



## Pattern and Impact of anxiety disorders in chronic kidney disease

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### Abstract

**Background:** Many studies have reported the occurrence of anxiety disorder in kidney disease, but only very few have tried demonstrating the relevance and the relative rate of different types of anxiety disorders in chronic kidney disease (CKD).

**Aim:** To find the distribution of different categories of anxiety disorders and the influence in the management of patients with CKD.

**Method:** This was a cross-sectional study of consecutive attendees of CKD patients at the renal unit of Enugu State University Teaching Hospital, Enugu using MINI International Neuropsychiatric Inventory, clinical and laboratory parameters collected from the patients' folders. Data were analyzed with statistical package of social science version 20. A *p*-value of  $\leq 0.05$  was considered statistically significant and confidence interval was at 95%.

**Result:** Commonest anxiety disorders found among the participants were panic disorder and generalized anxiety disorder, and 20.3% of them had one type of anxiety disorder or the other. Among these anxious participants, 83.9% of them were on haemodialysis, and 64.52% were classified stage 5 kidney disease.

**Conclusion:** Anxiety disorder is prevalent in kidney disease, and clinicians should have high index of suspicion since its presence may be indicative of severe disease.

**Keywords:** Pattern; Impact; Anxiety disorder; Kidney disease.

### Introduction

Anxiety disorders are psychological conditions that present with features of excessive fears, anxiety and related behavioural disturbances. They are different from the developmentally normative fear or anxiety because they are

excessive and persistent beyond appropriate periods and also differ from transient fear or anxiety, often stress-induced because they are persistent (typically lasting 6 months or more) (APA 2013). These anxiety disorders occur in absence of any other psychiatric, medical or

substance use disorder. Many anxiety disorders manifest in childhood and may persist till adulthood if not treated. Most of the anxiety disorders are commoner in females than males in a ratio of 2:1 (APA 2013).

Individuals with **specific phobia** characteristically present with fear or anxiety or avoidance of circumscribed objects or situations. These features are almost always immediately precipitated by the feared object/situation to such a degree that is sustained and disproportionate to the actual perceived risk. In **social anxiety disorder (social phobia)**, there is fear or anxiety or avoidance of social interactions and situations which may involve criticism or scrutiny. For example: meeting unfamiliar people, speaking in public, performing in front of others etc. The individual usually perceive himself/herself as being inferior, negatively evaluated, humiliated or rejected. **Panic disorder** is the experience of episodic, unexpected panic attacks with persistent concern or worry about having more attacks which may result to death or one going crazy and associated physical symptoms like chest tightness, breathlessness, numbness/tingling sensation. Those having **agoraphobia** are fearful and anxious about places or situations where escape might be difficult or help might not be available in event of developing panic-like symptoms or other incapacitating or embarrassing features. The usual complaints of persons with **generalized anxiety disorder** are sustained and excessive anxiety and worries about several issues in life the person finds difficult to control. In addition, the individual experiences physical symptoms like restlessness, fatigue, poor concentration, irritability, muscle tension and sleep disturbances (APA 2013).

From the foregoing, a number of common physical complaints are symptoms of anxiety disorders, such as palpitation, tremor, difficulty in attention and concentration, restlessness, indigestion, tingling sensation, numbness, breathlessness and diaphoresis (APA 2013; Stein, Sareen 2015), thereby confusing the diagnosis of

cardiovascular, pulmonary and neurological diseases. Furthermore, there is marked overlap in the symptomatology of anxiety disorders and depressive disorder coupled with the high tendency of the 2 conditions co-existing in the general population and in patients with chronic kidney disease (Cukor, Coplan, Brown, Friedman, Newville 2008; Cukor, Coplan, Brown, Peterson, Kimmel 2008). Sleep apnea and other sleep disorders which are quite common in End Stage Renal Disease (ESRD) patients. (Merlino, Piani, Dolso, Adorati, Cancelli 2006); the potential overlap of symptoms of anxiety disorder with complications of uremia; fatigue which may be related to diverse organ system disorders in ESRD, such as anemia or myopathies; difficulty concentrating which may reflect uremic encephalopathy; and cognitive dysfunction which is increasingly recognized as a complication of ESRD are other diagnostic challenges in patients with chronic kidney disease (Kurella, Chertow, Fried, Cummings, Harris 2005).

