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ASSESSMENT OF NURSES KNOWLEDGE AND PRACTICE FOR NEPHROTIC CHILDREN IN A MILITARY HOSPITAL

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Abstract

Nephrotic syndrome is a condition that causes the kidneys to leak large amounts of protein into the urine. This can lead to a range of problems, including swelling of body tissues and a greater chance of catching infections. This descriptive study assessed of nurses' knowledge and practice caring for nephrotic children. A convenience sample was 57 pediatric nurses caring children with nephrotic syndrome. Tools of data collection: Two tools were utilized for data collection; Tool I: Self- administered questionnaire sheet: Tool II: An Observational checklists: adopted by the researcher for evaluation of nursing practices of children with nephrotic syndrome. The results showed that majority of the pediatric nurses had inadequate practice about nephrotic syndrome, but there were a positive correlation between nurses' practice, age, of pediatric years' experience and general experience.

Key words: nephrotic syndrome, pediatric nurses, practice, children.

Introduction

Childhood nephrotic (nephritic) syndrome is not a disease in itself; rather, it is a group of symptoms that indicated kidney damage, particularly glomeruli, damage, and tiny units within the kidney where blood is filtered. This caused huge body protein release into urine. Signs and symptoms are oedema, proteinuria, hypoalbuminemia, hyperlipidaemia, lipiduria, hyponatremia, and frothy urine (Ferri, 2018). The causes can be divided into two as primary and secondary causes (Kelly and Landman, 2016): 1- Primary causes are conditions developing within the kidney, as minimal change disease (MCD), or focal segmental glomerulosclerosis (FSGS). 2- Secondary causes affect other body parts in addition to kidneys as diabetes, systemic lupus erythematosis (SLE), and vasculitis-inflammation of blood vessels. Presence of protein in urine is a common laboratory finding in children. Although proteinuria is usually benign, and can be a marker of a serious underlying renal disease or systemic disorder. When proteinuria coexists with hematuria, the likelihood of clinically significant renal disease is higher. Besides, proteinuria represents an independent risk factor for the progression of non-glomerular or glomerular chronic kidney disease in children (Litwin, 2004). Wong (2007) in New Zealand found that the incidence was 1.9children/100,000 under age 15 years, without significant difference in INS between ethnic groups. Approximately 80.4% were steroid responsive with median time to response of 8.4 days and mean time to relapse was 15.1+/-12.1 weeks (95% confidence interval). Follow-up at 12 months after diagnosis showed that two-thirds were either steroid dependent or frequent relapses. Steroid resistance patients had a more variable course with some developing chronic renal failure and other remaining persistently nephrotic. He concluded that incidence, and outcome of children with INS were similar to overseas studies. A large variety of steroid treatment regimens were noted. Nephrotic syndrome was usually due to a glomerular disease and categorized into primary and secondary forms. The primary NS or INS (90%), both terms denoted a similar vagueness as to cause is not associated with any underlying disease. Syndrome manifests with varied clinical and pathologic states. Term secondary NS (10%) relates to ream of clinical diseases affecting the kidneys, such as anaphylactic purpura, systemic lupus erythematous, diabetes mellitus, sickle cell disease, syphilis, neoplasms, drugs and infections (Burgstein, 2008). Nephrotic syndrome in children usually has a good prognosis. However, in children less than 5

