

The Comparison of Depression in Hemodialysis and Renal Transplantation Patients

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Abstract: Depression is the fourth most disabling disease affecting people worldwide and the most common psychological disorder among patients with end-stage renal disease (ESRD). The objective of this study is to survey and comparison of depression in dialysis and renal transplantation patients. Also examine the association between depression and demographic information in two groups. Cross-sectional was used to conduct the study, which involved 108 patients (61 dialysis and 47 renal transplantation). Depression was measured using the Beck depression Statistical was done by chi-score and t-test using SPSS win software. The mean age in dialysis and renal transplantation patient was 47.4 \pm 15.5 and 39.9 \pm 9.7 years. Statistical analysis of this means was significant difference ($P < 0.003$). in two group, the prevalence of depression was not significantly in females than males. Prevalence of depression in the dialysis patients was nearly 93 and in the renal transplantation was 56. Major depression in dialysis patients was 16.4 and in renal transplantation was 6.4. The Mean number of depression in dialysis and renal transplantation patient was 21/08 \pm 8/04 and 13/23 \pm 8/31 (number of Beck depression above of 9) finally mean value of depression in dialysis samples was significantly different ($P < 0.000$) from that of renal transplantation samples. Depression was not significantly correlated with demographic factors such as duration of treatment, age, gender and married. Prevalence of depression in dialysis patients was more than renal transplantation patients. This high prevalence of depression emphasizes the significance of this disorder among patients on chronic hemodialysis. Due to its impact on mortality and survival rates, early diagnosis of depression in such patients is therefore crucial.

[Shahriar Mahmoodi, Ghader Salehnejad, Simin Nazarian. **The Comparison of Depression in Hemodialysis and Renal Transplantation Patients.** *Life Sci J* 2012;9(4):5754-5758] (ISSN:1097-8135).
<http://www.lifesciencesite.com>. 856

Keywords: Hemodialysis, Renal transplantation, Depression, ESRD, Beck depression Statistical

1. Introduction

End-stage renal disease (ESRD) or a very advanced renal disease with a prevalence of one per one million in developed countries [1] is a kind of progressive and irreversible impairment of kidney work in which the body's ability to maintain fluid and electrolyte balance is disrupted. In addition, the available data indicate that at least 60 million people worldwide are suffering from different degrees of renal dysfunction. According to the last data, nearly two millions suffer from renal failure (ESRD) in USA, costing over 70 thousand dollars for treatment and care of patients undergoing dialysis [2]. The rate of increasing renal patients is annually 15 percent in Iran [ref]. Number of renal patients has increased by 11 % during the last 4 years and there are 22376 patients suffering from kidney impairment in Iran. Rate of ESRD patients is principally increasing in recent years [ref].

Number of hemodialysis patients has doubled since 1990. Increasing the number of hospitalization days due to mental diseases in ESRD patients is much higher compared to the total population and timely recognition and treatment of mental disorders is not only effective in promoting the care and

following up the patients treatment, but also increases the life quality of patients[3,4].

Among well-known psychological problems in patients with ESRD includes depression, organic mental disorders, materials abusing, and anxiety [5]. Depression is the most important mental problem that can lead to changes in nutritional status, direct and indirect effects on the immune system, non-compliance with treatment regimen, increasing the severity of the disease and ultimately suicide or stopping treatment if not be identified or treated [6, 7].

Prevalence of depression in ESRD patients has been reported from 10 to 100 percent; this rate of depression is an alarm that its approval and epidemiological studies carried out reveal that suicides occurred in these patients are 10 to 100 times higher than normal individuals [8].

Moreover, depression is one of the disorders, which allocates exorbitant costs. Depression is considered as one of the expensive diseases in America. Several studies show that compared to other patients, physical patients having depression hospitalized in hospital had 40 percent and 35 percent increase in terms of length of stay and the cost of treatment respectively [9]. Perhaps, the reason is that

depression is an important factor in decreasing the patients' tendency to take the treatment and lack of participation of depressed patients in the treatment has increased their medical problems and has endangered their health, even cause premature death [10]. Patients with ESRD are those patients dealing frequently with many social-psychological stress-makers because of changing in lifestyle due to illness, and treatment method, therefore, depression is one of the most common their psychological problems [11].

Using Beck Depression Inventory (BDI), Kamil et al (2000) found a significant relationship between severity of depression and mortality in dialysis patients [12]. In addition, they reported that patients earned higher depression score have experienced more complications during treatment [13]. In a research carried out by Coolins et al (1999), they implied to 25 - 50 percent of depression in hemodialysis patients [14].

Ekman et al (2004) reported that depression in receivers of kidney transplant was significantly lower [15] than patients undergoing hemodialysis and chronic transplant rejection. According to Haily, 20 percent of hemodialysis patients had psychological problems and 43 percent of them had depression [16]. Research conducted in Iran indicate high frequency of depression in dialysis patients; for example, Vafa'i et al investigated the prevalence of depression in hemodialysis patients using the BDI test and found that 53 percent of patients had depression [17]. Zahyraldin et al recorded that the rate of depression in hemodialysis patients was around 69 percent (scoring more than nine) using BDI test [18].

