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**OPTIMISM AS A MEDIATOR VARIABLE OF THE
RELATIONSHIP BETWEEN SOCIAL SUPPORT AND
HAPPINESS IN CHRONIC RENAL FAILURE**

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Abstract:

Chronic Renal Failure(CRF) is the end-stage of chronic kidney disease. Optimism may play a very important role in helping patients adapt better to their life. This study aims to explore the role of optimism as a moderator variable of the relationship between social support and happiness in a sample of patients with(CRF) in Upper Egypt. Methods: This cross-sectional study, 188 participants (94 patients with CRF, and 94 healthy persons)completed questionnaires assessing optimism , social support, and happiness. Results: The demographic characteristics showed that the sample of patients with CRF(n=94) male(55.3%) females(44.7%) and the ages of the patients ranged between 20 and 76 year. There were positive correlation levels between optimism and happiness($r = .736$, $p < 0.01$). Social support correlated with happiness($r = -.393$, $p < 0.01$) and optimism scores($r = -.415$, $p < 0.01$). Optimism was found to be a partial mediator variable, the total effect of social support on happiness (Sobel=3.974, $p = 0.003$). In addition to our results revealed differences that were statistically significant between patients with CRF and healthy persons in optimism(p value=0.001) and happiness(p value=0.05) towards healthy persons but without differences in social support between them. Optimism can act as a mediator variable in the relationship between social support and happiness in patients of CRF. Improving optimism may help in coping with a patient's burden and better happiness. Also, the study confirmed that healthy persons had higher optimism and happiness more than patients with CRF but without differences between them as regards social support.

Key words: Chronic Renal Failure, moderator variable, Optimism, Social support, Happiness.

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1. Introduction

Renal failure (RF) refers to damage to both kidneys and occurs when less than 10% of their renal function only works or the kidneys fail to excrete harmful waste products, this is named end-stage kidney disease (ESKD). Uremia is a group of symptoms of renal failure that include elevated blood urea and creatinine levels associated with nausea, vomiting, anorexia, fatigue, pruritus, and neurologic changes (Doig, 2006). In some cases (RF) must be certain by seeking for factors that could affect the serum creatinine concentration, like interference by other substances or drugs furthermore, the use of drugs affecting the tubular secretion of creatinine if any uncertainty remains, the second estimation of glomerular filtration rate by the Cockcroft–Gault formula (Gounden & Jialal, 2019).

Patterns of diagnostic coding of chronic kidney disease typically follow one of the following 1) diabetic kidney disease 2) hypertensive kidney disease 3) glomerular diseases (primary or secondary). 4) vascular disorders 5) tubular and interstitial diseases 6) cystic diseases 7) acute kidney injury; and 8) related problems of kidney transplantation (Selzer, 1996). Nevertheless, The National Kidney Foundation has defined chronic kidney disease as that the presence of glomerular filtration rate $<60 \text{ ml/min}/(1.73 \text{ m}^2)$ for three months with (or without) other manifestations of kidney damage (Vaidya & Aeddula, 2019). In the literature, Chronic kidney disease (CKD) is a condition of long term damage to both kidneys. The prevalence has been reported at 11% in the USA and Europe after excluding patients on dialysis and with a functioning transplant, Chronic kidney disease is frequently in older people and who is suffering from diabetes mellitus (Intercollegiate, 2008).

Dialysis is a method of keeping the life of a person. It is an external machine acting at the function of an internal organ. When the kidneys can't filter waste products from the body, concentrate urine, or preserve electrolytes. There are two kinds of dialysis techniques: Peritoneal dialysis that occurred by circulating a solution through the fluids of the abdomen. Hemodialysis that occurred by circulating blood through a special machine.

