



Relationship between resilience with illness behavior in dialysis patients

Zinat Goldanimoghdam¹, Bibi Aghdas Asghari², Farzaneh Michael Manee³

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1. Department of Educational Psychology, School of Humanities, Islamic Azad University Birjand Branch, Birjand, Iran
2. **Correspondence to:** Department. of Social Science, School of Humanities, Islamic Azad University Gonabad Branch, Gonabad, Iran
Email: a_asghari2002@yahoo.com
3. Department of Psychology, Faculty of Literature and Humanities, Urmia University, Urmia, Iran

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Abstract

Dialysis patients are classified as special cases. These patients have to face various physiological changes and lots of psychological stress. This research aimed to study the relationship between resilience with illness behavior in dialysis patients. The study population consisted of all dialysis patients who have referred to the diemoanalysis unit (78 participants); all of them have taken census for sampling due to the low number of statistical. Data collection tools was the Connor-Davidson resilience scale and Pilowsky & Spence's illness behavior questionnaire. There is a negative relationship significant between resilience with hypochondriasis, affective disorder, and denial of disease. The modified coefficient for the dependent variable of hypochondriasis is equal to 21; for affective control, affective disorder, denial of disease was 21.4, 22.4, and 29.5 respectively. These coefficients indicate that how amount of dependent variables are expressed by independent variables. According to the results, it is necessary that that psychological aspects of patients should be focused in the treatment of diseases.

Keywords: Illness Behavior, Psychological Resilience, dialysis patients

Introduction

Chronic renal failure is a chronic disease which has had a rising trend in recent years as its incidence in the United States has increased by 10 times during the past 20 years [1]. According to statistics of transplantation and special diseases management center, ministry of health and medical education of Iran the annual growth of this disease in Iran is about 11%. The annual incidence of the disease in Iran is 53 people per every one million of the population and its prevalence is 250 people per every one million of the population. These figures in the United States are 200 and 975 people per every

one million of the population respectively [2]. Kidney transplant is the main treatment of chronic renal failure. But due to problems of transplant, patients are dialysis (hemodialysis and peritoneal dialysis) treatment until conditions provided for kidney transplant [3]. Statistic renal data system, about 90% of afflicted with this disease is treated with hemodialysis. Statistic patient's hemodialysis in Iran increases 15% annually. So the number of patient's dialysis is announced in Iran 15.448 people according to report of Foundation for special diseases in 2012 [4].

Dialysis can reduce symptoms of the disease and preserve life, but this illness and complication has different impact on aspect of health due to the nature of chronic renal failure and frequent sessions of dialysis, patients are facing with multiple problems bodily, psychological, social, and economic for the long-term [5].

Davoodi et al. [6] in their study stated that patients under dialysis treatment since the beginning affection disease have been faced with a series of intense negative emotions which can affect quality of life and reaction patients to their disease so these patients retrain the regime prescribed and even necessary follow up treatment for their disease. Also Al-Arabi [7] showed by increasing one's dependence on other affliction with chronic renal failure and changes caused hemodialysis will have low self-confidence and sense of lonely. These problems lead to changes in lifestyle, health status, and the role and behavior of the disease.

Illness behavior is a term which used to describe a patient's reactions to the experience of being ill. Some called phases of this disease the role of patients. More precisely, the sick role refers to the role gives the community according to sickness of person [8]. Dialysis patients appear different illness behavior. They have been faced to many challenges in agreement with treatment, their struggle with his illness, they show actions prescriptions and denial of disease with ignoring diet and the absence of therapy sessions [9]. In this regard, Cukor et al. [10] showed depression between 20-30% among dialysis patients. Also Ghassemzadeh [11] stated that chronic renal failure and its treatment with dialysis can be patients exposed to a wide range of bodily, psychological, economic, and social problems and affect their lifestyle and resilience.

Resilience is a phenomenon which can be achieved from natural human adaptive responses and despite one's face of serious threats, empowers humans in access success and overcoming threats. Resilience is not threaten resistance against damages or threatening conditions, but a resilient person is actively participates and build the surrounding environment. Resilience is capacity of the

individual in equality ecological, mental and spiritual balance in returns risky situations [12]. Hence, it cannot consider recovery equivalent. So, resilience is back to basic balance or achieves a higher level at balance in threatening conditions and should provide successful adaptation to life [13].

Masten distinguished three important aspects related to the dynamic process of resilience: 1) individuals at risk showed better results than one expected, 2) Positive adaptation in spite of the experience of stress, 3) A good recovery from the trauma [14].

