

# Influence of Illness Perception on Depression & Quality of Life among Haemodialysis Patients

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**Abstract-** Chronic dialysis imposes a considerable burden on patients and families. Psychosocial issues are an important concern in the overall health of haemodialysis patients. Over recent years, there has been increasing attention given to the individual characteristics of patients with an emphasis placed on understanding the effects of the patients' social situation, perceptions and responses to the illness, their physicians and healthcare providers, their spouses and families, and their socio-economic status have on outcomes. This study sought to assess the influence of illness perception on depression and quality of life in haemodialysis patients. The sample included 31 males and 21 females with the age range of 20 -60 years and illness duration of 1 year to 5 years. Patients were evaluated with comprehensive psychological testing. Result shows that there was significant relationship found between depression and quality of life in relation to illness perception. Understanding of illness was significantly different in male and female haemodialysis patients.

**Index Terms-** Illness perception, Depression, Quality of Life, Chronic kidney disease, Haemodialysis

## I. INTRODUCTION

Chronic kidney disease is a world wide public health problem affecting more than 50 million population. Most individuals with chronic kidney disease or hypertension are not diagnosed until long after the illness has developed. More over when they are diagnosed they too often are treated sub optimally or not at all. In most part of the world, end stage renal failure patients do not have access to maintenance haemodialysis treatment and simply die. Kidney disease is a significant interactive disease in patients with diabetic mellitus, hypertension and cardiovascular disease with major morbidity and mortality consequences and high cost to health care system.

Physical and emotional symptoms are the principal manifestations of chronic illness and play a central role in patients' experience with life-limiting disease. It seems that a similar relationship exists in the chronic haemodialysis population (Weisbord et al, 2005). It was reported that the incidence of some psychological disorders such as depression and anxiety are increased in patients who were being treated with haemodialysis due to end-stage renal failure, which led to 1.5-3 times more hospitalizations than end stage renal failure patients without any psychological disorder (Kimmel et al. 1998).

## A. Prevalence

The incidence of chronic disease in India was 53% in 2005 (Reddy et al, 2005). One billion populations in India are in need of specialized and expensive tertiary care. The prevalence of chronic renal failure is 0.16 per cent in the community in 2003. Agarwal and co-workers (2003) arrived at an estimate of 0.78 per cent of chronic kidney disease in a community-based sample in New Delhi.

## B. End-Stage Renal Disease (ESRD)

Renal failure refers to temporary or permanent damage to the kidneys that result in loss of normal kidney function. Kidney damage for less than or equal to 3 months as defined by structural and functional abnormalities of kidney with and without decreased glomerular filtration rate (GFR), manifest by either pathological abnormalities, markers of kidney damage, including abnormalities in composition of blood or urine or abnormalities in imaging test. End-stage renal disease is when the kidneys permanently fail to work.

## C. Risk factors for development of chronic kidney disease

- Underlying disease: Hypertension, Diabetes Mellitus, Dyslipidemia etc.
- Lifestyle factors: Tobacco and Inactivity
- Family history
- Aging
- Prenatal factors: Maternal Diabetes mellitus, Low birth weight, delay in gestational age status.

## Causes

Although chronic kidney disease sometimes results from primary diseases of the kidneys themselves, the major causes are diabetes and high blood pressure. Glomerulonephritis (inflammation and damage of the filtration system of the kidneys and can cause kidney failure), Polycystic kidney disease (hereditary cause of chronic kidney disease wherein both kidneys have multiple cysts), Analgesic nephropathy (use of analgesics regularly over long durations or certain other medications), Ischemic nephropathy (Clogging and hardening of the arteries (atherosclerosis), Obstruction of the flow of urine by stones, an enlarged prostate, strictures (narrowings), or cancers and other causes include HIV infection, sickle cell disease, heroin abuse, amyloidosis, kidney stones, chronic kidney infections, and certain cancers.

## Symptoms

The kidneys are remarkable in their ability to compensate for problems in their function. The chronic kidney disease may progress without symptoms for a long time until only very minimal kidney function is left. Notably, most patients have no

decrease in urine output even with very advanced chronic kidney disease. The symptoms are: a) Fatigue and weakness (due to anemia or accumulation of waste products in the body), loss of appetite, nausea, vomiting, decreased sexual interest and dysfunction) need to urinate frequently, especially at night, swelling of the legs and puffiness around the eyes (fluid retention), c) itching, easy bruising, and pale skin (from anemia), headaches, numbness in the feet or hands, disturbed sleep, altered mental status and restless legs syndrome and d) high blood pressure, chest pain due to pericarditis (inflammation around the heart), shortness of breath from fluid in lungs, bleeding (poor blood clotting), bone pain and fractures.

