

ORIGINAL PAPER

The Prevalence Of Anxiety And Depression In Chronic Kidney Disease Patients

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Abstract

Objective: The main objective of this study is to identify the prevalence of anxiety and depression among CKD patients. **Methods:** This is a cross sectional study in CKD patients with a routine hemodialysis two times per week. The prevalence of anxiety and depression was assessed using Hospital Anxiety and Depression Scale, Indonesian version. This scale has 14 questions, clustered into 2 sub-scale: 7 questions to identify anxiety and 7 questions to identify depression. Score 0 to 7 considered as negative result or normal and score ≥ 8 considered as positive result or abnormal. **Results:** The subjects were dominated by male (63.9%), age 51-60 years (31.3%), had married (82.8%), have a high educational background (46.7%), and had an occupation (78.7%). The highest anxiety mean score was in subjects aged 40-50 years, whereas the highest depression mean score was in low educational background group. About 31% of the subjects had an anxiety and 23.7% of the subjects had a depression. Among them are dominated by mild case. There was no subject with severe case. Gender, age, marital status, educational background, and working history were not significant to the presence of anxiety and depression in CKD patients. **Conclusion:** Anxiety and depression are a common psychological problems among CKD patients.

Keywords: Chronic Kidney Disease, Anxiety, Depression, Hemodialysis

Introduction

Chronic kidney disease (CKD) estimated affects 10% of the general population [1]. Due to the advancement of science and the

increasingly aging populations, the rates of chronic patients, including CKD patients, are higher [2]. The prevalence of CKD in Indonesia increase from 2.0 ‰ in 2013 to 3.8 ‰ in 2018 [3]. The number of new

hemodialysis patients in Indonesia also increase consistently from 2013 to 2017 [4].

CKD is a complex condition having both physical and psychological problems for the patient [5]. The transition from pre-dialysis CKD to renal replacement therapy, such as hemodialysis, is a stressful event [6]. CKD patients with a routine hemodialysis experience many psychosocial problems such as anxiety and depression [7-9].

Anxiety and depression are often under-recognized and under-treated [10,29]. Multiple consequences of a chronic disease diagnosis, including CKD, can contribute to depression or anxiety such as the loss of a sense of self, and uncertainty about the future, loss of relationships, social isolation, and feelings of guilt [11-12].

Anxiety and depression among CKD patients have been associated with poor quality of life, increased morbidity, and mortality [11,13-14]. By identifying CKD patients with a higher risk of anxiety and depression, healthcare providers may be better able to ensure the provision of appropriate rehabilitation to this population [15].

To the best of our knowledge, there are no studies that have reported the prevalence of anxiety and depression along with its influencing factors among CKD patients in Indonesia. The main objective of this study is to identify the prevalence of anxiety and depression among CKD patients. The second objective is to examine the influencing factor(s) to the presence of anxiety and depression in CKD patients.

Method

This is a cross sectional study conducted at Bethesda Hospital and Panti Rapih Hospital,

Yogyakarta, Indonesia. The subjects were adult (age >18 years), had a CKD with a routine hemodialysis two times per week. The minimum subject requirement was 120 subjects. Subjects who did not willing to join the study, participate in other trial, incompetent to give a consent and to answer the questionnaire were excluded from this study.

The prevalence of anxiety and depression was assessed using Hospital Anxiety and Depression Scale, Indonesian version. This scale has 14 questions, clustered into 2 sub-scale: 7 questions to identify anxiety and 7 questions to identify depression. Each question has 4 answer option, ranged from 0 to 3. The higher number indicates the worse outcome. The final result obtained by sum up each sub-scale. Score 0 to 7 considered as negative result or normal and score ≥ 8 considered as positive result or abnormal. The positive result can be divided into 3 group: a mild case (scored 8 to 10), a moderate case (scored 11 to 15), and a severe case (scored 16 to 21). While answering the questions, subjects were accompanied by researcher to minimize a bias due to misperception.

Subjects's characteristics recorded in this study i.e. gender, age, marital status, educational background, and working history. Age is clustered into 5 group, age >70 years, 61 to 70 years, 51 to 60 years, 40 to 50 years, and <40 years. Marital status differed into married and single. Subject who had divorced or never been married included in single group. Educational background differed into low, moderate, and high. Subject without a formal education or elementary school included in low educational background. Junior and senior high school included in moderate educational background. Subjects with bachelor degree or higher included in high

educational background. Working history grouped into working and unemployment. Subjects who retired included in unemployment group.

