

Research Article

## Depression among Chronic Kidney Disease Patients at a Tertiary Level Hospital in Bangladesh

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### Abstract

**Background:** Depression is a common psychiatric problem around the world. It is more frequent among patients with chronic illnesses in comparison to general population. It is more common in patients with chronic kidney disease (CKD).

**Objective:** To describe the depression of CKD patients at a tertiary level hospital in Bangladesh.

**Methodology:** This descriptive study was conducted at Department of Nephrology, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka,

Bangladesh from July 2019 to June 2020, among 112 CKD patients recruited by convenience sampling technique. Data were collected by face to face interview. The Zung Self-Rating Depression Scale (SDS) was used to assess the severity of depression.

**Results:** The mean age of the participants was 46.75 ( $\pm$  14.80) years of them 60.71% were male, 39.29% female and 82.14% married. The mean Zung score of depression among CKD patients was 54.43 ( $\pm$  6.34); from the total number of patients 80.36% had depression; of them mild depression was 61.61%, moderate depression was 19.64% and severe depression was 0.89%. A few socio demographic

factors such as religious belief, unemployment, economic independency, lack of regular physical exercise along with family history of depression and duration of illness in CKD had demonstrated significant association with patient's depression ( $p < 0.05$ ).

**Conclusion:** Depression is frequently common in CKD patients and mild depression is more common. An early diagnosis and proper treatment of depression could be helpful in improving the quality of life of CKD patients.

**Keywords:** Chronic illness; Chronic kidney disease (CKD); Depression; Zung Self-Rating Depression Scale (SDS)

## 1. Introduction

Depression is a mental state which is marked by sadness, emptiness, hopelessness and loss of interest for most of the time [1]. It is characterized by a persistently depressed mood lasting for a minimum of two weeks [2]. Depression affects 322 million people around the world [3]. Evidence showed that depression is an important cause of disability worldwide [4]. Depression occurs more frequently in patients with chronic illness than in the general population [5]. Depression involves both cognitive and somatic features. The somatic characteristics of depression are very similar to the symptoms of uremia; such as anorexia, sleep disturbances, fatigue and gastrointestinal disorders [6]. These similarities make the recognition of depression difficult in chronic kidney disease (CKD) patients. CKD is a global health problem equally affecting the people of developed countries as well as developing countries.

CKD causes enormous economic losses, and also triggers major challenges in regards to health. CKD is associated with increased social and psychological problems. Life-long treatment, recurrent symptoms, diet restriction, the high cost of treatment, deprived kidney function over time and limited capacity to work are some of the factors that alter the daily lifestyle and social functioning of CKD patients which may predispose them to increased risks of depression [7].

The prevalence of depression among general population ranges from 20% to 25% in women and 7% to 12% in men [8]. While the prevalence of depression among CKD patients has varied widely in different populations [9]. The reported prevalence of depression among CKD patients ranged between 20% and 46% in developed countries [10-13]. On the other hand this prevalence was 44.1% to 92.7% in developing countries [14-16]. Worldwide CKD is increasingly prevalent day by day. In Bangladesh approximately 100-120 CKD patients per million populations reach end stage renal disease (ESRD) every year [17]. The incidence of CKD is increasing rapidly in this country. But there is scarce evidence to assess the depression among CKD patients in Bangladesh.

Therefore, many cases of depression in the CKD patients remain undiagnosed and untreated. Proper screening and early diagnosis help in decreasing this burden and improve patient's quality of life. In this background this study aimed to describe the depression of CKD patients at a tertiary level hospital in Bangladesh.

## 2. Methods

### 2.1 Study design

This descriptive study was carried out to describe the depression among chronic kidney disease (CKD) patients at Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh. The study was conducted from July 2019 to June 2020. This study was approved by the ethical review committee BSMMU, Dhaka, Bangladesh.

### 2.2 Participants

The study was carried out among 112 CKD patients who were admitted at Bangabandhu Sheikh Mujib Medical University (BSMMU) hospital in Dhaka, Bangladesh. Participants were selected by convenient sampling technique following selection criteria. Adult patients (age >18 years) of both sexes, having chronic kidney disease and willing to participate in this study were included. Renal transplant patients, patients' having any types of malignancy, patients having previous history of any psychiatric disorder were excluded from the study.

