Psychiatric Morbidity among Patients Undergoing Haemodialysis - A Cross-Sectional Study at Government Medical College, Kottayam

Shameena Abdullah[1], P.G. Saji[2], Ganga Gangadhara Kaimal[3]

[1]Department of Psychiatry, Directorate of Health Services, Kerala, India.
[2, 3] Department of Psychiatry, Government Medical College, Kottayam, Kerala, India.

ABSTRACT

BACKGROUND

Chronic kidney disease (CKD) is a major health issue to be discussed in this current era due to its increasing prevalence. The burden due to chronic kidney disease is very high especially in low and middle income countries. The prevalence of psychiatric morbidity is high in patients undergoing haemodialysis. The presence of psychiatric illness increases the risk of hospitalisation and mortality in patients with end stage renal disease. This study was conducted to assess the psychiatric morbidity of patients with chronic kidney disease on maintenance haemodialysis.

METHODS

Descriptive research design was used for the study**.** The sample of the study consisted of 180 patients above the age of 18 years with chronic kidney disease undergoing maintenance haemodialysis. A specially designed pro-forma, ICD 10 symptoms check list, and ICD 10 diagnostic criteria for research are the tools used for the study.

RESULTS

Most of the patients were from 41 - 50 years age group (27.8 %) with a mean age of 47.43 and majority were males (74.4 %). 45.6 % patients had plan for renal transplant and 62.2 % patients were on twice weekly haemodialysis. The primary diagnosis was chronic glomerulonephritis in 33.9 % and diabetic nephropathy in 32.8 % of study participants. 11.7 % of study participants had IgA nephropathy and 9.4 % of study participants had ischemic renal failure. 23.9% of participants were found to have psychiatric morbidity. The most common psychiatric illness was depression which was reported in 15.0 % of study population. 6.1 % of participants had adjustment disorder, 2.2 % had anxiety disorder and 0.6 % had psychosis. The mean duration of dialysis was 2 years in patients with psychiatric illness.

CONCLUSIONS

A male preponderance was found in the study population. High psychiatric morbidity is found among patients undergoing haemodialysis and depression is the most common psychiatric disorder identified.

KEYWORDS

Psychiatric Morbidity, Haemodialysis

Corresponding Author:
Dr. P.G. Saji,
Additional Professor of Psychiatry,
Government Medical College,
Kottayam, Kerala, India.
E-mail: drsajipg@gmail.com

DOI: 10.18410/jebmh/2021/372

How to Cite This Article:
Abdullah S, Saji PG, Kaimal GG. Psychiatric morbidity among patients undergoing hemodialysis - a cross-sectional study at Government Medical College, Kottayam. J Evid Based Med Healthc 2021;8(23):1982-1987. DOI: 10.18410/jebmh/2021/372

Submission 26-12-2020,
Peer Review 05-01-2021,
Acceptance 21-04-2021,
Published 07-06-2021.

BACKGROUND

Chronic kidney disease is a major health issue to be discussed in this current era due to its increasing prevalence. It is also known as end-stage renal disease (ESRD). This is a chronic condition which affect both the physical and psychological status of patients. Haemodialysis is the most common method used to treat ESRD. World health organisation (WHO) bulletin in 2018 pointed out the that low and middle income countries suffer very high burden due to chronic kidney disease.[1] As per the report of the chronic kidney disease registry of India, 63538 cases of chronic kidney disease were registered in India in the year 2011. The disease was more in men and mean age of the patients was 50.7 in males and 48.1 in females. 17.38 % of patients were undergoing haemodialysis and 2.19 % of patients were on peritoneal dialysis. Among the patients 20.1 % were found to have tobacco use and 7.1 % were found to have alcohol use. The primary disease was diabetic nephropathy in 30.9 % of patients, chronic glomeruli nephritis in 13.3 % of patients, tubulointerstitial disease in 6.8 %, autosomal dominant polycystic kidney disease (ADPKD) in 2.2 % and graft dysfunction in 0.3 % of patients.[2] A review on the adaptation to dialysis pointed out that, during the initial stages, patients accept dialysis, but later there occur increase anxiety, depression and confusion. The long-term effects of dialysis include regression, depression and denial.[3] A study comparing patients between renal failure on dialysis with comorbid psychiatric illness and renal failure on dialysis with other comorbid medical conditions reported that psychiatric morbidity accounted for hospitalisation in 9 % of all dialysis patients. The hospitalisation rate was 1.5 to 3.0 times higher compared to other comorbid medical illness. Patients in younger age group and male patients were hospitalised more with a psychiatric illness. Compared to peritoneal dialysis, hospitalisation with mental illness was more in haemodialysis patients.[4] A review article regarding the psychiatric issues in renal failure and dialysis patients discussed that the common mental disorders that occur in such patients were depression, substance use disorders, delirium, anxiety disorders and suicide. They also noted that the pharmacological treatments used for renal disease might increase the risk of behavioural manifestations such as agitation and confusion.[5]