When people are faced with an adverse condition, there are three methods that they approach and it defines whether it will promote well-being or not. The three approaches are:

- 1) An eruption of anger.
- 2) They implode with overwhelming negative emotions, go numb, and become unable to react.
- 3) They simply become upset about the disruptive change.

The third category of approach is employed by resilient people who become upset about the disruptive state and thus change their current pattern to cope with the issue. The first and second category of approach leads people to adopt the victim role by blaming others and reject any coping methods even after the crisis is over. They prefer to instinctively react, rather than respond to the situation. Those who respond to the adverse conditions in themselves tend to cope with it, reside and halt the crisis. Negative emotions involve fear, anger, anxiety, distress, helplessness, and hopelessness which decrease a person's ability to solve the problems and they weaken their resiliency. Constant fears and worries weaken people's immune system and increase their vulnerability to illnesses [15].

There are studies which have suggested that resilience has an impact on the treatment of diverse chronic diseases such as systemic lupus erythematosus (SLE), diabetes, rheumatoid arthritis (RA), juvenile idiopathic arthritis, Chagas disease, etc.[16]

Smith et al [17] and Taghizadeh and Miralayi [18] in their studies stated that resilience

is a factor that helps people in the face and compatibility successfully hard and stressful life, reduce depression, and increases the ability of compatibility with pain. Also, Orak [19] argues that resilient people tend to be commitment and complete involvement in daily activities. They enjoy having challenges and believe that imperative are nature acceptable change and disease therefore look to life's problems and diseases as an opportunity for increase skills and abilities. So, resilience makes a dynamic process people to properly deal with stressful issues in life [20] and strengthen in itself ability of internal control, empathy, daily responsibilities organizing, positive thinking, and positive self-concept [21].

Resilience can benefit patient safety efforts because it represents a change in emphasis from a traditional, reactive focus on errors to seeing humans as a defense against failure. In the modern division, dialysis patients are classified as special patients. These patients have been faced with many psychological tensions because these patients in addition to dealing with various physiological changes. So, this study was aimed to investigate relationship between resilience with the patient behaviors (in four dimensions: pochondriasis, emotional control, affective disorder, denial of illness) in dialysis patients.

Method

The present search was correlational and cross-sectional research. The study population consisted of all dialysis patients who have referred to the specific patient's medical center hemodialysis clinic of Birjand university of medical sciences (East of Iran) in 2015 (including 78 participants). In this study Connor-Davidson Resilience Scale (CD-RISC) and Pilowsky & Spence's Illness Behavior Questionnaire (IBQ) were used.

The Connor-Davidson Resilience Scale (CD-RISC) was developed by Kathryn M. Connor and Jonathan R.T. Davidson as a means of assessing resilience was considered as the capacity to overcome adversity. Since its development in 2003, the CD-RISC has been tested in a several

contexts with a variety of populations and has been modified into different versions. The CD-RISC consists of 25 items, which are evaluated on a five point Likert scale ranging from 0-4: not true at all (0), rarely true (1), sometimes true (2), often true (3), and true nearly all of the time (4). These ratings result in a number between 0-100, and higher scores indicate higher resilience. Factor analysis of the original scale produced five factors:

- Personal competence, high standards, and tenacity
- Trust in one's instincts, tolerance of negative affect, and strengthening effects of stress
- Positive acceptance of change and secure relationships
- Control
- Spiritual influences

Mohamadi [22] has validated this scale in Iran. He performed this scale on 248 people and reliability with internal consistency Cronbach's alpha measure was 0.89. Shafieezadeh [23] examined the reliability of the questionnaire through Cronbach's alpha which reported 0.91. Cronbach's alpha coefficient for the present study was 0.93.

It is a 62-item self-report instrument that provides information relevant to the delineation of a patient's attitudes, ideas, affects, and attributions in relation to illness that was developed by Pilowsky and Spence's. Six scales were calculated and correlated with several personality measures. The generated scores are described, and nine clinical vignettes are presented and then Pilowsky & Spence's Illness Behavior Questionnaire (IBQ) score profiles and interpretations illustrate the manner in which the latter may complement other clinical data. The ways in which individuals react to their own health status is becoming of greater importance as the taking of responsibility for one's own health is increasingly emphasized. The IBQ provides information that should be relevant to the management of patients, regardless of the specific nature of their illness. In this study the Indian version of it has been used which contains 36 questions and 4 components.

The components are: hypochondriasis (1-11), emotional control (28-36), affective disorder (18-27), denial of illness (12-17). Final question is yes or no that awarded yes score (1) and no score (0). Due to the options for patient behavior questions used of the method to cut in two halves (composition) that optioned stability for the total scale 0.61 and for each of subscales hypochondriasis, Denial of disease, affective disorder and emotional control 0.78, 0.74, 0.70 and 0.69 respectively. Data were analyzed by using MANOVA with SPSS-16.

