The Social Sciences 6 (3): 221-226, 2011
ISSN: 1818-5800

Illness Perception and Depression in Patients with End-Stage Renal Disease on Chronic Haemodialysis

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Abstract: Chronic disease states are known to cause psychological dysfunctions. This aspect is not well studied in patients with end stage renal disease on chronic renal replacement therapy. The aims of this study were to determine, the level of depression and to evaluate whether illness perception is related to depression among End-stage Renal Disease (ESRD) patients on chronic Haemodialysis (HD). A total of 183 HD patients completed the Revised Illness Perception Questionnaire (IPQ-R) and Beck Depression Inventory II (BDI-II) to measure the level of depression. Results showed that 8% of the patients had major depression. Eight components of illness perception which included identity, cyclical, consequences, personal control, treatment control, illness coherence, emotional response and causes were significantly correlated with depression. Five predictors contributed to the variance in depression and emotional response was identified as one of the major predictors of depression in patients with ESRD. Hence, this study demonstrated important relationships between illness representations and depression in ESRD patients treated by HD.

Key words: Illness perception, depression, end-stage renal disease, haemodialysis, emotional response, Malaysia

INTRODUCTION

Chronic illness will cause depression in some people. This is because a chronic illness lasts for a very long time and usually cannot be completely cured. People with chronic illness must adjust to the demand of the illness itself as well as to the effects of the treatment for their condition. This illness often affects a person's mobility and independence and change the way a person lives, sees him/herself or relates to others.

Chronic Kidney Disease (CKD) is a new global pandemic illness and the number of End-stage Renal Disease (ESRD) patients are also reaching epidemic proportions. Like other chronic illnesses such as cardiovascular cancer, diabetes and stroke, they affect not only patients but their families, friends and workplace too. The patients with CKD face a lot of challenges especially from the aspects of health status, lifestyle as well as their roles in life (Al-Arabi, 2006). ESRD occurs when the kidneys are no longer able to clean and filter waste products and fluids from the blood circulation as they normally do. When this occurs, it would endanger the patient's life. According to the National Kidney Foundation, ESRD is defined as the point where kidney function is at 10% of normal.

ESRD has a significant impact upon the lives of sufferers. The experience of concurrent multiple losses which include kidney function, family role, work role, sexual function, time and mobility, impact significantly on the lives of patients (Kimmel, 2001) and it may lead to depression. Depression is the most common psychopathological condition among patients with ESRD (Chilcot *et al*., 2008). Most patients experienced depression and Shea observed that up to 60% of them were depressed. Similar findings were reported by Retan and Lewis (1996) and Beard (1969).

Severe depression was noted by Gonzalez *et al*. (1963) in half of their patients. Nonetheless, Smith *et al*. (1985) found that using the Beck Depression Inventory (BDI), 47% of his patients suffered from depression.

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Patients who received neither help nor support from others would have some suicidal tendency and would choose to withdraw from dialysis treatment. There have been a few systematic studies of suicide in this population. Studies by Kurella *et al.* (2005) showed that of 465, 563 patients, 44, 465 (9.6%) withdrew from dialysis before death and 264 (0.0005%) died from suicide in USA. In other reports, withdrawal from dialysis occurred in 9-20% of ESRD patients and is more likely to occur in older, white and female patients (Leggat *et al.*, 1997; Port *et al.*, 1989). Patients with major depression are highly prevalent in the general population and lead to grave consequences in terms of excessive mortality, disability and secondary morbidity (Berlim *et al.*, 2006). Depression and dialysis are common associations and cause serious impact on ESRD patients. Yet depressed dialysis patients remain (Lopes *et al.*, 2004).

The concept of illness perception is useful in understanding the impact of depression on ESRD patients. This perception has been found to be an important determinant of behavior and has been associated with a number of important outcomes such as treatment adherence and functional recovery (Leventhal *et al.*, 1997) and quality of life (Timmers *et al.*, 2008; Fowler and Baas, 2006). How patients perceived their illness have been most effectively researched within the model of Common-sense, previously referred to as the theory of Self-regulation developed by Leventhal *et al.* (1997) and Diefenbach and Leventhal (1996).

