Psychological Evaluation in Hemodialysis Patients

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Abstract

Introduction: End stage renal disease has a high burden of disease affecting patient's quality of life and this may dramatically shorten their life expectancy. These patients may be faced with serious stressors which are related to the disease and its treatment. Considering psychosocial problems in hemodialysis patients, we designed this study to evaluate depression, anxiety, social support and to determine temperament, character and correlation between these factors in hemodialysis patients.

Methods: This was a multicenter cross-sectional study which was done on 218 hemodialysis patients in Isfahan during April-July 2011. Depression, anxiety, social support, temperament and character were evaluated in patients using Hospital Anxiety and Depression Scale (HADS), Persian version of Multidimensional Scale of Perceived Social Support (MSPSS-P) and Temperament and Character Inventory (TCI) questionnaires.

Results: 138 (63.3%) subjects were male. Mean age was 58.18 ± 14.3 years. 95 (43.6%) participants had depression and 94 (43.1%) had anxiety. Family support had the highest score between social support subscales. Family support was significantly correlated with self-directedness (p = 0.012), cooperativeness (p = 0.03), self-transcendence (p = 0.018), reward dependence and friends support (p = 0.036) and cooperativeness and others support (p = 0.049).

Conclusion: Physicians should be aware of depression and anxiety in hemodialysis patients. Our results showed that patients had a supportive relation with their family and it could be because of Iranian culture and religious believes. In terms of temperament and character, patients were tolerant, supportive, humble and sociable.

Keywords: Renal Dialysis, Temperament, Character, Depression, Anxiety, Social Support (JPMA 62: S-1; 2012).

Introduction

The end stage renal disease (ESRD) which is characterized by irreversible kidney damage is a chronic exhausting disease that suffers about 14000 Iranian patients. ESRD could have a significant impact on patient's quality of life, both mental and physical health status. Any chronic illness such as ESRD could inflict a heavy burden and huge psychological problem on both patients and their family.[1-4]

Both organ transplantation and hemodialysis (HD) as the main therapeutic modalities are time and money consuming procedures. The lack of social and professional activities and patients dependency on their family may decrease the patients self esteem and self image and also decrease social support which result in anxiety, depression, helplessness and loneliness.[5,6] The patients who undergoing HD have several difficult physio-psychological consequences. The chronic nature of ESRD could affect patients-family relationship and patients perceived social support and the decreased perceived social support may lead the patients to a depression state.[7,8]

The absence of social support may induce blemish and rumination in thoughts, maladaptive feeling expression, social isolation and it maybe causes an increase in patients anxiety and depression level.[9] The most common psychological problem in HD patients is depression which is followed by anxiety, lowered social interaction and disturbed quality of life. The psychological insults are always undergoing in these patients because of difficulty in research designing and data collection in this group and also because of the similarity of uremic symptoms to depression symptoms.[10]

The psychological comorbidities in HD patients like depression, anxiety and personality disorders may interfere with their management and treatment success, so they may increase the incapacitation and mortality and morbidity of the disease. The personality disorder was elementarily described in 1980 and after that, several studies were carried out to declare the etiology and underlying structure and pathogenesis of the disease. The personality variances are usually originated from 4 temperaments [novelty seeking (NS), harm avoidance (HA), reward dependence (RD) and

persistence (P)] and 3 character traits [self-directedness (SD), cooperativeness (CO) and self-transcendence (ST)].[11]

Temperament is the aspect of the personality and is the heritable basis in automatic behavioral reflex to danger, novelty and reward. The 4 dimensions of temperament are stable during life and it is almost uniform between different cultures; but character is the individualized response to the stimulus and is the difference in higher cognitive processes.[12] In contrast with temperament, the character is changed with aging and life events. Therefore, there are the temperament traits and also the social and culture experiences and the random life events that reconstruct the character. Consequently, character is the modified adaption of temperament to the environmental factors which may be influenced by mental and physical stresses like chronic disease.[13] Thus the personality which is made from the character and temperament is by itself complex adaptive mechanism to internal and external factors.

