Depression among patients undergoing hemodialysis; a narrative review

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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.

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 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. 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.

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.

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.

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.

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.

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

<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th>Location</th>
<th>Sample size</th>
<th>Instrument</th>
<th>Rate of depression</th>
</tr>
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<tbody>
<tr>
<td>Nazemian et al</td>
<td>2006</td>
<td>Mashhad</td>
<td>150</td>
<td>CESD</td>
<td>64.5%</td>
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<td>Hashemi et al</td>
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<td>North Khorasan</td>
<td>46</td>
<td>BDI</td>
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<td>Afshar et al</td>
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<td>120</td>
<td>BDI</td>
<td>70%</td>
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<tr>
<td>Mogharab et al</td>
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<td>Birjand</td>
<td>60</td>
<td>BDI</td>
<td>56.7%</td>
</tr>
<tr>
<td>Salehi et al</td>
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<td>Tehran</td>
<td>60</td>
<td>BDI</td>
<td>50%</td>
</tr>
<tr>
<td>Kariminia et al</td>
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<td>Tehran</td>
<td>39</td>
<td>HADS</td>
<td>-</td>
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<td>Rezaei Ghalechi et al</td>
<td>2013</td>
<td>Ardebil</td>
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<td>Self-designed</td>
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<tr>
<td>Sanavia and Afshar</td>
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<td>Tehran</td>
<td>120</td>
<td>BDI</td>
<td>70%</td>
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<tr>
<td>Najafipour et al</td>
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<td>Shiraz</td>
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<td>BDI</td>
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<td>Kerman</td>
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<td>BDI</td>
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<tr>
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<td>Tehran</td>
<td>147</td>
<td>DASS21</td>
<td>60.5%</td>
</tr>
<tr>
<td>Nasiri Zarrin Gabri et al</td>
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<td>Bojnourd</td>
<td>120</td>
<td>BDI</td>
<td>90.8%</td>
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<tr>
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<td>BDI</td>
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<td>Ahmazade et al</td>
<td>2010</td>
<td>Isfahan</td>
<td>196</td>
<td>SCL-90-R</td>
<td>50%</td>
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<tr>
<td>Zahir Aldin et al</td>
<td>2005</td>
<td>Tehran</td>
<td>100</td>
<td>BDI</td>
<td>69%</td>
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</table>
Depression in hemodialysis

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-aldin 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 ESRDs 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, acupressure, 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.

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**References**


