correlation of this study showed that the lower the depression, the higher the self-efficacy, the higher the socio-psychological adaptability, and not the knowledge. These factors influence depression, self-efficacy, and knowledge in social psychological adjustment.

**Improvements/Applications:** Considering these results, we need to develop programs that improve psychosocial control of patients with peritoneal dialysis and recommend patients to control depression and self-efficacy in patients with peritoneal dialysis. Because depression is the biggest factor influencing social and psychological control, you should consult about depression

**Keywords:** Peritoneal dialysis, social psychological adjustment, depression, self-efficacy, knowledge

## I. INTRODUCTION

### 1.1. Necessity of This Study

In modern society, chronic disease patients are continuously increasing due to population aging but the ultimate goal of medical care is controlling the disease process rather than completely curing the disease. In particular, among chronic diseases, end-stage renal disease refers to a condition where kidney functions have declined to 5% or below of normal states due to various factors such as chronic glomerulonephritis, chronic pyelonephritis, hypertension, diabetes, etc., so that blood urea, nitrogen and other waste products are not excreted but are accumulated in the body. Dialysis is one of the typical treatments for end-stage renal disease. The number of dialysis patients in 2015 was 97,014 with an increase by 14,756 compared to 2014. Peritoneal dialysis patients account for 8% of the total dialysis population. [1] Peritoneal dialysis has the advantage of being capable of continuously removing waste products without causing changes in blood pressure or imbalance symptoms appearing in hemodialysis [2]. However, peritoneal dialysis requires a lot of knowledge and management in patients' everyday lives such as catheter

management, self-management to clean up the exit site, aseptic dialysate replacements, dietary control, regular medication, blood pressure control, peritonitis premonitory symptom control, body weight management against over-hydration symptoms, and drained dialysate turbidity inspection. In addition, as the duration is lengthened, peritoneal dialysis patients experience more difficulties because they care themselves in most cases and become more careless and negligent in self-care over time. Therefore, treatment drop-out rates due to diverse complications are at worrisome levels. Therefore, dialysis patients should be supported and helped so that they can control and keep their self-care of their disease with interest by providing knowledge and information, educating on knowledge, and observing and controlling whether the patient perform health behaviors. For dialysis patients, knowledge education is an important element that increases patients' performance of self-care for health, reduces the occurrence of complications, or slows down the progress of the disease and can be said to be important. Recently, diverse factors that affect the health behaviors of peritoneal dialysis patients have been presented. However, according to a study conducted by Kim Ji-yeong [3], patients' self-efficacy, which is their belief that the results will be determined by their behavior, contributes to the improvement of dialysis patients' health behaviors. Therefore, self-efficacy can be said to be an important contributing factor for the act of symptom control using dialysis. Self-efficacy is an individual's belief in his/her ability to perform a particular act in a certain situation and becomes a major factor in determining the actions to be taken and how many times and how long the actions should be taken [4]. Therefore, patients should be motivated so that they can successfully perform necessary actions.

In addition, as the disease persists, peritoneal dialysis patients become more neglectful in their self-care behaviors compared to the initial period of dialysis and become to conduct undesirable coping behaviors due to the stress experienced in daily life. This may bring about negative results for the solution of the problems faced by the patients so that the patients are highly likely to experience depression. Therefore, those patients that undergo dialysis are more likely to experience especially anxiety and depression among stress responses than ordinary persons or other chronic disease patients [5], and the pain of peritoneal dialysis patients may be associated with their psychological conditions such as depression.

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In addition, the pain is caused by shrinkage in social life or experience of long-term and repetitive stress, and shortage in time in the patients' workplaces due to the disease and changes in the patients' role and responsibility in their families due to limitations in social activities aggravate conflicts among family members to affect the patients' psychosocial adaptation while they maintain dialysis after beginning dialysis[5]. Furthermore, chronic disease patients are limited in their participation in leisure activities due to changes in their overall health resulting in physical and emotional discomfort. In addition, chronic disease patients worry about their future too much and experience difficulties in self-acceptance and social adjustment. Therefore, psychosocial adaptation is important for peritoneal dialysis patients to maintain dialysis continuously.