According to Cloninger's psycho-biological model of personality (1987), the biologic substrates which are secreted in response to specific environmental stimuli are responsible in expressing a hereditary condition like temperament. The functional interaction between the three neurotransmitter system (adrenergic, dopaminergic and serotonergic) creates an integrated system of different response models to novelty, danger and compensation and the force involved in these systems produce a wide variety of personality types as observed in the social behavior of each individual when faced with different situation.[14]

The quality of life in HD patients is always poorer than general population and these findings are not surprising because of ESRD is mainly a physical disease leading to strong emotional limitations. The HD patients often present a low grade of novelty seeking and harm avoidance and a high grade of reward dependence. Therefore, HD patients need more emotional support and help from others and also have a more pronounced psychiatric sensitivity. HD patients show low serotonin and dopamine levels and high noradrenalin level, typical of cyclothymic personality. In patients returning to dialysis, we can notice both the neurohormonal findings which are typical of HD patients parallel with an accentuation of chronic depression aspect.[15]

As HD patients are suffering from a chronic disease, it could affect patient's quality of life, social activity and social relationships, depression and anxiety state and personality. We designed this study to evaluate these patients' perceived social support, depression, anxiety and their personality changes in Iran because these factors are influenced by life events and they may be affected by different cultures and religious beliefs.

Methods

This was a multicentre cross-sectional study in Isfahan which enrolled the hemodialysis patients that were selected from Shariaaty, Sadooghi and Hojatiye Hospitals, during April-August 2011. 241 HD patients were included in this study. Finally, 218 subjects that fully completed (23 were case failures) questionnaires were analyzed. Informed consents were obtained from all the participants and those who had loss of consciousness were excluded. This study was approved by research committee of Islamic Azad University, Najafabad Branch.

Measures and Measurement:

Patients' demographic characteristics, history of other medical problems such as diabetes mellitus (DM), polycystic kidney disease (PKD), hypertension (HTN), ischemic heart disease (IHD), hepatitis B virus (HBV), hepatitis C virus (HCV) infection and renal stone was registered.

Anxiety and depression were measured by a reliable and valid Persian translated and validated version of the Hospital Anxiety Depression Scale (HADS). HADS questionnaire contains 14 questions which measures two subscales: anxiety and depression (7 questions for each subscale). In this test, scores are between 0 and 21 for each subscale, higher scores indicate more severe symptoms.[16]

Persian version of Multidimensional Scale of Perceived Social Support (MSPSS-P) questionnaire had 12 items and was developed by Zimet et al.[17] It measures the perceived support in 3 subscales from family, friends, and significant other (a person with whom one shares a close relationship); each subscale contains 4 questions and each question have a score between 0-6. In this test higher scores show more perceived support.[17] In Farsi version of MSPSS-P, Cronbach's alpha coefficient was found to be 0.84 for the whole scale and 0.90, 0.93 and 0.85, respectively for friends, significant others and family subscale in patient sample, and 0.92 for the whole scale and 0.89, 0.92 and 0.87, respectively for friends, significant others and family subscale in healthy sample.[18]

The Temperament and Character Inventory (TCI) questionnaire was developed by Cloninger in 1994 to assess temperament including 20 questions for novelty seeking (NS), 20 questions for harm avoidance (HA), 15 questions for reward dependence (RD), 5 questions for persistence (PS), and character including 25 questions for self-directedness (SD), 25 questions for cooperativeness (CO) and 15 questions for self transcendence (ST) dimensions of Cloninger's biopsychosocial model of personality in adults.[19] In this test, each question has a point and finally, all items' sum below 33% shows low score, 33-67% presents

normal and more than 67% shows high score. This questionnaire consists of 125 questions and about seven independent dimensions. Four of these test temperament and three test character. In Persian valid and reliable version of TCI questionnaire, Cronbach's alpha coefficient has been found to be 0.5 for NS, 0.79 for HA, 0.74 for RD, 0.44 for P, 0.75 for SD, 0.76 for CO and 0.81 for ST.[20]

Statistical Analysis:

Statistical procedure was done by Statistical Program for Social Sciences software (SPSS) version 18. Student's t-test and Pearson product moment correlations were used for data analyses. The significance level (p) was set at 0.05.