### 2.3 Instruments

Two instruments were used for data collection. These were (I) Demographic Questionnaire and (II) Zung Self-Rating Depression Scale (SDS).

- Demographic Questionnaire: The demographic questionnaire consists of 12 items including: age, gender, marital status, education level, religious belief, occupation, monthly family income, economic dependency to others, place of residence, regular physical exercise, family history of depression, duration of illness etc.

- Zung Self-Rating Depression Scale: The Zung Self-Rating Depression Scale which was developed by Romera et al. to assess the level of depression for patients diagnosed with depressive disorder [18]. The Zung Self-Rating Depression Scale is a short, self-administered survey to quantify the depression status of a patient. There are 20 items on the scale that rate the four common characteristics of depression: the pervasive effect, the physiological equivalents, other disturbances, and psychomotor activities. There are ten positively worded and ten negatively worded questions. Each question is scored on a scale of 1-4 (a little of the time, some of the time, good part of the time, most of the time). The score ranged from 20-80. Score <50= normal range, 50-59= mild depression, 60-69= moderate depression and  $\geq 70$  severe depression.

### 2.4 Data collection methods

Data were collected by face-to-face interview. Before collecting data, each participant was explained about the research objectives and asked to sign the consent form only if they were willing to participate in this study. Then, each participant was requested to response particular questions of the questionnaires. Then screening of the questionnaires to check the completeness of each question was done. Confidentiality and anonymity were strictly maintained.

### 2.5 Data analysis

Data were analyzed using Statistical Package for Social Science (SPSS) software version 23. Categorical data were presented as frequency/percentage and continuous variables were

expressed as mean  $\pm$  SD (standard deviation). Statistical analyses of data were done by using independent t-test, Pearson's correlation test and ANOVA. A p value  $<0.05$  was considered statistically significant.

### 3. Results

A total of one hundred twelve (112) chronic kidney disease (CKD) patients were participated in this

study. Their age ranged from 21 to 92 years and the mean age was 46.75 ( $\pm$  14.80) years. Majority (60.71%) of the participants was male and most of them had religious belief (79.46 %). Among the total study participants; 83.93 % was married and more than half (62.50 %) of the study participants had higher secondary and above level of education.

Characteristics	Categories	Frequency	Percentage	Mean $\pm$ SD
Age (Year) (Range= 21-92)				46.75 $\pm$ 14.80
Gender	Male	68	60.71	-
	Female	44	39.29	
Religious belief	Yes	89	79.46	-
	No	23	20.54	
Marital status	Unmarried	18	16.07	-
	Married	94	83.93	
Education level	Analphabet	5	4.46	-
	Primary	11	9.83	
	Secondary	26	23.21	
	Higher Secondary and above	70	62.50	
Occupation	Service	49	43.76	-
	Business	17	15.17	
	Farmer	7	6.25	
	Unemployed	39	34.82	
Family income (Min-Max) (5000-300000) BDT*				46214.29 $\pm$ 48810.24
Economic dependency to others	Dependent	52	46.42	-
	Independent	60	53.58	
Place of Residence	Urban	69	61.60	-
	Rural	43	38.40	
Regular physical exercise	Yes	41	36.60	-
	No	71	63.40	
Family history of depression	Yes	39	34.82	-
	No	73	65.18	
Duration of illness of chronic kidney disease (in month)				41.37 $\pm$ 53.07

\*BDT= Bangladesh taka

**Table 1:** Basic data of the study participants (N=112).

The data also reveals that 43.76 % of the participants were service-holder, the mean monthly family income of the study participants was 46214.29 ( ± 48810.24) Bangladesh taka (BDT) and 53.58% was economically independent. Nearly two third (61.60 %) of the participants lived in urban areas. Regarding regular physical exercise, it was revealed that 63.40% participants were not doing regular exercise. It was found that, almost one third of the participants (34.82 %) had family history of depression and the mean

duration of illness of the study participants was 41.37 ( ± 53.07) months (Table 1).