Few studies compared and analyzed factors that affect peritoneal dialysis patients' psychosocial adaptation. Most of related studies are about the performance of self-care and few studies compared and analyzed other factors. Since demand for peritoneal dialysis decreased due to increases in hemodialysis hospitals, not so many studies are conducted on peritoneal dialysis patients. Therefore, the relevant studies are necessary.

Therefore, in this study, peritoneal dialysis patients' self-efficacy, depression, and knowledge according to their psychosocial adaptation will be grasped with a view to providing basic data for development of newest educational materials to provide peritoneal dialysis patients with knowledge of psychosocial adaptation.

### 1.2. Purpose of This Study

The purpose of this study is to examine the psychosocial adaptation, knowledge, self-efficacy, and depression of peritoneal dialysis patients and the concrete purposes are as follows.

1. Examine the degree of psychosocial adaptation according to the general characteristics of the subject.
2. Examine the correlations between the subject's general characteristics, psychosocial adaptation, knowledge, self-efficacy, and depression
3. Examine the factors that affect the subject's psychosocial adaptation

## II. MATERIALS AND METHOD

### 2.1. Design of This Study

This study is a descriptive correlation study to investigate the relationships among psychosocial adaptation, self-efficacy, and depression.

### 2.2. Subjects of This Study

To select study subjects, the researcher visited the hemodialysis unit of a higher general hospital located in S-si of J-do under the cooperation of the hospital, obtained permission by the head of the institution, and provided sufficient information on the study to peritoneal dialysis patients who met the criteria for the subjects of this study for one year from 2016. Thereafter, study subjects were selected from among those who agreed to participate in the study. Data were collected by requesting those subjects who could answer to the questionnaire by themselves to complete the questionnaire by themselves and by reading the contents of

the questionnaire to those subjects who could not answer to the questionnaire by themselves with a structured questionnaire in the form of one-on-one interviews to record verbal answers of the subjects. Since the subjects might feel negative emotions such as difficulties in impulse-control and depression in the process of completing the questionnaire, the researcher sufficiently explained the subjects to immediately stop participating in the study in such cases before completing the questionnaire. In acknowledgement of the subjects' responses to the questionnaire, prepared gifts were presented after identifying the subjects' preference and this study was conducted after getting approval (IRB Number SCH2015-077) from the institutional review board of the institution to which this researcher belongs to.

When the number of persons of the study samples was calculated with effect size .05, power of test 90%, and significance level .03 for multiple regression analysis using the G\*Power 3.1.9.2. Program, the necessary appropriate number of persons was 86 and 100 study subjects were recruited for this study considering a dropout rate of 10%. After completing the questionnaire, a total of 93 subjects excluding seven unfaithful respondents were determined to be final study subjects. Therefore, the number of samples in this study satisfied the minimum number of samples.

### 2.3. Tool of This Study

In this study, age, education level, economic level, the number of times of having peritonitis, and the number of times of exercise per week were examined as general characteristics variables. Other variables include psychosocial adaptation, knowledge, self-efficacy, and depression. A structured questionnaire including questions and scales for each variable was used as a research tool, and the questionnaire was a self-administered by the study subjects.

#### 2.3.1. Psychosocial adaptation

To measure psychosocial adaptation, the scores of the psychosocial adaptation scale developed by Chaplin et al.(1990)[6] and translated by MunSeong-mi(2000)[7] were measured. Higher scores mean that the degrees of psychosocial adaptation are high. The reliability in this study was Cronbach's  $\alpha = .94$ .

#### 2.3.2. Knowledge

In this study, the scores of knowledge were measured using the knowledge evaluation scale developed by Park Mi-hwa, Park Oh Jang(1999)[8] and modified and complemented by Lee Jeong-ee(2008)[9], of which the validity was verified. The scale consists of 19 items and higher scores mean higher levels of knowledge. The reliability in this study was Cronbach's  $\alpha = .98$ .

#### 2.3.3. Self-efficacy

In this study, the scores of self-efficacy were measured using a tool as a self-efficacy evaluation scale developed by Sherer, Maddux, Jacob, and Roser(1982)[10] and modified and complemented by Hong(1999)[11], of which the validity was verified. The scale consists of 19 items and higher scores mean higher levels of self-efficacy. The reliability of this tool in this study was Cronbach's  $\alpha = .86$ .