The final score of anxiety and depression sub-scale was calculated for normality using Kolmogorov-Smirnov. The analysis continued with independent t test or Mann Whitney test for nominal variables and one-way ANOVA for ordinal variables to evaluate the significant variables to the presence of anxiety and depression. The significant value was set at $p < 0.05$.

Each subject involved in this study signed an informed consent form. All data obtained from this study is classified. This study was verified by Duta Wacana Christian University School of Medicine Ethical Research Committee, Yogyakarta, Indonesia.

Results

Total subjects participated in this study were 122. The subjects were dominated by male (63.9%), age 51-60 years (31.3%), had married (82.8%), have a high educational background (46.7%), and had an occupation (78.7%). The highest anxiety mean score was in subjects aged 40-50 years, whereas the highest depression mean score was in low educational background group. Table 1 shows the detail of subjects' characteristics. About 31% of the subjects had an anxiety and 23.7% of the subjects had a depression. Among them are dominated by mild case. There was no subject with severe case.

There are many factors influencing mental status in patients such as socioeconomic status, religion, and culture. The score of anxiety and depression sub-scale were analyzed to several variables. Gender, age, marital status, educational background, and working history were not significant to the presence of anxiety and depression in CKD patients.

Table 1. The Characteristics of Subjects

Characteristics (n: 122)	n (%)	Anxiety Mean Score	Depression Mean Score
Gender			
Male	78 (63.9)	5.15 ± 3.58	5.38 ± 3.19
Female	44 (36.1)	6.31 ± 3.67	5.13 ± 3.27
Mean age	51.7 ± 12.6 years		
Age			
>70	25 (20.5)	6.33 ± 5.85	6 ± 5.29
61-70	25 (20.5)	4.54 ± 3.88	5.09 ± 3.10
51-60	38 (31.3)	6.21 ± 3.81	5.78 ± 3.23
40-50	31 (25.4)	6.53 ± 3.17	5.36 ± 2.64
<40	3 (2.5)	4.84 ± 3.06	4.64 ± 3.69
Marital status			
Married	101 (82.8)	5.45 ± 3.67	5.13 ± 3.05
Single	21 (17.2)	6.14 ± 3.56	6.04 ± 3.87
Educational background			
Low	12 (9.8)	4.08 ± 2.84	6.75 ± 3.72

Moderate	53 (43.4)	5.26 ± 3.55	5.28 ± 3.43
High	57 (46.7)	6.17 ± 3.81	5 ± 2.84
Working history			
Working	96 (78.7)	5.55 ± 3.47	5.12 ± 3.13
Unemployment	26 (21.3)	5.57 ± 4.36	5.73 ± 3.56

Table 2. The Prevalence of Anxiety and Depression

Score Range	Anxiety Sub-scale n (%)	Depression Sub-scale n (%)
0-7	84 (68.8%)	93 (76.2%)
8-10	25 (20.4%)	22 (18.0%)
11-15	13 (10.6%)	7 (5.7%)
16-21	0 (0)	0

Table 3. Analysis of Sub-scales

Variables	Anxiety Sub-scale	Depression Sub-scale
Gender	0.092	0.612
Age	0.169	0.704
Marital Status	0.444	0.379
Educational background	0.140	0.232
Working history	0.749	0.410

Discussion

The present study aimed to identify the prevalence of anxiety and depression in CKD patients. By using HADS questionnaire, the prevalence of anxiety and depression in CKD patients are 31% and 23.7% respectively. Many previous studies have shown a higher result. A cross sectional study in 200 patients of CKD stage III to V in India using HADS questionnaire were found to be 71% and 69% respectively [16]. However, only 50 subjects in this study were on hemodialysis. A research by Yoong et al. (2017) on hemodialysis patients who completed the HADS, 45.4% among them reported elevated anxiety symptoms and

49.9% reported elevated depressive symptoms [17]. Other observational cross-sectional study of 128 hemodialysis patients showed a lower result. By using HADS, depression of any intensity was found in 9.3% and anxiety of any intensity was found in 11.7% [18]. A prospective study that included stages IV – V CKD during hemodialysis revealed 29% of them are anxious and 58% of them are depressed [6]. These differences, in spite of using a same questionnaire, may be due to several factors including the distribution of subjects' characteristic, duration of hemodialysis, frequency of hemodialysis, and the presence of comorbidities. Different method to assess the presence of anxiety and depression leads

to different result. Other instrument used to assess the presence of anxiety and depression including Hamilton rating scale for anxiety (HAM-A), Hamilton rating scale for depression (HAM-D), Beck Anxiety Inventory (BAI), Beck Depression Inventory (BDI), Patient Health Questionnaire, and Center for Epidemiological Studies Depression Scale (CES-D).