A study on medication adherence among haemodialysis patients demonstrated moderate depression in 80 % of the patients with end stage renal disease undergoing haemodialysis. The study demonstrated an association between depression and lack of adherence to haemodialysis treatment regimens.[6] A study comparing patients on haemodialysis and not on haemodialysis reported depression and anxiety in both groups but the prevalence of depression was high among patients undergoing haemodialysis. They also reported higher rates of depression among patients using steroids and/or immunosuppressant drugs.[7] Another study from China reported severe depressive symptoms in 69.2 % of patients undergoing haemodialysis. They reported that patients with lower levels of blood urea nitrogen and shorter duration of HD were more likely to depressive disorder.[8]

A study from Nigeria demonstrated psychiatric disorders in 55 % of patients undergoing haemodialysis. Among the psychiatric disorders, 35 % had major depressive disorder and 20 % had generalized anxiety disorder.[9] A 4 - year long-term follow-up study among end-stage renal failure patients on haemodialysis reported high frequency of dementia, delirium, and major depression. Management by psychiatrist was needed for these conditions especially for dementia in aged patients who were on long-term haemodialysis therapy.[10]

Depression may be also present at the start of dialysis. This was suggested by the finding that 44 percent among the one hundred and twenty-three incident dialysis patients scored above the validated cut-off on the beck depression inventory.[11] In a cross-sectional study conducted in Kerala among haemodialysis patients by Vinod V. S et al. reported that 46 percentage of patients were found to have depression.[12]

Depression is found to be associated with an increased risk of hospitalization in dialysis patients and a greater number of hospital days.[13] Depression was associated with increased morbidity and mortality. Prognosis was poor in patients with depressive disorder which was found to be independent of the severity of the primary renal disease even in patient who were not on dialysis.[14]

A study on mental illness and mortality among patients with end stage renal disease undergoing dialysis reported depression as the most common mental illness in children and young adults and organic disorders/dementia as the most common mental illness in elderly adults. Among young adults, depression and affective disorders were found in 3 % of the sample and alcohol use disorders were found in 1 % of the sample. Among elderly adults, 3 % of the sample were having organic disorder/dementia and 1 % of the sample were having depression/affective disorder. Among children 4 % of the sample were found to have depression/affective disorders.[15]

An Indian study reported 44.1 % prevalence of depression in patients with chronic kidney disease. 28.4 % had mild depression, 15.6 % had moderate depression and 0.8 % had severe depression. 53 % of the study sample was constituted by males and the mean age of the sample was 54.3 years. Depression was found to be more in male patients and in patients under the age of 60 years. The financial situation of the patient, duration of the chronic kidney disease, haemodialysis and presence of comorbidities were found to have significant effect on depression.[16]

A study from Sudan reported 68 % prevalence of depression in patients undergoing haemodialysis. Depressive symptoms were more in patients who were on dialysis for less than 1 year. Sixty percentage of the study participants were males. One third of the sample were above the age of 50 years. Comorbidities were common and the most common comorbidity was hypertension which was found in 53.3 % of the participants. The dialysis duration was less than one year in 48 % and more than 3 years in 22.7 % of the participants. Depression was found to be 1.4 times more in males compared to females.[17]

Anxiety disorders were found in 45.7 % of subjects undergoing haemodialysis and the perceived quality of life

was lower in dialysis patients with comorbid anxiety disorders.[18]

A study among urban dialysis patients reported a twenty nine percent prevalence of depressive disorder and twenty seven percent prevalence of anxiety disorder. The mean age of the study sample was 53.2 years and females constituted fifty-three percentage of the sample. The average duration of dialysis was 61 months. 20 % of the sample had major depressive disorder and 9 % had dysthymia or depressive disorder not otherwise specified. Substance use disorder was found in 19 % of the sample and psychotic disorder was found in 10 % of the participants. The diagnosis of depression was independent of the medical health status of the patient. The study also found a special advantage for cognitive behavioural therapy in patients treated with many medications.[19]

Suicide is more common among chronic kidney disease patients than the general population. Independent predictors for suicide include male gender, white or Asian race, recent hospitalization, and alcohol or drug-dependence.[20] Alcoholism appears to be particularly common among patients with end stage renal disease. In one study of 163 patients undergoing dialysis in an urban centre in the United States, 28 percent scored positive according to the Michigan Alcoholism Screening Test.[21] Such patients were more likely to be young, HIV-positive, and male.