In this study depression was observed in 90 (80.36%) participants among total 112 CKD patients. From the total number of participants; 61.61% participants have mild depression, followed by 17.86% have moderate depression, only 0.89% have severe depression and 19.64% participants had no depression. The mean Zung score of the study participants was 54.43 ( ± 6.34) (Table 2).

Depression Level	Frequency (n)	Percentage (%)	SDS score range
No depression	22	19.64	20-49
Mild	69	61.61	50-59
Moderate	20	17.86	60-69
Severe	1	0.89	70 and above
Mean Zung score ( ± SD)		54.43 ( ± 6.34)	

**Table 2:** Level of depression among chronic kidney disease participants (N= 112).

Relationship between different socio-demographic characteristics and depression in chronic kidney disease patients are shown in Table 3. It was observed that, there were significant relationship between some demographic characteristics and depression of CKD patients. The data analysis revealed that participants having religious belief were significantly more likely for depression (p=0.04). Unemployed participants were significantly depressed than employed participants (p=0.00). Economically independent participants were significantly more depressed than economically dependent participants (p=0.01). Participants who not doing regular physical exercise were significantly depressed than participants on regular physical exercise (p=0.01). The results

indicated that participants who have no family history of depression were significantly depressed (p=0.02). The duration of illness was significantly correlated with depression among CKD patients (p=0.02). However, there were no significant relationship was observed between depression and other demographic variables of the study participants such as age (p=0.20), gender (p=0.30), marital status (p=0.39), education level (p=0.14), monthly family income (p=0.44) and place of residence (p=0.30).

Variables	Categories	Frequency	Mean $\pm$ SD	P value
Age (Years)				0.20*
Monthly family income, Bangladesh Taka (BDT)				0.44*
Gender	Male	66	53.18 $\pm$ 5.88	0.30**
	Female	44	56.36 $\pm$ 6.61	
Religious belief	Yes	89	54.74 $\pm$ 6.55	0.04**
	No	23	53.22 $\pm$ 5.41	
Marital status	Unmarried	18	52.72 $\pm$ 5.43	0.39**
	Married	94	54.76 $\pm$ 6.48	
Education level	Analphabet	5	54.40 $\pm$ 10.78	0.14***
	Primary	11	57.09 $\pm$ 6.50	
	Secondary	26	56.40 $\pm$ 6.06	
	Higher Secondary and above	70	53.41 $\pm$ 5.95	
Occupation	Service	49	52.20 $\pm$ 5.80	0.00***
	Business	17	55.41 $\pm$ 4.65	
	Farmer	7	51.14 $\pm$ 4.18	
	Unemployed	39	57.38 $\pm$ 6.74	
Place of Residence	Urban	69	55.26 $\pm$ 6.42	0.30**
	Rural	43	53.09 $\pm$ 6.06	
Economic dependency to others	Dependent	52	53.04 $\pm$ 5.31	0.01**
	Independent	60	55.63 $\pm$ 6.94	
Regular physical exercise	Yes	41	53.22 $\pm$ 5.14	0.01**
	No	71	55.13 $\pm$ 6.88	
Family history of depression	Yes	39	53.33 $\pm$ 5.43	0.02**
	No	73	55.01 $\pm$ 6.74	
Duration of illness of chronic kidney disease (in month)				0.02*

p value reached from \*Pearson's correlation test, \*\*independent t-test, and \*\*\*ANOVA

**Table 3:** Relationship between socio-demographic characteristics and depression of chronic kidney disease participants (N=112).

#### 4. Discussion

Depression is becoming a very important issue in modern society. It occurs more frequently in patients with chronic illnesses than in the general population. Due to the irreversible nature and poorer prognostic outcomes, depression is frequently common among patients with chronic kidney disease (CKD). The aim

of this study was to describe the depression of chronic kidney disease patients at a tertiary level hospital in Bangladesh.