Such perceptions come into play as soon as patients experience their initial symptoms and typically changed with illness progression, emergent symptoms and treatment responses. Leventhal proposed that illness perception reflect the patient's cognitive response to symptoms and illness and that emotional responses are processed in parallel to these illness perceptions (Leventhal *et al.*, 1984).

Hence, it is important to evaluate how patients' perception of their illness impacts depression among ESRD patients. There is evidence which showing that response to an event is flavored by the individual's knowledge, capabilities, life experiences and socio-cultural background. Some patients may perceive, illness in wholly negative terms and define it as a freedom adversity. When illness is perceived with the sense of doom or viewed solely in terms of decline and loss, a negative experience is likely to follow. A negative perception of illness seeds unhappiness and depression. Perception improves when illness is viewed as something that occurs within context. To view illness as a normal part of life allows patients to live more fully in the present, a view that seeds positive return. Despite the well known relationship between patients' perception of their illness and depression, little research has been done which focuses on these issues among ESRD patients on chronic Haemodialysis therapy. This study aims to investigate the level of depression, the relationship between illness perception and depression and also to find out whether illness perception can predict depression among ESRD patients.

MATERIALS AND METHODS

Research design: This study employed a cross-sectional design. Participants were assessed using Beck depression inventory II (BDI-II) and Revised Illness Perception Questionnaire (IPQ-R). Patients who were receiving HD treatment for >3 months were excluded. After getting approval from HUKM Ethical committee and MAA-Medicare, patients also had to give informed consent to be participate in the research. Independent variables that were used in this study were the component of illness perceptions while the dependent variable was depression.

Sample: The participants in this study included 183 patients with ESRD who were undergoing Haemodialysis treatment at outpatient facilities affiliated with Hospital University Kebangsaan Malaysia and MAA-Medicare Kidney Charity Fund Dialysis centre.

Instruments

Beck Depression Inventory II (BDI-II): Depression was measured with the Beck Depression Inventory Second Edition (BDI-II). It has 21 items, self-reporting instrument intended to assess the existence and severity of symptoms of depression. There is a four point scale for each item ranging from 0-3. Total score of 0-13 is considered minimal range, 14-19 is mild, 20-28 is moderate and 29-63 is severe. BDI-II has high internal consistency with a coefficient alpha of the sample showing a good value of 0.93 comparable to the coefficient alpha for 277 psychiatric patients which also showed a high value of 0.92 (Beck *et al.*, 1996). In addition, this testing device had a high value for convergent validity. The BDI-II showed good convergent and discriminant validity when correlated against validated measures of depression (e.g., Revised hamilton psychiatric rating scale for depression). In Malaysia, the test equipment has been tested for validity and reliability by a group of researchers from Universiti Sains Malaysia for specific research on postpartum women in Kedah. The value of the internal consistency of this Malay version of BDI-II is high at 0.86. The correlation with BDI-II Edinburgh Postnatal Depression Scale (EPDS) and Hamilton Rating Scale for depression were 0.72 and 0.75, respectively (Mahmud *et al.*, 2004).

Revised Illness Perception Questionnaire (IPQ-R): Illness perception was assessed with the well-validated Revised Illness Perception Questionnaire developed by Moss-Morris and Chalder (2003). The IPQ-R assesses nine components of illness representation in three sections. The 1st section asks about the subscale identity. In which participants are asked yes/no questions about eighteen different symptoms and if they believe these symptoms are related to being on haemodialysis.

The 2nd section consists of 38 questions address seven subscales time-line, cyclical, consequences, personal control, treatment control, coherence and emotional response. The patients rated the items on a four point scale, ranging from strongly disagree to strongly agree. The time-line dimension was assessed by six items. A higher score on this dimension indicates the perception of a chronic course of the disease. Cyclical (nature) was assessed by four items whether patients would view their illness with (as) episodes that come and go over time. The consequences dimension was assessed by six items and a higher score indicates that the patient considered their disease as having serious consequences upon their life.