Various psychological factors affect patient's long-term physical outcome. Various co-morbid disorders are likely to reduce adherence with the complex dietary and medication regimens prescribed. Long-term dialysis therapy itself often results in loss of freedom, dependence on caregivers, disruption of marital, family, and social life, and reduced financial income. Due to these reasons, the physical, psychological, socioeconomic, and environmental aspects of life are negatively affected, leading to compromised quality of life.[22]

Patients with end-stage renal ailment need to attempt to adjust to a ceaseless physical disorder and the need much of the time of adjusting to dependence on a dialysis machine to stay alive. Modification in cognitive, behavioural and emotional terms is needed by patient their families.[23-25]

A study regarding stressors and coping among patients undergoing haemodialysis demonstrated that both psychosocial stressors and physiological stressors have equal impact. Maximum stress was reported in patients on dialysis for one to three years.[26] A study regarding the coping strategies and quality of life among patients on haemodialysis and continuous ambulatory peritoneal dialysis reported that men were having better coping strategies with the physical aspects of the illness.[27]

METHODS

Descriptive research design is used for the study. The sample of the study consisted of 180 patients with chronic kidney disease undergoing maintenance haemodialysis in a tertiary care institute. The dialysis was sponsored by government. Patients of both gender above 18 years with chronic kidney disease undergoing maintenance haemodialysis are included. Patients younger than 18 years, undergoing dialysis for acute kidney injury, patients with hearing, or speech deficits and patients with psychiatric illness prior to the diagnosis of CKD are excluded from the study. Specially designed Pro-forma, ICD 10 Symptoms Check list, and ICD 10 Diagnostic criteria for research are the tools used for the study. The ethical clearance was obtained from the institutional review board of Government Medical College, Kottayam. The study period was from June 1st 2017 to May 31st 2018. The participants were interviewed prior to the medical visits or after the haemodialysis session in a separate room. A written informed consent was obtained. The specially designed pro-forma was completed to collect the relevant socio demographic profile and clinical details of the patients. ICD 10 symptom checklist for mental health disorders-version 1.1[5] was used as a screening tool for all the patients. The patients who have mental disorders during screening were further evaluated by using the tool ICD 10 diagnostic criteria for research. Data was coded and entered in Microsoft Excel and analysed using IBM SPSS software V 16.0. Descriptive statistics were used in the analysis.

RESULTS

The mean age of the study population was 47.43 with a standard deviation of 13.87. Median age was 49. Minimum age was 19 and maximum age was 86. Among the total 180 patients, 46 (25.6 %) were females and 134 (74.4 %) were males. Diabetes mellitus was present in 101 (56.1 %) of patients and hypertension was present in 23 (12.8 %) of the patients. Of the study population, 59 (32.8 %) had diabetic nephropathy, 17 (9.4 %) had ischemic renal failure. Chronic glomerulonephritis was present in 61 patients (33.9 %) and IgA nephropathy was present in 21 patients. (11.7 %).17 (9.4 %) had chronic tubulointerstitial nephritis and 4 (2.2 %) had rapidly progressive glomerulonephritis (RPGN). Autosomal dominant polycystic kidney disease (ADPKD) was present in one patient. (0.6 %). 82 (45.6 %) patients had plan for renal transplant and 98 (54.4 %) had no plan for transplant. Among the patients, two were (1.1 %) on once weekly maintenance haemodialysis, one hundred and twelve (62.25 %) were on twice weekly maintenance haemodialysis and sixty-six were (36.7 %) on thrice weekly dialysis schedule.