years old and in adults over 30 years the prognosis is usually not good and can lead to permanent kidney damage. In these groups the disease reappeared after sometimes and needed continuous drug adminstration to keep the disease under control (Barakat and Atiyeh, 1998). But, without treatment nephrotic syndrome showed a very bad prognosis especially rapidly progressing glomerulonephritis, which led to acute kidney failure after a few months. Treatment reduced the kidneys damage, prednisone, cyclophosphamide, levamisole are some drugs used to treat nephrotic syndrome. Also, lack of albumin was treated by giving albumin from outside into a vein. Fluid retention was treated with drugs called diuretics, which remove the excessive water collected in body. The patient was advised to consume salt, fat containing foods and fluids including water in low amounts. Safaei and Maleknejad (2009) in Iran studied nephrotic syndrome (NS) among 44 children 29(66%) boys and 15 (34%) girls and reported that facial edema was in 42 (95%), microscopic hematuria in 10(23%), gross hematuria in 2(4.5%), and hypertension in 5(11.2%) patients. Children underwent biopsy, focal segmental glomerulosclerosis was the commonest pathologic one (41%). Others were minimal change disease in 3 (18%), membranoproliferative glomerulonephritis in 1(5.8%), diffuse proliferative glomerulonephritis in 2(11.6%), membranous glomerulonephritis in 1 (5.8%), and diffuse meningeal proliferation in 3(17.5%) cases. At the time of hospitalization peritonitis was in 5(11.4%), pneumonia and upper respiratory sinusitis in 8 (18%), and cellulites in 2 (4.5%) patients. Twenty nine patients (66%) were steroid sensitive, 9 (20.5%) steroid resistant and 6(13.5%) steroid dependent. But, among patients with steroid-sensitive NS, 37% didn't relapse, 38.8% frequent relapses, and 26.4% were infrequent relapses. Hahn *et al.* (2015) in Australia reported that in nephrotic syndrome protein leaks from the blood to the urine through the glomeruli resulting in hypoproteinaemia and generalized edema. But, most children with nephrotic syndrome respond to corticosteroids, 80% experienced a relapsing course. Corticosteroids reduced the mortality rate to around 3%. But, corticosteroids well recognized potentially the serious adverse effects such as obesity, poor growth, hypertension, diabetes mellitus, osteoporosis and behavioral disturbances.

Thus, the nursing consideration is very important for establishing a basic lines of care and family education, which includes: first, monitoring intake and output in young children and weighing the diapers, second, assessment of edema through observing swelling around eyes and dependent area, third, diet should be restricted like salt and fluids and high protein during appearance of edema and fourth protected the child with nephrotic syndrome from infection especially when the child is receiving corticosteroid therapy (Caroline and Mary, 2003).

Safaei and Maleknejad (2009) in Iran reported that a good nursing care helps child with nephrotic syndrome to reduce pain and control illness condition effectively, and it was an important part for patients to recover, so learning how to arrange a good nursing care proved to be very important for the parents of child with nephrotic syndrome Bakkaloglu and Chaefer (2011) in Belgium reported that the health care providers treat idiopathic childhood nephrotic syndrome with several types of medications that control the immune system, remove extra fluid, and lower the blood pressure. In control the immune system; corticosteroids are a group of medications that reduce the activity of the immune system, decrease the amount of albumin lost in the urine, and decrease swelling. The health care providers commonly use prednisone or a related corticosteroid to treat idiopathic childhood nephrotic syndrome. About 90% of children achieved remission with daily corticosteroids for 6 weeks and then a slightly smaller dose every other day for 6 weeks. Remission was a period when the child is symptom-free. The nurses have a major role in teach child, and his family to repo-

rt immediately any changes in the sensation, warmth, comfort or appearance (color, activity and edema). They also teach family how to monitor blood values for white blood count, initiate strategies to prevent infection by use aseptic technique, assess the child urinary output, fluid intake and make balance between them to prevent hypervolemia, hematuria, to assess proteinuria, to prevent thrombosis, assess treatment program or diuretic therapy, steroid therapy and immunization to prevent hypovolemic shock, hypertension, growth failure and iatrogenic (Ishikura *et al,* 2014).

Hockenberry *et al.* (2014) in USA reported that nursing care is most effective when it is delivered with the belief that the family is the patient. When a child is healthy, the child's health is enhanced when the family is a fully functioning, health-promoting system. The family unit can be manifested in a myriad of structures; each has the potential to provide a caring, supportive environment in which the child can grow, mature, and maximize his or her human potential. In addition to the integration of family-centered care into every chapter, an entire chapter is devoted to understanding the family as the core focus in children's lives including the social, cultural, and religious influences that impact family beliefs. Separate sections in another chapter deal in depth with family communication and family assessment. Nurses must master knowledge about health and illness, and human responses to each; they must be good leaders and good team members; they must think critically and creatively; they must both use and advance the science of nursing; they must participate in inter professional collaborations; they must be both caring and professional; and they must grapple with profound ethical dilemmas related to new technologies not dreamed of even a few years ago (Wong, 2014).

