

## Relationship between Spiritual Intelligence and Self-Care of Hemodialysis Patients

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### Abstract

**Background:** Chronic renal failure is a progressive and irreversible disorder which disables kidneys to excrete metabolic waste and maintain fluid and electrolyte and exposes the patients to different types of malfunctions. Hemodialysis is one of the main treatments for chronic kidney failure patients. Despite the therapeutic effect of hemodialysis in end stage renal failure, patients experience multiple physical and psychological stresses. Since body and spirit are correlated, religious attitude and spiritual intelligence can act as a potential support. Studies have shown that spiritual beliefs influence health and self-care behaviors of patients. The purpose of this study is to examine the relationship between spiritual intelligence and self-care in hemodialysis patients.

**Methods:** This study used a descriptive-analytic methodology. Participants included 122 hemodialysis patients in teaching hospitals of Imam Reza and Imam Khomeini in Kermanshah. Inclusion criteria included age >18, 6 months of hemodialysis or more, and willingness to participate. Demographics, self-care checklist as well as Abdollahzadeh's spiritual intelligence questionnaire were used to collect data. Data was analyzed by SPSS, V22, using descriptive statistics (percentages, diagrams, mean) and Pearson correlation coefficient.

**Results:** participants were of both genders (50% female and 50% male), majority of whom aged 60-70 (22.3%), with less than high school education (72.1%) and unemployed (83 %). The results showed that  $R = .211$  at 95% confidence level, suggesting a significant relationship between spiritual intelligence and self-care. A majority of patients (32%) had moderate spiritual intelligence (score 111-128 for SQ questionnaire). The mean of self-care was 56.32; patients had the highest self-care (24.99) for skin and fistula and the lowest self-care (6.20) for sleeping and rest.

**Conclusion:** There is a significant correlation between spiritual intelligence and self-care. Therefore, spiritual aspects can promote self-care behaviors among patients.

**Keywords:** spiritual intelligence, self-care, hemodialysis patients

### 1. Introduction

Currently, the increasing prevalence of chronic diseases challenges health workers (Sharifinia et al., 2012). Chronic renal failure is one of these diseases affecting 2-4% of the population. Chronic kidney disease is a result of chronic renal failure which is an irreversible condition leading to dysfunctional nephrons and progresses to treatments such as dialysis to avoid the deadly uremia (Harrison, 2005).

The prevalence of chronic kidney failure affects 242 million people worldwide increasing by 8% annually. According to studies, the mortality rate of these patients is 18% in America (Baraz et al., 2006). According to the Society for Protection of Kidney Patients, there are 40 thousand kidney patients in Iran, of which 15 thousand receive dialysis and nearly 1500 patients die annually because of the complications (Shafipour et al., 2010).

With broad access to dialysis, hundreds of thousands of patients with ESRD (End Stage Renal Diseases) have long lived. However, these patients experience multiple physical, psychological and social stresses. By starting dialysis, these patients will experience different needs and changes in their lived. They will require specific diet and fluids as well as prevention of cardiovascular complications. Restrictions can cause a conflict and stress in

one's life and contradictory interactions. These patients may experience changed self-concept and self-esteem, disrupted family role, and loss of value. For these reasons, these patients may suffer mental disorders (Nasiri, 2012), because body and mind are always interacting (Kaplan & Sadook, 2010). Therefore, it is essential to promote both life expectancy and quality of life (Sharifinia et al., 2012). Spirituality is a way to reform and improve the quality of life and create knowledge on capabilities of the patients (Pak et al., 2010). Based on this spirituality, the World Health Organization (WHO) has recently defined human as a biological, psychological, social and spiritual entity (Moalemi et al., 2010). People need spiritual health, whether they believe in a religion for a good life (Tate and Forchheimer, 2002). In recent years, evidence of psychology, neurology, anthropology and cognitive sciences showed a third intelligence, spiritual intelligence (Johnson, 2001). Different definitions have been provided for spiritual intelligence; theorists consider different components for spiritual intelligence. Nobel and Vaughan believed that eight components represent developed spiritual intelligence including precision and openness, humility, kindness, generosity, tolerance, resistance, integrity and desire to meet others' needs (Zarei Matin et al., 2012). Few studies conducted on patients with chronic diseases indicate the positive effect of spirituality on health and quality of life. For example, spirituality is known as a source of adjustment in patients with AIDS. Spiritual adjustment is associated with higher levels of health and lower psychological stress after spinal surgery. In patients with different types of cancer, spirituality is associated with higher mental health, general health and quality of life. Positive effects of spirituality include fewer depressive symptoms in women with breast cancer and genital cancer and resistance to stress in hospitalized elderly patients and in patients with AIDS (Pirasteh Motlagh and Nikmanesh, 2013; Baljani et al., 2012). Spiritual intelligence is an effective factor in determining the lifestyle and self-care behaviors of hemodialysis patients (Daaleman et al., 2001). Studies have less focused on the relationship between spiritual intelligence and self-care. Therefore, it seems critical to evaluate the effects of this relationship on different aspects of chronic patients. The purpose of this study is to examine the relationship between spiritual intelligence and self-care behaviors.

