

# Depression among patients undergoing hemodialysis; a narrative review

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Received: 14 March 2017

Accepted: 28 June 2017

Published: 16 July 2017

**Keywords:** Psychological problem, Hemodialysis patients, End-stage renal diseases, Developing country, Iran

## Abstract

Psychological problems such as negatively affect quality of life in hemodialysis patients and their response to treatment. In present study we reviewed prevalence of depression among Iranian end-stage renal diseases patients who were under hemodialysis. A narrative review of the literature was undertaken between May 2016 and July 2016, which involved searching several electronic sources including Cochrane Library, Science Direct, Elsevier, Web of Knowledge, EMBASE, PubMed, Medline, Scopus, IranMedex, Scientific Information Database, ISC, Google, Google Scholar and Yahoo. The following keywords were used; chronic kidney disease, end-stage renal disease, psychological issue, depression, dialysis, hemodialysis, renal replacement therapy, patients, Iran. We included 15 studies for this review. Most studies included in present study used self-reported questionnaire to measuring depression. According to finding of present study, depression prevalence was between 39.2% and 90.2%. Depression has several adverse effects on end-stage renal disease patients. Present review study revealed that depression is common among Iranian hemodialysis patients. All healthcare workers should be aware of this and planed for prevention and management.

## Citation:

Mazroie Sebdani A, Pourhossein Alamdary M, Abdollahpour N. Depression among patients undergoing hemodialysis; a narrative review. J Prev Epidemiol. 2018;3(1):e09.

## Introduction

End-stage renal disease (ESRD) (last stage of chronic renal failure) is a chronic restrictive illness that emerging as globally important public health problems (1,2). In this disease kidneys fail to work and the body retains fluid. Factors such as diabetes, hypertension, proteinuria and excess weight, smoking, family history of kidney disease and advanced age increase the risk of ESRD development (2-5). Profound challenges confront societies in the entire world as a result of the growth of kidney disease in general and of ESRD in particular (6-8). According to the latest United State Renal Data System Annual Data Report, more than 660 000 Americans are being treated for end stage renal disease (9). Studies also reported that around 0.03% of the US population began renal replacement therapy (RRT) in 2004 (10). Similar to most other countries, prevalence of ESRD in Iran increased in recent years (11).

Dialysis and kidney transplantation are the only treatment options available for patients suffering from ESRD (2). Studies revealed, more than 1 million patients with ESRD are on RRT worldwide, and it their population will be doubled within the next decade (2). Patients under hemodialysis

## Core tip

When a patient needs maintenance hemodialysis therapy, level of physical, mental, social and financial stress may increase significantly, leading to an increased chance of depression development. Present review study revealed that depression is common among Iranian hemodialysis patients. This common mental disorder may negatively effect on the quality of life in patients and their response to treatment. It is important that all the patients on maintenance hemodialysis be frequently screened for signs and symptoms of psychiatric disorders such as depression.

usually experience several physical problems that affect their quality of life negatively (12). Patients with ESRDs undergoing hemodialysis have certain restrictions, such as the control of diet, fluid intake, chronic pain and discomfort associated with puncturing the arteriovenous fistula on the day of dialysis. Also psychological problems such as depression and anxiety are common in among this group of patients (13). It seems that psychological problems among ESRD undergoing hemodialysis in developing countries such as Iran were more prevalent. Several studies conducted in this regard, however review studies are very limited. In present study we reviewed prevalence of

depression among Iranian ESRD patients who were under hemodialysis.

## Methods

The aim of present study was to conduct a systematic review to reveal prevalence of depression among hemodialysis patients. Dialysis in Iran is always managed governmentally. The first hemodialysis center was set up in 1975 in Iran. In 2008 about 12 500 patients in Iran were under hemodialysis treatment (14). A narrative review of the literature was considered the appropriate method to answer the research question. Taking this approach, a narrative review of the literature was undertaken between May 2016 and July 2016, which involved searching several electronic databases including Cochrane Library, Science Direct, Elsevier, Web of Knowledge, EMBASE, PubMed, Medline, Scopus, IranMedex, Scientific Information Database, ISC, Google, Google Scholar and Yahoo. The following keywords were used; chronic kidney disease, end-stage renal disease, psychological issue, depression, dialysis, hemodialysis, renal replacement therapy, patients, Iran. The main strengths and limitations of each paper were summarized. Titles and abstracts were examined for relevance to the review question, accessibility and English and Persian language. The review identified 24 papers. Two authors independently assessed trials for inclusion and extracted data. Data were checked for accuracy.

## Results

We included 15 studies in the review (Table 1). In one study, Nazemian et al examined the level of depression among 150 hemodialysis patients. They used Center for Epidemiologic Studies Depression Scale (CESD) for detection patients' depression level. Incidence of depression in the study by Nazemian et al was 64.5%. They also reported that factors such as history of kidney

transplant, the length of the time, hemodialysis patients, job and level of income were correlated with depression level. Age and sex and marital status were not related to depression (15).