The study aimed to assess of the nurses' knowledge and practice caring for a Military Nephrotic Hospital with a well-designed questionnaires program

Materials and Methods

Research hypotheses: **T**he nurses who will receive an educational program will have better practice score in the post-test.

Research design: A quasi-experimental design was utilized in current study.

Research setting: The study was carried out on the available nurses.

Sample: Convenience sample was 57 pediatric nurses caring children with nephrotic syndrome.

Inclusion criteria: Preschool and school children diagnosed as nephrotic patients, and free from any other disease.

Tools of data collection: Two tools were developed after extensive review of literatures and publications: 1- Self-administered questionnaire sheet included the personal characteristics of the pediatric nurses as age, sex, qualifications, years of general and pediatric experience, and whether they attended any training program regarding health care of NS children. 2- An observational checklist was adopted to evaluate the following skills of the urine analysis for albumin, edema care, protect child from infection and measure vital signs and child anthropometric measures.

Validity of study tools: The content validity was tested by a jury consisted of 3 spec ialised professors and experts in pediatric nursing and medicine to ascertain that the tools were relevant, understood, and applicable; minor modifications were carried accordingly.

Ethical considerations: After the permission from the Hospital Manager, each nurse was asked to give oral consent to participate after full explanation of nature and study aims and expected outcomes and benefits. Each participant has the right to withdraw from the study at any time without any rationale.

Results

Details were given in tables (1, 2 & 3) and figures (1, 2, 3, 4, 5, 6, 7 & 8)

Table 1: Pediatric nurses according to personal characteristics (n=57).

Variables		No.	%
Age (years)	20-<30	41	72.0
	>30	16	28.0
Mean age ±SD		26.5±5.3	
Sex	Male	7	12.3
	Female	50	87.7
Educational level	Diploma	25	43.9
	Technical Institute	28	49.1
	Bachelor	4	7.0
General nursing experience	1-<6	30	52.6
	6-<11	15	26.3
	11+	12	21.1
Mean general experience ±SD		7.2±5.5	
Pediatric nursing experience	1-<6	41	71.9
	6-<11	12	21.1
	11+	4	7.0
Mean pediatric experience ±SD		4.4±3.9	
Training courses	Yes	9	15.8
	No	48	84.2

A total of 72% aged from 20 to <30years (26.5±5.3), of whom 50 (87.7%) were females, 49.1% & 43.9% of nurses were Technical Institute and diploma education respectively, 52.6% of nurses having experience in general nursing from 1 to <6years, but 71.9% of them with experience in pediatric nursing from 1 to <6years with mean years of experience 4.4±3.9 and 84.2% of pediatric nurses didn't attend training courses.

Table 2: Total nurses' practice scores before, immediate and 3 months' after program implementation (n=57).

Variables	Before				Immediate				3 months' after				χ^{2Y}	p-value
	Pass		Not		Pass		Not		Pass		Not			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
Axillary temperature	26	45.6	31	54.4	45	78.9	12	21.1	42	73.7	15	26.3	16.3	<0.0001**
Peripheral pulse	17	29.8	40	70.2	41	71.9	16	28.1	35	61.4	22	38.6	22.1	<0.0001**
Respiratory rate	6	10.5	51	89.5	30	52.6	27	47.4	28	49.1	29	50.9	26.6	<0.0001**
Blood pressure	24	42.1	33	57.9	40	70.2	17	29.8	37	64.9	20	35.1	10.5	0.005**
Height	15	26.3	42	73.7	41	71.9	16	28.1	39	68.4	18	31.6	29.7	<0.0001**
Weight	22	36.6	35	61.4	44	77.2	13	22.8	30	52.6	27	47.4	17.7	<0.0001**
Urine analysis	36	63.2	21	36.8	49	86.0	8	14.0	45	78.9	12	21.1	8.5	0.014*
Skin care during edema	15	26.3	42	73.7	38	66.7	19	33.3	35	61.4	22	38.6	22.0	<0.0001**
Infection control	25	43.	32	56.1	39	68.4	18	31.6	34	59.6	23	40.4	7.2	0.027*
Total practice	21	36.8	36	63.2	41	71.9	16	28.1	36	63.2	21	36.8	15.5	<0.0001**

*Significant at <0.05, **highly significant at <0.01, χ^{2Y}=chi-square with Yates correction test, Fisher's exact probability test.