While personal control dimension comprised five items and a higher score indicates the perception of a better personal control of the disease. Treatment control was assessed by five items and a higher score indicates that the patient considers, HD is efficient in controlling ESRD. Coherence is a measure of how well the patient understands his illness. It was evaluated by five items, a higher score on this dimension indicates that the patient can be considered to understand ESRD. The last dimension assessed emotional response has six items while a higher score on this dimension indicates more intense emotional reaction to the disease. The final section focuses on the subscale causes. This scale consists of 18 possible causes for being on dialysis (e.g., lifestyle, hereditary, chance, behaviour and uncertain). This scale also uses the five point Likert-type scale.

Data analysis: Data were analysed with SPSS for windows (Version 18.00). A t-test and ANOVA were used to analysis the differences between depression by gender and races. Pearson's correlation was used to analysis the relationship between illness perception and depression. A stepwise multiple regression procedure was conducted to predict illness perception on depression.

RESULTS AND DISCUSSION

Descriptive analysis: Table 1 shows the demographic profile of the study that 54.1% were males and 44.9% were females. With regards the ethnic composition, 40.4% were Malay, 44.8% Chinese, 12% Indians and 2.7% others. Religious affiliation, 44.3% were Muslims, 31.1% were Buddhists, 12% were Hindus, 4.9% were Christians and the remaining 7.7% followed other religions. Most of the participants were married (80.3%), bachelor (8.2%), divorced (2.7%) and widow/widower (8.7%).

Table 1: Demographic profile of study

Variables	Frequency	Percentage
Gender		
Male	99	54.1
Female	84	44.9
Ethnic		
Malay	74	40.4
Chinese	82	44.8
Indian	22	12.0
Others	5	2.7
Religion		
Islam	81	44.3
Buddha	57	31.1
Hindu	22	12.0
Christian	9	4.9
Others	14	7.7
Marital status		
Bachelor	15	8.2
Married	147	80.3
Divorced	5	12.7
Widower	16	8.7
Total (n)	183	100%

Table 2: Reliability analysis of the instruments

Scale	α value
Illness perception (IPQ-R)	
Identity	0.80
Time line (acute-chronic)	0.82
Cyclical	0.72
Consequences	0.70
Personal control	0.70
Treatment control	0.51
Illness coherence	0.77
Emotional response	0.72
Causes	0.79
Depression (BDI-II)	0.89

Reliability of the instrument: The reliability of both instruments was assessed. Cronbach alpha reliability coefficients were calculated for each of the subscales of the IPQ-R and the BDI-II. The α levels are shown in Table 2.

All illness perception subscales demonstrated adequate reliability (α levels>0.70) with the exception of the treatment control subscale of the IPQ-R which had a reliability of only 0.51. The BDI-II demonstrated excellent internal consistency in this sample of people with ESRD with Cronbach α = 0.86.

Level of depression, depression by gender and races: As shown in Fig. 1, descriptive analysis showed that of 183 HD patients 8.2% had severe depression, 18% moderate, 15.35% mild and 58.5% were normal. The results of the study showed that depression was a common

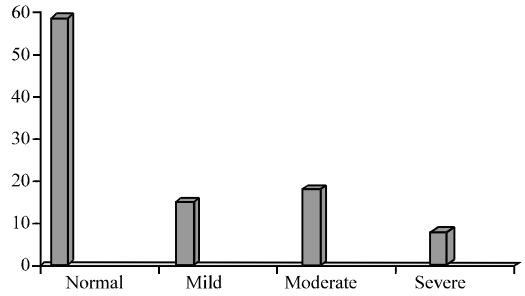

Fig. 1: Level of depression

psychological problem among Malaysian ESRD patients. About 8% of patients suffered from major depression and 26.2% from moderate to severe depression. These results were consistent with those of studies by Hinrichsen *et al.* (1989) and Craven *et al.* (1988). Although, only 8% of the patients suffered from major depression without any diagnosis and proper treatment, these will certainly result in their early demise. According to Kim *et al.* (2002), hopelessness and distress are prominent features of depression among dialysis patients. The routine of dialysis treatment and varying levels of health may impact upon feelings of hopelessness.

