

## Role of Pediatric Nurses Regarding Children's Needs Undergoing Hemodialysis Therapy

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### Abstract

**Background:** Pediatric nurse plays an important role in management needs of children with chronic renal failure (CRF) and undergoing hemodialysis therapy. **Aim:** It was to assess role of pediatric nurses regarding children's needs undergoing hemodialysis therapy. **Research design:** A descriptive design was utilized for this study. **Settings:** This study was conducted at Pediatric Hemodialysis Unit in Children's Hospital affiliated to Ain Shams University Hospitals and El-Zahra University Hospital. **Subject:** A purposive sample was including 50 pediatric nurses caring for children undergoing hemodialysis therapy (25 nurses and 25 children from children's Hospital and 25 nurses and 25 children from El-Zahra Hospital). **Tools:** A questionnaire sheet constituted 3 parts to assess: Demographic characteristics, nurses' knowledge regarding renal failure and hemodialysis therapy, and Quality of life scale, this tool is adapted from (Varni & Limbers, 2011) to determine the needs of children undergoing hemodialysis therapy. **Results:** There were highly statistically significant differences between the total knowledge of the studied nurses and also their total role regarding needs of children undergoing hemodialysis therapy about renal failure and hemodialysis therapy and their educational level, years of experience and attending training courses at ( $p < 0.01$ ). In addition, there was positive correlation between total nurses' knowledge about renal failure and hemodialysis and their total role regarding the needs of children undergoing hemodialysis therapy. **Conclusion:** The current study concluded that, the role of pediatric nurse regarding needs of children undergoing hemodialysis therapy namely physical, social and emotional needs are affected by their educational level, years of experience and attendance of training courses. **Recommendations:** Periodic assessment of knowledge, and practice and continuous course training for all nurses who are providing care for children undergoing hemodialysis therapy, based on children's actual needs assessment.

**Key Words:** Hemodialysis therapy, Children's needs, Role of nurse.

### Introduction

The kidneys play key roles in body function, not only by filtering the blood and getting rid of waste products, but also by balancing the electrolyte levels in the body, controlling blood pressure, and stimulating the production of red blood cells. They get their blood supply through the renal arteries directly

from the aorta and send blood back to the heart via the renal veins to the vena cava. (The term "renal" is derived from the Latin name for kidney) (*Baskin & Kongan, 2018*).

Kidney failure, known as renal failure or renal insufficiency, is a medical condition of impaired kidney function in which the kidneys fail to adequately filter metabolic wastes from the blood. The two

main forms are acute kidney injury, which is often reversible with adequate treatment, and chronic kidney disease, which is often not reversible. The type of renal failure is differentiated by the trend in the serum creatinine; other factors that may help differentiate acute kidney injury from chronic kidney disease include anemia and the kidney size on sonography (*Yared & Ichikaua, 2016*).

Chronic Renal Diseases (CRD) defined as: "evidence of structural or functional kidney abnormalities (abnormal urine analysis, imaging studies, or histology) that persist for at least 3 months, with or without a decreased of glomerular filtration rate (GFR), less than 60 ml/minute/1.73 m<sup>2</sup> (*Webster et al., 2017*).

The goal of management of Chronic Renal Failure (CRF) in children is not only to prevent progression to End Stage Renal Disease (ESRD) but to fulfill the physiological, social and emotional needs of children to the best possible quality of life. It can achieve through early and appropriate treatment of reversible causes of CRF. It may help to achieve normal growth, development and periodic monitoring for rate of progression to end stage renal disease to help plan for renal replacement therapy (*Arici, 2014*).

Medical management of CRF includes dialysis to remove waste products and extra water from the blood. There are two types of dialysis; hemodialysis and peritoneal dialysis. Kidney transplantation involves surgically placing a healthy kidney from a donor inside the children body that is used when there is no life threatening medical condition other than kidney failure (*Abraham & George, 2016*).