## 2. Materials and Methods

The study used a descriptive-analytical methodology. The studied population consisted of all hemodialysis patients in teaching hospitals of Imam Khomeini and Imam Reza (AS) in Kermanshah. The samples included 122 patients selected by convenience sampling. By the approval of the Kermanshah University of Medical Sciences and above hospitals as well as hemodialysis nurses, participants were asked to complete the questionnaire. The process was explained for the participants who were assured of full privacy.

The questionnaires included demographic form, self-care checklist and spiritual intelligence questionnaire developed by Abdollahzadeh et al (2009) in 29 questions which were scored on a Likert scale (strongly agree to strongly disagree). Varimax rotation method was used to reduce the variables; thus, the reduced questionnaire contained two items: 1) understanding and communication with the source of existence (12 questions), 2) spiritual life with inner core (17 questions). Scores ranged from 29 to 145 (Saadati, 2009). Reliability of the questionnaire (.89) was calculated by Abdollahzadeh et al using Cronbach's alpha. Formal content validity was also confirmed by the experts. Confirmatory factor analysis was used to calculate the correlation of questions ( $>0.3$  for all questions). The self-care checklist was developed by theorists in Gonabad Medical University. The checklist involved 24 self-care activities regarding diet and fluid control, skin and fistula care, activity and fatigue, sleep and rest. The responds were scored on a Likert scale ranging from never to always. Any items were given 0 to 4 points. Total score of this checklist varied from zero to 96 for very poor self-care (0-12), poor self-care (13-24), moderate self-care (25-48), good self-care (49-60), very good self-care (61-73) and excellent self-care (74-96).

Content validity of the checklist was approved by several members of the faculty and nephrologists in Mashhad. Reliability ( $r = 0.78$ ) was confirmed by test-retest performed within a week (Sajadi et al., 2009). Then, data was analyzed by Pearson correlation coefficient using SPSS, V18.

## 3. Results

In this study, 122 hemodialysis patients were studied (61 male and 61 female). This section first presents descriptive findings and then the results of statistical analysis. The participants were of both genders (50% female and 50% male), majority of whom aged 60-70 (22.3%) with an income below 500 thousand Tomans (62.3%) and unknown accommodation (91.8%). Participants were mostly unemployed (83.6%) with less than high school diploma (72.1%), high school diploma (18.9%), master degree (6.6%) and higher education (0.8%). The majority of samples (68%) were married.

Table 1. Absolute and relative frequency of samples based on age and gender

Age		Gender		Total
		Female	Male	
<20	Number	2	3	5
	%	1.7%	4.9%	3.3%
20-30	Number	4	3	7
	%	6.7%	4.9%	5.8%
30-40	Number	7	8	15
	%	11.7%	13.1%	12.4%
40-50	Number	7	12	19
	%	11.7%	19.7%	15.7%
50-60	Number	12	13	24
	%	20%	21.3%	20.7%
60-70	Number	17	10	27
	%	28.3%	16.4%	22.3%
70-80	Number	9	9	18
	%	15%	14.8%	4.9%
>80	Number	3	3	6
	%	5%	4.9%	5%
Total		61	61	122
		100%	100%	100%

