

Describe the Effects of the Nephrotic Syndrome on Children aged 8 to 13 Years in Iraq

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Abstract: Introduction: Nephrotic syndrome (NS) is a disorder characterized by protein leakage in the urine, which can lead to life-threatening hypovolemia, hypercoagulation, and infection. The average age of a kid with NS is four years old, affecting boys more than girls. Nevertheless, the frequency varies by age, gender, race, and geographic area. The frequent use of corticosteroids in these individuals and the recurring nature of the condition might pose substantial health-related obstacles to quality of life. **Objective:** This paper aims to describe the effects of nephrotic syndrome on children aged 8 to 13 years in Iraq. **Patients and Methods:** A cross-sectional study was conducted in different hospitals in Iraq, which included 151 cases of pediatric nephrotic syndrome, for both males and females, between the fifth of October 2021 to the nineteenth of January, which were included and divided into two groups, where the first group was Nephrotic Patients (N=85) and the second group was Control Patients (N=66) where they meet the following requirements: Children between the ages of 8 to 13 years who had nephrotic syndrome for more than one year. It was used in a cross-sectional study of patients with pediatric nephrotic syndrome using the SPSS program. **Results and Discussions:** In our study, patients with the nephrotic syndrome had low levels according to the scale Ped'SQL (physical, social, educational, and emotional) compared to the healthy controls group the effective Ped'SQL score was surprisingly low. Where a direct statistical relationship was found between the patient group with quality of life with r correlation =+0.876, p-value 0.008, and this explains the role in Table 4. **Conclusion:** This study reveals that while nephrotic syndrome is treatable, it can hurt patients' physical, emotional, social, and intellectual lives. As a result, this study showed great efficiency and reliability in evaluating the pediatric database in clinical practice, particularly for patients with renal disease. This study showed that Ped'sQL was successful in evaluating all patients, as it discovered that control patients had higher assessment scores than the renal patients' group and that all four sections, which included physical, educational, social, and emotional performance, showed that control patients performed better than nephrotic patients' group.

Keywords: Nephrotic syndrome (NS); Swelling; Infections; Clinical types of NS; Glomerulonephritis; and Hepatitis.

INTRODUCTION

Nephrotic syndrome is a kidney condition that causes swelling and other symptoms. Although it can affect people of any age, nephrotic syndrome usually occurs in children between the ages of 2 and 8.

Nephrotic Syndrome (NS) is one of the most common chronic diseases in childhood. Its incidence ranges from 1 to 3 cases per 100,000 population under the age of 16. During childhood, the first causes of kidney disease are structural changes in the kidneys and urinary tract, which can progress to chronic renal failure. It occurs most frequently between the ages of 2 and 8 years, and most cases are consistent with primary or idiopathic NS (INS). After an upper respiratory tract viral infection with abrupt edema proteinuria in the range of nephrotic syndrome (> 50 mg/kg/day), hypoalbuminemia (serum albumin 2.5 g/DL), and hyperlipidemia (TG > DL/200 mg), the condition is frequently identified. [McKinney, P.A.

et al., 2001]. Nephrotic syndrome (NS) is characterized by protein leakage in the urine, which can lead to life-threatening hypovolemia, hypercoagulation, and infection. The average age of a kid with NS is four years old, affecting boys more than girls [Niaudet, P, 2004; Hinkes, B.G. et al., 2007]. Nevertheless, the frequency varies by age, gender, race, and geographic area. The frequent use of corticosteroids in these individuals and the recurring nature of the condition might pose substantial health-related obstacles to quality of life [Machuca, E. et al., 2009]. Growth retardation, bone deformities, gingival enlargement, mutism after corticosteroid and cyclosporine usage, and edema are the most prevalent consequences that cause uncomfortable physical changes, particularly in adolescence [Benoit, G. et al., 2010]. These youngsters appear to have issues such as low self-esteem because of delayed growth and development and limits in