This current study indicates female (6.31 ± 3.67), aged 40-50 years (6.53 ± 3.17), and high educational background (6.17 ± 3.81) had a higher anxiety mean score, whereas male (5.38 ± 3.19), aged >70 years (6 ± 5.29), and low educational background (6.75 ± 3.72) had a higher depression mean score. Single and unemployment both had a high anxiety and depression mean score. These results are in concordance to study by Theofilou (2011). Older patients and those who divorced or widowed reported a significantly higher level of depression [19]. Females were observed to have a tendency of developing anxiety, whereas males develop depression [20]. Females reported worse mental health with more somatic symptoms, social dysfunction, and more trait anxiety in comparison to males [19]. Patients who had lower levels of education and those who are unemployed were also observed to be at higher risks [13].

Gender, age, marital status, educational background, and working history were not significant to increase the prevalence of anxiety and depression as shown in this study. This results were similar to previous studies. Age, gender, marital status, and educational level were not significant to anxiety and depression as stated by Bezzera et al. (2018) [6]. A prospective cross-sectional observational study of 150 patients showed there was no relationship between education and depression or anxiety

[21]. A study in end-stage renal disease (ESRD) patients concluded age (p: 0.27) and gender (p: 0.06) were not a predictor of depression and anxiety [22]. The results of the multiple logistic analysis in research by Chiang et al. (2013) indicated that sex, age, and marital status were not associated with depression among CKD patients [15].

Anxiety and depression in ESRD have been significantly associated with adverse medical outcome [23]. This statement is supported by many previous researches. Data of more than 67,000 patients undergoing dialysis found that the presence of depressive symptoms is associated with a 50% increase in the risk of mortality [24]. A prospective observational study concluded that depressive symptoms in CKD predicted increased rate of progression to ESRD, faster dialysis initiation, death, or hospitalization [25]. A 3-year follow-up prospective cohort study on 100 CKD subjects not on dialysis showed that patients with depressive symptoms have a twofold higher risk of progression to death or dialysis and a composite event (death, initiation of dialysis or hospitalization) [26].

Higher levels of anxiety in patients who received HD can be explained. Those patients are need to stay connected to the machine for several hours a week which is restricting their independence and autonomy. Moreover, they are subjected to the stress of hospital visits every two or three days, transportation to the hospital, having to share time with other patients, restricted diet and inability to make long trips [18]. There is a positive correlation between anxiety and depression in ESRD patients and also positively correlated with the performance status of ESRD patients [27].

There are some hypothesis regarding the

correlation of psychological problems to the presence of adverse medical outcome. Psychological problems, especially depression, can increase inflammation (which in turn can accelerate atherosclerosis), implicated in the modulation of vascular tone by altering serotonin levels and autonomic nervous system function, increasing platelet aggregation, altering cortisol, and norepinephrine production. These mechanisms can lead to cardiovascular events and stroke [11]. There are also behavioral consequences of depression, which may adversely affect medical outcomes, such as medication noncompliance [28]. Noncompliance with self-care behaviors could worsen blood pressure, blood glucose, cholesterol, bone metabolism, anemia, phosphorus, and volume status in patients with CKD and ESRD, and ultimately lead to adverse health outcomes [14].

At least there are two strategies to identify an anxiety and/or depression on CKD patients. The first is a conservative approach by screen only patients with signs of anxiety and depression. The second is to screen all new CKD or ESRD patients periodically (for every 6 months to 1 year) for anxiety and depression with screening questionnaires [14]. Since the prevalence of anxiety and depression in this study and previous studies are high, a prompt identification of anxiety and depression among CKD patients along with a correct treatment are required. By reducing the severity of anxiety and depression, morbidity and mortality rate are expected to reduce.

Conclusion

Anxiety and depression are a common psychological problems among CKD

patients. A prompt identification and treatment of anxiety and depression can help in enhancing the patient's performance status, improving quality of life, thus reducing morbidity and mortality rate among CKD patients.

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Conflict Of Interest

There are no conflicts of interest to disclose.

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