Since compared to other health stuffs, nurses are associated with dialysis patients; they can prevent the negative impacts and devastating effects of depression through identifying depression and its severity in order to assist its timely treatment. Therefore, timely diagnosis and effective treatment of depression would result in improving the life quality, disease prognosis, and patients' survival [19]. The present research was carried out to assess depression rate in hemodialysis and kidney transplant patients in Sanandaj, Kurdistan province, Iran.

2. Material and Methods

This is a cross – sectional, analytical-descriptive study. The samples were all patients treated with hemodialysis in 2005 at Hemodialysis Center, Tauhid Hospital in Sanandaj selected through census, considering rejection and admission criteria. Criteria for admission were that the samples studied were at least six months under treatment with hemodialysis and would like to participate in research and rejection criteria included a history of suffering from psychiatric disorders before treatment with hemodialysis, mourned during the last 6 months, and

physical and mental disabilities. Hence, the total number of patients participated in the study was 108 patients (61 dialysis and 47 hybrid).

In order to collect data, two questionnaires of demography including age, sex, qualification,..., and Center for Epidemiologic Studies-Depression (CES-D) Beck scale (including 21 questions with four options) were used to assess depression rate at wards studied. Validity and reliability of this questionnaire has been confirmed by Rodin (1999) and Beck (2009) [20]. Test-retest was used to determine the reliability of this tool. Scores of depression and severity of depression have been determined based on the Beck Depression Standard as No depression (0-9), Mild (10-18), Medium (19-29), and severe (30-63). For patients who were illiterate or for some reasons were not able to record answers, the questions desired were asked and their answers were recorded without any manipulation. The data collected were analyzed for T-test and Chi-Square, the descriptive statistics and statistical test using SPSS statistical software.

3. Results

108 (61 dialysis and 47 hybrid) patients treated by dialysis and transplantation were assessed and compared. The age mean of patients studied in the dialysis group and the transplantation group was 47.4 ± 15.5 and 39.9 ± 9.7 years old respectively with $P < 0.003$ showing significant difference.

Higher percentage (more than 30 percent) of patients in both groups had elementary qualification and a very small percentage had a higher education. Illiteracy level in dialysis patients was more compared to transplant patients. Nearly 20 percent of patients in both groups are single. Prevalence of depression in both groups was reversely proportional to the qualification. Moreover, rates of depression in hemodialysis patients increased as duration of hemodialysis increased, whereas this rate decreased with increasing duration of transplantation.

There was no significant relationship between severity of depression and gender, age, duration of treatment and marital status. Separate comparison of depression rate in men and women in each group showed no significant difference. Generally, 93 percent of dialysis patients had depression with different severity (mild to severe). Nearly, 56 percent of the transplant patients had depression with different severity (mild to severe) (Table). 16.4 percent of dialysis patients and 6.4 percent of transplant patients had severe depression. Moreover, the mean and standard deviation of both groups with $P < 0.000$ showed significant difference (Table 2) so that rate of depression in dialysis patients was much more than transplant patients. There was no

significant difference in depression rate with age, sex, marital status, and qualification.

Table 1: comparison of absolute and relative frequency in patients studied as dialysis, and kidney transplant group and their depression rate

Group classification	Depression level	Number	Percent
dialysis	No depression	4	6.6
	Mild	24	39.3
	Medium	23	37.7
	Sever	10	16.4
	Total	61	100
transplant	depression	18	38.3
	Mild	18	38.3
	Medium	8	17
	Sever	3	6.4
	Total	47	100
Total	depression	22	20.4
	Mild	42	38.9
	Medium	31	28.7
	Sever	13	12
	Total	108	100

Table 2: Comparison of mean and standard deviation in both dialysis and transplant patients

Dialysis (61 patients)		Transplantation (47 patients)		Total (108 patients)	
Mean	S.D.	Mean	S.D.	Mean	S.D.
21.8	8.04	13.23	8.31	17.15	17.8

4. Discussions

Depression is one of the most common psychological disorders in ESRD patients. Several studies have been reported the depression rate from 10 to 100 percent; this rate is especially higher in hemodialysis patients. Over the last years, more attention has been paid to psychosocial factors affecting the results of treatment. Progressing renal failure, patient feels more the symptoms of diseases day by day, and the best available treatment that can reduce symptoms and partial improvement in patient quality of life is hemodialysis and peritoneal dialysis and kidney transplantation is in final category of the ESRD treatment [7, 8].