Pearson correlation and regression tests were used at significant level of $p < 0.05$.

Results

Patients in this study were 47% men and

52.6% women. 92.3% of them were married, and 7.7% single. 34.6% of them were younger than 50, 43.6% were 51-70 year-old, and 21.8% were older than 70. 35.9% of the patients were illiterate, 36% had primary and secondary education, and 28.1% were diploma and higher. 74.4 and 25.6% of the studied patients were resident town and village respectively. The results showed that the majority of participants (66.7%) were unemployed and economical, 21.8% were retired and only 11.6% were practitioner. 33.3% have were antecedent dialysis of less than two years, 48.7% antecedent dialysis 2-4 years and 17.9% antecedent dialysis of more than 4 years. 52.6, 47.4% were dialysis twice and three times a week (Table 1).

Table 1 Descriptive indices of the research variables

Variable	Variance	Mode	Median	Standard deviation	Mean	Maximum	Minimum
Age	288.59	63	56.50	16.99	55.10	85	19
Dialysis records	3.59	1	2.50	1.90	2.85	9	1
Hypochondriasis	7.42	9	9.00	2.72	7.67	11	1
Emotional control	2.15	4	3.50	1.47	3.27	6	0
Affective disorder	6.67	6	5	2.58	5.33	10	0
Denial of illness	3.54	2	3	1.88	2.99	8	0
Resilience	307.83	87	87	17.55	87.56	119	43

The significance level for hypochondriasis, emotional control, and denial of the disease is less than 0.05. Therefore, it can be concluded that these variables do not follow a normal distribution. The significance level for affective disorder and resilience is more than 0.05. Thus, it can be stated that affective disorder and resilience have a normal distribution.

Inferential findings (experiment analysis of variance/ covariance multivariate or MANOVA).

Due to conditions of the variables, has been used MANOVA technique. Techniques assumptions include:

- 1) The dependent variables should be quantitative level (distance/ relative). In this way, we have two dependent variables at least.
- 2) Independent variables can be quantitative (distance/ relative) and qualitative (nominal/ compound). In this way, we have two independent

variables at least.

3) The independent variables factor should be qualitative level.

4) The independent variables variety should be quantitative level.

5) The factors and varieties are linear relation with dependent variables.

In this study dependent variables: Four distance of patient behavior hypochondriasis, emotional control, affective disorder and Denial of disease. Independent variables including: The independent variables variety: resilience, patients age.

The independent variables factor: level education, employment type, dialysis antecedent.

For interpret the result test Box's M in Table 2 is used from number reduction of the statistic. This test has two degrees of freedom in the name of df_1 and df_2 . According to the amount of

F, assumption is rejected, if the significance level is smaller than 0.05. This means that between various groups are different covariance matrices observed the dependent variables. Here amount of

significant is greater than 0.05 so null hypothesis is approved. This means that covariance matrices dependent variables observed are equal between various groups statistical society.

Table 2 Box's M of equality of covariance matrices

Box's M	67.948
F	1.464
df1	30
df2	986.935
Sig.	0.052

Table 2 it shows results four multivariate test side significant effect of each independent variable in the model:

- 1) First test is Pillai's Trace.
- 2) Second test is Wilks' Lambda that changes between 0 to 1 and shows amounts close 0

different averages groups and vice versa amounts close 1 to indicate lack of differences averages and amount 1 indicated that are one all averages.

- 3) Third is Hotelling's test.
- 4) The fourth test is is the Roy's largest root.

Table 3 The simultaneous effect or interaction of independent variables on dependent variables