In 2010, there were 2.62 million people received dialysis worldwide, and prediction to double by 2030. Globally, the cost of the treatment of the moderate stages of (CKD) seems to be so much than the total cost treatment end-stage kidney (Luyckx, Tonelli, & Stanifer, 2018). In 2014, The prevalence of the end-stage renal disease in Assiut governorate was 366 per million of the population. The cause of the end-stage renal disease was unknown in 25% of patients, while hypertension was in charge of in 21.4% of patients, obstructive uropathy in 11% of patients, chronic glomerulonephritis in 8% of patients, nephropathy in 3% of patients, chronic pyelonephritis in 8.9% of patients, diabetes mellitus in 14.9% of patients, toxemia of pregnancy in 2% of patients, and polycystic kidney disease in 0.7% of patients (El-Arbagy, Yassin, & Boshra, 2016).

There are a lot of psychosocial stresses that can affect RF patients and their families. Some of these stresses are changed body image, role loss, dependency, and changes in social and marital relations. The response of patients to stress affects adjustment to their treatment (Leung, 2003). Renal replacement therapy and kidney transplantation are increasing the burden on health systems, particularly in Egypt, where costs for dialysis and renal transplantation are still unaffordable for most patient's thus, optimism as a mediator variable between social support and happiness may be helpful in

the treatment of CRF, particularly the healthcare system still suffers from a lack of psychologists provided services to patients.

Numerous studies indicated that there is a relationship between optimism and physical health. Nevertheless, they showed positive relations at a health lifestyle, low physical diseases, best physical health, and fewer levels of pain among individuals with high optimism (Grove, 2014). Furthermore, it was noted that depression, suicide, and anxiety were common side effects observed in patients with renal failure. Pharmacological treatment of these problems needs an important role of the psychiatrist. And asserting the need for interdisciplinary teamwork in improving the quality of life of patients with renal failure and dialysis (De Sousa, 2008).

Research studies have shown that the level of optimism is related to psychological and social dimensions that include (feelings, daily and social activities, health, social support and quality of life) and there is the association between optimism and state of physical health (MORALES GARCIA et al., 2011). Optimism refers to generalized expectation that life creates positive events. Optimism influences health through coping methods, i.e. it is associated with effective and active coping in addition to decreasing physical symptoms. In renal patients, optimism is related to increased social support and decreased depression levels (Montilla et al., 2012). In addition to that social support through self-esteem can affect optimism, and Social support has a relation to high self-esteem, accordingly social support predicts optimism (Symister & Friend, 2003). According to (Karademas, 2006), optimism and social support had related to health, optimism partially mediates the association between self-efficacy and social support.

2. Method

2.1 Participants

This study is applied to 188 participants, 94 Patients with CRF, and 94 healthy persons (52 males, 42 females). Age of the participants ranged from 20 to 76 years. The participants were recruited from patients with their caregivers who were attending the renal dialysis units in hospitals of the Ministry of Health in Assiut Governorate Al-Mabrra, Al-Shamla and Al-Iman Hospitals, there were no statistically significant differences detected between patients with CRF and healthy participants as regard to gender, marital status, age, education, and work status, details of demographic characteristics can be seen in Table 1.

Table 1:

Demographic data of studied participants

Category		CRF N=94(%)	Healthy N=94(%)	P value
Gender	Male	52(55.3)	52 (55.3)	1
	Female	42(44.7)	42 (44.7)	
Marital status	Married	75(79.8)	76(80.9)	.980
	Never married	15(16)	14(14.9)	
	Widowed	4(4.2)	4(4.2)	
Age	20-30	15(16)	14(14.9)	.998
	31-40	19 (20.2)	21 (22.3)	
	41-50	31 (33)	30 (31.9)	
	51-60	23 (24.5)	22 (23.4)	
	61-70	4 (4.2)	5 (5.4)	

	71-80	2 (2.1)	2 (2.1)	
Education	Illiterate	19 (20.2)	20 (21.3)	.807
	Primary degree	6 (6.4)	3 (3.2)	
	Preparatory degree	6 (6.4)	8 (8.5)	
	Secondary degree	39(41.5)	36(38.3)	
	College degree	24(25.5)	27(28.7)	
Work status	Work	52(55.3)	63(67)	.100
	Not work	42(44.7)	31(33)	
Duration of illness	1-12 months	13(14)		
	1-5 years	59(63.4)		
	5-10 years	11(11.7)		
	10+ years	11(11.7)		
The number of dialysis	Two per week	34(36.2)		
	Three per week	60(63.8)		

2.2 Measures

Patient's demographic data including gender, marital status, age, educational level, Work status, duration of illness, and the number of dialysis per week, the following measuring scales for assessing participant's optimism, social support, and happiness were used.

