

Effect of An Educational Program on Knowledge and Practice of Nurses Who Are Caring for Nephrotic Children

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Abstract

Background: Pediatric nurses had unsatisfactory knowledge and practice regarding the care of nephrotic syndrome children as reported by many studies. **Aim:** This study aims to evaluate the effect of an-educational program on knowledge and practice of nurses who are caring for nephrotic children. **Methods:** A quasi- experimental design was utilized in current study. Sample: Convenience sample of 57 pediatric nurses who are caring children with nephrotic syndrome. **Tools of data collection:** Two tools were utilized for data collection; self-administered questionnaire sheet included personal characteristics of the pediatric nurses, their knowledge, and observational checklist for evaluation of nursing practices of children with nephrotic syndrome. **The results** Shows that majority of the pediatric nurses had unsatisfactory knowledge and inadequate practice about nephrotic syndrome before program implementation, that improved significantly immediate and 3 months after program implementation, there are a positive correlation between nurses' knowledge, age and years of experience, also between nurses practice, age, years of pediatric and general experience. **Conclusion:** The pediatric nurses' knowledge and practice improved significantly after program implementation and this improvement positively correlated with age and years of experience. **The study recommended** that in service training program should be conducted for the pediatric nurses in their work place to update their knowledge and improved their practice.

Key words: Educational program, nephrotic syndrome, pediatric nurses, knowledge, practice, children

Introduction

Nurses have a major role in teach child and family to report immediately any changes in sensation, warmth, comfort or appearance (color, activity and edema). They also may teach family how to monitor blood values for white blood count, initiate strategies to prevent infection by use

aseptic technique, assess child urinary output, fluid intake and make balance between them to prevent hypervolemia, hematuria, to assess proteinuria, to prevent thrombosis, assess the program of treatment or diuretic therapy, steroid therapy and immunization to prevent hypovolemic shock, hypertension, growth failure and iatrogenic (Ishikura et al., 2014).

Nephrotic syndrome (NS), or nephrosis, is a commonly diagnosed kidney disease in childhood. It is a condition in which the kidneys “leak” protein from blood into urine. In children, nephrotic syndrome may only be temporary, or it may be an early sign of kidney damage. The resistant forms may progress to chronic kidney disease and/or end stage renal disease. Nephrotic syndrome occurs when changes in the selectivity barrier of the glomerular capillary wall can no longer restrict the loss of protein to a minimal level, thus resulting in massive protein loss through the urine (Ishikura et al., 2014).

Nephrotic syndrome is usually due to a glomerular disease and is currently categorized into primary and secondary forms. The primary NS or INS (90%) – both terms denote a similar vagueness as to cause – is not associated with any underlying disease. The syndrome manifests with varied clinical and pathologic states. The term secondary NS (10%) relates to a realm of clinical diseases affecting the kidneys, such as anaphylactic purpura, systemic lupus erythematosus, diabetes mellitus, sickle cell disease, syphilis, neoplasms, drugs and infections (Burgstein, 2008).

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 (Zyarah&Mua’ala, 2011).

A good nursing care helps child with nephrotic syndrome reduce sufferings and control illness condition effectively. It is an important part for patients to recover, so learning how to arrange a good nursing care is very important for parents who have child

with nephrotic syndrome (Safaei & Maleknejad, 2009). 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 and Hockenberry& Wilson, 2013).

Aim of the study:

The study was aimed to evaluate effect of an educational program on knowledge and practice of nurses who are caring for nephrotic children.

Research Hypotheses:

1. The nurses who will receive an educational program will improve knowledge score in the post-test.
2. The nurses who will receive an educational program will improve practice score in the post-test.

Materials and Methods:

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

- Research setting: The study was carried out in the inpatient department in two hospitals in Ismailia City, Suez Canal University hospital and Ismailia Generalhospital.

Sample:

A convenient sample of 57 nurses who are working in Suez Canal University Hospital and Ismailia General Hospital, will

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be involved in the study regardless their characteristics (gender-attendance of training course-years of experiences and qualification).

These nurses who are caring for children with the following criteria:

1- Preschool and school children diagnosed as nephrotic patient.