**2.3.4. Depression**

In this study, depression was defined based on the scores measured using the depression measurement tool Beck Depression Inventory- II (BDI- II) developed by Beck et al.(1996)[12] to be consistent with the major depression criteria of DSM-IV. The reliability of this tool in this study was Cronbach's  $\alpha = .89$ .

**2.3. Data Analysis**

SPSS WIN 18.0 Version program is used for data analysis. General characteristic of the subject is used for frequency analysis and descriptive statistic. T-test, ANOVA, Pearson's Correlation Coefficient, Stepwise multiple regression analysis are used for analysis.

**III. RESULTS AND DISCUSSION**

**3.1. General Characteristic**

The general characteristics of the peritoneal dialysis patients who participated in this study are as shown in Table 1. The number of the subjects was 93 in total and the ratios of males and females were similar to each other as the number of male subjects was 47patient(50.5%), and that of female subjects was 46patient(49.5%). As for the ages, the number of the subjected aged 50 years or more was 61patient(65.6%), which was larger than that of those aged less than 50 years. As for education levels, the number of those who graduated at least high school was 63patient(67.7%) and as for marriage status, the number of those who had married was 81patient(87.0%). As for monthly incomes, the number of those with monthly incomes below 2 million won was 64patient(68.6%), as for the number of times of exercise per week, the number of those who were exercising 1-3 times/week was 39patient(41.9%), which was the largest number, and as for smoking, the number of those who were not smoking was 85patient(91.4%). As for drinking, the number of those who were not drinking was 83patient(89.2%), as for the number of times of peritonitis infections, the number of those who were infected at least once was 51patient(54.8%), and as for the number of times of replacement of dialysate, the number of those who replaced dialysate 3-4 times was 76patient(81.7%).(Refer to Table1)

**Table 1: General Characteristic of Participants (n=93)**

Variables	Classification	Total (n=93)	
		n(%)	M±SD
Sex	Mam	47(51.1)	
	Female	46(49.5)	
Age	≤ 49 years old	32(34.4)	4.03±1.42

	≥ 50years old	61(65.6)	
Education	≤Middle school	30(32.3)	
	≥Highschool	63(67.7)	
Monthly household income (10,000 won)	<199	64(68.6)	
	≥200	29(31.2)	
Exercise/week	No	36(38.7)	
	1-3/week	39(41.9)	
	4-7/week	28(30.1)	
Smoking	Yes	8(8.6)	
	No	85(91.4)	
Drinking alcohol	Yes	10(10.8)	
	No	83(89.2)	
Peritonitis	No	42(45.2)	
	1	24(25.8)	
	≥2	27(29)	
Switching number	1-2	6(6.4)	
	3-4	76(81.7)	
	≥5	11(11.8)	

**3.2. The self-efficacy, depression, and psychosocial adaptation of peritoneal dialysis patients according to their general characteristics**

The psychosocial adaptation, knowledge, self-efficacy, and depression levels of peritoneal dialysis patients were examined and according to the results, the score of psychosocial adaptation was shown to be 3.26±.77, that of knowledge was shown to be 1.48±.10, that of self-efficacy was shown to be 3.23±.37, and that of depression was shown to be 1.75±.43( in Table 2)

**Table 2: Social psychological adjustment, knowledge, self – efficacy, depression (n=93)**

Variable	Mean ±SD	Range
Social psychological adjustment	3.26±.77	1-5
knowledge	1.48±.10	1-2
self - efficacy	3.23±.37	1-5
depression	1.75±.43	1-5

**3.3. The psychosocial adaptation of peritoneal dialysis patients according to their general characteristics**

The differences in the psychosocial adaptation among the general characteristics were examined and according to the results, statistically significant differences were shown according to the items, age(t=.791, p=<.078), education(t=.630, p=<.041), economic conditions(F=1,211, p=<.026), and the number of times of exercise(F=1,567, p=<.072)(Refer to Table 3 ).