Optimism Scale (OS):

The OS is the Arab list for optimism Prepared by Ahmed Abdel-Khalek which aimed to evaluate the individual's optimism rates, so the scale was applied to the studied participants, it is primarily used for evaluating optimism. It consists of 15 questions, each of which offers five reactions to choose from, ranging from 1 that corresponds to "No" to 5, meaning "very much." The higher score refers to high degree of optimism(Abdel-Khalek,1996). There were many validations that have revealed that OS had well to an excellent internal consistency, test-retest reliability with Cronbach's α of .93, and factor analysis validity that reflect covariance ration 49.10%, in normal male and female samples. In this study, Cronbach's α value for optimism was .91.

Social Support Scale(SSS):

The SSS was prepared by Sprinder Geroge(2001) and translated into Arabic by Afaf Danial. The scale measures support inside and outside the family, it consists of 42 items, each of which offers four reactions to choose from, ranging from 1 that corresponds to "disagree" to 4, meaning "very agree." This scale has two subscales to evaluate support by 21 items inside the family and 21items outside the family. Two subscales scores vary between 21 and 84, and the total scores vary from 42 to 168. The higher the score, the more perceived social support that the person is reporting(Danial,2008). There were many validation studies that have revealed that SSS had well to excellent internal consistency and test-retest reliability with Cronbach's α of .51- .93 in samples with different ages and social levels (Sprinder Geroge 2001; Afaf Danial., 2009). In this study, Cronbach's α values for the total score and support inside the family, and outside the family, were .76, .58, .68, respectively.

The Oxford Happiness Questionnaire (OHQ):

The OHQ is Oxford Happiness Inventory Developed by Argyle, Martin&Lu(1998), and translated into Arabic by Ahmed Abdel-Khalek,it is 29

items scale designed to assess rates of happiness to individual, each of which offer four reactions to choose from, ranging from 1 that corresponds to “No” to 5 meaning “very much.” The higher score refers to a high degree of Happiness (Abdel-Khalek, 2003). There were many validation studies that have revealed that OHQ had well to excellent internal consistency and test-retest reliability with Cronbach’s α from .91 to .93 in male and female samples (Abdel-Khalek, 2003). The OHQ demonstrated high scale reliability with value 0.91, and the inter-item correlations within the OHQ and Oxford Happiness Inventory, $r = .65$, and $r = .58$ (Hills & Argyle, 2002). In this study, Cronbach’s α values for the total score were .59.

3. Data Analysis

The data were analyzed using SPSS v.25. Descriptive analysis was used to present demographic characteristics of CRF Patients. Analytic techniques included correlation analyses as well as a series of regressions with the purpose of conducting moderator analysis. Bivariate correlations were conducted to evaluate relationships between optimism, social support outside family, social support inside family, total social support and happiness to patient.

The moderation analysis was conducted according to the guidelines provided by Hayes (2013). The first step in the analysis was checking whether both social support and optimism are predictors of happiness. In the next step, the actual moderator variable was computed by multiplying social support and optimism. Finally, once the moderator variable was computed, it was included in the regression analysis as a predictor.

4. Results

4.1 Descriptive statistics for measured variables

The descriptive statistics of the scores on the measured tools showed that the SSS total score was 134, the SSS male perceived support is more than the SSS female perceived support. The perceived social support outside the family and social support inside the family in male patients were observed to have more “Optimism” with their life rather than female patients. The mean score of optimism in males (52.71 ± 12.45) was greater than the mean score of optimism in females (47.43 ± 11.81). The total mean score of the OHQ in males (91.31 ± 17.97) was greater than the total mean score of the OHQ in females (83.31 ± 20.29). The details of the descriptive statistics of measured variables are elaborated in Table 2.

