

Depression and anxiety among Children with Chronic Kidney Disease in Zagazig University Hospitals

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Abstract

Background: Psychiatric manifestations as depression and anxiety occur with chronic kidney disease (CKD). The aim of this work was to assess the association between Depression and anxiety and chronic kidney disease.

Methods: This cross sectional study which was done on 156 patients with CKD in Zagazig University Hospitals. This study was conducted at Pediatric Nephrology Unit Zagazig University Children's Hospital. All patients were subjected to the following: Complete history taking. Psychiatric assessment of children was based on the Semi Structured Clinical Interview For Children And Adolescents AGES 6-18 PROTOCOL FORM (SCICA) and the diagnostic and statistical manual of mental disorders 5th edition (DSM-5)

Results: prevalence of anxiety among CKD children was 37.2%. Prevalence of depression among CKD children was 30.8% of the studied sample. CKD patients on dialysis were more likely to be depressed than the pre-dialysis patients.

Conclusion: Depression and anxiety were significantly high in CKD patients.

Key words: Depression- anxiety Chronic Kidney Disease.

I. Introduction

Consultation-liaison psychiatry in renal medicine provides a unique experience for the psychiatrist as it provides the opportunity to work with a specialist multi-disciplinary team managing patients with chronic and complex physical problems in in-patient and out-patient settings ⁽¹⁾.

Psychiatric morbidity is defined as the presence of handicapping abnormalities of emotions, behavior, and relationships that impede personal and social functioning. ⁽²⁾

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Any chronic illness is a potential life crisis for patients and their family. Chronic kidney disease (CKD) is emerging as an important chronic disease globally⁽³⁾.

Advances in medical care, including improvements in dialysis and transplantation, have increased the survival rates for children with chronic renal failure (CRF). This long survival increases the opportunities for the development of psychiatric morbidity among these children⁽⁴⁾.

The aim of this work was to assess the association between Depression and anxiety and chronic kidney disease in Pediatric Nephrology Unit Zagazig University Children's Hospital.

II. Patients and Methods

This cross sectional study which was done on 156 patients with Chronic Kidney Disease in Zagazig University Hospitals. This study which was conducted at Pediatric Nephrology Unit Zagazig University Children's Hospital.

Consent: This study was ethically approved from Institutional Reviewer Board (IRB) in Faculty of Medicine, Zagazig University Hospital and informed parental consent from every case or their caregivers that participates in this research was taken.

Sample size: By assuming that attendance of children with chronic kidney disease in Zagazig university hospital was 156 patients in 6 months and all was included as a comprehensive sample.

Target population: Children with impairment of the kidney function more than 3 months.

Inclusion criteria: Any patient with impairment of the kidney function more than 3 months such as:

- ◆ Children with ESRD before and after dialysis
- ◆ Nephrotic syndrome
- ◆ Systemic Lupus Erythematosus (S L E)
- ◆ Renal Tubular Acidosis (R T A)
- ◆ Obstructive uropathy with impairment of kidney function
- ◆ Persistent microscopic hematuria

Exclusion criteria:

- ◆ Anatomical brain lesion
- ◆ Psychiatric disease before onset of renal disease
- ◆ Family history of psychiatric disease

Methodology:

All patients were subjected to the following:

1. Complete history taking: Demographic data : age and sex
2. examination

I- Psychiatric assessment of children was based on the Semi Structured Clinical Interview For Children And Adolescents AGES 6-18 PROTOCOL FORM (SCICA) and the diagnostic and statistical manual of mental disorders 5th edition (DSM-5)

II- The SCICA was designed to sample functioning for nine areas of patient's life: activities, school, job, friends, family relations, fantasies, self-perception, feelings and parent/teacher reported problems. The SCICA was not designed to obtain yes/no reports if symptoms, but it utilizes open-ended questions and structured tasks to encourage subjects to talk and behave in ways that will reveal their thoughts, feelings, concerns and interests as well their interaction style in a prototypic mental health assessment situation.

Statistical Analysis:

The collected data was revised, coded, tabulated and introduced to a PC using Statistical package for Social Science (IBM Corp. Released 2011. IBM SPSS Statistics for Windows, Version 24. Descriptive statistics: Mean, Standard deviation (\pm SD) for parametric numerical data. Frequency and percentage of non-numerical data. Analytical statistics: Student T Test was used to assess the statistical significance of the difference between two study group means. Chi-Square test was used to examine the relationship between two qualitative variables. P value >0.05 is non-significant (N-S). P <0.05 is significant (S).