#### *Treatment*

End stage renal disease is a chronic disease with treatment options of either life-long hemodialysis or renal transplant (Tsay and Healstead 2002).

Hemodialysis and peritoneal dialysis have been done since the mid 1940's. Dialysis, as a regular treatment, was begun in 1960 and is now a standard treatment all around the world. Peritoneal dialysis began in 1976.

**Hemodialysis** involves circulation of blood through a filter on a dialysis machine. Blood is cleansed of waste products and excess water. The acid levels and the concentration of various minerals such as sodium and potassium in the blood are normalized. The blood is then returned to the body. It typically takes three to five hours and is needed twice or thrice in a week based on the severity of the problem. It may be performed as traditional three times a week treatments, long nocturnal (overnight) hemodialysis, or short daily hemodialysis. Daily hemodialysis and long nocturnal hemodialysis offer advantages in quality of life and better control of high blood pressure, anemia, and bone disease.

**Peritoneal dialysis** utilizes the lining membrane (peritoneum) of the abdomen as a filter to clean blood and remove excess fluid. A catheter is implanted into the abdomen by a minor surgical procedure. Peritoneal dialysis may be performed manually or by using a machine to perform the dialysis at night. Peritoneal dialysis offers much more freedom compared to hemodialysis since patients do not need to come to a dialysis center for their treatment. They can carry out many of the usual activities while undergoing this treatment.

**Kidney transplantation** offers the best outcomes and the best quality of life. Transplanted kidneys may come from living related donors, living unrelated donors, or people who have died of other causes (cadaveric donors). In people with type I diabetes, a combined kidney-pancreas transplant is often a better option. Transplants from a living related donor generally have the best results. Transplant surgery is a major procedure and generally requires four to seven days in the hospital. All transplant recipients require lifelong immunosuppressant medications to prevent their bodies from rejecting the new kidney. Immunosuppressant medications require careful monitoring of blood levels and increase the risk of infection as well as some types of cancer.

#### **Psychological consequences on Chronic Kidney Disease**

"Psychosocial parameters" include the vast number of psychological variables and aspects of the social environment that affect the patient's perception of quality of life. The biopsychosocial model posits many intersecting levels of variables that might determine overall health status. Patients on dialysis sustain multiple losses in all areas of their lives (Kimmel, 2002).

#### *Depression*

Depression is the most common psychological problem in patients undergoing dialysis (Finkelstien 2000). It is believed that having a chronic disease coupled with numerous restrictions, patients face with, during the course of the disease can cause physical as well as psychological problems. Depression standing at the forefront, mental disorders (Sagduyu and Erten 1998) and depressive mood are frequently observed (Elal and Krespi 1999; Kimmel and Peterson 2005). Frequency of major depression among hemodialysis varies between 5-8.1% (Craven et al 1987; Hinrichsen et al. 1989; Smith et al. 1985), whereas minor depression is observed in 17.7% of the cases (Hinrichsen et al. 1989).

#### *Quality of life*

Haemodialysis patients have diminished quality of life compared to healthy patients. The quality of life was equally diminished in haemodialysis and peritoneal dialysis patients (Wasserfallen et al, 2004). They usually have many losses, with all their activities being hindered (Ozatalay 1990), and the quality of their lives is poor (Mollaoglu and Arslan 2003). It is plausible that poor quality of life is, in part, due to concomitant depression (Vazquez et al 2005). Ozgur et al (2003) found that physical wear secondary to hemodialysis caused deteriorations in psychological and social parameters and the level of depression in the patient group was higher than the cut-off point determined for the population. However, many patients continue to feel hopeless, anxious, and worry about finances, loss of sexual function, family burden, and loss of independence.

#### *Illness perception*

Perception of illness is defined as patients' assessment of how the disease interferes with their lives in personal, social, familial, and occupational contexts. Patients with the same medical diagnoses can have divergent views regarding the intrusive effects of their illness, depending on age, gender, ethnic and cultural background, personality, and extent of social support or marital satisfaction. The existence of other medical problems, for example, congestive heart failure, angina, recent surgery, or infection, also can modify patients' perceptions of illness. Perception of illness is likely an important aspect of coping with or adjustment to chronic illness.