Variable		Frequency	Percentage
Gender	Female	46	25.6
	Male	134	74.4
Primary kidney disease	Diabetic nephropathy	59	32.8
	Ischemic renal failure	17	9.4
	Chronic glomerulonephritis	61	33.9
	IgA nephropathy	21	11.7
	Chronic TIN	17	9.4
	RPGN	4	2.2
	ADPKD	1	0.6
Plan for transplant	No	98	54.4
	Yes	82	45.6
Schedule for haemodialysis	Once weekly	2	1.1
	Twice weekly	112	62.2
	Thrice weekly	66	36.7

Table 1. Gender and Disease Characteristics of the Study Participants

Coming to the duration of disease and dialysis, the mean duration of disease was 9.01 years with a standard deviation of 5.63 years. Median duration of disease was 7.5 years. Mean duration on HD was 2.25 years with a standard deviation of 1.77 and median of 2.00 years. Mean dialysis free disease duration was 6.74 years with a standard deviation of 5.71 and a median of 5.00 years. Maximum duration of disease was 22.00 years, maximum duration on HD was 9.00 years and dialysis free disease duration was 20.00 years.

Duration of Disease (years)		Duration on HD (years)	Dialysis Free Disease Duration (years)
Mean	9.01	2.25	6.75
Median	7.50	2.00	5.00
Mode	5.00	1.00	1.00
Standard deviation	5.63	1.77	5.71
Minimum	1.00	0.50	0.00
Maximum	22.00	9.00	20.00
Maximum	22.00	9.00	20.00

Table 2. Duration of Disease and Haemodialysis

Regarding the psychiatric morbidity in patients, 27 patients (15.0 %) had depressive illness, 11 patients (6.1 %) had adjustment disorder, one patient (0.6 %) had psychosis and four patients (2.2 %) had anxiety disorder. 137 patients (76.1 %) had no psychiatric disorders. Thus, psychiatric morbidity was identified in 23.9 % of study population. Of the 46 female patients included in the study, 21 (11.7 % of total) had psychiatric illness and 25 were euthymic (13.9 % of total). The male subjects were predominantly euthymic (N = 112, 62.2 % of total) and 22 had psychiatric morbidity (12.2 % of total).

Morbidity	Frequency	Percent
Euthymic	137	76.1
Depressive illness	27	15.0
Adjustment disorder	11	6.1
Psychosis	1	.6
Anxiety disorder	4	2.2
Total	**180**	**100.0**

Table 3. Types of Psychiatric Illness

The mean duration of disease among patients with psychiatric illness was 9.63 years and those without psychiatric illness was 8.82 years. The mean duration of haemodialysis among patients with psychiatric illness was 2 years and those without psychiatric illness were 2.32 years.

	Presence of Psychiatric Illness	N	Mean	Std. Deviation	Std. Error Mean
Duration of Disease	No	137	8.8175	5.59572	.47807
	Yes	43	9.6279	5.75294	.87732
Duration on HD	No	137	2.32	1.878	.160
	Yes	43	2.01	1.378	.210

Table 4. Psychiatric Morbidity with Duration of Disease and Duration of Haemodialysis

Of the 59 patients with diabetic nephropathy (32.8 % of total) 19 (10.6 % of total) had psychiatric morbidity and 40 (22.2 % of total) were euthymic. In 17 ischemic renal failure patients (9.4 % of total), 2 (1.1 % of total) had psychiatric morbidity and 15 (8.3 % of total) were euthymic. Chronic glomerulonephritis subgroup had 47 patients (26.1 % of total) with no psychiatric comorbidity and 14 patients (7.8 % of total) had psychiatric illness. In patients with IgA nephropathy, 16 (8.9 % of total) were euthymic and 5 (2.8 % of total) had psychiatric diseases. In patients with chronic tubulo interstitial nephritis, 15 (8.3 % of total) had no psychiatric illnesses while 2 (1.1 % of total) had psychiatric comorbidity. Among the four patients who were on maintenance haemodialysis for the indication of RPGN non recovery, three (1.7 % of total) had no psychiatric diagnoses and 1 (.6 % of total) was found to have psychiatric illness. Only one ADPKD patient participated in the study was euthymic.

Primary Disease		Presence of Psychiatric Illness		Total
		No	Yes	
Diabetic nephropathy	Count	40	19	59
	% of Total	22.2 %	10.6 %	32.8 %
Ischemic renal failure	Count	15	2	17
	% of Total	8.3 %	1.1 %	9.4 %
Chronic glomerular nephritis	Count	47	14	61
	% of Total	26.1 %	7.8 %	33.9 %
IgA nephropathy	Count	16	5	21
	% of Total	8.9 %	2.8 %	11.7 %
Chronic tubulo interstitial nephritis	Count	15	2	17
	% of Total	8.3 %	1.1 %	9.4 %
RPGN non-recovery	Count	3	1	4
	% of Total	1.7 %	.6 %	2.2 %
ADPKD	Count	1	0	1
	% of Total	.6 %	.0 %	.6 %
Total	**Count**	**137**	**43**	**180**
	% of Total	**76.1 %**	**23.9 %**	**100.0 %**