III. RESULTS

– This table showed that there was no statistically significant difference dialysis patients and predialysis patients regarding sex, Residence. Mean of age was significant higher in dialysis than predialysis(**Table 1**).

– Mean of Duration of kidney disease, Duration of renal impairment (months) was higher in dialysis patients than predialysis patients(**Table 2**).

– This table showed that there was no statistically significant difference dialysis patients and predialysis patients regarding Blood pressure, Pallor, Deformity % of oliguria was higher in dialysis patients than those in predialysis patients there was no statistically significant difference dialysis patients and predialysis patients regarding to Short stature, Renal osteodystrophy severity, Associated disease which more increased in dialysis(**Table 3**).

– This table showed that there was no statistically significant difference dialysis patients and predialysis patients regarding HB. Mean of WBC and PLT was significant less in dialysis than predialysis(**Table 4**).

– This table showed that there was statistically significant increase in urea and creatinine among dialysis patients than predialysis patients. There was statistically significant decrease in GFR among dialysis patients than predialysis patients(**Table 5**).

– This table showed that there was no statistically significant difference dialysis patients and predialysis patients regarding Iron. Mean of Serum albumin, PTH and Ferritin was significant higher in dialysis patients than predialysis patients(**Table 6**).

– This table showed that anxiety was present in 58 patients (37.2%), 15 of them in dialysis patients and 43 of them in predialysis patients. This table showed that there was no statistically significant difference dialysis patients and predialysis patients regarding Anxiety (**Table 7**).

– This table showed that depression was present in 48 patients (30.8%), 17 of them in dialysis patients and 31 of them in predialysis patients. This table showed that there was no statistically significant difference dialysis patients and predialysis patients regarding Depression (**Table 8**).

– This table showed that psychiatric disorders was present in 101 patients (64.7%), 25 of them in dialysis patients and 76 of them in predialysis patients. This table showed that there was no statistically significant difference dialysis patients and predialysis patients regarding psychiatric disorders (**Table 9**).

– This table showed that there was no statistically significant difference between present and absent psychiatric disorders regarding Duration of kidney disease and Duration of renal impairment (months). Mean Duration of dialysis (months) was significant higher in absent psychiatric disorders patients than present psychiatric disorders patients (**Table 10**).

Table (1): Comparison between Dialysis and Predialysis regarding demographic data.

			Dialysis (No.= 32)	Predialysis (No.= 124)	X ²	P. value
Age	Mean ± SD		13.06 ± 3.37	9.21 ± 2.89	t.test6.483	.000
sex	Male	No.	13	54	0.089	0.766
		%	40.6%	43.5%		
	Female	No.	19	70		
		%	59.4%	56.5%		
Residence	Urban	No.	12	37	0.693	0.405
		%	37.5%	29.8%		
	Rural	No.	20	87		
		%	62.5%	70.2%		

Table (2): Comparison between Dialysis and Predialysis regarding Duration of kidney disease, Duration of renal impairment (months), Duration of dialysis (months).

		Dialysis (No.= 32)	Predialysis (No.= 124)	t.test	P. value
Duration of kidney disease	Mean ± SD	6.35 ± 3.67	1.17 ± 1.64	11.816	.000
Duration of renal impairment (months)	Mean ± SD	6.35 ± 3.67	1.17 ± 1.64	11.816	.000
Duration of dialysis (months)	Mean ± SD	4.36 ± 2.78	-	-	-

Table (3): Comparison between Dialysis and Predialysis regarding clinical examination.