A total of one hundred twelve chronic kidney disease patients were participated in this study. Their mean age was 46.75 ( $\pm$  14.80) years. A couple of previous

studies conducted in Saudi Arabia found that the mean age of CKD patients having depression were 43.6 ( ± 15.1) years and 46.55 ( ± 12.09) years respectively which were consistent with this current study [19, 20]. However, our finding was not comparable with the study carried out in Taiwan which revealed that the mean age of participants' was 65.70 ± 12.37 years [21]. The majority (60.71%) of our participants were male and this finding was consistent with previous studies as reported that male participants was 69.6%, 61.9% and 52% respectively [16, 19, 22]. In this study, most (82.14 %) of the participants were married; in accordance Chiang et al. found 93% married in their study population [21]. In contrast Uzzal et al. found 7.9% married subjects suffering depression in their study population [16]. In our study more than half (62.50 %) of the study participants had higher secondary and above level education; in this series one third (33.2%) of the participants was illiterate and half (50%) of them had education up to secondary school level as showed by Uzzal, et al. which was consistency with this present study [16]. Nearly two third (61.60 %) of our study participants lived in urban area; in accordance Uzzal, et al. observed that most of their study participants (64.9%) were lived in urban area [16]. The data of this study also revealed that 34.82% study participants were unemployed. While Uzzal et al. reported that 72.2% study participants were unemployed which was not comparable with this current study [16]. Regarding the physical exercise, it was observed that 63.40% of our study participants were not doing regular physical exercise; in contrast Chiang et al. found 64.1% of their study participants were regularly engaged in exercise [21]. Additionally, most of our study subjects (79.46%) having religious beliefs;

nearly similar results (93.3%) were shown in a previous study [23].

There are many tools to determine the validity and optimal cut-off scores for depression. In this current study the level of depression was assessed by the Zung Self –Rating Depression Scale (SDS). It was revealed that the mean Zung score of the study participants was 54.43 ( ± 6.34) and 80.36% CKD patients categorized as depressed. This finding was consistent with previous studies as reported that depression was commonly observed among CKD patients [16, 20]. The higher prevalence of depression among CKD patients could be the huge financial burden of treatment along with uncertainties about disease consequences coupled with the fear of death and complications. On the other hand, in some previous studies it was found that depression was 23.7% and 53.50% among the CKD patients; these findings were much lower than current study [19, 24]. The possible reason may be they use different scale to score the level of depression in CKD patients. In our study mild depression was more prevalent among the study participants. This finding was consistent with a previous study [16]. But severity of depression of this study was not consistent with similar previous studies probably due to socio-economic diversity [15, 24].

Several previous studies showed different types of results related to depression with different socio-demographic variables in CKD patients. In this study religious belief, unemployment, economic independency, lack of regular physical exercise, family history of depression and duration of illness were significantly associated with depression. These findings were not comparable with related previous

studies; the possible explanation could be the socio-economic, cultural and ethnic diversity [21, 22, 25]. The result of this study showed that most of the CKD patients are depressed and mild depression is more prevalent. These findings alert us to the importance of the routine screening of depression in CKD patients. An early diagnosis and proper management of depression could be helpful in improving the quality of life of CKD patients.

### 5. Conclusion

This study demonstrated that depression is frequently common in CKD patients. Mild depression is more frequent among CKD patients. Depression is significantly associated with different socio-demographic variables. The findings of this study may help to evaluate the CKD patients in psychological background.

### Limitations of the Study

It was a single center study with a relatively small sample size.

### Recommendations

A population based multi-center study with large sample size should be done for better evaluation of depression in CKD patients.

### Conflict of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

### Authors' Contributions

Mosammet Khaleda Akter provided administrative support and participated in providing comments on the manuscript drafts. Mohammad Nurul Anowar

contributed to the interpretation of data and providing comments on the final draft of the manuscript. Jinnat Rehana comments on the manuscript drafts. Bipula Roy was responsible for the study conception, design, data collection, data analysis, and drafting of the work. All authors read and approved the final manuscript.