**Table 3. Differences in Social psychological adjustment according to characteristics (n=93)**

Variable	Categories	n	Mean ±SD	t or F	p
Age	49years old	32	4.03±.1.42	.791	.078*
	50years old over	61	3.46±.45		
Education	≤Middle school	30	3.48±.59	.630	.041*
	≥High school	63	3.16±.52		
Monthly household income(10,000 won)	<199	64	2.67±.94	1.211	
	≥200er	29	3.47±.55		



Peritonitis	NO	42	3.41±.55	1.11	.967
	1	24	3.78±.46		
	≥2	27	3.43±.56		
Grade Level	NO	23	3.42±.52	1.567	.072*
	1-3/week	115	3.43±.49		
	4-7/week	8	3.43±.49		

In this study, as for the differences in psychosocial adaptation of peritoneal dialysis patients according to the general characteristics, significant differences were shown according to the items; age, education, economic conditions, and the number of times of exercise, but no significant difference was shown according to the number of times of having peritonitis. In a study conducted by Yoon (2007)[13] on the levels of psychosocial adaptation of hemodialysis patients according to dialysis periods, there were significant differences in age, marital status, and education level. In a study conducted by Kim (2018)[14] on hemodialysis patients' family support and psychosocial adaptation, significant differences were shown in education level, religion, occupation, economic ability, family cohabitation, and helpers consistently with this study. These results are considered attributable to the fact that those peritoneal dialysis patients who easily received peritoneal dialysis management education and knowledge and more actively performed exercise because they had allowances in life psychosocially adapted well. The reason why no significant difference was shown in the number of times of having peritonitis is considered to be the fact that the anxiety about diseases due to complications hinders psychosocial adaptation. Since no study was conducted on the number of times of having peritonitis, studies on complications are considered necessary hereafter.

**3.4 Correlations between peritoneal dialysis patients' psychosocial adaptation and knowledge, self-efficacy and depression**

The correlations between the subjects psychosocial adaptation and their knowledge, self-efficacy, and depression were examined and according to the results, peritoneal dialysis patients' psychosocial adaptation was significantly negatively correlated with depression ( $r=-.629, p<.001$ ), was significantly positively correlated with self-efficacy ( $r=.455, p<.001$ ), was not significantly correlated with knowledge as shown in table 4. The level of psychosocial adaptation was shown to be higher when depression levels were lower and self-efficacy levels were higher while being shown to be not related to knowledge.

**Table 4. Knowledge, self – efficacy, depression correlation between (n=93)**

	knowledge	self - efficacy	depression	Social psychological adjustment
knowledge	1	.098 (.349)	-.042 (.691)	163 (.119)

self - efficacy		1	-.620** (.000)	.455** (.000)
depression			1	-.629** (.000)
Social psychological adjustment				1

In this study, the level of psychosocial adaptation was shown to be higher when depression levels were lower and self-efficacy levels were higher while being shown to be not related to knowledge. First, the result for depression was consistent with a study conducted by Yoon (2008)[13] on hemodialysis patients' dialysis periods and psychosocial adaptation. Since depression is one of chronic complications of peritoneal dialysis patients, it can be seen that when complications appear less frequently, adaption to social activities should be easier. The result for self-efficacy was consistent with a study conducted by Park, Kim(2006)[15] on blood and peritoneal dialysis patients' self-efficacy. It can be seen that those who act actively with positive belief in any situation can adapt well psychosocially. However, the result for knowledge was consistent with a study conducted by Park, Park (1999)[8] on peritoneal dialysis patients' health related knowledge and degree of performance of self-care. This can be considered attributable to the fact that even those who have a lot of knowledge would not perform health behaviors if they are not motivated.

**3.5. Factors that affect peritoneal dialysis patients' psychosocial adaptation**

To identify factors that affect psychosocial adaptation, a regression model that uses knowledge, self-efficacy, and depression as independent variables was analyzed and the result indicated that the regression model was significant ( $F=21,370, p<.001$ ), and the modified coefficient of determination indicating the explanatory power of the model was shown to be  $R^2=.399$ .

According to the results, among the factors that affect psychosocial adaptation, depression had the largest effect ( $\beta=-.590, p=.000$ ), followed by self-efficacy ( $\beta=.117, p=.159$ ), and knowledge ( $\beta=.200, p=.013$ ). (Refer to Table 5).