Psychiatric disorders usually co-exist with most chronic illnesses and especially with chronic kidney disease (CKD) (Assari 2018). Studies showed that anxiety symptoms are at least two times higher in CKD patients in comparison to general population (Kessler, Chiu, Demler, Merikangas, Walters, 2005; Feroze, Martin, Kalantar-Zadeh, Kim, Reina-Patton 2012). Hospital stay as a result of psychiatric disorders especially depression, anxiety, and substance abuse are 1.5 to 3 times more common in CKD patients than in population of individuals with other chronic diseases (Kimmel, Thamer, Richard, Ray 1998). The rate of anxiety disorders in haemodialysis (HD) patient has been estimated at 12%-52% in several studies (Murtagh, Addington-Hall, Higginson 2007). Cukor et al. (Cukor, Coplan, Brown, Friedman, Newville 2008) using semi-structured clinical interview (SCID-IV) found that 45.7% of the 70 randomly selected HD patients in a single dialysis center in Brooklyn, New York, met criteria for an anxiety disorder. They also reported that the commonest anxiety

disorders among the patients were specific phobia and panic disorder. At Lagos, Campbell et al using Schedule for Clinical Assessment in Neuropsychiatry (SCAN) studied psychiatric morbidities in patients with end stage renal disease and reported 21.4% prevalence rate of anxiety disorder among the participants (Campbell, Olangunji, Oyatokun, Adeyemi 2014). The presence of anxiety symptoms could have an influence on patients with CKD who did not require dialysis at first. For instance, Loosman et al found that among patients with CKD who were not yet on dialysis, the presence of anxiety symptoms showed a trend toward death or commencement of dialysis (Loosman, Rottier, Honig, Siegert 2015). In patients undergoing Peritoneal dialysis (PD), depression and anxiety symptoms have been noted to increase the likelihood of adverse outcomes. Juergensen et al, have demonstrated that patients on PD who reported higher scores for anxiety and depression were more likely to develop peritonitis within the following 12 months (Juergensen, Juergensen, Wuerth 1996). The presence of anxiety disorder in patients on HD has been observed to result in a significantly lower quality of life than patients with no psychopathology, and an even lower quality of life (QoL) than patients with only a depressive disorder (Cukor, Ver Halen, Fruchter 2013; Loosman, Rottier, Honig, Siegert 2015). Furthermore, anxiety disorders place patients at higher risk for concomitant substance abuse (Stein, Sareen 2015). An estimated 35% of patients with anxiety disorder in the general population abuse alcohol and other drugs (Stein, Sareen 2015; Robinson, Sareen, Cox, Bolton 2009).

Anxiety disorders can occur at different times and with a variety of features in the course of chronic kidney disease including during haemodialysis. A patient seemingly irritable and with irrational behaviours may be exhibiting features of panic disorder, post-traumatic stress disorder, and/or generalized anxiety disorder. Hence, clinical assessment for anxiety disorders may be necessary

when: dialysis is to be initiated; coexistent depression is suspected; there is of major life events/stressors; marked changes have occurred in the patients' clinical status, like if evidence of dietary or medication nonadherence, such as hyperphosphatemia is noted; or patient becomes uncooperative in the dialysis unit (Cohen, Cukor, Kimmel 2016). If anxiety disorder is diagnosed, then simultaneous evaluation for depression and risk of suicide is always indicated (Stein, Sareen 2015).

Not many studies have tried to elucidate the presence of different types of anxiety disorders in chronic kidney disease patients. In this study, we aimed at highlighting the rate of occurrence of anxiety disorders and the extent they can influence disease progression and management.

## **Materials and Method**

### **Study population**

This was a hospital based cross-sectional study of patients with chronic kidney disease who presented to the renal unit of Enugu State University Teaching Hospital Enugu from 1<sup>st</sup> November 2018 to 30<sup>th</sup> April 2019.

### **Ethical Approval**

The study was approved by ethical committee of the hospital.

### **Procedure**

Consecutive attendees with diagnosis of chronic kidney disease who gave informed consent for the study were recruited. The clinical and laboratory parameters of the patients were obtained from the patients' folder. Diagnosis of different types of anxiety disorders were made using their respective module of MINI International Neuropsychiatric Inventory (MINI).