Results

241 patients were recruited in this study but finally 218 subjects that completed questionnaires were analyzed. 138 (63.3%) were male and 80 (36.7%) were female. Mean age was 58.18 ± 14.3 years (age range was between 21 to 87 years old). 192 were married, 21 were single and 5 were widow. Mean duration of the time that patients were diagnosed as ESRD were 7.42 years and mean duration of hemodialysis was 3.15 years. Associated diseases were evaluated too. 126 patients (57.8%) had HTN, 96 (44%) had DM, 35 participants (16%) suffered from PKD, 35 (16%) had IHD, renal stone was reported by 33 patients (15.1%), 6 participants (2.8%) had hepatitis B virus infection and 2 patients (0.9%) had HCV infection.

HADS questionnaire indicated that in depression subscales, 49 patients (22.5%) had normal score, 76 had (34.9%) borderline score and 95 participants (43.6%) had high depression score. In anxiety subscale, 60 patients (27.5%) had normal score, 64 had (29.4%) borderline score and 94 (43.1%) had high anxiety score. Mean depression score in male patients were 10.01 and in female were 10.45

Table-1: HADS questionnaire results.

	Normal score	Borderline score	High score
Depression	49 (22.5%)	76 (34.9%)	95 (43.6%)
Anxiety	60 (27.5%)	64 (29.4%)	94 (43.1%)

Table-2: TCI questionnaire results.

	Low	Normal	High
Novelty seeking	46 (21.1%)	146 (67%)	26 (11.9%)
Harm avoidance	42 (19.3%)	144 (66.1%)	32 (14.6%)
Reward dependence	8 (3.8%)	193 (88.1%)	18 (8.3%)
Persistence	60 (27.6)	102 (46.8%)	56 (25.6%)
Self-directedness	56 (27.5%)	124 (55%)	38 (17.5%)
Cooperativeness	10 (4.6%)	120 (55%)	88 (40.4%)
Self-transcendence	12 (5.5%)	110 (50.5%)	96 (44%)

Table-3: Correlations between evaluated parameters.

Correlation between	p	r
Anxiety and Depression	0.001	0.579
Anxiety and Family Support	0.346	0.038
Anxiety and Friends Support	0.443	0.014
Anxiety and Others Support	0.191	0.084
Depression and Family Support	0.288	0.054
Depression and Friends Support	0.313	0.047
Depression and Others Support	0.252	0.065
Cooperativeness and Family Support	0.03	0.181
Cooperativeness and Others Support	0.049	0.157
Self-Transcendence and Family Support	0.018	0.201
Reward Dependence and Friends Support	0.036	0.173
Depression and Harm Avoidance	0.001	0.424
Anxiety and Harm Avoidance	0.001	0.415
Persistence and Cooperativeness	0.019	0.199
Persistence and Self-Transcendence	0.007	0.235
Cooperativeness and Reward Dependence	0.049	0.159
Harm Avoidance and Number of associated disease	0.002	0.278
Depression and Number of associated disease	0.027	0.185
Anxiety and Number of associated disease	0.018	0.202

(p = 0.566). Mean anxiety score was 10.30 in females participants and 9.43 in males but similarly, there was no significant difference between groups (p = 0.233). Table-1 summarizes the HADS questionnaire findings. Our findings indicated that family support subscale mean score was 19.77; friends support subscale mean score was 13.61 and others support subscale mean score was 18.58.

TCI questionnaire results indicated that novelty seeking mean score was 9.26 ± 3.09, harm avoidance mean score was 9.76 ± 3.51, Reward Dependence mean score was 7.65 ± 1.95, Persistence mean score was 2.47 ± 1.37, self-directedness mean score was 11.42 ± 5.16, cooperativeness mean score was 15.64 ± 4.08 and self-transcendence mean score was 9.85 ± 3.63. The mean score of harm avoidance in male patients was 9.24 and in female was 10.65 (p = 0.044); the mean score of self-transcendence in male patients was 10.33 and in female was 8.77 (p = 0.024). Table-2 summarizes the detail scores of TCI questionnaire. We used Pearson product-moment correlation test to evaluate correlations between various factors which are represented in Table-3.

