

Research Article

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## Prevalence of Obsessive-Compulsive Disorder in Pediatric and adolescent Patients with Chronic Kidney Disease

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### Introduction

CKD is defined as renal injury (proteinuria) and/or a glomerular filtration rate below 60 mL/min/1.73m<sup>2</sup> for more than 3 months [1, 12]. In children, CKD may be the result of congenital,

**Introduction:** Chronic Kidney Disease (CKD) is defined as renal injury and/or a glomerular filtration rate below 60mL/min/1.73m<sup>2</sup> for more than 3 months. Neurologic symptoms in CKD include fatigue, poor concentration, headache, drowsiness, memory loss, seizures, and peripheral neuropathy. Obsessive-Compulsive Disorder (OCD) is a chronic disabling illness characterized by repetitive, ritualistic behaviors over which the patients have little or no control. Common obsessions include contamination and thoughts of harming loved ones or oneself. Washing and cleaning compulsions are common in children, as is checking. The purpose of this study was to investigate the relationship between OCD and CKD.

**Materials and Methods:** In this case-control study, we evaluated 186 children aged 6-17 years old who were visited in the pediatric clinics of Amir-Kabir Hospital, Arak, Iran. The control group consisted of 93 healthy children and the case group included 93 age and sex matched children with stage 1 to 3 CKD. Then, the children's behavioral status was evaluated using the Children's Yale-Brown Obsessive-Compulsive Scale (C-YBOCS). The C-YBOCS is helpful in identifying children with OCD. The data was analyzed using descriptive and analytical statistics in SPSS-16.

**Results:** Compulsion was detected in 31 cases (33.3%) with CKD and 7 controls (7.5%), and obsession was found in 3 cases (3.2%) with CKD and 4 controls (4.3%). The difference in compulsion was significant (P-value=0.021) while the difference in obsession was not significant between the 2 groups (p-value=0.3). The most common symptom in CKD children with compulsion was silent repetition of words.

**Conclusions:** Compulsion is more common in CKD versus non-CKD children. The observed correlation between compulsion and CKD makes psychological counseling mandatory in children with CKD.

**Keywords:** Chronic Kidney Diseases; Obsessive-compulsive disorder; Child.

**Running Title:** Prevalence of Obsessive-Compulsive Disorder in CKD

acquired, inherited, or metabolic renal disease, and the underlying cause correlates closely with the age of the patient at the time when the CKD is first detected [2,11]. Patients with long-standing untreated CKD can have neurologic symptoms

(fatigue, poor concentration, headache, drowsiness, memory loss, seizure, peripheral neuropathy). Obsessive-compulsive disorder (OCD) is a chronic disabling illness characterized by repetitive ritualistic behaviors over which the patients have little or no control [3,9]. Common obsessions include contamination and thoughts of harming loved ones or oneself. Washing and cleaning compulsions are common in children, as are checking and straightening [4,10]. A search of the literature showed no study that assessed the association between OCD and CKD. This study was designed to evaluate the correlation between OCD and CKD [5,6,7,8].

### Materials and Methods

In this case-control study, we selected 93 children with CKD as the case group and 93 healthy children as the control group, who were all visited in Amir-Kabir Hospital, Arak, Iran. The ethics committee approved the study (approval code: 93-162-1, registration code: 1087). Our exclusion criteria were: 1-children with psychological disorders and/or mental retardation or nervous system disorders, 2-children whose parents did not fully cooperate, e.g. did not fill the forms completely or wished to withdraw from the study. The control group was selected from pediatric patients with UTI and normal DMSA, kidney sonography and VCUG. After primary evaluation regarding exclusion/inclusion criteria, basic information (age, sex, etc.) was recorded. Then, the children's behavioral status was evaluated using the Children's Yale-Brown Obsessive-Compulsive Scale (C-YBOCS) and Anxiety Disorders Interview Schedule for Children (ADIS-C) which are reliable and valid methods for identifying children with OCD. These questionnaires were tested for reliability in a pilot study by the researchers with 30 patients in each of the case and control groups and the Cronbach's alpha was 0.89 for (C-YBOCS) and 0.92 for (ADIS-C). The results were analyzed with SPSS-17 using descriptive statistics for basic information. P-values less than 0.05 were considered significant.

### Results

Overall, 186 children (93 cases and 93 controls) were selected for our study during 3 years. In this study, males comprised 56.5% of the population of whom 58.3% were in the case group and 54.7% were in the control group. Also, females comprised 43.5% of the population of whom

41.7% were in the case group and 45.7% were in the control group. The two groups were matched with no significant difference. On the other hand, 77.6% of the study population lived in urban areas of whom 72.2% were in the case group and 82.7% were in the control group. Moreover, 22.4% lived in rural areas of whom 27.8% were in the case group and 17.3% were in the control group. The two groups were matched with no significant difference. The mean age of children in the case and control group was  $9.12 \pm 3.31$  and  $9.89 \pm 2.01$  years, respectively ( $p=0.43$ ). There were 58 (62.4%) boys and 35 (37.6%) girls in the case group and 49 (52.6%) boys and 44 (47.4%) girls in the control group ( $p=0.38$ ). Compulsion was detected in 31 (33.3%) cases and 7 (7.5%) controls ( $p$  value=0.012). Obsession was detected in 3 (3.2%) cases and 4 (4.3%) controls ( $p$ -value=0.3). In children with CKD the most common sign of compulsive disorder is repeating words or mental acts and checking of repetitive behavior.

### Discussion

In this article, we compared OCD in children with and without CKD. To our knowledge, it is the first study of OCD in children with CKD. The data revealed that the incidence of compulsion was three times higher in CKD compared to non-CKD children. Johnson RJ et al reported that infants diagnosed with ESRD had intellectual and metacognitive functioning significantly lower than sibling controls [15]. Amr M et al reported that a better understanding of the neurocognitive function in children with CKD was a critical element to be ascertained early with proper assessment programs so as to design appropriate educational interventions for this handicapping illness [14]. Riar SK et al reported that the prevalence of RLS and sleep disorders was increased in children with CKD and appeared to be underdiagnosed [13]. Laakkonen H et al reported 21 children on peritoneal dialysis in infancy. In this study, some patients had risk factors for development but their neurological problems did not progress during PD. Patients without risk factors tolerated PD well without major neurological sequelae [12]. Lande MB et al reported that higher levels of blood pressure were independently associated with decreased Wechsler Abbreviated Scales of intelligence performance IQ scores in children with mild-to-moderate CKD [11]. Hooper SR et al reported that most children with mild-to-moderate CKD had no

major neurocognitive deficits while a substantial percentage did show neurocognitive dysfunction that placed them at risk for poor long-term educational and occupational outcomes [16]. Our results showed a higher incidence of compulsive disorders in children with CKD. Therefore, if these disorders are diagnosed and treated properly, OCD can be prevented or more easily treated in children.

## Conclusions

According to the results of this study, it could hypothesized that diagnosis and treatment of compulsive disorders is beneficial in preventing the progression of behavioral disorders in children with CKD. Therefore, the association between obsessive-compulsive disorders and CKD needs to be more closely studied and attention to eliminating confounding factors is necessary.

## Conflict of Interest

None declared

## Financial Support

None declared

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