Table 5. Primary Kidney Disease and Psychiatric Illness

DISCUSSION

The present study reported a male preponderance among patients undergoing haemodialysis. 74.4 % of the study population was constituted by males. This finding is consistent with the 2011 report of the chronic kidney disease registry of India which states that males are affected more with chronic kidney disease.[2] An Indian study and a study from Sudan also reported male preponderance.[16-17] Chronic glomerulonephritis and diabetic nephropathy were the most common primary kidney disease found in the present study. This is also consistent with the report of the chronic kidney disease registry of India.[2] Most of the patients in the present study was undergoing twice weekly dialysis and the mean duration of dialysis was 2 years in patients with psychiatric illness. A Sudanian study reported increased rate of psychiatric morbidity in patients with a dialysis duration of less than one year.[17]

Studies have reported high prevalence of psychiatric diagnosis in haemodialysis patients. The prevalence of psychiatric morbidity is found to be 23.9 % in the present study. This is inconsistent with the findings of other studies.[6,8-9,17] The low prevalence of psychiatric morbidity found in the present study can be as a result of using confirmatory diagnostic tools after screening, which was lacking in the other studies. Among the psychiatric illness, depressive disorders were found to be the most prevalent one. 15.0 % of the study population was found to have depressive disorder and 6.1 % were found to have adjustment disorder with depressed mood. This is consistent with other studies which stated that the depression in the most common psychiatric illness in patients undergoing hemodialysis.[6,7,9]

The high prevalence of depression in patients with end stage renal disease undergoing haemodialysis can be explained by biological and psychological factors. The biological factors responsible for the development of depression can be hormonal factors such as cortisol, inflammatory activities and altered autonomic activities. The psychological factors that contribute to depression can be the increase burden caused by the disease.[28]

A major medical crisis can be a contributing factor in the onset or exacerbation of an anxiety disorder. Uncertainty about treatment options, outcome, worries about health, finances, schedule of treatment and change in appearance etc., along with medical conditions like uraemia, anaemia etc., can contribute to the development of anxiety. In our study, 2.2 % of the patients were diagnosed with anxiety disorder.

CONCLUSIONS

In this study the prevalence of psychiatric morbidity in patients undergoing maintenance haemodialysis was 23.9 %. The most common psychiatric diagnosis was depression seen in 15.0 %, and 6.1 % of the patients had adjustment disorder with depressed mood. 2.2 % of the patients were diagnosed with anxiety disorder

Depression affects medical outcomes in patients with ESRD through multiple mechanisms, making the assessment and treatment of depression a must. Depression in dialysis patients is associated with increased morbidity and mortality. It affects the quality of life of patients and it increases the risk of suicide. Depression is associated with an increased risk of hospitalization in dialysis patients. This appears to be independent of comorbid illnesses and demographic variables.

Since psychiatric disorders have a negative impact on this chronic condition, provisions should be made for early diagnosis and treatment of the condition before the condition deteriorates.

Limitations

Small sample size was a limitation. Comparison between males and females with the variables like type of kidney disease, presence of diabetes mellitus, presence of hypertension, duration of disease, duration of haemodialysis and schedule of haemodialysis was not done.

Data sharing statement provided by the authors is available with the full text of this article at jebmh.com.
Financial or other competing interests: None.
Disclosure forms provided by the authors are available with the full text of this article at jebmh.com.