The findings showed that 93.4 percent of patients treated with hemodialysis and 61.7 percent of kidney transplant patients have experienced some degree of depression and 16.4 percent of hemodialysis patients and 6.4 percent of transplant patients had severe depression. In these patients due to a lot of social-psychological stresses or problems that they experience, depression has been reported as the most commonly psychiatric diagnosed, associated with high mortality rate. Depression in hemodialysis patients was significantly more than patients

transplanted. Many studies indicate that prevalence of depression in dialysis patients is higher that is consistent with the present study. Akman et al found that depression rate in renal transplant recipients in Turkey (Ankara City) was significantly lower than the hemodialysis and chronic rejection patients ($P = 0.003$) [15]. In another study conducted in Italy, it was shown that transplant patients 4 months after kidney transplantation, their depression rate had been reduced from 45.8 percent to 32 percent and the severity of depression was changed from 16.4 percent to zero percent was [22]. Penkower et al found that the depression rate in kidney transplant patients was significantly lower than the hemodialysis patients [23]. Since the overall goal of our study was comparative study of depression rate in two groups, therefore, the results of the similar studies with various criteria and investigative techniques can be reliable. However, it was attempted to use the same research tools to study the rate of depression in patients.

Anis et al have noted the depression rate in hemodialysis patients in Pakistan was 56.1% [24]. Etemadi also has expressed that the rates of depression in hemodialysis patients is 65% [25]. Koo et al reported that depression rate in dialysis patients was 56.5 percent [26]. Vafa'i has claimed that this percentage was 33.3 [27]. Other studies, including Kimmel et al, have proved that depression results in the incidence of malnutrition, immune system disorders, and suicide risk [7].

In the present study, comparing mean and standard deviation of two groups showed significant differences with $P < 0.000$ so that the average depression in dialysis and transplant patients was 21.08 ± 8.04 and 13.23 ± 8.31 respectively. Other researchers, including Koo et al from Korea, Nordan et al from Turkey, and Robert et al from United States reported the depression rate in hemodialysis patients as 22.7 ± 11.4 , 14.1 ± 11.3 , 12.1 ± 7.7 respectively [26,28, 29] showing that rate of depression in dialysis patients is quite variable depending on different conditions. With reference to job loss; reduced income; reduced role in family, workplace, and the community; presence of refractory and incurable disease; and stresses resulted during treatment can justify the increase of the depression mean. On the other hand, the majority of patients studied were from poor and low income families with financial ties to the relatives; however, the cultural poverty would not ineffective.

Factors that may undermine the life quality of patients include age, sex, race, level of anemia, nutrition, glomerular filtration rate, quality and techniques effective in dialysis treatment, social factors and depression. Among all the factors

mentioned, depression has been known as one of the factors that has determinative role in prognosis (pish agahi) and survival of patient. Several studies have proved the relationship between depression and mortality rate of patients [30]. In present study, despite assessing depression rate in these (dialysis and renal transplantation) patients, the possible demographic factors associated with severity of depression has also been discussed. No significant difference was found between depression rate and age, sex, qualification, and treatment duration.

Although similar research works have reported relationship between gender and depression significant, Vafa'i has claimed that the depression in women was more than men having a significant difference [27]. Koo et al have also found significant differences between age and depression rate [26], however, Etemadi did not find a significant relationship between the sex and age with depression [25]. The present study shows that the highest rate of depression was in dialysis patients, in age group of ≥ 45 years old and the lowest in the age group of 15-24 years old. Moreover, the highest rate of depression was in transplanted patients in the age group of 35-44 years old and the lowest in the age group 25-34 shows.

80 percent of dialysis patients and 58 percent of transplanted patients have obtained score equals to or more than 9, increasing with increasing duration of dialysis treatment, but not significant and does not show significant difference in transplanted patients. Koo et al have found significant relationship between depression and dialysis treatment duration [26].

Depression severity was higher in single patients rather than the married one, which is in agreement with the other researches including Akman et al and Vafa'i [27], however, Etemadi has reported that this rate was more in married patients [25]. In the present study, increasing level of qualification, the depression rate decreased, although it is not significant. Several studies suggest that depression in individuals having no higher education, was more than individuals having academic qualification [23].

According to the results obtained in this study and the results of some similar studies mentioned, it seems that the psychological problems of dialysis patients in dialysis wards must paid more attention. For this purpose, applying psychiatric services in hospitals and specialty divisions and activating counseling psychiatric services, which are rapidly growing in developed and developing countries is recommended to provide mental health for patients and real time diagnosis and treatment of psychiatric disorders so that to prevent the negative impacts of these disorders on life quality and the treatment process of background disease. One of the limitations

of this study as a preliminary study is low sample volume. A study with a larger size is recommended. One of the other limitations of this study was applying only one psychological tool for assessment; therefore, use of psychiatric interviews and or other psychological tools is recommended to make more ensure and identification of other psychiatric problems of this group of patients

The present study showed that depression in patients with renal failure is considered as a serious threat and can jeopardize the health of patients. Therefore, conducting periodically psychiatric examinations is recommended for timely diagnosis and subsequent treatment of depression in hemodialysis and renal transplant patients. In addition, it is recommended to carry out other studies on more patients with the aim of identifying other factors related such as stressors of hemodialysis patients. Such interventional researches could be designed and implemented to increase life skills to deal with psychological-social stressors, and thus to prevent and to treat depression and to enhance life quality of the patients.

Acknowledgements:

Research Deputy of Kurdistan University of Medical Sciences, administrators of Tauhid Hospital Training-Treatment Center, and those patients participated in this research are thanked.

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