			Dialysis (No.= 32)	Predialysis (No.= 124)	X ²	P. value
Blood pressure	Hypertension	No.	8	26	0.366	0.833
		%	25.0%	21.0%		
	Hypotension	No.	8	29		
		%	25.0%	23.4%		
	Normal	No.	16	69		
		%	50.0%	55.6%		
Pallor	Present	No.	24	73	2.814	0.093
		%	75.0%	58.9%		
	Absent	No.	8	51		
		%	25.0%	41.1%		
Urine	Oligoria	No.	31	29	58.037	0.000

	Normal	%	96.9%	23.4%		
		No.	1	95		
		%	3.1%	76.6%		
Short stature	Present	No.	30	0	143.929	0.000
		%	93.8%	.0%		
	Absent	No.	2	124		
		%	6.3%	100.0%		
Deformity	No	No.	32	124	0	1
		%	100.0%	100.0%		
Renal osteodystrophy severity	Yes	No.	30	0	143.929	0.000
		%	93.8%	.0%		
	No	No.	2	124		
		%	6.3%	100.0%		
Associated disease	Cardiomyopathy	No.	8	0	45.859	0.000
		%	25.0%	.0%		
	Hepatitis	No.	2	0		
		%	6.3%	.0%		
	No	No.	21	124		
		%	65.6%	100.0%		
Both	No.	1	0			
	%	3.1%	.0%			

Table (4): Comparison between Dialysis and Predialysis regarding CBC.

		Dialysis (No.= 32)	Predialysis (No.= 124)	t.test	P. value
WBC	Mean ± SD	6.54 ± 1.85	9.43 ± 6.46	-2.500-	0.013
HB	Mean ± SD	10.15 ± 1.13	9.91 ± 1.49	0.856	0.394
PLT	Mean ± SD	238.53 ± 88.11	390.97 ± 241.07	-3.510-	0.001

Table (5): Comparison between Dialysis and Predialysis regarding kidney function tests.

		Dialysis (No.= 32)	Predialysis(No.= 124)	t.test	P. value
Urea	Mean ± SD	57.76 ± 16.99	40.59 ± 19.29	4.39	.000
Creatinine	Mean ± SD	7.67 ± 1.82	1.89 ± 1.33	20.23	.000
GFR	Mean ± SD	8.31 ± 2.10	76.57 ± 57.03	-6.753-	.000

Table (6): Comparison between Dialysis and Predialysis regarding Serum albumin, PTH, Iron and Ferritin.

		Dialysis (No.= 32)	Predialysis (No.= 124)	t.test	P. value
Serum albumin	Mean ± SD	4.22 ± 0.49	3.61 ± 0.915	3.658	.000
PTH	Mean ± SD	369.95 ± 382.56	215.53 ± 170.42	2.241	.028
Iron	Mean ± SD	94.29 ± 51.02	89.57 ± 61.21	.363	.717
Ferritin	Mean ± SD	1113.03 ± 1135.97	583.40 ± 467.78	2.702	.009

Table (7): Comparison between Dialysis and Predialysis regarding Anxiety.

			Dialysis (No.= 32)	Predialysis (No.= 124)	Total	X ²	P. value
Anxiety	Present	No.	15	43	58	1.620	.203

		%	46.9%	34.7%	37.2%		
	absent	No.	17	81	98		
		%	53.1%	65.3%	62.8%		

Table (8): Comparison between Dialysis and Predialysis regarding Depression.

			Dialysis (No.= 32)	Predialysis (No.= 124)	Total	X ²	P. value
Depression	present	No.	17	31	48	9.445	.002
		%	53.1%	25.0%	30.8%		
	absent	No.	15	93	108		
		%	46.9%	75.0%	69.2%		

Table (9): Comparison between Dialysis and Predialysis regarding psychiatric disorders.

			Dialysis (No.= 32)	Predialysis (No.= 124)	Total	X ²	P. value
psychiatric disorders	present	No.	25	76	101	3.158	.049
		%	78.1%	61.3%	64.7%		
	absent	No.	7	48	55		
		%	21.9%	38.7%	35.3%		

Table (10): Comparison between present and absent psychiatric disorders regarding Duration of kidney disease, Duration of renal impairment (months), Duration of dialysis (months).

		present (No.= 101)	absent (No.= 55)	t.test	P. value
Duration of kidney disease	Mean ± SD	2.47 ± 3.34	1.81 ± 2.36	1.309	0.193

Duration of renal impairment (months)	Mean ± SD	2.47 ± 3.335	1.81 ± 2.36	1.309	0.193
Duration of dialysis (months)	Mean ± SD	3.70 ± 2.67	6.71 ± 1.799	-2.795-	0.009

IV. Discussion

A total of 156 patients were included in our study. Out of these patients, 32 (20.51%) on dialysis and 124 (79.49%) had pre-dialysis CKD.

