

Effects of Nephrotic Syndrome in Children

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ABSTRACT

Background: Chronic disorders, particularly nephrotic syndrome, are linked to psychological stress. In children with nephrotic syndrome, glucocorticoid medication can cause a variety of side effects, including behavioral issues. **Aim of the study:** The purpose of this study was to examine the effects of nephrotic syndrome in children. **Methods & Materials:** From June 2017 to May 2018, this prospective case control study was conducted at various institutes and medical college hospitals in Dhaka as well as Bogura. This study comprised 100 cases of nephrotic syndrome aged 4-17 years from a purposive sampling approach, as well as 100 age and gender matched control subjects. The behavior of children with nephrotic syndrome was assessed using SDQ grading. A data collecting sheet was created, and the Bengali version of the SDQ format was employed. Variables were measured using various methods. SDQ was compared to these variables, and data were analyzed using SPSS (version 22). **Results:** The case and control groups had mean ages of 7.86 ± 2.98 and 7.19 ± 2.77 years, respectively. There was no discernible difference in age between the cases and controls. The emotional symptoms scale, conduct difficulties scale, and peer relationship problem were significantly higher in cases than in controls, whereas the pro-social behavior scale was significantly lower. The total SDQ score did not differ significantly between kinds of nephrotic syndromes. However, the IFRNS had a greater SDQ level when compared to the other clinical variants. There was no association between SDQ score and father's or mother's occupation. There was no link between SDQ score and age, disease duration, or monthly household income in patients. Males made up the majority of both categories. **Conclusion:** This study discovered that children with nephrotic syndrome had much higher levels of emotional symptoms, conduct problems, and peer interaction issues than healthy children, whereas pro-social behavior was significantly lower. Overall, children with nephrotic syndrome had significantly more psychological problems than the control group.

Keywords: Emotional symptoms, psychological problems, nephrotic syndrome, SDQ

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INTRODUCTION

Nephrotic syndrome is largely a pediatric condition, with a greater frequency in children than in adults. The majority of children with nephrotic syndrome have steroid-sensitive minimal change illness, which is relatively benign. Teeninga discovered that the condition progresses to recurrent relapses, which are frequently associated with steroid dependence in 20 to 60% of patients [1]. Bagga discovered that minimal change nephrotic syndrome is more common in boys than in girls (2:1) and typically arises between the ages of 2 and 6 years [2]. Childhood peer relationships are strongly associated with emotional, behavioral, and adjustment difficulties. So, solid peer relationships are required to live a calm and healthy life. Kim and Newcomb underline that excellent mental health and family engagement are essential for coping with peers. Coie discovered that childhood peer social status can be predicted by parent-reported externalized and self-reported internalized disorders [3, 4, 5]. The authors also emphasized the importance of the source of information in order to synchronize patterns of relationship between predictor and outcome variables. Children who have chronic physical diseases were more likely to have behavioral issues.

Mushtaq discovered that illnesses such as insulin-dependent diabetic mellitus, cancer, cystic fibrosis, juvenile rheumatoid arthritis, and asthma, among others, are connected with increased psychopathologies in children, including behavioral issues [6]. Armstrong demonstrated that children with medical illnesses may not develop at the same rate as healthy children due to delayed neurocognitive development, disruptions in education, and limited social experiences, as well as the medical condition and treatment influences on intellectual and somatic growth and maturation [7]. This study is also consistent with the findings of Gipson on children with chronic kidney disorders [8], who found an increased risk of delays in neurocognitive development, particularly among toddlers. This conclusion supported the findings of Fennell, who showed worse memory scores for children with chronic kidney illness compared to controls [9]. Nephrotic syndrome is a condition that should be treated carefully to decrease morbidity and mortality. If behavioral difficulties persist, they will place a significant load on the patient and family. As a result, these individuals should be given special treatment early in the course of the disease to avoid behavioral issues.