2- Free from any other disease.

Tools of data collection:

Tool I: (Appendix I)

Self- administered questionnaire sheet: (Pre/Post-Test)

Include the two following parts:

Part 1:

A self-administered tool designed by the researcher based on the literature review; it was including items related to socio-demographic characteristics of the pediatric nurses as age, gender, qualifications, years of general and pediatric experience, and whether they attended any training program regarding health care of NS children.

Part 2:

Nurses' knowledge regarding health care of NS: it includes definition, causes, signs and symptoms, warning signs, complications, diagnostic studies, management, side effect, relapse and nursing care.

Each item of the part 2 of self-administered questionnaire sheet was given 1 score for correct answer and zero for wrong. The total score of nurses' knowledge about NS was 81 scores.

The scores transferred to percentage as follow:

Satisfactory knowledge $\geq 60\%$.

Unsatisfactory knowledge $< 60\%$.

Tool II: (Appendix II)

Tool II: An Observational checklists: (pre/post-test): adopted by the researcher to evaluate the following skills (Assuma, 2012).

-Evaluate urine analysis for albumin.

-Care of edema.

-Protect child from infection.

-Measure vital signs and child anthropometric measures.

The observational check list scored as follows: Each step was given 1 score if done correctly and zero if not done or done incorrectly. The total check list score was 85 scores.

The scores transferred to percentage as follow:

Adequate practice $\geq 60\%$.

Inadequate practice $< 60\%$.

Tool III: (Appendix III)

Health Educational Program

The health educational program was developed by the researcher after reviewing the related literature to educate nurses about NS and care of nephrotic children.

Validity of study tools:

The content validity was tested by a jury consisted of 3 professors and experts in

pediatric nursing and medicine to ascertain that the tools was relevant, understood, and applicable; minor modifications were carried accordingly.

Tools reliability:

Coefficient of reliability was measured by Cronbach's α (alpha). Cronbach alphas were calculated for the overall tested items of the studied nurses including total knowledge and total level of practice. Furthermore, a reliability test was conducted on the domains of the knowledge and practice. The reliability of knowledge scales exceeded the acceptable level (0.7 standards), while the reliability of each of practice scales exceeded the good level (0.8 standards).

Ethical Considerations:

Each nurse was asked to give oral consent to participate in the study after full explanation of the nature and the main aim of the study and expected outcomes and benefits. Each participant was free to either participate or not in this study and had the right to withdraw from the study at any time without any rationale. The researcher assured voluntary participation, anonymity and confidentiality of the gathered data.

Procedure:

An official permission was obtained using proper channels of communication. Official letters were sent from the Faculty of Nursing, Suez Canal University to the director of each study setting, to attain the permission to carry out the study. Acceptance of directors of Suez Canal University Hospitals in Ismailia was also obtained.

Results

Table 1: Percentage distribution of pediatric nurses according to their personal characteristics (n=57).

Variables		n=57	
		No.	%
Age (years)	20-<30	41	72.0
	>30	16	28.0
Mean age \pm SD		26.5 \pm 5.3	
Gender	Male	7	12.3
	Female	50	87.7
Educational level	Diplome	25	43.9
	Technical Institute	28	49.1
	Bachelor	4	7.0
Experience in Nursing Generally	1-<6	30	52.6
	6-<11	15	26.3
	11+	12	21.1
Mean general experience \pm SD		7.2 \pm 5.5	
Pediatric experience	1-<6	41	71.9
	6-<11	12	21.1
	11+	4	7.0
Mean pediatric experience \pm SD		4.4 \pm 3.9	
Training courses	Yes	9	15.8
	No	48	84.2

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Table (1) shows that 72% of pediatric nurses their age ranged from 20 to <30years old with mean age 26.5 ± 5.3 , 87.7% are females, 49.1% and 43.9% of nurses are technical institute and diploma education respectively, 52.6% of nurses having experience in general nursing from 1 to <6 years, while 71.9% of nurses having experience in pediatric nursing from 1 to <6 years with mean experience years 4.4 ± 3.9 and 84.2% of pediatric nurses have no training courses.