Improved in peripheral pulse, respiratory rate, blood pressure, height, weight, urine analysis, skin-care during edema and infection control in immediate & after program.

Table 3: Total practice score and demographic characteristics (n=57)

Variables	r- value	p-value
Age (years)	0.423	0.001**
Educational level (grades)	0.197	0.141
General experience (years)	0.320	0.015*
Pediatric experience (years)	0.318	0.016*

*Significant at <0.05, **highly significant at <0.01.

Positive correlations between total practice score and age at (r=0.423, p=0.001), general experience (r= 0.320, p=0.015), and with pediatric experience at (r=0.318, p=0.016).

Discussion

The sustainable development goals (SDGs) were adopted by all United Nations Member States in 2015 to end poverty, reduced inequality and build more peaceful, prosperous societies by 2030. Also known as the Global Goals, the SDGs are a call to action to create a world where no one is left behind. The SDGs cannot be achieved without the realization of child rights. Leaders of tomorrow,

Children's ability to protect the future for us all depends on what we do to secure their rights today (UNICEF, 2021)

Nurses looking after NS children who have a significant supportive role in helping the family understand various therapies, preventing or managing expected side effects or toxicities, and child follow-up. Education is a constant feature of the nursing role especially in terms of new treatment, clinical trials, and home care (Wong, 2014).

The present results showed that slightly less than three quarters of the pediatric nurses' ages were at 20-30 years old. Besides, as to pediatric nurses qualifications 43.9% were graduated from nursing secondary school (diploma), less than half of study sample were graduated from Technical Institute of nursing49.1% and 7% were University graduated. This agreed with Jabber and Nasir (2017) in Kufa found that the majority of the pediatric nurses' ages were at 20-30 years old, and that two fifth of the nurses were graduated from technical nursing institutes and university graduated, while the majority of control group were graduated from technical nursing institute Also, Kahriman and Bostan (2017) in turkey who found that out that 49.5% of the nurses belonged to 20-29 age group, 58.6% of them were under graduated or high educated level, 93.9% of whom were female, 59.6% of them did not have any children, 34.3% of them worked as a nurse for ≤4 years and 50.5% of them were employed at department of pediatrics for ≤4 years. Also,

In the present study, the majority of pediatric nurses were females. This agreed with Mukhlif and Hattab (2016) in Iraq who reported that the largest number of recruited nurses were females. This result may be due to the fact that majority of Egyptian Military nursing staff with different educational were females.

In the current study showed that 52.6% of the pediatric nurses had less than six years of general experience in nursing, 26.3% with 6-<11, and 21.1% with more than 11 years general experiences in nursing with mean of 7.2±5.5 but, experience in pediatric nursing were 71.9%. 21.1 % and 7.0 % respectively, with mean of 4.4±3.9. This more or less agreed with both Mukhlif and Hattab (2016) and Jabber and Nasir (2017) concerned with nurses experience in nephrology units.

The present study results found that the majority of pediatric nurses did not have any courses about nursing care of children with nephrotic syndrome, and only minority of nurses have training courses on different topics in pediatrics. Generally, People with nephrotic syndrome face many problems that affect their quality of life directly, including the side effects of medications and the high dependence on medical equipment for a large part of life, severe dietary intake, the unpredictability of relapse time, and frequent periods of need for hospitalization. Also, the present results disagreed with Jabber and Nasir (2017) who found that the majority of nurses have training courses.

In the present study the majority of nurses' practices about measuring of vital signs in children with nephrotic syndrome was at a poor level before program, but significant improved after program implementation regarding vital signs, with the axilla was site of choice to measure hospitalized child temperature without infection compared to oral or rectal route. Also, nurses' practices about measuring of weight and height in children with nephrotic syndrome were at a poor level, but significant improved after the program implementation. Wong (2014) in New Zealand found that measurement of physical growth parameters (weight and height) in children was the key element in evaluating their health status, which were plotted on percentile charts, and the child's measurements in percentiles and compared with those of the general population.

The present study showed the urine analysis was without significant differences between pre- and post-tests, but the total practice score showed significant improvement. No doubt, urine analysis is a routine daily pract-

ice for nephrotic patients.