	Effect	Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Intercept	Pillai's Trace	0.544	13.144 ^b	4.000	44.000	0.000	0.544
	Wilks' Lambda	0.456	13.144 ^b	4.000	44.000	0.000	0.544
	Hoteling's Trace	1.195	13.144 ^b	4.000	44.000	0.000	0.544
	Roy's Largest Root	1.195	13.144 ^b	4.000	44.000	0.000	0.544
Resilience	Pillai's Trace	0.408	7.578 ^b	4.000	44.000	0.000	0.408
	Wilks' Lambda	0.592	7.578 ^b	4.000	44.000	0.000	0.408
	Hoteling's Trace	0.689	7.578 ^b	4.000	44.000	0.000	0.408
	Roy's Largest Root	0.689	7.578 ^b	4.000	44.000	0.000	0.408
Education	Pillai's Trace	0.503	1.354	20.000	188.000	0.151	0.126
	Wilks' Lambda	0.566	1.374	20.000	146.881	0.144	0.133
	Hoteling's Trace	0.649	1.379	20.000	170.000	0.139	0.140
	Roy's Largest Root	0.404	3.798 ^c	5.000	47.000	0.006	0.288
Interaction with education jobs	Pillai's Trace	0.701	1.249	32.000	188.000	0.183	0.175
	Wilks' Lambda	0.438	1.284	32.000	163.859	0.159	0.186
	Hoteling's Trace	0.988	1.312	32.000	170.000	0.139	0.198
	Roy's Largest Root	0.607	3.564 ^c	8.000	47.000	0.003	0.378
Job interact with dialysis	Pillai's Trace	0.293	1.246	12.000	138.000	0.258	0.098
	Wilks' Lambda	0.710	1.341	12.000	116.705	0.205	0.108
	Hoteling's Trace	0.402	1.431	12.000	128.000	0.160	0.118
	Roy's Largest Root	0.389	4.474 ^c	4.000	46.000	0.004	0.280

The third column in Table 3 had shown the amount of each four test with statistic F. that

this amount statistic F is become higher than test F and an approximate distribution. In this

table is shown degrees of freedom hypothesis and also distribution error. For interpretation significant this Table should be used the amount SIG. According to amount, when significance level effect of the test is smaller than 0.05, so it can be concluded that it has significant effect and has a role model. Researcher considered only significant variables in the table due to avoid high volume. According to the table below, each four test is significant about the effect resilience variable. The fourth test is significant for education variable. Employment is not significant but for the fourth test is significant in communication with education. Employment, also the interactive in the fourth test is significant with dialysis antecedent.

Intercept: b: Exact statistic

Resilience: b: The statistic is upper bound on F that yields a lower bound on the significance

level.

Education: c: The statistic is an upper bound on F that yields a lower bound on the significance level.

Interaction with education jobs: c: The statistic is an upper bound on F that yields a lower bound on the significance level.

Table 4 shows test results Levene's test to assess the equality error variances of the dependent variable. In this table, the smaller is than 0.05 the level error of statistical F for three dimensions of patient behavior except denial of disease. So, error variance these variables are different in between patients that different grades are three dimensions of patient behavior (emotional control, affective disorder and hypochondriasis). But there is no different in error variance for dimension denial of disease.

Table 4 Levene's test results to measure the equality of error variances in variables

	F	df1	df2	Sig.
General hypochondriasis	2.199	28	49	0.008
Affective inhibition	2.598	28	49	0.002
Affective disturbance	1.696	28	49	0.052
Denial of illness	1.523	28	49	0.097

Table 5 is the effect of result tests between subjects that shows for this study the most important the result test of analysis multivariate variance. This table shows results of the significant or total text in significant and also individually each dependent variable on the independent variables. According to this table, it is affect resilience of the four dimension of patient behavior because the significant level is less than 0.05. The interactive effects educations and employment, for the three other dimensions are not significant, and only for dimension emotional control is significant. The interactive effects employment and dialysis antecedent, only for dimension emotional control is significant and for the three other dimensions is not significant.

In this table contains another results is under the table the justified coefficient of determination. It is clear the amount of coefficient for each of dependent variables. For the dependent

variable of hypochondriasis is tantamount to 21. Also 21.4, 22.4 and 29.5 were for emotional control, affective disorder and Denial of disease respectively. These numerical values indicate that how much any of these independent variables have specified the variation of dependent variables.

Discussion

Result of assumptions' test showed that in its various dimensions there is significant relationship between resilience in total with patient behavior in dialysis patients. There is a significant and negative relationship between resilience and patient's behavior in dialysis patients in dimension hypochondriasis, affective disorder and denial of disease but there is not significant relationship between resilience with emotional control in studied patients. In this context, Ghasemzadeh in comparison of resilience and life style

Table 5 Test of between subjects effects, individual effects of each independent variable on the dependent variables