METHODS & MATERIALS

A prospective case-control study was undertaken in the Department of Pediatric Nephrology, National Institute of Kidney Diseases and Urology in Dhaka, Bangladesh, From June 2017 to May 2018. This study included 100 cases of nephrotic syndrome aged 4-17 years using a purposive sampling approach, as well as 100 age and sex matched controls. The behavior patterns of children with nephrotic syndrome were assessed using SDQ scoring. A data collecting sheet was created, and the Bengali version of SDQ format was employed. Various variables were measured. SDQ was compared to these variables, and the results were

analyzed using SPSS (version 22). A p-value was considered statistically significant if ≤ 0.05 , and non-significant if > 0.05 .

RESULT

Table I displays the ages of the study patients in both cases and controls. In both groups, the majority of study participants were between the ages of four and ten. The case and control groups had mean ages of 7.86 ± 2.98 and 7.19 ± 2.77 years, respectively. There was no discernible difference in age between the cases and controls.

Table I: Age of the study subjects (n=200)

Parameters	Group		P value
	Case (n=100)	Control (n=100)	
Age (years)			
4-10	80 (80.0)	86 (86.0)	0.094*
11-17	20 (20.0)	14 (14.0)	
Mean $\pm$ SD	7.86 ± 2.98	7.19 ± 2.77	

Table II demonstrates that the emotional symptoms scale, conduct difficulties scale, and peer relationship problem were significantly higher in cases than in controls, whereas the pro-

social behavior scale was significantly lower. The hyperactivity scale indicates no difference between case and control.

Table II: SDQ level of different psychiatric scales in case and control (n=200)

SDQ scales	Group		P value
	Case (n=100) [mean $\pm$ SD]	Control (n=100) [mean $\pm$ SD]	
Emotional symptoms scale	1.20 ± 1.33	0.47 ± 0.87	<0.001
Conduct problem scale	0.45 ± 0.88	0.12 ± 0.56	<0.001
Hyperactivity scale	1.23 ± 1.49	1.10 ± 1.33	0.601
Peer relationship problem scale	1.40 ± 1.22	1.03 ± 0.88	0.023
Pro-social behavior scale	9.52 ± 1.02	9.85 ± 0.48	0.014
Total scale	4.28 ± 2.59	2.72 ± 1.95	<0.001

Table III displays the clinical categories of nephrotic syndrome among the cases and their related mean SDQ value. The total SDQ score did not differ significantly between kinds of

nephrotic syndromes. However, the IFRNS had a greater SDQ level when compared to the other clinical variants.

Table III: SDQ score of different clinical types of nephrotic syndrome in cases (n=100)

Clinical types of nephrotic syndrome	P-value
First Attack / FRNS	0.267
First Attack / IFRNS	0.036
First Attack / SDNS	0.469
FRNS / IFRNS	0.829
FRNS / SDNS	0.757
IFRNS / SDNS	0.602

Table IV reveals that there was no association between SDQ

score and father's or mother's occupation.

Table IV: Association of SDQ score with father's and mother's occupation in cases (n=100)

Parameters	Mean $\pm$ SD	P-value
Father's occupation		
Farmer	4.19 ± 2.59	0.071
Service holder	2.50 ± 1.77	
Businessman	5.00 ± 2.13	
Overseas employee	5.38 ± 2.84	
Mother's occupation		
Housewife	4.21 ± 2.56	0.331
Service holder	5.14 ± 3.07	

Table V reveals that there was no link between SDQ score and age, disease duration, or monthly household income in

patients.

Table V: Correlation of SDQ score with age, duration of disease and monthly family income in cases (n=100)

Parameters	r value	P value
Age	-0.055	0.590
Duration of disease	+0.015	0.885
Monthly family income	+0.182	0.071