A study done by Bulman and Wortman (1977) suggests that self-blame can lead to guilt, self-recrimination, or depression. Self-blaming patients may be poorly adjusted to their illness because of the focus on things they could have or should have done to prevent it. Self-blame for chronic illness is wide-spread. Patients frequently perceive themselves as having brought on their illnesses through their own actions. In some cases, these perceptions are correct. Poor health habits such as smoking, improper diet, or lack of exercise can produce heart-disease, stroke or cancer. In some cases the patient's self-blame can be

inappropriate when the disease is caused by a genetically based defect (Bulman&Wortman, 1997).

### Need for the study

Although the area of "psychonephrology" has been a subject of research for many years, recent works in patients with and without renal disease has advanced our understanding of the interaction of psychological factors with medical outcomes.

The medical risk factors associated with increased psychological co morbidities in haemodialysis patients are well known, but the psychosocial factors that may affect the coping and illness perception have not been clearly defined. The purpose of this study was to evaluate the influence of illness perception on the levels of depression & quality of life in outpatient with end-stage renal disease undergoing haemodialysis.

## II. MATERIALS AND METHODS

The aim of the study is to evaluate the influence of illness perception on the level of depression and quality of life among patients undergoing haemodialysis. Hypotheses are formed to find out the relationship between depression and quality of life in relation to illness perception and to find out the gender difference in all these variables among haemodialysis patients.

The target samples for this study were adult patients diagnosed with End Stage Renal Disease (ESRD) by concerned physician who are on maintenance haemodialysis on regular outpatient basis. The samples size consists of 52 ESRD patients. (M=31 & F=21). The samples were collected from Department of Nephrology, Sri Ramachandra University, Chennai. Purposive sampling technique was used.

### Inclusion criteria

- 1) Those patients diagnosed with End Stage Renal Disease (ESRD) by the concerned physician
- 2) Patients age range between 25-60 years
- 3) Males and Females
- 3) Speaks and understands Tamil or English
- 4) Minimum educational qualification of 8<sup>th</sup> standard
- 5) Duration of illness ranging from more than one year to less than 5 years.
- 6) Patients under medication for diabetes, hypertension and other medication for dialysis maintenance.

### Exclusion criteria

- 1) Illiterate
- 2) Past or present history of psychiatric illness
- 3) Past or present history of head injury, clinically apparent neurological disorder.
- 4) Other physical disorders such as with AIDS, Hepatitis B or any other viral infectious disease.

### Tools Used:

1. WHO Quality of Life – BREF
2. The Brief Illness Perception Questionnaire (BIPQ)
3. Beck Depression Inventory (BDI-II)

### World Health Organization Quality Of Life – BREF

The WHO quality of life (QoL) questionnaire was developed by the World Health Organization (1998). The WHO Quality of

Life-BREF was used in this study to measure patients' subjective perception of quality of life. The WHOQoL-BREF consists of 26 questions and its items are distributed into four domains: physical health (7 items), psychological health (6 items), social relationship (3 items), and satisfaction with the environment (8 items). The other two items are used to test overall perceptions of quality of life and general health. To provide a broad and comprehensive assessment, one item from each of the 24 facets contained in the original WHOQoL-100 has been included.

Participants are asked to self-report their subjective perception of their quality of life in the two weeks prior to completing the questionnaire. A five-point Likert scale is used in the questionnaire. The four subscale scores are calculated by summing up the scores of the corresponding items in each subscale. The overall score is the summation of all subscale scores and two global item scores. The higher the score obtained, the higher the quality of life perceived by the respondent. It takes about 20 minutes to administer this questionnaire.

The internal consistency tested by Cronbach alpha coefficient for overall QOL was good at 0.85. Subscale alphas ranged from 0.45, 0.62, 0.64 and 0.67 for social relationship, physical health, satisfaction with the environment and psychological well-being respectively.

### The Brief Illness Perception Questionnaire (BIPQ)

The BIPQ was developed by Broadbent et al (2006). It provides a rapid assessment of illness perception which could be particularly helpful in ill population. It consists of 8 items plus one item regarding causal factors.

There are two scales; Cognitive illness representation (5 items) and Emotional illness representation (2 items). One item assesses illness comprehensibility. An additional item assesses the causal representation by an open-ended response item which asks the patient to list the three most important causal factors in their illness (item 9). All of the items except causal question are rated using 0-10 response scale.