academic and social performance [Löwik, M.M. et al., 2009]. Repeated absences from school owing to long-term hospitalizations and limits on group activities might exacerbate their difficulties [van den Berg, J.G. et al., 2004]. One component of the man's case for these patients is the issue of their compliance with medical instructions, which is caused by the disease's long course and drug side effects [McCarthy, E.T. et al., 2010]. This is especially troublesome in teens, who are going through the vital years of their lives in terms of physical and emotional adherence to medical instructions and, as a result, better man's argument of the condition [McCarthy, E.T. et al., 2010]. Moreover, they may obtain better therapy by identifying the disease's influence on numerous parts of nephrotic syndrome patients' life. The yearly incidence of NS in children in the United States and Europe is estimated to be 1-7 per 100,000, with a cumulative frequency of 16 per 100,000 [Zhang, S.Y. et al., 2011].

[Lai, K.W. et al., 2007]. Congenital and infantile NSs occur before the age of one year and are usually linked with infections (e.g., syphilis, toxoplasmosis, etc.) or with mutations in genes coding for proteins, and they are steroid-resistant. Idiopathic nephrotic syndrome (INS) is the most common form of NS in children,

accounting for more than 90% of cases between the ages of one and ten and 50% beyond ten [Abdel-Hafez, M. et al., 2009]. The clinical features of NS are associated with renal biopsy findings of diffuse foot process effacement on electron microscopy and minimal changes (called minimal change disease (MCD), focal segmental glomerulosclerosis (FSGS), or diffuse mesangial proliferation (DMP) on light microscopy, defining INS. Many patients exhibit MCD histology findings [Hodson, E.M. et al., 2010]. Most MCD patients (>90%) respond to glucocorticoid medication, but only 50% of DMP patients and 30% of FSGS patients are projected to do so. Clinical features distinguish children with MCD from other glomerular pathologies [Trachtman, H. et al., 2011]. The latter include being under the age of six, not having hypertension, not having haematuria, having normal complement levels, and having a normal renal function. Nevertheless, the beginning of nephrotic syndrome in the first year of life, especially in the first three months, is more likely to be attributable to a gene mutation and resistance to glucocorticoids [Trachtman, H. et al., 2011]. It is, therefore, generally accepted that a

course of glucocorticoids should be given without prior kidney biopsy when the illness begins after the age of one year, with the upper age limit generally considered to be ten years because only 10% of patients under the age of ten are steroid-resistant, compared to 20% of patients under the age of eighteen [Bertelli, R. et al., 2010]. This paper aims to describe the effects of nephrotic syndrome on children aged 8 to 13 years in Iraq.

PATIENTS AND METHODS

A cross-sectional study was conducted in different hospitals in Iraq, which included 151 cases of pediatric nephrotic syndrome, for both males and females, between the fifth of October 2021 to the nineteenth of January, which were included and divided into two groups, where the first group was Nephrotic Patients (N=85) and the second group was Control Patients (N=66) where they meet the following requirements: Children between the ages of 8 to 13 years who had nephrotic syndrome for more than one year of patients group.

In this cross-sectional study, an analysis of the demographic study carried out by our institution was carried out on ages between the ages of 8 to 13 years according to the SPSS program (gender, weight, causes of nephrotic syndrome, which included glomerulonephritis, hepatitis, diabetes, sickle cell anemia, income Level of parents (Low, intermediate and high), Symptoms associated with a nephrotic syndrome which included Swelling, Infections, Urine changes, Blood clots and CNIs receiving, and which selected Yes or No among these data in Table 1.

In this study, we distributed patients according to The period of the disease in children with nephrotic syndrome of group patients and control by (2-6 months), (6-9 months), (9-18 months), and > (18 months) as shown in Figure 1. Furthermore, this study was designed with a distribution of clinical types of NS between patients of nephrotic syndrome and patients' control, which was conducted during three sections (SDNS, SSNS, and SRNS), where can be seen in Figure 2.

this study was evaluated according to the distribution of the complications between nephrotic patients and control where parameters selected with blood pressure, obesity, gingival hyperplasia, cushingoid manifestation, cushioned faces, thrombotic events where it happened between nephrotic patients' group and control patients which can see in Table 2.