Accordingly, Hashemi et al examined the level of depression among 46 patients treated with hemodialysis using Beck Depression Inventory. Data collected using the SPSS software testing descriptive and chi-square were analyzed. They reported that 39.2% of patients had some level of depressive disorder (16).

Other study conducted on 120 patients on conventional maintenance hemodialysis by Afshar et al. They used Beck Depression Questionnaires in order to depression screening. Results of the investigation by Afshar et al revealed that 70% of patients experienced some levels of depression. Of them 26.7% suffered from severe depression. Factors such as age, gender, underlying disease, hemodialysis duration, history of renal transplantation, anemia, marriage status, occupation, serum albumin level and depression have not significant correlation with patients' level of depression (17).

Likewise, in the other study in 2010, Mogharab et al examined the prevalence of depression and life events among 60 hemodialysis patients in Birjand using Beck Depression Questionnaire and Holmes-Rahe Life Event Questionnaire. More than half (56.7%) of participants in the study of Moghareb et al were depressed. Only participants' gender was related to depression level (18).

Furthermore, Salehi et al examined the prevalence of depression in patients undergoing hemodialysis in Tehran using Beck Depression Inventory. Rate of depression in the study of Salehi et al was 50%. Of them 33.3%, 15% and 1.7% reported mild, moderate and severe level of depression respectively. Only patients' level of education was related to their level of depression (19).

In a case-control study in 2006, Karaminia et al compared

**Table 1.** Studies included in this study

Author	Year	Location	Sample size	Instrument	Rate of depression
Nazemian et al	2006	Mashhad	150	CESD	64.5%
Hashemi et al	2014	North Khorasan	46	BDI	39.2%
Afshar et al	2009	Tehran	120	BDI	70%
Mogharab et al	2010	Birjand	60	BDI	56.7%
Salehi et al	2000	Tehran	60	BDI	50%
Kariminia et al	2006	Tehran	39	HADS	-
Rezaei Ghalechi et al	2013	Ardebil	100	Self-designed	42%
Sanavia and Afshar	2012	Tehran	120	BDI	70%
Najafipour et al	2012	Shiraz	56	BDI	85%
Anjomshoa et al	2013	Kerman	217	BDI	86.4%
Mollahadi et al	2009	Tehran	147	DASS21	60.5%
Nasiri Zarrin Gabaei et al	2012	Bojnourd	120	BDI	90.8%
Asadi et al	2014	Kerman	182	BDI	68.1%
Ahmadzade et al	2010	Isfahan	196	SCL-90-R	50%
Zahir Aldin et al	2005	Tehran	100	BDI	69%

the level of anxiety and depression in 32 transplant recipients and 39 hemodialysis patients in Tehran. They used the Hospital Anxiety Depression Scale. Kariminia et al found hemodialysis patients are at higher risk of depression. However they not reported percentage of depression in their patients (20).

Similarly, in other study in 2013, Rezaei Ghalechi and colleagues examined the prevalence of depression in hemodialysis patients. Participants of their study were 100 hemodialysis patients from Ardabil province. They used a self-designed questionnaire for measuring depression. In their investigation, 42 patients (42%) were depressed. Importantly, the result of investigation by Rezaei Ghalechi et al showed that men are at higher risk of depression compared to women (21).

Additionally, in other study, Sanavia and Afshar examined the depression among 120 patients on conventional maintenance hemodialysis using Beck's questionnaires in Tehran. Frequency of depression among study population in their study was 70% while 26.7% of them suffered from severe depression. They could not find any correlation between patients' age, gender, underlying disease, and hemodialysis duration, history of renal transplantation, marital status, occupation, hemoglobin, and serum albumin level with depression level (22).

Previously in 2012, Najafipour et al examined the prevalence of depression among 56 patients with chronic hemodialysis in Jahrom, Shiraz. They used Beck Depression Inventory to screening depression. Around 85% of patients in their study had some degree of depression. Of their patients, 34.5% had mild depression while 30.9% and 18.2% had moderate depression and severe depression respectively; and especially 1.8% were suffering from very severe depression (23).

In other study in 2013, Anjomshoa et al examined level of depression among hemodialysis patients in Kerman, southeast of Iran. The depression level of patients in was assessed using Iranian version of Beck Depression Inventory. In this study 86.4% of hemodialysis patients had some levels of depression. In general, 29%, 30% and 27.4% suffered from mild, moderate and severe level of depression, respectively. They also showed that diabetic patients and patients with hypertension are at a higher risk of depression (24).