Discussion

This study was designed to evaluate temperament, character, depression, anxiety and social support and their correlation in 218 hemodialysis patients. We found that self-transcendence is significantly higher in male and we can conclude that men are more humble, unpretentious than female and harm avoidance was significantly higher in female which indicates that they have more social inhibition and shyness with strangers than male which could be because of our culture.

According to HADS questionnaire, 95 participants

(43.6%) had high depression score and 94 (43.1%) had high anxiety score. In another study which was done on Italian patients who underwent hemodialysis, 50 % of subjects had depression and anxiety was reported in 43% using HADS. In this study anxiety and depression were correlated[21] which was in line with our findings.

Karaminia et al. carried out a study on Iranian hemodialysis patients and they reported that anxiety in hemodialysis patients was higher than patients who had renal transplantation. They used HADS questionnaire and anxiety score was 10.41 ± 2.77 which was higher that our findings. They reported that mean depression score was 8.47 ± 3.42 in hemodialysis patients which was higher in our study.[22]

According to findings of our study and other studies about high prevalence of depression and anxiety in hemodialysis patients, we can conclude that emotional and psychological factors play an important role in HD patients and because of this, physicians and nurses should be aware of depression and anxiety signs and symptoms in these patients.

The highest score in social support was in level of perceived social support from family which was 19.77 ± 4.77. It shows that patients and their family relationship were supportive. Some studies indicated that people who had experienced negative life events seek for more support from family.[9,23] Kara et al. used MSPSS-P to evaluate social support in hemodialysis patients. They found that family is the most important provider of social support in hemodialysis patients.[24] We found family as the most important provider of social support too. This could be because of this fact that in Iran; culture and our religious believes plays an important role between family members, so members of family provide care for their patients.

Coppolino et al. performed a study about neurobiological model in HD patients. They evaluated plasmatic dopamine, serotonin and noradrenaline concentrations and according to their laboratory findings, RD grade (noradrenergic activity) was higher than NS (dopaminergic activity) and HA (serotonergic activity) in hemodialysis patients. Our study had different results. We found that HA mean was higher that NS and RD. This could be because of the fact that our evaluation methods were different.[25]

We found that all temperament and character dimensions mean scores were normal in HD patients but according to our results CO and ST had high normal mean scores. Persons with high self-transcendence score consider themselves as integral parts of the universe as a whole. These persons are spiritual, unpretentious, humble and fulfilled. These characteristics are presented when they are confronted with suffering, illness or death and it is inevitable with advancing age so high normal ST score in hemodialysis patients could be explained as ESRD is a chronic and debilitating illness.[12] Self-transcendence high score in HD patients was because of the fact that ESRD is a chronic disease which has a great influence in patient's quality of life. ST was correlated with family support and it could be because of our religious believes and spiritual characteristic of ST.

High cooperativeness dimension score is related to those who take themselves integral parts of society. Highly cooperative persons are known as tolerant, empathetic, compassionate, supportive and principled.[11] We had found that cooperativeness had a correlation with family and others support and this could be because of their supportive characteristic. Brain system of reward dependence is social attachment and its principal neuromodulator is norepinephrine and serotonin. High individuals in reward dependence are sensitive, social dependent and sociable.[11]

We had found that reward dependence has the highest score percentage between temperaments. Reward dependence was correlated with friends support dimension and this could be because of the fact that they are sociable and social dependent. We found that RD was correlated with CO and this could be because of their compassionate and sensitive characteristics. Harm avoidance indicates social inhibition, shyness with strangers, rapid fatigability and pessimistic worry in anticipation of problems.[11] HA was correlated with depression and anxiety and this could be because of their social inhibition, shyness trait. HA was correlated with number of associated disease and this is maybe due to their rapid fatigability property.

Conclusion

In conclusion, we could not find any personality disorder according to temperament and character in these patients. Additional researches are needed about temperament and character evaluation for personality disorders in these patients because their personality is influenced by their social activities and it is culture based.

Acknowledgments

Conflict of Interests:

Authors have no conflict of interests.

Authors' Contributions:

AB, AT and RK carried out the study. AT had coordinated in the study. NA and MRNT provided assistance in design. RK and AT participated in data

collection. AT, BM, MRNT prepared the manuscript. All authors have read and approved the content of the manuscript.

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