### **MINI International Neuropsychiatric Inventory**

The M.I.N.I. is a short structured diagnostic interview developed jointly by psychiatrists and clinicians in the United States and Europe to identify DSM-IV and ICD-10 psychiatric disorders. It was designed to meet the need for a short but accurate structured psychiatric interview for multi-centre clinical trials and epidemiology

studies. This instrument has 3 versions: M.I.N.I. Plus, M.I.N.I. Screen and M.I.N.I. Kid. In this study, M.I.N.I-Plus (Anxiety disorder modules) was used to confirm the diagnosis of different categories of anxiety disorder. In a validation study carried out in University of South Florida in Tampa and INSERM in Paris, Composite International Diagnostic Interview (CIDI) and Structured Clinical Interview for DSM-III-R (SCID) were compared with M.I.N.I. in France and United States. Overall, the results were very positive, the data suggested that the M.I.N.I. succeeded in reliably and validly eliciting the symptom criteria used in making DSM-III-R and ICD-10 diagnoses and did so in less than half the time needed for the SCID or the CIDI. (Sheehan, Lecrubier, Sheehan , Amorim, Janav 1998)

**Data Analysis**

Data obtained were analyzed with statistical package of social science version 20. The variables were expressed as percentages, means and standard deviation using descriptive statistics. A p-value of  $\leq 0.05$  was considered statistically significant and confidence interval was at 95%.

**Results**

The mean age of the 153 participants was  $51.4 \pm 15.5$  years. The majority of the participants were male gender. Panic disorder and generalized anxiety disorder were most common among them. About 1/5<sup>th</sup> of them had one category of anxiety disorder or the other, over 4/5<sup>th</sup> of the anxious participants were on haemodialysis and approximately every 6.5 out of 10 of them were classified stage 5 kidney disease.

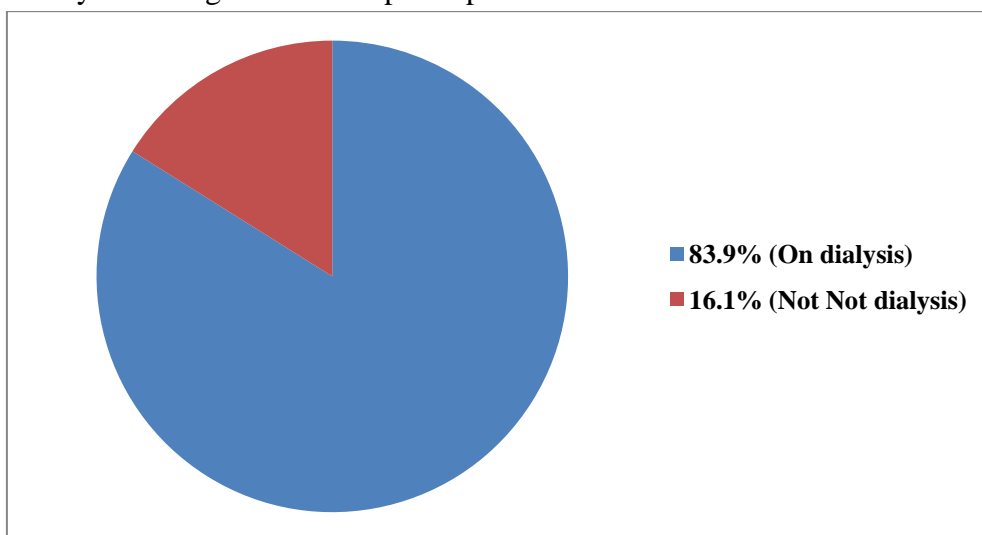
**Table 1:** Demographic characteristics of the participants

Characteristics	Male	Female	Total
Age (years)			
Mean	51.4		
Median	52.0		
Standard deviation	$\pm 15.5$		
Range	71		
Gender N (%)	97 (63.4)	56 (36.6)	153