The Brief IPQ allows a very simple interpretation of scores: increase in item scores represent linear increases in the dimension measured.

The Brief IPQ showed good test-retest reliability (above 0.60 for all the items) and concurrent validity with relevant measures (IPQ-R).

### Beck Depression Inventory (BDI-II)

The BDI was developed by Beck, A.T., et al (1988) to measure the severity of depression. It is a 21 item self-report instrument intended to assess the existence and severity of symptoms of depression. BDI has a high coefficient alpha, (.80), its construct validity has been established, and it is able to differentiate depressed from non-depressed patients. It is a 4 point scale for each item ranging from 0 to 3. Total score is the sum of all items. The internal consistency of total scores was 0.86 and correlation of BDI with clinical rating of depression was >0.60 for psychiatric patients and normal adults.

### Procedure for data collection

The sample for the study was collected from the Department of Nephrology, SRU, Chennai. The patients were explained individually about the purpose of the investigation and rapport

was established. Those who were willing to participate in the study were included. An written informed consent form was obtained from them. The socio-demographic details and clinical data sheet was filled. The tests were conducted in a distraction free setting. The assessment was completed in 2 sessions which lasted for 45 minutes each.

The order of presentation of the psychological tests for all subjects was the same. They were WHOQoL – BREF, Marital Quality Scale, Brief Illness Perception Questionnaire and Brief Cope scale, Beck Depression Inventory II (BBI II), Female Sexual Function Index (FSFI) or Brief Sexual Function Inventory (BSFI). Tests were administered at the bedside of the patients. The questionnaires took about a total of 1-1½ hours to complete (2 sessions of 45minutes each).

### III. RESULTS AND DISCUSSION

The collected data was analyzed using Statistical Package for Social Sciences – 15 (SPSS-15). Descriptive statistics such as mean, standard deviation and percentages are used. Parametric test (t test) was used to find out the significant difference between means and Pearson’s correlation to find out the relationships between variables under study.

**Table 1a: Percentage Distribution of Socio Demographic Characteristics**

Variables	Frequency	Percentage
<b>Gender</b>		
Male	31	60
Female	21	40
<b>Age</b>		
20 - 40 years	11	21
41 - 50 years	20	39
51 - 60 years	21	40
<b>Education</b>		
Secondary	25	48
Higher secondary	14	27
Graduates	13	25
<b>Occupation</b>		
Employed	6	12
Unemployed	23	44
Self employed	4	8
House wife	19	36
<b>Socio economic status</b>		
Low	15	29
Middle	36	69
High	1	2
<b>Religion</b>		
Hindu	41	79
Christian	8	15
Muslim	3	6

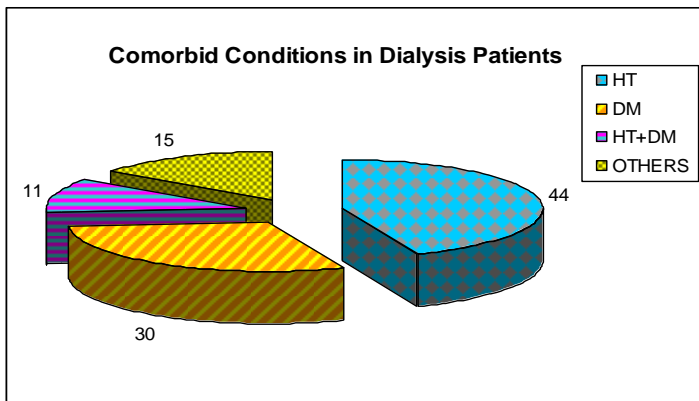
The sample of 52 consists of 60% males and 40% females. Among them 21% were in the age range of less than 40 years, 39% were in the age range of 41-50 years. In the age group of 51-60 years, 40% coming under this category. With regard to education 48% of them have completed secondary level, 27%

have completed higher secondary level and rest 25% are graduates. With regard to occupation 12% were employed, 44% were unemployed. Self-employed were 8% and rest 36% were house wives. In socio economic status 29% were from low socio economic status, 69% were from middle socio economic status and the rest 2% were from high socio economic status. With regard to religion, 79% were Hindus, 15% were Christians and 6% were Muslims.