RESULTS

Table 1: The demographic results of nephrotic patients' children

Variables	Nephrotic Patients (N=85)	Control Patients (N=66)	P-value
Age			
8-10	38 (44.71%)	32 (48.48%)	0.0474
11-13	47 (55.29%)	34 (51.52%)	0.0481
Sex			
Male	62 (72.94%)	48 (72.73%)	0.0498
Female	23 (27.06%)	18 (27.27%)	0.0496
Weight (Kg)	35.4 ± 14.7	30.3 ± 19.5	0.0453
Causes of nephroticsyndrome			
Glomerulonephritis	11 (12.94%)	9 (13.64%)	0.0491
Hepatitis	22 (25.88%)	21 (31.82%)	0.0473
Diabetes	18 (21.18%)	12 (18.18%)	0.0478
sickle cell anaemia	34 (40%)	24 (36.36%)	0.0447
Income Level ofparents			
Low	35 (41.18%)	28 (42.42%)	
Intermediate	30 (35.29%)	22 (33.33%)	
High	20 (23.53%)	16 (24.24%)	
Symptoms associatedwith nephroticsyndrome			
Swelling	10 (11.76%)	9 (13.64%)	0.0487
Infections	14 (16.47%)	15 (22.73%)	0.0463
Urine changes	25 (29.41%)	19 (28.79%)	0.0486
Blood clots	36 (42.35%)	23 (34.85%)	0.0336
calcineurin inhibitors receiving			
Yes	33 (38.82%)	25 (37.88%)	0.0491
No	52 (61.18%)	41 (62.12%)	0.04913

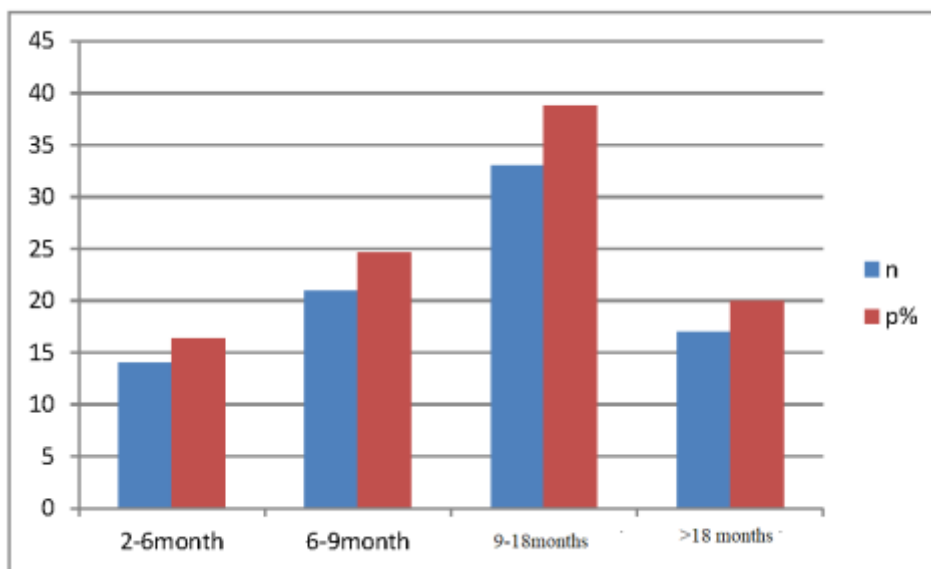


Figure 1: The period of the disease in children with nephrotic syndrome of group patients and control.