Before conducting multiple regression analysis, the conditions; multicollinearity, independence, normality, and homoscedasticity were tested. According to the test of multicollinearity, the tolerance limit values were shown to be .914~.991,



which were larger than 0.1 and the variance inflation factor (VIF) values were shown to be 1.009~1.094, which were not larger than 10. In addition, the autocorrelation(independence) of errors was tested and according to the results, the Durbin-Watson statistics value was 1.964, which is close to 2, indicating that the errors were not auto-correlated. According to the analysis of residuals, the range of standardized residuals was -2.205~2.283 satisfying the homoscedasticity and the normality was identified.

<Table 5> Factors influencing social adjustment (n=93)

Variable	B	SE	$\beta$	t	p
depression	-1.066	.148	-.590	-7,219	.000***
self efficacy	.245	.172	.117	1,420	.159*
knowledge	1.588	.626	.200	2,538	.013**

Adjusted R2=.399, F=21.370, p=<.000\*\*\*

Regression analyses were conducted to identify factors that affect peritoneal dialysis patients' psychosocial adaptation and according to the results, depression had the largest effect followed by self-efficacy and knowledge in order of precedence. A study conducted by Lee Jeong-rim et al.(2010)[16] on factors related to peritoneal dialysis patients' depression, a study conducted by Kim Mi-nyeo(2018)[14] on the effect of hemodialysis patients' psychosocial adaptation on the quality of their life, and a study conducted by Yun Sun-ho(2007)[13] on psychosocial adaptation according to dialysis periods and the quality of life support the fact that depression is a factor that has the largest effect on psychosocial adaptation. The fact that self-efficacy is a factor that affects psychosocial adaptation could be identified in a study conducted by Park Seon-hwa(2018)[17] on the effects of dialysis, depression, self-efficacy, and social support on the quality of life of dialysis patients. Finally, knowledge was shown to have no significant correlation indicating that it had third largest effect on psychosocial adaptation. However, since there were few previous studies on factors that affect psychosocial adaptation, diverse studies were considered necessary. Depression is considered to affect psychosocial adaptation because peritoneal dialysis patients have a chronic disease and undergo peritoneal dialysis that requires steady and continuous care. Self-efficacy is considered to have effects on psychosocial adaptation when the patient has overcome the depression as such and is satisfied with his/her self-care. Knowledge is considered to be utilizable as knowledge will reduce depression and enhance self-efficacy.

As described above, the fact that peritoneal dialysis patients' psychosocial adaptation, depression, self-efficacy, and knowledge are important variables was identified.

It is considered necessary to develop programs to enable peritoneal dialysis patients to mitigate depression and enhance self-efficacy thereby utilizing knowledge.

#### IV. CONCLUSION

This study is the descriptive correlation study conducted in order to grasp the relation between emotional intelligence, general mental health, academic emotion regulation, stress in clinical practice and satisfaction in major of the male

university students majoring in nursing at the universities located in G city, J city, J province, I city and J province.

The findings of this study are as follows. In regard to satisfaction in major measured depending on general characteristic, there is significant difference in grade level, the reason for application and decision of department, by contrast there is no significant difference in age and grade. It is revealed that the higher emotional intelligence, general mental health, academic emotion regulation is respectively and the lower stress in clinical practice is, the higher satisfaction in major, additionally in order of stress in clinical practice, general mental health, emotional intelligence, academic emotion regulation in terms of extent of influence, these factors have a big effect on satisfaction in major.

Based on these findings mentioned above, it is proved that stress in clinical practice, general mental health, emotional intelligence, academic emotion regulation are main factors. It is considered that developing and using the program aimed at improving mental health and emotion intelligence can enhance academic emotion regulation ability and offer an opportunity to overcome stress in clinical practice by himself, as a result of it, satisfaction in major will be increased.

The researchers suggest that lots of studies are required to be carried out with various subjects in order to generalize the result of this study and the studies on diverse affecting factors of the male students majoring in nursing are required to be conducted in order to examine concrete satisfaction in major, additionally, it is needed to develop and use the program aimed at controlling stress in clinical practice and counsel the male students about stress in clinical practice.

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