**Table 1b: Percentage Distribution of clinical Characteristics of the patients**

Variables	Frequency	Percentage
<b>Duration of illness</b>		
< 2 years	30	58
2years – 5 years	22	42
<b>Duration of dialysis</b>		
<12 months	30	58
12-24 months	13	25
>24 months	9	17
<b>Frequency of dialysis / week</b>		
Once	6	12
Twice	35	67
Thrice	11	21
<b>Total number of dialysis</b>		
<50	18	35
51-150	25	48
>151	9	17
<b>Comorbidity</b>		
Hypertension (HT)	31	44
Diabetic mellitus(DM)	15	30
Hypertension + Diabetic mellitus(HT+DM)	6	11
Others (cardiovascular disease, arthritis etc)	8	15
<b>Financial support</b>		
Self	38	73
Insurance	14	27
Adequate	18	35
Inadequate	34	65
<b>Family support</b>		
Adequate	34	65
Inadequate	18	35

The above table shows the clinical details of the subjects. With regard to the duration of illness 57.7% have the illness for the past two years and 42.3% have the illness duration of 2 years to 5 years. With regard to the duration of dialysis 57.7% were on dialysis for less than 12 months, 25% were on dialysis for 13-24 months and the rest 17.3% were for more then 25 months to 60 months. The frequency of dialysis per week is one for 11.6%, two for 67.3% and thrice for 21.2%. With regard to total number of dialysis 34.6% have finished less than 50 number of dialysis, 48% have finished 51-150 number of dialysis and the rest 17.3% have finished more than 151 number of dialysis.



**Figure1: Comorbid Conditions in Dialysis Patients**

With regard to comorbidity 44% have hypertension and 29% have diabetic mellitus, 11% have both hypertension and diabetic mellitus. The rest 15% have other comorbid conditions like cardiovascular disease, arthritis etc. The financial support was by self for 73% of individuals and 27% receive insurance for their financial needs. The financial support was perceived adequate by 35% of samples and inadequate by 65% of samples. With regard to family support 65% of individuals perceived as adequate and 35% of individuals perceived it as inadequate.

**Table 2: Correlation between the Depression, Marital Quality and Quality Of Life in Relation to Illness Perception**

Variables	Emo R	Udrsnd	IP	Depre	QoL
1. Cog.R	.033	.158	.707**	.007	-.143
2. Emo R	1.000	-.143	.470**	.560**	-.402**
3. Udrsnd	-	1.000	.427**	-.280*	.356**
4. IP	-	-	1.000	.170	-.020
5. Depre	-	-	-	1.000	-.649**
6. QoL	-	-	-	-	1.000

\*\*correlation is significant at the 0.01 level (2 tailed)

\*correlation is significant at the 0.05 level (2 tailed)

Table 2 shows, there is no correlation between total score of illness perception in relation to depression, marital quality and quality of life. In considering the subscales of illness perception, positive correlation is observed between Emotional representation (concern and emotional response to illness) and depression which was found significant at 0.01 level. This shows when there is increased concern about the illness and the patient responds emotionally to it, there is tendency to be more depressed. Negative correlation was observed between Emotional representation (concern and emotional response to illness) and Quality of life which was found significant at 0.01 level, indicates when concern and emotional response towards illness is increased Quality of life tend to be decreased. Fowler & Baas (2006) reported strong relationship between the emotional component of illness perception and quality of life provides support for pursuing further examination of the Common-Sense Model and holistic outcomes in persons with chronic kidney disease undergoing haemodialysis.

Similarly the domain understanding or comprehension of illness was negatively correlated with depression which was found significant at 0.05 level. This shows that when understanding about the illness is better there is tendency to be less depressed since the understanding of the illness helps them adjust to the demands of the illness. A positive correlation was observed between understanding or comprehension of illness and quality of life which was found significant at 0.01 level. Hence better understanding or comprehension of the illness increases the adjustment to the illness and improves the quality of life. Similar findings are seen by Sack and Kimmel (1990), Kimmel (2000), Covic et al. (2002) and Timmer et al (2007).

Depression is found to be significantly correlated to Quality of life at 0.01 level, suggesting that alleviation of depressive symptoms could improve the Quality of life of patients with end stage renal disease. Management of depression would imply improving coping strategies used, as coping is found to be negative correlation with depression. This has implications for the patient care interventions done for end stage renal disease; mainly identifying the presence of depressive symptoms if any and improves coping strategies to manage depressive symptoms. Similar findings reported by Finkelstein, Watnick, Finkelstein & Wuerth, Kimmel (2002), found depression is the most common psychiatric abnormality seen in patients on dialysis and has been demonstrated to be the strongest predictor of quality of life.