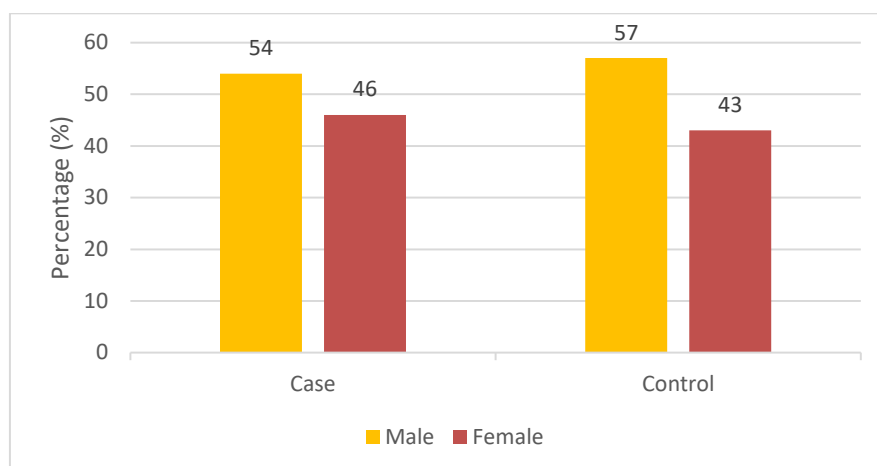


Figure 1: Sex of the study subjects

Figure 1 depicts the sex of the study individuals in both cases and controls. Males made up the majority of both categories.

DISCUSSION

In the current investigation, the mean age of the patients and controls was practically identical. The mean age of the patients was comparable to that of Guha and Ghobrial [10,11]. Rodriguez [12] studied older children, with an average age of 9.48 ± 3.06 years in cases and 9.28 ± 2.85 years in controls. This study found that males outnumbered females in both the case and control groups. A similar conclusion was discovered in the studies of Rodriguez and Guha [12, 10]. However, Agrawal included a similar number of men and women [13]. This study discovered that children with nephrotic syndrome had much higher levels of emotional symptoms, conduct problems, and peer interaction issues than healthy children, whereas prosocial behavior was significantly lower. Overall, children with nephrotic syndrome had significantly more psychological problems than the control group. Rodriguez found that children with nephrotic syndrome had increased emotional symptoms, peer problems, and overall psychological difficulties [12]. Ghobrial observed no significant difference [11]. Agrawal evaluated children's quality of life with nephrotic syndrome [13]. They used PedsQL 4.0, a generic core scale. Children with nephrotic syndrome scored significantly higher on both the physical and emotional scales. They also discovered a considerably lower social score in children with nephrotic syndrome compared to healthy children. Boraey and El-Sonbaty found that children with nephrotic syndrome have significantly more behavioral issues than healthy children [15]. Manti discovered that total psychosocial scores as judged by the Child Behavior Checklist (CBCL) were considerably higher among children with nephrotic syndrome [16]. Mehta used the Child Behavior Checklist (CBCL) to evaluate behavioral issues and social competencies in children

with nephrotic syndrome [17]. When comparing children with nephrotic syndrome to healthy children, they discovered a considerably higher CBCL score in behavior difficulties and a significantly lower score in social competence. Guha et al. discovered that hyperkinesia was the most common behavioral abnormality, followed by conduct disorder, learning problem, and obsessive-compulsive neurosis [10]. The current investigation demonstrated a relationship between distinct clinical forms of nephrotic syndrome and the SDQ score system. The total SDQ score did not differ significantly between the various clinical categories of nephrotic syndrome. However, the IFRNS had a greater SDQ level when compared to the other clinical variants. Ghobrial et al. discovered no significant differences in emotional symptoms, conduct problems, hyperactivity, peer relationship issues, or prosocial behavior amongst clinical categories of nephrotic syndrome [11]. So, the different forms of nephrotic syndrome have no effect on the psychological well-being of patients. This study also found an association between SDQ score, age, disease duration, and monthly household income. However, no substantial relationship was found. Rodriguez et al. found no significant relationship between SDQ score and age, but a strong correlation with disease duration [12]. This could be due to variances in sample size and low drug compliance in our country.

LIMITATION

This is a cross-sectional study. These patients could not be assessed or evaluated further. The time it took for symptoms to resolve after discontinuing therapy was unknown.

CONCLUSION & RECOMMENDATION

This study discovered that children with nephrotic syndrome had much higher levels of emotional symptoms, conduct problems, and peer interaction issues than healthy children, whereas pro-social behavior was significantly lower. Overall, children with nephrotic syndrome had significantly more psychological problems than the control group. Based on the study's findings and discussions, the following recommendations are made: A longitudinal investigation should be carried out.

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