Table (2) The difference in total nurses' knowledge scores before, immediate and 3 months' after program implementation (n=57)

Variables	Before		Immediate		3 months' after		χ^{2Y}	p-value	
	No.	%	No.	%	No.	%			
Total knowledge									
Satisfactory	29	50.9%	49	86.0%	44	77.2%	16.2	<0.0001**	
Unsatisfactory	28	49.1%	8	14.0%	13	22.8%			

Table (2) shows that highly statistically significant improvement was detected immediate and 3 months after the program were 50.9%, 86% and 77.2% respectively $p < 0.0001$.

Table (3) The differences in total nurses' practice scores of children with nephrotic syndrome before, immediate and 3 months' after program implementation of educational program. (n=57)

Variables	Before				Immediate				3 months' after				χ^{2Y}	p-value
	Pass		Not		Pass		Not		Pass		Not			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
Nursing practice														
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*
Skincare during edema	15	26.3%	42	73.7%	38	66.7%	19	33.3%	35	61.4%	22	38.6%	22.0	<0.0001**
Protection against infection	25	43.9%	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 p-value at <0.05, **highly significant p-value at <0.01, χ^{2Y} =chi-square with Yates correction test, Fisher=Fisher's exact probability test.

N.B. Numbers are not mutually exclusive.

Table (3) shows that significant improvement in nursing practice including peripheral pulse, respiratory rate, blood pressure, height, weight, urine analysis, skincare during edema and protection against infection were detected immediate and after program implementation at $p < 0.0001$.

Table (4) Correlations between total knowledge score and demographic characteristics of the pediatric nurses (n=57).

	Total knowledge score	
	r- value	p-value
Age (years)	0.29	0.029*
Educational level	0.07	0.619
General experience /years	0.18	0.176
Pediatric experience /years	0.25	0.042*

*Significant p-value at <0.05 , **highly significant p-value at <0.01 .

Table (4) shows that positive correlations was detected between total knowledge score and age of nurses /years and also with the year of pediatric experience and no correlation were.

Table (5) Correlations between total practice score and demographic characteristics of the pediatric nurses (n=57)

	Total practice score	
	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 p-value at <0.05 , **highly significant p-value at <0.01 .

Table (5) shows that their significant positive correlations was detected between total practice score and age at ($r=0.423$, $p=0.001$), general experience ($r= 0.320$, $p=0.015$), and also with pediatric experience at ($r=0.318$, $p=0.016$).

Table (6) Correlations between total knowledge and total practice scores of the studied nurses (n=57)

	Total knowledge score	
	r- value	p-value
Total practice score	0.869	<0.0001 **

*Significant p-value at <0.05 , **highly significant p-value at <0.01 .

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Table (6) shows that strong positive correlation between total knowledge and total practice scores of pediatric nurses with statistically significant difference at $p < 0.0001$.

Discussion:

Children are the most precious part of the nation's life and the biggest promise for the future; their life development and protection are a basic responsibility of the community and the family. Nurses working with children who have NS have a significant supportive role in helping the family understand various therapies, preventing or managing expected side effects or toxicities, and observing for late effects of treatment. Education is a constant feature of the nursing role especially in terms of new treatment, clinical trials, and home care (Wong, 2014).

The present study aimed to evaluate the effect of an educational program on knowledge and practice of nurses who are caring for nephrotic children.

The study results showed that slightly less than three quarters of the pediatric nurses age were at 20-30 years old, this result agrees with the result of Kahrman and Bostan., (2017), in a study titled "Problems related to nursing services at the department of pediatric" who found that the majority of the pediatric nurses age were between 20-29 years old, also the study result in line with Jabber and Nasir., (2017), in a study titled "Effectiveness of an educational program on nurses' knowledge about management of children with nephrotic syndrome" in Kufa, who found that, the majority of the pediatric nurses (control and study) age were at 20-30 years old.

The study results revealed that the majority of pediatric nurses in the current study are females, this finding supported by Mukhlif and Hattab, (2016), in a study titled " Assessment of nurses' knowledge and practice" in Baghdad, who stated that the largest number of recruited nurses were females. This result may be due to majority

of nurses with different educational background in Egypt were females.