Table 2. Absolute and relative frequency of samples based on education

Education	No.	%	Valid %	Cum %
Less than diploma	88	72.1	73.3	73.3
Diploma	23	18.9	19.2	92.5
Master degree	8	6.6	6.7	99.2
Higher education	1	0.8	0.8	100
Total	120	98.4	100	
Unknown	2	1.6		
Total	122	100		

Table 3. Absolute and relative frequency of samples based on employment

Employment	Number	%	Valid %	Cum %
Unemployed	102	83.6	85.7	85.7
Employed	12	9.8	10.1	95.8
Self-employed	5	4.1	4.2	100
Total	119	97.5	100	
Unknown	3	2.5		
Total	122	100		

Table 4. Absolute and relative frequency of samples based on accommodation

Accommodation	Number	%	Valid %	Cum %
City	112	91.8	91.8	91.8
Village	10	8.2	8.2	100
Total	122	100	100	91.8

Table 5. Absolute and relative frequency of samples based on monthly income

Monthly income (*1000)	Number	%	Valid %	Cum %
<500 T	76	62.3	63.9	63.9
500-1,000 T	34	27.9	28.6	92.4
>1,000 T	9	7.4	7.6	100
Total	119	97.5	100	
Unknown	3	2.5		
Total	122	100		

Table 6. Absolute and relative frequency of samples based on marital status

Marital status	Number	%	Valid %	Cum %
Single	15	12.3	12.3	12.3
Married	83	68	68	80.3
Widow	22	18	18	98.4
Divorced	2	1.6	1.6	100
Total	122	100	100	

Analysis showed that spiritual intelligence was very low (4.9%), low (34.6%), moderate (39.3%), high (9.8%) and very high (21.3%) for female participants and very low (1.6%), low (11.5%), moderate (24.6%), high (27.9%) and very high (34.6%) for male participants or very low (3.3%), low (18%), moderate (32%), high (18.9%) and very high (27.9%) in total. The mean of scores was 119.4 for females and 125.72 for males; thus, 32% of patients had moderate spiritual intelligence, which indicates a significant difference (p-value = 0.011, 0.05 error).

Table 7. Absolute and relative frequency of samples based on spiritual intelligence scores

Gender		Spiritual intelligence					Total
		Very high	High	Moderate	Low	Very low	
Woman	Number	13	6	24	15	3	61
	%	21.3	9.8	39.3	24.6	4.9	100
Man	Number	21	17	15	7	1	61
	%	34.4	27.9	24.6	11.5	1.6	100
Total		34	23	39	22	4	
%		27.9	18.9	32	18	3.3	

p-value = 0.011

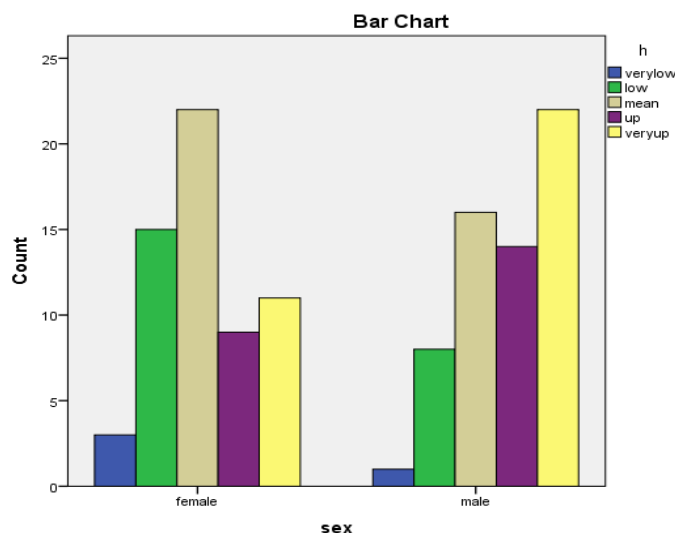


Figure 1. Level of spiritual intelligence versus gender

Analysis showed that 36.1% of patients (34.4% male and 37.7% female) had a good self-care; 36.1% of female participants had a moderate self-care. Self-care was very good and excellent for 29.5% and 16.4% of male participants and 19.7% and 4.9% of female participants, respectively; this suggests that men have better self-care behaviors. The highest level of self-care was related to skin and fistula care (24.99), followed by diet (18.29) and finally sleeping and rest (6.20).