### References

1. Roehr B. American psychiatric association explains DSM-5. *Bmj* 6 (2013): 346.
2. Halter MJ, Varcarolis EM, editors. *Varcarolis Foundations of psychiatric mental health nursing*. Elsevier Health Sciences (2014).
3. World Health Organization. *World health statistics 2013: a wealth of information on global public health*. World Health Organization (2013).
4. World Health Organization, World Health Organization. *Ageing, Life Course Unit. WHO global report on falls prevention in older age*. World Health Organization (2008).
5. Sabaté E, Sabaté E, editors. *Adherence to long-term therapies: evidence for action*. World Health Organization (2003).
6. Kimmel PL, Levy NB. *Psychology and rehabilitation*. *Handbook of Dialysis*. Daugirdas JT, Blake PG, Ing TS (2001): 413-419.
7. Wen CP, Cheng TY, Tsai MK, et al. All-cause mortality attributable to chronic kidney disease: a prospective cohort study based on 462 293 adults in Taiwan. *The lancet* 371 (2008): 2173-2182.

8. World Health Organization. The world health report 2002: reducing risks, promoting healthy life. World Health Organization (2002).
9. Kimmel PL, Peterson RA. Depression in patients with end-stage renal disease treated with dialysis: has the time to treat arrived?. *Clinical Journal of the American Society of Nephrology* 1 (2006): 349-352.
10. Hedayati SS, Finkelstein FO. Epidemiology, diagnosis, and management of depression in patients with CKD. *American journal of kidney diseases* 54 (2009): 741-752.
11. Watnick S, Kirwin P, Mahnensmith R, et al. The prevalence and treatment of depression among patients starting dialysis. *American journal of kidney diseases* 41 (2003):105-110.
12. Hung KC, Wu CC, Chen HS, et al. Serum IL-6, albumin and comorbidities are closely correlated with symptoms of depression in patients on maintenance haemodialysis. *Nephrology Dialysis Transplantation* 26 (2011): 658-664.
13. Fan L, Sarnak MJ, Tighiouart H, et al. Depression and all-cause mortality in hemodialysis patients. *American journal of nephrology* 40 (2014): 12-18.
14. Ahlawat R, Tiwari P, 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* 29 (2018): 1165.
15. Tanvir S, Butt G, Taj R. Prevalence of depression and anxiety in chronic kidney disease patients on haemodialysis. *Ann Pak Inst Med Sci* 9 (2013): 64-67.
16. Uzzal OK, Islam MN, Ahmed PI, et al. Depression and insomnia in patients on maintenance hemodialysis. *Journal of Dhaka Medical College* 24 (2015): 3-11.
17. Rashid HU. Bangladesh renal registry report 1986-1996. *Bang Renal J* 21 (2002): 25-28.
18. Romera I, Delgado-Cohen H, Perez T, et al. Factor analysis of the Zung self-rating depression scale in a large sample of patients with major depressive disorder in primary care. *BMC psychiatry* 8 (2008): 1-8.
19. Amira O. Prevalence of symptoms of depression among patients with chronic kidney disease. *Nigerian journal of clinical practice* 14 (2011): 460-463.
20. AlDukhayel A. Prevalence of depressive symptoms among hemodialysis and peritoneal dialysis patients. *International journal of health sciences* 9 (2015): 9.
21. Chiang HH, Livneh H, Yen ML, et al. Prevalence and correlates of depression among chronic kidney disease patients in Taiwan. *BMC nephrology* 14 (2013):1-8.
22. Kokoszka A, Leszczyńska K, Radzio R, et al. Prevalence of depressive and anxiety disorders in dialysis patients with chronic kidney disease. *Arch Psychiatry Psychother* 1 (2016): 8-13.
23. Saha M, Faroque MO, Alam KS, et al. Chronic kidney disease specific cardiovascular risk factors among non dialytic patients with chronic kidney disease stage-v an experience of a specialized hospital. *Bangladesh Medical Research Council Bulletin* 38 (2012): 18-22.

24. Hawamdeh S, Almari AM, Almutairi AS, et al. Determinants and prevalence of depression in patients with chronic renal disease, and their caregivers. International journal of nephrology and renovascular disease 10 (2017): 183.

25. Shirazian S, Grant CD, 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 2 (2017): 94-107.



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