REFERENCES

[1] Essue B, Jha V, John O, et al. Universal health coverage and chronic kidney disease in India. World Health Organization. 2018 [cited 7 February 2021]. https://www.who.int/bulletin/volumes/96/7/18-208207/en/
[2] Ngilneii C. Chronic Kidney Disease (CKD) - prevalence and management in India. Medindia. Medindia.net. 2017 [cited 7 February 2021]. https://www.medindia.net/health_statistics/diseases/chronic-kidney-disease-ckd-india.asp
[3] Abram H. Psychiatric reflections on adaptation to repetitive dialysis. Kidney International 1974;6(2):67-72.
[4] Kimmel PL, Thamer M, Richard CM, et al. Psychiatric illness in patients with end-stage renal disease. Am J Med 1998;105(3):214-221.
[5] De Sousa A. Psychiatric issues in renal failure and dialysis. Indian J Nephrol 2008;18(2):47-50.
[6] Kauric-Klein Z. Depression and medication adherence in patients on hemodialysis. Curr Hypertens Rev 2017;13(2):138-143.
[7] Ćwiek A, Czok M, Kurczab B, et al. Association between depression and hemodialysis in patients with chronic kidney disease. Psychiatr Danub 2017;29(Suppl 3):499-503.
[8] Hu A, Xue Z, Mwansisya TE, et al. Major depressive disorder in hemodialysis patients in China. Asia Pac Psychiatry 2015;7(1):78-84.
[9] Aghanwa HS, Morakinyo O. Psychiatric complications of hemodialysis at a kidney center in Nigeria. J Psychosom Res 1997;42(5):445-451.
[10] Fukunishi I, Kitaoka T, Shirai T, et al. Psychiatric disorders among patients undergoing hemodialysis therapy. Nephron 2002;91(2):344-347.
[11] Watnick S, Kirwin P, Mahnensmith R, et al. The prevalence and treatment of depression among patients starting dialysis. Am J Kidney Dis 2003;41(1):105-110.
[12] Vinod VS, Kumar VK, Shaji KS, et al. The prevalence & treatment of depression in patients undergoing haemodialysis in a tertiary care centre. J Evid Based Med Healthc 2016;3(52):2713-2717.
[13] Lacson E Jr, Bruce L, Li NC, et al. Depressive affect and hospitalization risk in incident hemodialysis patients. Clin J Am Soc Nephrol 2014;9(10):1713-1719.
[14] Hedayati SS, Minhajuddin AT, Afshar M, et al. Association between major depressive episodes in patients with chronic kidney disease and initiation of dialysis, hospitalization or death. JAMA 2010;303(19):1946-1953.
[15] Kimmel P, Fwu C, Abbott K, et al. Psychiatric illness and mortality in hospitalized ESKD dialysis patients. Clinical Journal of the American Society of Nephrology 2019;14(9):1363-1371.
[16] Tiwari P, Ahlawat R, D'Cruz S. Prevalence of depression and its associated factors among patients of chronic kidney disease in a public tertiary care hospital in India: a cross-sectional study. Saudi Journal of Kidney Diseases and Transplantation 2018;29(5):1165.
[17] Ahmed M, Elkheir H, Wagaella A, et al. Prevalence and risk factors of depressive symptoms among dialysis patients with end-stage renal disease (ESRD) in Khartoum, Sudan: a cross-sectional study. Journal of Family Medicine and Primary Care 2020;9(7):3639.

[18] Cukor D, Coplan J, Brown C, et al. Anxiety disorders in adults treated by hemodialysis: a single-center study. American Journal of Kidney Diseases 2008;52(1):128-136.
[19] Cukor D, Coplan J, Brown C, et al. Depression and anxiety in urban hemodialysis patients. Clin J Am Soc Nephrol 2007;2(3):484-490.
[20] Kurella M, Kimmel PL, Young BS, et al. Suicide in the United States end-stage renal disease program. J Am Soc Nephrol 2005;16(3):774-781.
[21] U.S. National Library of Medicine. Medlineplus Drug Monographs. www.nlm.nih.gov/medlineplus/druginformation.html (Accessed January 2007).
[22] Christensen AJ, Ehlers SL. Psychological factors in end-stage renal disease: an emerging context for behavioral medicine research. J Consult Clin Psychol 2002;70(3):712-724.
[23] Levy NB. Psychological reactions to machine dependency: hemodialysis. Psychiatr Clin North Am 1981;4(2):351-363.
[24] Addison T. On the constitutional and local effects of the disease of the supra-renal capsules. In: Wilks S, Daldy TM, eds. A Collection of the Published Writings of the Late Thomas Addison MD. London: New Sydenham Society 1868: p. 211-239.
[25] Catalano C, Goodship TH, Graham KA, et al. Withdrawal of renal replacement therapy in Newcastle upon Tyne: 1964-1993. Nephrol Dial Transplant 1996;11(1):133-139.
[26] Baldree KS, Murphy SP, Powers MJ. Stress identification and coping patterns in patients on hemodialysis. Nurs Res 1982;31(2):107-112.
[27] Lindqvist R, Carlsson M, Sjödén PO. Coping strategies and quality of life among patients on hemodialysis and continuous ambulatory peritoneal dialysis. Scand J Caring Sci 1998;12(4):223-230.
[28] Shirazian S, Grant C, Aina O, et al. Depression in chronic kidney disease and end-stage renal disease: similarities and differences in diagnosis, epidemiology and management. Kidney International Reports 2017;2(1):94-107.