Table 8. Absolute and relative frequency of samples based on scores of self-care activities

Gender		Self-care activities					Total
		Excellent	Very good	Good	Moderate	Poor	
Woman	Number	3	12	23	22	1	61
	%	4.9	19.7	37.7	36.1	1.6	100
Man	Number	10	18	21	12	0	61
	%	16.4	29.5	34.4	19.7	0	100
Total		13	30	44	34	1	122
%		10.7	24.6	36.1	27.9	0.8	100

p-value = 0.061.

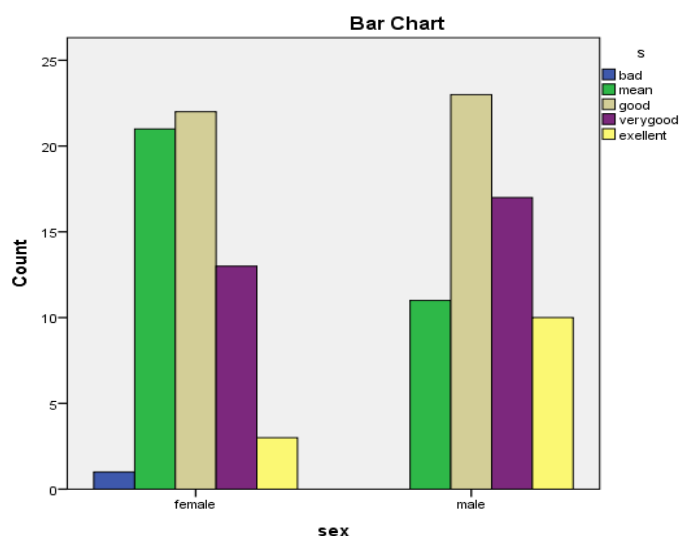


Figure 2. level of self-care versus gender

Table 9. Absolute and relative frequency of samples based on scores of diet and therapeutic regimen

Gender		skin and fistula care and therapeutic regimen			Total
		High	Moderate	Low	
Woman	Number	23	33	5	61
	%	37.7	54.1	8.2	100
Man	Number	35	25	1	61
	%	57.4	41	1.6	100
Total		58	58	6	122
%		47.5	47.5	4.9	100

p-value = 0.044.

Table 10. Absolute and relative frequency of samples based on scores of skin and fistula care

Gender		Diet and therapeutic regimen			Total
		High	Moderate	Low	
Woman	Number	26	21	14	61
	%	42.6	34.4	23	100
Man	Number	38	19	4	61
	%	62.3	31.1	6.6	100
Total		64	40	18	122
%		52.5	32.8	14.8	100

p-value = 0.019.

Table 11. Absolute and relative frequency of samples based on scores of activity and fatigue

Gender		Activity and fatigue			Total
		High	Moderate	Low	
Woman	Number	18	39	4	61
	%	29.5	63.9	6.6	100
Man	Number	25	31	5	61
	%	41	50.8	8.2	100
Total		43	70	9	122
%		35.2	57.4	7.4	100

p-value = 0.339.

Table 12. Absolute and relative frequency of samples based on scores of sleep and rest

Gender		Sleep and rest			Total
		High	Moderate	Low	
Woman	Number	12	16	33	61
	%	19.7	26.2	54.1	100
Man	Number	14	16	31	61
	%	23	26.2	50.8	100
Total		26	32	64	122
%		52.5	26.2	21.3	100

p-value = 0.897.

The results also show that 40.4% of participants with high and very high spiritual intelligence had a high level of self-care; this suggests a significant difference (p-value = 0.415, 0.05 error).

Table 13. Absolute and relative frequency of samples based on scores of spiritual intelligence and self-care activities

			Self-care activities			Total
			Poor and moderate	Good	Very good and excellent	
Spiritual intelligence	Low	Number	10	11	5	26
		%	38.5	42.3	19.2	100
	Moderate	Number	10	14	15	39
		%	25.6	35.9	38.5	10
	High	Number	15	19	23	57
		%	26.3	33.3	40.4	100
Total		Number	35	44	43	122
		%	28.7	36.1	35.2	100

p-value=0.415.