Regarding nursing qualifications in the present study, more than two fifth of the pediatric nurses were graduated from nursing secondary school (diplome), less than half of study sample were graduated from technical institute of nursing and the minority of them were graduated from nursing faculty (bachelor degree). These findings agree with Mukhlif and Hattab, (2016), who found that two fifth of the pediatric nurses were graduated from nursing secondary school (diplome), in the study sample, more than one third of nurses graduated from technical institute while minority were graduated from nursing faculty (bachelor degree), and disagree with Jabber and Nasir, (2017), who found that two fifth of the study group graduated from technical nursing institutes and nursing faculty of nursing, while the control group more than half graduated from technical nursing institute. The distribution of nurses in current study reflects the distribution of nursing personnel qualifications in Egypt.

The current study results revealed that more than half of the pediatric nurses less than six years of general experience in nursing and the majority of nurses have experience in pediatric nursing between 1-10 years of experience, these result go in line with Mukhlif and Hattab, (2016), who indicated that higher percentage of study nurses were between 1-10 years of experience in nephrology units, and disagree with Jabber and Nasir, (2017), who found that the majority of nurses in study and control groups were between (1-2) years of experience in nephrology units.

The present study results found that the majority of the 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, these results agree with **Sadky, (2010)**, in a study titled "Assessment of nurses' knowledge and skills about nephrotic syndrome in children " in Egypt, who reported that two thirds of pediatric nurses did not attend any training programs in care of children with nephrotic syndrome while one third of nurses have training courses on different topics in pediatrics, the current results disagree with **Jabber and Nasir, (2017)**, who found that the majority of nurses have training courses.

The study results revealed that the majority of the pediatric nurses had unsatisfactory knowledge about causes and incidence of NS before implementing the educational program, these results agree with **Mukhlif and Hattab, (2016)**, results who reported that the majority of the study nurses had unsatisfactory knowledge regarding causes and incidence before program implementation. These results may be due to lack of in service training program among pediatric nurses in university and ministry of health hospitals.

The current study results revealed that the majority of the pediatric nurses have a good knowledge about edema as the most mentioned manifestation before program implementation, immediately and three months after implementing the educational program. This finding goes in line with **Pais and Avenir, (2013)**, who mentioned that edema is the cardinal manifestation of NS and is usually the first clinical picture and the edema is the most apparent sign for nurses and parents of child with NS. From the researcher point of view, the apparent manifestation of NS which disturb the parent to seek medical help is the edema that may be severe in some children and observable by nursing and other health personnel.

The study results revealed that regarding types of investigations needed to diagnose NS, it was found that the pediatric nurses having adequate knowledge regarding

urine analysis for proteinuria, kidney imaging, kidney function test and urine analysis during treatment before implementing the educational program, while renal biopsy was the least known investigation as stated by nurses before implementing the educational program. These results agree with **Mukhlif and Hattab, (2016)**, who reported that the knowledge is at a good level for the majority of pediatric nurses' relative to disease diagnosis, and also **White et al., (2011)**, who reported that the diagnosis of NS is mainly based on laboratory results. While most of children with NS are treated initially without undergoing a kidney biopsy, it may be done if a lesion other than MCNS is suspected. The researcher observe that the previous investigations requested as the routine investigation with children with NS and are repeated when needed for evaluation of children progress.

The findings of the present study results confirmed that the majority of nurses mentioned corticosteroids as the main treatment of NS before program implementation improved immediate after program to one hundred percent. These results disagree with **Mukhlif and Hattab, (2016)**, who reported that the knowledge is at a poor level for the majority of pediatric nurses' relative to disease treatment and management. This result might be due to the fact that the corticosteroid is the drug of choice to treat NS and the first line of treatment.

The present study results revealed that slightly less than half of nurses in this study reported renal failure as a complication of NS before program implementation. This result agrees with **Mukhlif and Hattab, (2016)**, who reported that slightly less than half of nurses have knowledge about NS complications. On contrary, **Friedman, (2010)**, reported that unlike other causes of NS, idiopathic NS does not progress to chronic renal failure. This result may be due to chronicity of NS and frequent relapses

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among most of children play a role in the part of developing renal failure as complications of NS.