In other study in 2009, Mollahadi et al compared anxiety, stress and depression between hemodialysis and kidney transplantation patients in Tehran. They examined 147 hemodialysis and 146 kidney transplantation patients using Depression, Anxiety and Stress Scale 21 (DASS21). They reported that 63.9% of hemodialysis patients had anxiety, 60.5% had depression and 51.7% had stress (25).

Several years ago, a study in 2010 performed by Ahmadzade et al, in Nour and Ali-Asghar hospitals in Isfahan. They used SCL-90-R questionnaire for measuring prevalence of depression, anxiety and psychosis. Of 196 patients studied by Ahmadzade et al, 50% had some levels of depression. Patients' age and frequency of dialysis in week were related to depression rate in their study (26).

In a case-control study, Nasiri Zarrin Gabaei et al examined the prevalence of depression and its associated factors in hemodialysis patients in the hospital of Bojnurd. They used the Beck Depression Inventory questionnaire for measuring depression. The prevalence of depression in the study was 90.8%. They also reported a significant correlation between participant's gender, age, education level, marital status, history of drug administration and underlying disease with their level of depression (27).

In other study Asadi et al examined the correlation between social support and depression among patients undergoing hemodialysis in Kerman. They used the Beck's Depression Questionnaire and Social Support Questionnaire (ESSI: Enriched Social Support Instrument). According to findings of Asadi et al, 68.1% of the subjects had some degree of depression (28).

Finally, Zahir-alain et al examined depression level among 100 hemodialysis patients in Tehran. They used the Beck's Depression Questionnaire. According to findings of the study conducted by Zahir-Aldin et al, 69% of hemodialysis patients had some degree of depression (29).

## Discussion

Chronic kidney disease and ESRD are emerging as globally important public health problems (2). In present study we reviewed prevalence of depression among Iranian ESRD patients who were under hemodialysis. According to finding of present study, reported prevalence was between 39.2% and 90.2%.

Results of present study are similar to results of one previous review study in Iran. In this study, that included Iranian studies from 1998 to 2013, prevalence rate was reported between 28% to 93% percent (30). However in comparison to review studies in other countries, prevalence of depression in present study is higher. In the study by Palmer et al, the point prevalence of depressive symptoms within the 249 individual study populations was reported between 1.4% and 94.9%, with an overall meta-analytical prevalence of 34.0% (31). Murtagh et al reviewed the prevalence of symptoms in ESRD. Weighted mean prevalence (and range) in Murtagh et al study was fatigue/tiredness 71% (12% to 97%), pruritus 55% (10% to 77%), constipation 53% (8% to 57%), anorexia 49% (25% to 61%), pain 47% (8% to 82%), sleep disturbance 44% (20% to 83%), anxiety 38% (12% to 52%), dyspnea 35% (11% to 55%), nausea 33% (15% to 48%), restless legs 30% (8% to 52%), and depression 27% (5% to 58%) (32).

Depression is the most common psychological problem among ESRD patients. Detection and management of depression has recently been the center of focus in the nephrology literature (33,34). Depression has several adverse effects on ESRD patients. For example, Hedayati et al examined the association between major depressive episodes in 267 patients with chronic kidney disease and initiation of dialysis, hospitalization, or death. Among 267 patients in their study, 56 patients had major depressive episodes (21%). They found, major depressive episode was associated with an increased risk of poor outcomes

in this group of patients (35). Various pharmacological and non-pharmacological treatments such as first and second generation antidepressants, cognitive behavioral therapy (CBT), exercise training, acupuncture, massage, relaxation, melody and rhythm and spirituality counseling exist for depression management in hemodialysis patients (36-38). Similarly, Valsaraj et al examined the effect of cognitive behavioral therapy on anxiety and depression among 80 people undergoing hemodialysis. Results of this study showed significant reduction in mean score of anxiety and depression after cognitive behavioral therapy (39). Additionally, Kim et al examined the effect of music therapy on anxiety and depression in hemodialysis patients. Results of their investigation revealed that music decrease patients' anxiety and depression significantly (40).

### Conclusion

When a patient needs maintenance hemodialysis therapy, level of physical, mental, social and financial stress may increase significantly, leading to an increased chance of depression development. Present review study revealed that depression is common among Iranian hemodialysis patients. This common mental disorder may negatively affect on the quality of life in patients and their response to treatment. It is important that all the patients on maintenance hemodialysis be frequently screened for signs and symptoms of psychiatric disorders such as depression.

### Limitations of the study

Most studies included in present study used self-reported questionnaire to measuring depression. Also included studies were related to only 9 provinces of Iran.

### Authors' contribution

Design and concept: AMS, MPA and NA. Data analysis: AMS, MPA and NA. Writing of the manuscript: AMS and NA. Critical revision and finalizing paper: MPA and NA.

### Conflicts of interest

The authors declare no conflict of interest.

### Ethical considerations

Ethical issues (including plagiarism, data fabrication, double publication) have been completely observed by the authors.

### Funding/Support

None.

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