This study showed that, mean value of age was significant higher in dialysis than predialysis patients.

This agrees with **Shafi and Shafi**,⁽⁵⁾ who found that, Patients with ESRD had higher mean age compared to pre-dialysis CKD patients.

This study showed that, there was no statistically significant difference Dialysis and Predialysis regarding sex.

This disagrees with **Tanvir et al.**,⁽²⁾ hemodialysis patients were found to be more in male sex.

This study showed that, mean of duration of kidney disease, duration of renal impairment (months) was higher in Dialysis than those in pre-dialysis CKD patients.

This agrees with **Bakr et al.**,⁽⁴⁾ who found that, mean of duration of kidney disease, duration of renal impairment (months) was higher in Dialysis than those in pre-dialysis CKD patients.

This study showed that, mean value of serum albumin was significant higher in dialysis than predialysis

Albumin is a very important marker of nutritional status in HD patients. The causes of hyperalbuminemia in our patients are anorexia and gastrointestinal disorders, which attributed to both depression and ESRD **Haung and Chien-Te**,⁽⁶⁾. Poor protein intake in malnutrition can lead to decreased level of protein bound indoxysulfate, which has a direct antidepressive effect (7).

With respect to serum ferritin, we observed that it was increased significantly in dialysis patients ($P > 0.05$).

This runs parallel to the study by **Roozbeh et al.**,⁽⁸⁾ who found that high serum ferritin was present in patients with dialysis patients.

Serum ferritin is frequently used as a marker of iron stores in uremic patients. However, a high serum ferritin level might be related to an acute phase reaction in dialysis patients⁽⁹⁾.

Some authors have also suggested that high serum ferritin is a reflection of the 'Malnutrition Inflammation Complex Syndrome' in dialysis patients⁽¹⁰⁾.

This study demonstrated that prevalence of anxiety among chronic kidney disease children was 37.2% of the studied sample.

Our results were consistent with the results of **Ng et al.** ⁽¹¹⁾ followed up with 159 patients with CKD, 50 patients (31.8%) had anxiety.

Anxiety is an emotional state in which the individual experiences intense fear, uncertainty, and dread from the anticipation of a threatening situation. ⁽¹²⁾.

Anxiety disorders are one of the most common emotional disorders in the general population. ⁽¹³⁾. It is believed that the prevalence of anxiety disorders among children/adolescents with different chronic medical illnesses is higher compared to their healthy counterpart ^{(14);(15)}

The rates of anxiety symptoms in pediatric patients range from 7 to 40%, depending on the type of disease, examined group or used methods ⁽¹⁵⁾.

This study showed that, there were no statistically significant difference Dialysis and Predialysis regarding Anxiety.

Our results were consistent with the results of **Abdel Salam et al.**, ⁽¹⁶⁾ who did not find any significant correlation between anxiety and Dialysis or Predialysis.

The importance of anxiety may have been underestimated in HD patients. Notably, anxiety is a common psychological problem that may emerge during the initial course of dialysis. Thus, it is important to identify anxiety symptoms in dialysis patients ⁽¹⁷⁾.

This study demonstrated that prevalence of depression among chronic kidney disease children was 30.8% of the studied sample.

Our results are in agreement with **Amira**, ⁽¹⁸⁾ who aimed to determine prevalence of depression among CKD patients. They found the prevalence of depression among the CKD patients was 23.7%.

Our results are in agreement also with **Ahlawat et al.**, ⁽¹⁹⁾ who found that, about 44% of the patients were found to have depression.

This study showed that, CKD patients on dialysis were more likely to be depressed than the pre-dialysis patients.

Our results are in agreement with **Amira**, ⁽¹⁸⁾ that suggested that patients on dialysis are at higher risk of depression in comparison to those not on dialysis.

Our results are in agreement also with **Ahlawat et al.**, ⁽¹⁹⁾ who found that, patients with on dialysis were more likely to be depressed when compared to those not on dialysis.

V. CONCLUSION

Depression and anxiety were significantly higher in CKD patients. Patients with dialysis are significantly more prone to develop psychiatric disorders. Patients with dialysis had significantly higher depression than non-dialysis patients.

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