The study results revealed that regarding medication side effect more than half of nurses mentioned edema or weight gain and two fifth of nurses mentioned moon face are the medication side effect before the program and improved immediate and after program implementation, this result agrees with **Mukhlif and Hattab, (2016)**, who reported that slightly more than half of nurses have knowledge about medication side effect. This result may be due to the fact the moon face is the obvious side effects of cortisone which is easy to be observable. **Hockenberry and Wilson, (2009)**, mentioned that side effects of steroids include weight gain, rounding of face, behavior changes, and increased appetite. Long term therapy may result in hirsutism, growth retardation, bone demineralization, infection, and hyperglycemia.

The present study results found that the majority of the pediatric nurses having adequate knowledge regarding causes of relapse, regarding the NS warning signs most and of the pediatric nurses realized that the Oliguria / anuria and proteinuria are two warning signs of nephrotic syndrome but the minority of pediatric nurses realized that the exposure to people with contagious disease is warning signs of nephrotic syndrome, **Bendal, (2009)**.reported that infection protection can be met through avoiding overcrowding, people with contagious disease, and washing hands. This result may be due to the pediatric nurses have knowledge about the causes of relapse and warning signs because these items were mainly discussed with parents by medical staff.

The present study results found that more than half of the pediatric nurses had unsatisfactory knowledge to give health teaching about nephrotic syndrome before program implementation but the total

satisfactory level of health teaching was improved significantly after program implementation. **Wong, (2014)**, mentioned that health teaching may be the nurse's direct goal, such as during parenting classes, or may be indirect, such as helping parents and children understand a diagnosis or medical treatment, encouraging children to ask questions about their bodies, referring families to health-related professional or lay groups, supplying patients with appropriate literature, and providing anticipatory guidance. Health teaching is one area in which nurses often need preparation and practice with competent role models because it involves transmitting information at the child's and family's level of understanding and desire for information. As an effective educator, the nurse focuses on providing the appropriate health teaching with generous feedback and evaluation to promote learning.

The present study results indicated that the total knowledge about nephrotic syndrome showed that nearly half of the pediatric nurses had unsatisfactory scores before program implementation. These findings go in the same line with **Mukhlif and Hattab, (2016)**, who stated that the majority of nurses had unsatisfactory knowledge regarding their caring of nephrotic children before program implementation. Also agree with **Hassan, (2014)**, in a study titled "Developing clinical protocol for nursing practice: improving care of children with nephrotic syndrome" in Egypt, who stated that the majority of nurses had unsatisfactory knowledge regarding their caring of nephrotic children before program implementation. This may be due to the knowledge need to be up dated regularly and this choice not available for those nurses.

The study results revealed that the majority of pediatric nurses' practices about measuring of vital signs in children with nephrotic syndrome is at a poor level before program, there are significant improvements immediate after the program implementation regarding measuring of vital signs, and found

that the axilla is the site of choice which is commonly used to measure child temperature at hospitals which is used as a measure to prevent infection also, nurses use it as an easy method compared to oral or rectal.

The study results revealed that the majority of pediatric nurses' practices about measuring of weight and height in children with nephrotic syndrome is at a poor level before program, there are significant improvements immediate after the program implementation regarding measuring of weight and height, **Wong, (2014)**, mentioned that measurement of physical growth in children is a key element in evaluating their health status. Physical growth parameters include weight and height (length). Values for these growth parameters are plotted on percentile charts, and the child's measurements in percentiles are compared with those of the general population.

The study results revealed regarding practice of urine analysis that no statistically significant differences were detected between pre and posttest but the total practice score shows statistically significant improvement, this may be due to the urine analysis is the routine practice for nephrotic patient.