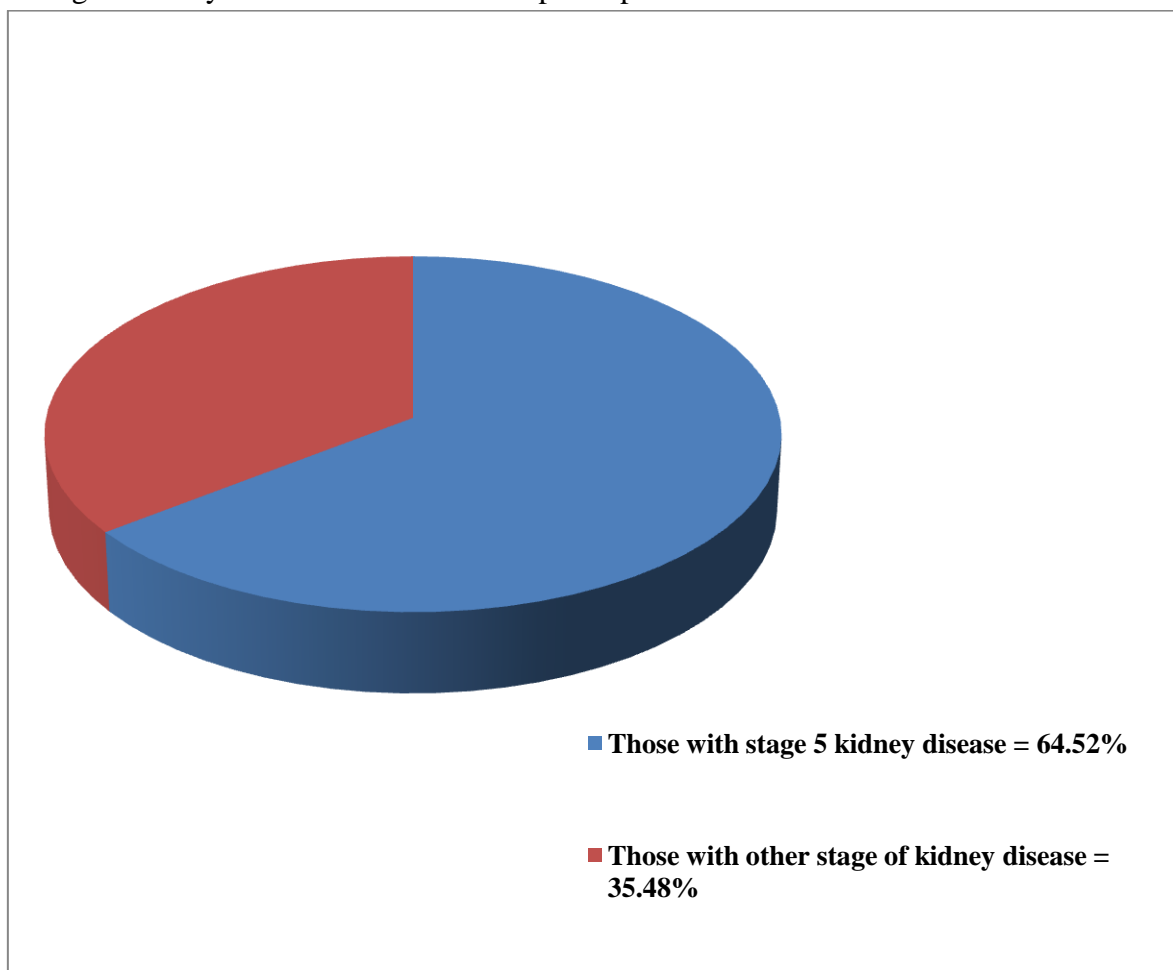
**Table 2:** Distribution of anxiety disorders among the participants

Characteristics	Male	Female	Total	p
Anxiety disorders				
No N (%)	79 (51.6)	43 (28.1)	122 (79.7)	.63
Yes N (%)	18 (11.8)	13 (8.5)	31 (20.3)	
Panic disorder				
No N (%)	91 (51.5)	47 (30.7)	138	.048
Yes N (%)	6 (3.9)	9 (5.9)	15	
Agoraphobia				
No N (%)	96 (62.7)	55 (35.9)	151	.70
Yes N (%)	1 (0.7)	1 (0.7)	2	
Social phobia				
No N (%)	92 (60.1)	56 (36.6)	148	.84
Yes N (%)	5 (3.3)	0 (0.0)	5	
Generalized Anxiety disorder				
No N (%)	89 (58.2)	49 (32.0)	138	.39
Yes N (%)	8 (5.2)	7 (4.6)	15	