Table 2:

Descriptive statistics of the measured variables

Measures	Male (n =52)	Female (n =42)	Total (n =94)
OS	52.71±12.45	47.43±11.81	50.35±12.39
SSOF	70.85±7.52	65.88±8.97	68.62±8.52
SSIF	67.54±10.24	63.36±14.38	65.67±12.37
SST	138.36±15.13	129.24±20.31	134.29±18.12
OHQ	91.31±17.97	83.31±20.29	87.73±19.36

Note: OS=Optimism scale, SSOF=Social support outside family, SSIF = social Support inside family, SST= Social support total, OHQ= Oxford Happiness Questionnaire.

4.2 Correlation analysis

The regression analysis to report the correlations between optimism, social support, and happiness were conducted. The analysis showed that

individuals who reported higher levels of social support also reported higher levels of optimism, $r = .415$, $p < 0.01$. In addition to that, optimism was positively correlated with social support inside the family and outside the family ($r = .246$ and $.415$, respectively, $p < 0.05$, 0.01). Happiness was correlated with social support ($r = -.393$, $p < 0.01$) also, happiness was positively correlated with social support inside the family and outside the family ($r = .439$ and $.267$, respectively, $p < 0.01$) and optimism scores ($r = -.726$, $p < 0.01$), thus showing that social support is associated with both increased optimism and happiness. The two components of social support (inside the family, and outside the family) were correlated strongly with the total social support scores ($r = .898$, $.878$, respectively), suggesting the measure is structurally sound. Correlations between optimism, social support, and happiness are reported in Table 3.

Table 3:

The bivariate correlation between optimism, social support, and happiness

Scale	OS	SSOF	SSIF	SST	OHQ
OS	-	.503**	.246*	.415**	.726**
SSOF		-	.577**	.878**	.439**
SSIF			-	.898**	.267**
SST				-	.393**
OHQ					-

Note: OS=Optimism scale, SSOF=Social support outside family, SSIF = social Support inside family

,SST= Social support total, OHQ= Oxford Happiness Questionnaire.

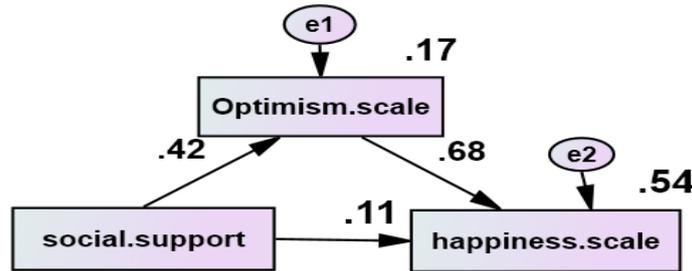
** Correlation is significant at the 0.01 level(two-tailed).

4.3 Regression analysis

A series of linear regressions as specified by (Baron & Kenny, 1986) were conducted to examine a potential mediating effect of optimism on the relationship between social support and happiness using a program AMOS v.22. As Baron and Kenny (1986) revealed in their study there are many steps in mediation analysis: 1) There is a relationship between the independent and the dependent variables. 2) The relationship between the mediator and the dependent variable is examined. 3) The mediating variable is involved in the model with the independent variable such that both predict the dependent variable. If the relationship between the independent and the dependent variables fails to reach statistical significance in this model, the mediating variable can be considered a full mediator. If the relationship between the independent and the dependent variable is still statistically significant but is lower than in the original analysis, a Sobel test can be conducted to see if the mediating variable enacts enough of a change in the relationship between the independent variable and the dependent variable such that it can be considered a partial mediator. The first step of the analysis indicated a statistically significant effect of Social support on happiness, $b = 0.481$, $t = 4.105$, $p < 0.001$. The second step of the mediation analysis showed that the regression of happiness scores on optimism was also statistically significant, $b = 1.134$, $t = 10.117$, $p < 0.001$. The third step of the analysis showed a statistically significant effect of both social support and optimism on happiness, between optimism and happiness $b = 1.062$, $t = 8.664$, $p < 0.001$. but non statistically significant between social support

and happiness $b=0.136$, $t=0.159$ Results of these analyses are displayed in Figure 1.