The present study showed that care of edematous skin was at a poor level before program, which was significantly well done by the majority of pediatric nurses after the program implementation. This was the steps forward of clean eyelids daily by sterile wet cotton followed by using a layer of cotton for the skin folds and testicular lifter for male child to decrease testes swelling after program implementation. This agreed with Mukhlif and Hattab (2016) in Iraq who reported that the majority of nurses practices about edema care was at a poor level before program implementation and become very good after educational program. Also, Ball and Bindler (2009) in USA emphasized that the nephrotic child's skin stretched with edema, became thin and fragile and need meticulous care. They added that the nurses must direct the mother to repeated skin assessment, turning child frequently, keeping the skin clean and dry to prevent skin break down, and how to protect NS children from potential infection these behaviors are observed after the program implementation and nurses take the responsibility of theses care components.

The present study showed that the nursing care to protect the child from infection was at poor level before program implementation, and later being acceptable. This agreed with Rosster and Robert (2012) who reported that the level of education has effects positively on nurses' practices. Also, this may be due to the shortage of trained nursing staff which made them loaded with the basic duty as medication preparation, make investigation…etc.

The present study results showed that the majority of nurses have incompetent practices regarding care of children with nephrotic syndrome. These results agreed with Jabber and Nasir (2017) in Kufa who reported that the educational program must be suitable & effective to improve the nurses' knowledge about management of children with nephrotic syndrome. Besides, Caroline and Mary (2003) reported a positive relationship between the nurses' practices and a well-prepared training courses. They added that this may be due to lack of nursing education program in pediatric hospitals nephrology units, also training courses are considering the right method to enhance the nurses' skills regarding different items of care of NS children to become competent nurses.

In the present study nurses' total practice scores of different procedures improved significantly after the program implementation with difference between pre-test and post-test. This agreed with Sharkawy *et al.* (2014) in Egypt who reported that nephrotic syndrome (NS) in children is the common chronic disorder and serious medical condition, characterized by alterations of perm-selectivity at the glomerular capillary wall. The classic triad of the proteinria, hypoproteinemia, and edema defined the syndrome, and the nephrotic syndrome was 15 times greater than in adults.

Abou Hashish and Bajbeir (2018) in Saudi Arabia reported that fostering emotional intelligence and critical thinking disposition among nursing students would enhance their problem-solving skills and judgment abilities which in turn, lead to providing more qualified clinical services. They added that Educational training courses, workshops and, seminars should be prepared specifically for all academic levels for more development and enhancement of these skills and that emotional intelligence and critical thinking disposition ought to be considered for more inclusion and incorporation in the undergraduate and graduate nursing curricula.

Moreover, the present study showed no significant correlation between nurses' sexes and their knowledge. This agreed with Al-Maskari *et al.* (2019) in Oman they didn't find significant correlation between the nurses' knowledge and sexes. However, Majidipour *et al.* (2019) in Iran reported a significant relationship between the nursing students' performance, their sexes ($p= 0.014$) and academic educational year ($p = 0.015$).

Conclusion

Pediatric nurses' practice was improved significantly immediate and three months after program implementation. There was significant improvement in nursing practice in peripheral pulse, respiratory rate, blood pressure, height, weight, urine analysis, skin care during edema and protection against infection after program implementation.

Recommendations

1- Training program must be conducted for pediatric nurses in workplace to update their knowledge and improved practices.

2- Pediatric nurses must be provided with specific guidelines about nephrotic syndrome to safeguard their practice by extending their skills.

3- Simple illustrative booklets including the required knowledge and practices about care of children with nephrotic syndrome must be available at pediatric department.

4- Hospital head manager must call for monthly meeting competent in theoretical knowledge, and clinical practice in the field of the nephritis and infection control measures

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Explanation of figures

Fig. 1: Urinalysis for high protein level (5min. after micturition).
Fig. 2: Nephritic syndrome in patient lower limbs.
Fig. 3: Nephritic syndrome in medical education.
Fig. 4: Kidneys function in medical education.
Fig. 5: Nephritic syndrome eye edema.
Fig. 6: Nephritic syndrome obesity.
Fig. 7: Nephritic syndrome, renal histopathology.
Fig. 8: Nephritic syndrome, did "Amenemhat III" suffered eye edema?