**Figure 1:** Haemodialysis among the anxious participants.



**Figure 2:** Stage 5 kidney disease and the anxious participants



**Discussion**

Anxiety disorder has been noted as the second most common psychological disorders found among patients with CKD (Hiricare, Tais Pérez-Dominguez, Armando Rodríguez-Pérez, Miguel. García-Bello 2012). It seems like a warning

response manifesting in circumstances of danger, threat or change in life situations. In this study, the prevalence of anxiety disorders in the study population was found to be 20.3%. This is comparable to 19.7% reported in Saudi Arabia in a cross-sectional study of CKD patients



undergoing haemodialysis (Goh, Griva 2020). However, our finding is at variance with another research carried out in Brooklyn New York using Semi-structured Clinical Interview (SCID-IV) involving randomly selected 70 patients on haemodialysis whereby 47.5% of them were identified to have anxiety disorder (Cukor, Coplan, Brown, Friedman, Newville 2008). This discrepancy may be as a result of differences in the individual questionnaires used and the socio-economic differences of the studied population.

Cukor et al (Cukor, Coplan, Brown, Friedman, Newville 2008) reported that the most common anxiety disorder in CKD patient were panic disorder and specific phobia, however, this finding is not in total conformity with the result of this research which identified generalized anxiety disorder and panic disorder as the commonest of the anxiety disorders in CKD patients. This result can be understood from the fact that CKD is a very stressful medical condition, and generalized anxiety disorder has been observed to have a positive link with stressful events, and some of them may become chronic when the stressor persists. Stressful life events involving losses increase the risk of developing depression and generalized anxiety disorder (Kendler, Hettema, Butera, Gardner, Prescott 2003). However, life events characterized by danger are more prevalent in individuals who eventually present features of generalized anxiety disorder. Panic disorder on the other hand is characterized by repeated episodes of panic attacks which usually present prominently as a particular form of fear response. The state of fear is often associated with sudden rise of autonomic arousal that may result in fight and flight action and thought of immediate danger (APA 2013). Deteriorating health status and tendency of undergoing certain medical procedures like dialysis or kidney transplant to mention only but a few, are glaring feared situations and immediate danger that CKD patients are exposed to. In other words, panicking may explain why some CKD patients are irritable, uncooperative and even refuse treatment.

The result of this study also showed that among the 20.3% participants who had anxiety disorder, 83.9% of them were on haemodialysis, while only 16.1% of them were not on dialysis. However, haemodialysis in CKD patient most times is indicative of an end stage disease and also a severe disease. Hemodialysis requires the patient to adapt to certain restrictions, such as the dietary control, fluid intake, chronic pain and discomfort associated with puncturing the arteriovenous fistula on the day of dialysis, frequent hospital stays, as well as more frequent injuries during the patient's weakened state after dialysis. Also, problems in daily functioning, and fear of the future undoubtedly influence the onset of symptoms of depression and anxiety (Hmwe, Subramanian, Tan, Chong 2015; Gerogianni, Babatsikou 2014; Gerogianni KG, Babatsikou 2013). The source of the patient's anxiety are also invasive procedures accompanying hemodialysis such as: inserting a needle into the arteriovenous fistula, implanted central venous catheters, alarm sounds going off in the dialysis machine and renal staff changing shift at the dialysis station (e.g. a lack of a permanent nurse who punctures the fistula "properly") (Feroze, Martin, Kalantar-Zadeh, Kim, Reina-Patton 2012). Long-term dialysis interferes and leads to an unfavourable self-image, leading to many negative emotions such as despondency, anger, dissatisfaction and disappointment (Wruk-Złotowska A 2006). Furthermore, it has also been demonstrated in this study that 64.52% of these anxious participants were in the stage 5 kidney disease. This observation tries to buttress fact that anxiety disorder in patients with chronic kidney disease may be a sign of severe disease so that appropriate measures may need to be taken.

### **Conclusion**

Anxiety disorder is prevalent in kidney disease. Panic disorder and generalized anxiety disorder occur commonly in CKD. In the course of management of these patients, detection of coexisting anxiety disorder may signify severe

illness. Further studies to exactly delineate the implication of coexisting anxiety disorders in chronic kidney disease patients is highly recommended.

### Acknowledgement

Many thanks go to the staff of medical out-patient department and renal unit of Enugu State University Teaching Hospital Enugu, Nigeria.

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