The results in Table 3 showed that there were no significant differences of depression between male and female HD patients ($t = 0.64$, $p>0.05$). This finding showed that patients may use the same approach to reduce or manage their problems especially in terms of controlling their emotion, mobility and treatment schedule.

One way ANOVA was carried out to compare the depression between races. There were significant differences of depression between Malay, Chinese, India and others race ($F = 6.64$, $p<0.05$) (Table 4). It showed that some of the races suffered more depression than others. This may be possible because different races are using different coping strategies to cope with their problems.

Relationship between illness perception and depression: The relationship between the dimensions of Illness perception and depression is shown in Table 5. There was no significant correlation between timeline and depression. However, eight other components of illness perceptions via identity, cyclical (nature), consequences, personal control, treatment control, illness coherence, emotional response and causes were significantly correlated with depression except timeline.

A stepwise multiple regression procedure was conducted and results in Table 6 showed that only five out of nine predictors had contributed to the variance in depression. The highest contribution comes from the emotional variable (27.8%) whereas timeline contributed only 1.8% (lowest). There were negative significant correlation between personal control, treatment control and illness coherence. Good personal and treatment control together with greater understanding of their illness were associated with less depression. However, there was a positive significant correlation between identity, cyclical, consequences, emotional response and causes components with depression. Patients who perceived more symptoms (identity), patients who perceived frequent cyclic illness, more consequences, high emotional response and more causes of the illness were associated with greater depression. In addition, five predictors (emotional, personal control, consequences, coherence and identity) that contributed to the variance in depression had been identified. The emotional response was a major predictors of depression in patients with ESRD, under Haemodialysis treatment.

Although, there are not many studies that examined the relationship between illness perception and depression among ESRD but studies performed on myocardial infarction patients showed that as

Table 3: Depression between gender

Variable	Gender	n	Mean	SD	t-test
Depression	Male	99	13.02	9.88	0.64
	Female	84	13.93	18.19	

$p>0.05$

Table 4: Depression between races

Groups	Sum of square	df	MS	F test
Between group	1663.62	3	554.54	6.64*
Within group	14957.40	179	83.56	

*$p<0.05$

Table 5: Pearson's correlations between illness perceptions and depression

Variables illness perception	R
Identity	0.32**
Time-line	0.10
Cyclical	0.16**
Consequences	0.45**
Personal control	-0.30**
Treatment control	-0.23**
Illness coherence	-0.42**
Emotional response	0.53**
Causes	0.21**

**$p<0.01$, *$p<0.05$

Table 6: Results of regression analysis

Model	R	R^2
1	0.527[a]	0.278
2	0.579[b]	0.335
3	0.613[c]	0.376
4	0.631[d]	0.398
5	0.645[e]	0.416

[a]Predictors: (constant), IPQ emotional; Predictors: (constant), IPQ emotional and personal control; [c]Predictors: (constant), IPQ emotional, personal control and consequenes; [d]Predictors: (constant), motional, personal control, consequenes and coherence; [e]Predictors: (constant), IPQ emotional, personal control, consequenes, coherence and identity and [g]Dependent variable: depression

depression increased, illness perception also increased (Cherrington *et al*., 2004). In fact, studies by Stafford *et al*. (2009) on coronary artery disease patients also showed that the illness beliefs were significantly associated with depression.

Nicole (2005) who studied congestive heart failure showed that patients who reported a greater number of symptoms (identity), more serious consequences, weaker beliefs about personal control and effectiveness of treatment control had a lower understanding of their illness (coherence) reported significantly higher levels of depression.

CONCLUSION

This study stressed on the importance of how illness perception determines the HD patients' depression. The way the patients feels and believes regarding one self, the disease and also the treatment will usually affect his or her life. Additionally, the relationship between the eight components of illness and depression provide support for pursuing further examination of the Common-sense model and holistic outcomes in persons with ESRD patients undergoing haemodialysis.

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