Using the parametric formula of the Pearson correlation coefficient (R),  $R = 0.211$  at 95% confidence level and 5% error. As this value is larger than the values expressed in the table, it can be concluded that there is a significant relationship between spiritual intelligence and self-care. Thus, the hypothesis is supported at 95% confidence level and the null hypothesis is rejected.

#### 4. Discussion

In this study, spiritual intelligence was considered as a predictor variable for the level of self-care in hemodialysis patients. As the results show, there is a significant relationship between spiritual intelligence and the level of self-care. Few studies have been conducted on the effect of spiritual intelligence on self-care behaviors of hemodialysis patients. However, the current findings are consistent with some studies. Esmailipoor Zanjani et al examined the relationship between depression and spiritual intelligence of diabetic patients in Ghazvin. They did not found any significant difference in spiritual intelligence between females and males. Their results also showed that the majority of non-depressed participants had moderate spiritual intelligence (Esmailipoor Zanjani et al., 2012). Haghshenas et al examined the relationship between spiritual intelligence and attachment style of students and found that the majority of participants had moderate to low spiritual intelligence (Haghshenas et al., 2011); this is consistent with the current study in which spiritual intelligence was moderate. This consistency can be explained by the fact that the Iranian culture emphasizes spirituality and spiritual teachings; thus, the spiritual aspect of patients is partially developed and the majority of patients have moderate spiritual intelligence. However, the current finding is inconsistent with Ridge Ferrer who evaluated spiritual adjustment of hemodialysis patients in Spain. In this study, hemodialysis patients had lower spiritual intelligence (Abilio Reig-Ferrer et al., 2012). This can be explained by different religious culture.

The results indicate the mean of self-care activities by patients (56.32). As the results show, the highest self-care (24.99) was exercised for skin and fistula care and the lowest level of self-care (6.20) was related to sleeping and rest. Atashpaikar et al evaluated self-care capabilities of hemodialysis patients; they found that the patients were not fully capable of self-care activities and only 3.7% had good capability (Atashpaikar et al., 2010). This is inconsistent with the current study in which the majority of patients had moderate to very good level of self-care. In the study of Atashpaikar et al, the highest and lowest level of self-care were related to vascular measures and diet, respectively; while in the current study, the lowest level of self-care was related to sleep and rest. The current study is consistent with Atashpaikar regarding skin and fistula care and inconsistent regarding the poorest self-care activity. Ashvandi et al examined the effect of small-group trainings on serum electrolytes in hemodialysis patients and showed that hemodialysis patients were not fully aware of the diet and most people did not follow the diet. Soleimani claimed that patients do not receive full training for self-care (Ashvandi et al., 2011), which is not consistent with the current study. Nasiri and Poodineh moghadam evaluated the effect of teach-back method on defective self-care activities of hemodialysis patients and showed that the highest level of defective self-care was related to nutrition (insufficient awareness of food containing phosphorus and potassium), excretion (constipation prevention), activity and rest, skin care and medication, mental health (lack of information on relaxation and problem solving techniques to reduce nervousness) (Nasiri, 2012). In the current study, the mean score of self-care was 18.29 for diet and therapeutic regimen, 24.99 for skin and fistula care, 6.84 for activity and fatigue, and 6.20 for sleeping and rest; the last two are consistent with Nasiri and Poodineh moghadam. As nursing personnel specially focus on skin care and fistula, patients exercise good self-care in this regard. However, insufficient knowledge on sleep and rest as well as complications of skin rash or anemia leads to defective self-care in sleeping and rest. This can be eliminated by effective trainings and treatment of complications.