Figure 1:Mediation model of Social support, Optimism, and Happiness.



Note: = $p < 0.01$

In other words, higher optimism scores are generally predictive of both high happiness scores and social support. However, having good social support can increase levels of happiness in all cases

A Sobel test was then conducted to evaluate the extent to which optimism acts as a mediator between social support and happiness. The Sobel test is carried out to determine whether a mediator variable has an effect of the independent variable on the dependent variable. A significant test statistic presents evidence that an independent variable has an indirect influence on the dependent variable. This is conducted by testing the hypothesis that there is no statistical difference between the total effect(effect of the independent variable on the dependent variable) and the direct effect (effect of the same independent variable on the dependent variable)after taking into consideration the effect of mediator variable(Sobel, 1982). The regression analysis has established that optimism is a mediator in this model, Sobel tests ascertain how much of a mediator it is. also provides a calculation of the Sobel test. Results indicated that optimism is a partial mediator of Social support on happiness(Sobel=3.974, $p=0.003$)(Preacher & Leonardelli, 2001). Through that optimism had partial mediation in influencing happiness through Social support. so, the results of this study are logical and in line with the previous literature results.

4.4 T Test

As regards optimism, happiness there were differences which were statistically significant between patients with CRF and normal participants which were much higher in normal participants than patients with CRF, but there were no statistically significant differences detected at Social support outside the family, Social support inside the family and Social support among them were reported in(Table 4).

Table 4:

The differences between CRF and Normal in optimism, social support, and happiness.

Scale	CRF N(94)	Normal N(94)	P value
OS	50.35 ±12.39	55.34±9.08	0.001
SSOF	68.62 ±8.52	68.39±6.36	0.839
SSIF	64.44 ±9.29	63.52±8.94	0.492
SST	133.05 ±15.82	131.91±12.65	0.578

OHQ 87.73±19.36 95.71±19.88 0.05

5. Discussion

The present study explored the role of OS as a mediator variable on the relationship between SSOF and OHQ of patients with CRF in Egypt. The literature has cited various models showing the phenomenon of the effect of mediator variables. Such a model presented by (Kesebir & Diener, 2009) explained that happiness is differences in responding to individuals at events have an important effect on levels of happiness. and that such constant temperamental tendencies creating from genetic inheritance account for about 50% of differences in happiness, Nevertheless, optimism has been found to be powerful predictors of happiness. Psychologists think that increased happiness is possible and estimating the positive aspects of lives. Research has revealed that happiness is reinforced by optimism Furthermore, gratitude, kindness, and optimism can improve levels of happiness (Wharton, Keonig, & Kahneman, 2010). It has been noted that introducing social support to patients with CRF from the family and support of the friendly environment was associated with a decrease in depressive symptoms, positive perception of renal failure, and their satisfaction with life. so, social support can improve the mood of patients and decrease anxiety symptoms, so may help them to continue treatment (Msc & Babatsikou, 2014).

A study of (Gurklis, 1992) revealed that positive social support provided from relatives, friends, and the dialysis center staff led to relieve trouble of physiological stressors which patients suffered so they exhibited expressions of happiness about this social support, so social support should be continuous, foster a feeling of optimism, and assist patients to take an active role in their health care.

6. Conclusion

The present study concluded that optimism was considered a mediator variable of the relationship between social support and happiness in patients with CRF and there were differences between CRF patients and healthy persons at optimism, happiness but no differences between them at social support. So, the findings of our study suggested that optimism was playing an important role to increase happiness rates in patients with CRF. These results call for further research to explore other factors that contribute to happiness in patients.

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