**Table 3: Comparison of Scores on Depression of Male and Female patients**

Variable	Gender	N	Mean	SD	t	P
Depression	Male	31	2.87	.991	.055	NS
	Female	21	2.86	.727		

NS=not significant

The above table shows no significant difference between depression and gender distribution. The t-value was found to be .055. There are discrepancies in the results of studies that investigated depression in dialysis patients. Despite some studies reporting that there no significant difference in the level of depression between males and females (Astan 2001; Akman et al. 2004), there are also studies reporting that males suffered from depression significantly more than females.

**Table 4: Comparison of Scores on Illness Perception of Male and Female patients**

Variable	Gender	N	Mean	SD	t	P
Cognitive Representation	Male	31	31.39	2.290	1.398	NS
	Female	21	30.38	2.889		
Emotional Representation	Male	31	14.29	1.465	1.563	NS
	Female	21	13.48	2.250		
Understanding	Male	31	5.23	1.230	2.559	0.05*
	Female	21	4.24	1.546		
IP	Male	31	50.58	3.314	2.540	0.05*
	Female	21	48.10	3.673		

\*P<0.05

NS=not significant

The above table indicates the comparison of scores on illness perception of male and female patients. The t-value was found to be 1.398 for cognitive representation, 1.563 for emotional representation, shows no significant difference between male and female patients. The t value for comprehension of illness or understanding is 2.559 and t value for total score is 2.540. It is seen from the table that there is significant difference between males and females in total score of illness perception and also in the understanding of illness. Similar findings have been reported by Nolen-Hoeksema, Larson, & Grayson (1999). They found that females tend to perceive that they have less control over their lives than males in general. Another similar study by MacInnes (2005), found that women had a perceived lack of control over the illness and a belief that the illness was inevitable.

**Table 5: Comparison of Scores on Quality of Life of Male and Female patients**

Variable	Gender	N	Mean	SD	t	P
Quality of Life	Male	31	1.42	.50	-.731	NS
	Female	21	1.52	.51		

NS=not significant

Table 5 shows, the comparison of scores on quality of life of male and female patients. The t-value of the total score was found to be -.731. It is seen from the table that there no significant difference between males and females in relation to quality of life. The above finding is in agreement with the studies of Wasserfallen et al. (2004) that quality of life was substantially diminished in both.

#### IV. SUMMARY & CONCLUSION

The present study was carried out to find the influence of illness perception on depression and quality of life sexual functioning. The sample of present study consists of 52 patients on maintenance haemodialysis. This study shows there is significant relationship between depression and quality of life in relation to illness perception among haemodialysis patients. Though there is no significant difference in level of depression, and quality of life in male and female haemodialysis patients, statistically significant difference in illness perception is established.

#### V. LIMITATIONS OF THE STUDY

The small sample size (52) and the disproportionate number of men (31) and women (21) and the characteristics of the haemodialysis population included in this analysis: prevalent with no significant baseline comorbidities. Due to the use of self-report questionnaires, it is possible that some human factors, such as social desirability, may have influenced the results of the study. The demographic homogeneity of participants and majority of respondents in this study were elderly and we were unable to recruit enough patients and plan intervention for the findings of the study due to time constraints and business practices of dialysis centers.

#### VI. IMPLICATION OF THE STUDY

In dialysis treatment, patients face with multiple stresses. In addition to a total dependence to a machine and care takers, patients have to cope with a disease that restricts and renders him/her unfit. They usually have many losses, with all their activities being hindered and the quality of their lives is poor. The demands of patients on chronic dialysis have been suggested to be the most stressful of all other illnesses and treatment regimens. The most common emotional changes following the initiation of dialysis and need for life style changes interferes substantially with patient's social life.

#### VII. RECOMMENDATIONS FOR FURTHER STUDY

Future studies can be carried out using a bigger sample size and quality and quantity of the relations between patients and their relatives (caregivers) be addressed. A comparison group comprising subjects with other chronic diseases such as diabetes, hypertension or other disorders can be included. Developing a package of psychosocial interventions such as treatment for depression or interventions designed to increase social support may improve the quality of life and to increase coping skills and enrich self-control experience with inclusion of daily life arrangements can be recommended in patients with CKD.

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