A significant relationship was found between spiritual intelligence and self-care using Pearson correlation coefficient and 5% error. Numerous studies have been conducted on the effect of spiritual intelligence on self-care behaviors of hemodialysis patients. For example, Saadati and Lashani examined the relationship between spiritual intelligence and stress coping strategies among students of life sciences and rehabilitation. They found that spiritual intelligence (mean = 65.79) significantly predicts the stress coping strategies ( $P < 0.001$ ); people with higher spiritual intelligence use stress coping strategies more effectively in responding to stressful conditions (Saadati, 2009). Moalemi, Raghbi and Salari (2010) compared the spiritual intelligence and mental health of addicts and normal subjects and found that people with higher spiritual intelligence have higher public health (Moalemi et al., 2010). Karimi et al (2012) studied the spiritual intelligence and clinical competence of nurses. They showed that spiritual intelligence is effective on clinical competence and people with higher spiritual intelligence are more capable of problem solving and adjustment (Karimi and Vagheie, 2012). This is consistent with Farhangi who studied intelligence as a predictor of transformational leadership; in general, people with higher spiritual intelligence have higher adjustment and flexibility (Farhangi et al., 2009). Hussien Dokht et al examined the relationship between spiritual intelligence, spiritual well-being and quality of life and marital satisfaction. They found a positive significant relationship between spiritual intelligence and spiritual well-being and quality of life and marital satisfaction. In fact, spiritual intelligence involves a series of capabilities and abilities which use spiritual resources to increase well-being and adjustment (Hussien Dokht et



al., 2014). Hamid et al evaluated the relationship between spiritual intelligence and resilience and found a significant relationship between these two variables ( $P < 0.01$ ). It can be concluded that people with higher spiritual intelligence are more resilient to stressful chronic conditions such as chronic renal diseases and exercise better self-care activities (Hamid et al., 2013).

Narimani et al examined the effect of spiritual intelligence trainings on mental adjustment of patients with AIDS and found that the trainings improved mental health and adjustment of these patients (Narimani et al., 2014). Hence, this is consistent with the current study. McClain evaluated the effect of spiritual intelligence on hopelessness in end-stage cancer patients and found a special relationship between spiritual health and hopelessness, while this relationship was not found among patients with higher spiritual intelligence. That is, patients with lower spiritual intelligence are more hopeless and tend to die faster (McClain et al., 2003). In this study, the patients with higher spiritual intelligence exercised more self-care activities, which is consistent with the current study. This can be explained by the fact that religion is a key element of life for patients and patients use religion to cope with stresses and solve their problems.

Irene Kerch et al evaluated the effect of spirituality and religious beliefs on medication adherence in patients with hypertension. Although those patients used spirituality and religion in their lifestyles, their medication adherence was poor (93.25) (Kretchy et al., 2013). In another study on 157 patients with chronic pain in Midwest University Medical Center, the relationship between religion and spirituality and mental and physical health was examined. It was found that patients with lower mental health had less adjustment with religion and spirituality. This study assumed that spirituality significantly increased mental and physical health and lowered the pain, while the results showed that people who exercise religious activities such as praying had less physical health. This was explained by stress-responsiveness model of Ellison and Levin; stressor force people to exercise religious activities repeatedly. Thus, there is no direct or indirect relationship between spirituality and pain (Rippentrop et al., 2005). This is not consistent with the current study, which can be due to the religious culture and personal differences. According to researchers at Harvard University, spirituality is not only rooted in one's personal belief but also in his experience. Belief without experience will not be followed by many physical and mental advantages. People may have spiritual experiences, but do not recognize them. Spirituality can be granted by spiritual experiences (Sayyed Fatemi et al., 2006).

## 5. Conclusion

This study shows that people with higher spiritual intelligence can take care of themselves better. The results of this study reveal the effect of spiritual beliefs as a factor to deal with physical and psychological problems caused by diseases. In a society where people have strong beliefs, spirituality seems an easier and better multi-dimensional human care. Moreover, culture-based care, spirituality and a comprehensive view of the various aspects of the problems can help health care professionals to provide better services to patients.

### 5.1 Remarks

It is recommended to consider variables which were not significantly related (age, gender, education and economic status, etc.) for future works. The results can be generalized to other patients and other groups. It is also recommended to include spirituality in theoretical and clinical training courses for medical students, particularly nursing students, who are more dealing with patients. They can learn how to provide better services for patients in the light of moral and human dignity. It is also recommended to consider plans and approaches to improve mental spiritual health focusing on the meaning and objective to promote adjustment and self-care behaviors of patients.

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## Competing Interests Statement

The authors declare that there is no conflict of interests regarding the publication of this paper.

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