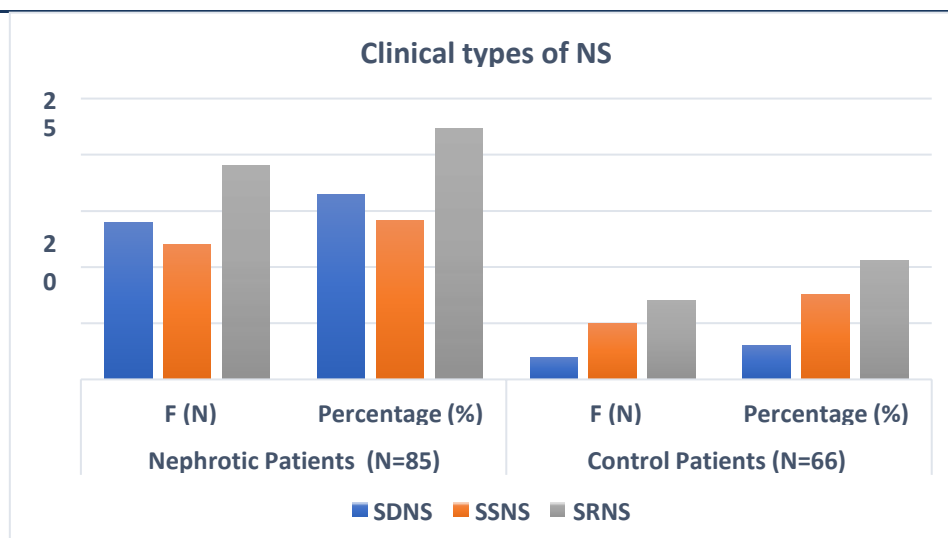


Figure 2: Distribution of clinical types of NS between patients of nephrotic syndrome and patients control. Severe steroid-dependent nephrotic syndrome (SDNS), steroid-resistant nephrotic syndrome (SRNS)

Table 2: Complications between nephrotic patients and control patients

Complications	Nephrotic Patients (N=85)	Control Patients (N=66)	P-value
Blood pressure	9 (10.59%)	2 (3.03%)	0.0372
Obesity	4 (4.71%)	4 (6.06%)	0.0484
Gingival hyperplasia	4 (4.71%)	1 (1.52%)	0.0477
Cushingoid manifestation	12 (14.12%)	3 (4.55%)	0.0354
Cushioned faces	6 (7.06%)	4 (6.06%)	0.0495
Thrombotic events	5 (5.88%)	1 (1.52%)	0.04362

Scoring and interpretation

Scoring the Generic Core Scales

Items on the PedsQL Generic Core Scales are reverse-scored and transformed to a 0-100 scale. Higher scores indicate the better health-related quality of life:

0 ("Never") = 100

1 ("Almost Never") = 75

2 ("Sometimes") = 50

3 ("Often") = 25

4 ("Almost Always") = 0

Scale scores are computed as the sum of the items over the number of items answered (to account for missing data). If more than 50% of items or more are missing, the Scale Score should not be computed.

Table 3: PedsQL Scores in nephrotic patients and controls

Items	Nephrotic Patients (N=85)	Control Patients (N=66)	P-value
Emotional	40.4±19.21	60.56±17.4	0.0388
Social	55.2±14.4	82.65±5.7	0.0413
Physical performance	48.9±18.56	69.9±14.33	0.04315
School	60.1±6.88	70.4±7.73	0.0441

Table 4: Correlation between groups of study with quality of life

Variable	quality of life	Patients	Control
R-correlation	1	-0.0776	+0.876
Sig	---	0.87	0.008

DISCUSSION

This study was focused on chronic diseases such as nephrotic syndrome, focusing more on the duration of the disease and the causes of nephrotic syndrome and improving its clinical outcome. It seems that this disease's impact on these patients' quality of life has been largely neglected [Gulati, A. *et al.*, 2010]. While the chronic nature of the disease and exposure to corticosteroids and cyclosporine, and tacrolimus and their complications, as well as clinical manifestations of the disease, such as glomerulonephritis, hepatitis, sickle cell anemia and treatment complications such as obesity, blood clots, and urine changes were thoroughly studied. [Sellier-Leclerc, A.L. *et al.*, 2010]