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	General hypochondriasis	295.768 ^a	30	9.859	1.682	0.054	0.518
	Affective inhibition	85.996 ^b	30	2.867	1.698	0.051	0.520
	Affective disturbance	270.050 ^c	30	9.002	1.739	0.043	0.526
	Denial of illness	155.501 ^d	30	5.183	2.074	0.012	0.570
Intercept	General hypochondriasis	152.294	1	152.294	25.975	0.000	0.356
	Affective inhibition	4.248	1	4.248	2.516	0.119	0.051
	Affective disturbance	137.376	1	137.376	26.540	0.000	0.361
	Denial of illness	80.969	1	80.969	32.391	0.000	0.408
Resilience	General hypochondriasis	46.714	1	46.714	7.967	0.007	0.145
	Affective inhibition	8.050	1	8.050	4.768	0.034	0.092
	Affective disturbance	55.847	1	55.847	10.789	0.002	0.187
	Denial of illness	36.384	1	36.384	14.556	0.000	0.236
Interaction with education jobs	General hypochondriasis	74.720	8	9.340	1.593	0.153	0.213
	Affective inhibition	36.336	8	4.542	2.690	0.016	0.314
	Affective disturbance	38.914	8	4.864	0.940	0.494	0.138
	Denial of illness	6.589	8	0.824	0.329	0.950	0.053
Job interact with dialysis	General hypochondriasis	4.348	3	1.449	0.247	0.863	0.016
	Affective inhibition	22.210	3	7.403	4.385	0.008	0.219
	Affective disturbance	20.873	3	6.958	1.344	0.271	0.079
	Denial of illness	1.027	3	0.342	0.137	0.937	0.009
Total	General hypochondriasis	5156.000	78				
	Affective inhibition	999.000	78				
	Affective disturbance	2732.000	78				
	Denial of illness	969.000	78				
Corrected Total	General hypochondriasis	571.333	77				
	Affective inhibition	165.346	77				
	Affective disturbance	513.333	77				
	Denial of illness	272.987	77				

a. R Squared = .518 (Adjusted R Squared = .210)

b. R Squared = .520 (Adjusted R Squared = .214)

c. R Squared = .526 (Adjusted R Squared = .224)

d. R Squared = .570 (Adjusted R Squared = .295)

between dialysis and kidney transplant patients concluded that there is a significant and positive relationship between resilience and life style in dialysis patients. Also Leaven says there is reverse relationship between responsibility in self-care (patient's reaction to the illness) and negative emotional-mental states in patients treated with maintenance hemodialysis. In this regard, study of Michael et al. [24] showed that patients with low quality of life score at all dimension mental health including spiritual health, emotional role limitation, social functioning, and vitality. Among these areas, emotional role limitation was assigned to the lowest mean of the quality of life. Also, patients were extreme difficulties in physical performance and tolerating the new conditions. Researches' results among dialysis patients in Australia showed that patients in collation with stressful situations break down the problem into smaller and controllable components and

they seek information, consider adverse different of the problem, and direct actions [25]. The justified coefficient determination showed for the four dimensions of patient behavior that the amount of coefficient for hypochondriasis to 21, 21.4, 22.4 and 29.5 for emotional control, affective disorder, and denial of disease is equal.

The results in examining the interaction variables the four dimensions of patient behavior showed that the interactive effects educations and employment for three other dimensions is not significant, and only for dimension emotional control is significant. The interactive effects employment and dialysis antecedent, only for dimension emotional control is significant and for the three other dimensions is not significant.

According to the results of the present study and conduct studies in this field, chronic patients seek more that this control stressful

situations, manage, or come and live with it. While, they have high psychology suffering and this suggests that these patients, despite the annoying experience, try to actively proceeding in order to deal with the threatening situation and on the contrary those are that with lower psychological and in contrast stressful situation use from method emotional statements into avoiding, retirement, suppression, and giving up. People who control stressful situation, manage, or com and live with it, people are purposeful and usually when such act the stress to be evaluated as a manageable and tractable factor, and consequently led to towards self-care programs, reduced exclusion, reduced demoralization, and increased participation in self-care [26]. So, the necessity of training patients it seems inevitable regarding dimensions disease and solutions resilience in contrast [27].

Conclusion

The results show that all subscales of behavioral illness (self-immobility, emotional distress and denial of disease) except for emotional control have a significant and negative relationship with resilience. The results show that all subscales of behavioral illness (Hypochondriasis, Affective disturbance and denial of illness) except for affective inhibition have a significant and negative relationship with resilience. From the dimensions of the behavioral illness, respectively denial of the disease has the most impact from resilience and at the next level, there is affective disturbance and hypochondriasis. Acceptance of the disease is the first stage in coping with illness. The constraints of hemodialysis and mental-spiritual factors, complex therapeutic regimes, limitation in daily activities and functions, occupational and financial stress, and family problems, all of them cause a person to be in high mental pressure. If patients have high resiliency, they will be able to respond appropriately to these problems.

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Contribution

Study design: BA

Data collection and analysis: ZG, FM

Manuscript preparation: BA

Conflict of Interest

"The authors declare that they have no competing interests."

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