The present study results regarding care of edematous skin, found that the majority of pediatric nurses' practices about edema care in children with nephrotic syndrome is at a poor level before program, there are significant improvements immediate after the program implementation regarding care of edematous skin in the following steps of the procedure as clean eyelids daily by wet cotton followed by use layer of cotton between skin folds and use testicular lifter for male child to decrease testes swelling after program implementation, these findings go in the same line with **Mukhlif and Hattab, (2016)**, who stated that the majority of nurses practices about edema care at a poor level before program implementation, **Ball and Bindler, (2009)**, emphasized that the

nephrotic child's skin is stretched with edema, become thin and fragile and need meticulous care. The researcher observes that when the nurses direct the mother to repeated skin assessment, turning the 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 these care components.

The present study results found that nursing care to protect the child from infection at poorer level for the majority of them before program implementation, these results agree with **Rosster and Robert (2012)**, indicated that the level of education has effects positively on nurses' practices. Also this may be due to shortage of nursing staff which made them loaded with the basic duty as medication preparation, make investigation, etc.....

The study results revealed that the majority of nurses have incompetent practices regarding care of children with nephrotic syndrome. These results agree with **Sadky, (2010)**, in a study titled "Assessment of nurses' knowledge and skills about nephrotic syndrome in children" in Egypt revealed that the majority of nurses have incompetent practices skills as regarding care of children with nephrotic syndrome. Also supported with **Mary and Thomas, (2001)**, in a study titled "Nursing experience and education effect on quality care", their results showed that there is a positive relationship between the nurses' practices and training courses. 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.

The study results revealed that the nurses' total practice scores of different procedures improved significantly after program implementation and there are a

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significant difference between pre-test and post-test results, These results agrees with **Hassan, (2014)**, in a study titled "Developing clinical protocol for nursing practice: improving care of children with nephrotic syndrome", in Egypt the nurses' knowledge and practice toward children with nephrotic syndrome had been improved after involved in educational program that indicated with a significant difference between pre-test and post-test results, also agree with **Chun-yan, (2011)**, in a study titled "Effect of nursing intervention on nephrotic syndrome in children" who indicated that there is a high significant difference between pre-posttest scores.

The present study results revealed that there is a no significant correlation between nurses' level of education and their knowledge, these findings agreed with study done by **Salih, (2007)**, in a study done in Baghdad, who reported that there was no significant correlation between nurses' knowledge and their level of education.

The current study results revealed that there is a no significant correlation between nurses' gender and their knowledge, these findings agreed with study done by **Al-Sa'idi, (2006)**, in a study done in Baghdad, who indicated that there is no significant correlation between nurses' knowledge and gender also these findings are agree with **Al-Jaza'iri, (2007)**, in a study done in Baghdad, he mentioned that there is no significant correlation between nurses' knowledge and gender.

The present study results indicated that there were significant positive correlations between total knowledge score and age. There were significant positive correlations between total practice score and age, general, and pediatric experiences. These findings supported by **Morgan, (2004)**, who studied "The clinical course and risk factors for recurrence and long-term outcome of primary nephrotic syndrome in children from the nurses prospective" and

reported that the age of the nurses significantly affects the clinical experience including practical skills and background information. This may be due to the pediatric nurses' daily facing different situations that reflect positively on their knowledge and practice.

The present study results indicated that there is a significant correlation between nurses' knowledge and pediatric years of experience, these findings agreed with **Al-Jazai'ri, (2007)**, who mentioned that there is a significant correlation between nurses' knowledge and pediatric years of experience, this indicated that in pediatric nursing field the nurses daily facing challenges during their care with sick children which reflected positively in her body of knowledge which a positively effect on the care that provided to the children.

Conclusion:

Pediatric nurses' knowledge and practice improved significantly immediate and three months after program implementation. There was significant improvement in nursing practice including peripheral pulse, respiratory rate, blood pressure, height, weight, urine analysis, skin care during edema and protection against infection after program implementation. There was significant positive correlation between total knowledge and total practice scores of the pediatric nurses.

Recommendations

The study recommended that:

1- In service training program should be conducted for the pediatric nurses in their workplace to update their knowledge and improved their practices.

2- Pediatric nurses must be provided with specific guidelines about nephrotic

syndrome to safeguard their practice by extending their skills.

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

4-Replication of the study on large sample of pediatric nurses to generalize the results is recommended.

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