On the other hand, repeated hospitalizations and absences from school to see a doctor might impact each child's physical, emotional, psychological, and academic elements. In such a way that its consequences may continue into the child's future years. This problem can impair patient adherence to medical directives, especially in the case of phlegm. Greater knowledge of Ped'SQL might lead to proof of excellent clinical treatment and, eventually, illness management. The Ped'SQL General Scale is a trustworthy, practical, and adaptable instrument frequently used in pediatrics. [Guignonis, V. *et al.*, 2008] Amiri *et al.* investigated and Validated its dependability in Iraqi youngsters. Males outnumber females in our cohort of patients with NS.

The results of investigations on the influence of nephrotic syndrome on patients' Ped'SQL scores have been inconsistent and occasionally conflicting. [Lai, K.W. *et al.*, 2007] Roth, *et al.*, (2004) assessed QOL in 45 Dutch children with nephrotic syndrome and discovered that only social functioning was reduced. In contrast, the Ped'SQL examination of 85 children from the nephrotic syndrome group with dominant NS in our study revealed worse social functioning and higher school.

Performance scores. (Abdel-Hafez, M. *et al.*, 2009) In India, Mazahir *et al.* showed poorer ratings for children with NS compared to healthy children, notably in school performance.

In Table 3, the patient's quality of life was evaluated according to a special scale for children, where all aspects of life were evaluated, and a decrease was found in the patient's quality of life compared to the control group, where a statistical

relationship was found in all aspects of life.

Our findings agreed with Agrwal, *et al.*, and Selewski, *et al.*, (Leroy, S. *et al.*, 2009). These data suggest that nephrotic syndrome, regardless of disease phenotype, can influence different elements of a child's quality of life. However, the small sample size may make reaching such a conclusion difficult. A broad study of the potential link between clinical characteristics, disease consequences, and Ped'SQL scores was also carried out. Our findings showed that illness duration negatively influenced Ped'SQL scores, which was comparable with the results of Rahman, *et al.*, [2016], who found that longer disease duration and more recurrences were important factors.

This study sought to examine the possible association between socioeconomic characteristics and ratings in chronically sick children and observed a significant relationship that was consistent with our findings when compared to the study of Mishra, *et al.*, [2015], findings' When Ped'SQL results were compared to normal data from prior research. It was shown that children with nephrotic syndrome had poorer social, educational, and physical performance scores than patients in the control group. At the same time, the patients in the research had higher emotional ratings that did not differ substantially from the control group patients' values.

CONCLUSION

This and other studies reveal that while nephrotic syndrome is treatable, it can have a negative impact on a patient's physical, emotional, social, and intellectual life. Early detection of the consequences of nephrotic syndrome may be the first step toward taking steps to decrease the disease's catastrophic effects. As a result, this study demonstrated great efficiency and reliability in evaluating children's Ped'sQL in clinical practice, particularly for patients with nephrotic disease. In conclusion, this study demonstrated that Ped'sQL was successful in evaluating all patients, as it discovered that control patients received higher evaluation scores than the group of nephrotic patients and that all four sections, which included emotional, physical, educational, and social performance, demonstrated that control patients performed better than the group of nephrotic patients. This study is advised to deal with these children's complete care in multidisciplinary teams composed of pediatric nephrologists,

psychologists, and psychiatrists.

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Source of support: Nil;

Conflict of interest: Nil.

Cite this article as:

Al-Mnehil, J.K.M., Algharbawi, B.A.A. and Ai Baraznchi, S.J.M. "Describe the Effects of the Nephrotic Syndrome on Children aged 8 to 13 Years in Iraq." *Sarcouncil Journal of Medical Series* 2.3 (2023): pp 1-7.