Hemodialysis is the most common method used to treat advanced and

permanent kidney failure in pediatrics. Hemodialysis defined as a medical procedure that uses a special machine to filter waste products from the blood and to restore normal constituents to it again (*Kallenbach, 2015*).

Chronic hemodialysis has many complications as cardiovascular, nutritional, gastrointestinal, hepatic, endocrinal, complications of Arterio-Venous Fistula (AV), infections, nervous system & sleep disorders (*Webster et al., 2017*).

The dialysis nurse plays a vital role in providing information, care, support, understanding and therapeutic counseling to the pediatric patient and his family throughout the entire illness. The nursing management must be provided in order to needs of children undergoing hemodialysis therapy for reducing the complications of renal function and the stresses of dealing with a life threatening illness (*James et al., 2014*).

### **Significance of study:**

Chronic Renal Failure (CRF) is a major health problem among children. In Egypt, the estimated annual incidence of End Stage Renal Disease (ESRD) is around 74 per million, and the total prevalence of patients on dialysis is 264 Per Million Patient showing that the incidence of children with CRF on maintenance dialysis is continuously expanding during the last three decades (*Abou El Hana et al., 2015*).

Total children attended in pediatric conservative Nephrology Clinic and the pediatric conservative Nephrology Clinic of the Pediatric Dialysis unit at Ain Shams University Children Hospital in 2014 were 2397 children (**National Center for Health Statistics and National Center for Chronic disease prevention and Health Promotion, 2014**).

Hemodialysis is some life for children with CRF to replace the work of the kidney. So, hemodialysis is the major form of dialysis which is the first and most successful artificial organ technology used to treat advanced and permanent renal failure. There has been as significant improvement in hemodialysis technique due to improve technology of dialysis machine (*Nelson et al., 2015*). Pediatric nurses play an important role in monitoring the physical status of children undergoing hemodialysis for evidence of physiologic imbalance, emotional changes and social safety needs of patients, and helping them understand and adjust to the care and changes in life style. So that, this study was done to the assess role of nurses according to the physical, emotional and social needs of children who having hemodialysis.

### **Aim of the study**

To assess role of pediatric nurse regarding children's needs undergoing hemodialysis therapy.

### **Research questions:**

- 1- What are factors affecting role of pediatric nurse regarding children's needs undergoing hemodialysis therapy?
- 2- What are nursing role regarding needs of children undergoing hemodialysis therapy?

### **Subject and Method**

**The subject and methods of the current study discuss under the following four (4) designs:**

- I. Technical Design
- II. Operational Design
- III. Administrative Design
- IV. Statistical Design

### **Technical Design**

### **Research Design**

A descriptive design was used to conduct this study.

### **Settings:**

This study was conducted at Pediatric Hemodialysis Unit in Children's Hospital affiliated to Ain Shams University Hospitals and El -Zahra University Hospital. Pediatric Hemodialysis Unit at Children's Hospital affiliated to Ain Shams University Hospitals consisted of five rooms for hemodialysis therapy (HVCs room, isolation room and three rooms for negative cases), three rooms (one for water processing unit, other room for waste, and washing and nurses room) inside hemodialysis unit, in addition to the waiting room, and physician room outside hemodialysis unit. There are three stock devices for hemodialysis therapy (AK96 GAMBRO) and twenty eight devices for hemodialysis therapy (two devices Fresenius 4008S cordiax) one device at I.C.U and other at hemodialysis therapy unit, (six devices Fresenius 5008S) five devices one in each room, and one in HVCs room, (three devices artis physio GAMBRO) one in hemodialysis unit and two in ICU, (two devices ultra-GAMBRO) one at HCVs room and other malfunction, and (fifteen devices bellco formula 2000) at hemodialysis therapy unit. Every device has a seat beside it. Every room has one television. Pediatric Hemodialysis Unit in Children's Hospital affiliated to El -Zahra University Hospitals included four rooms for hemodialysis therapy (HVCs room, isolation room, and two rooms for negative cases), two rooms (one for water processing unit, and other room for waste, and washing) inside hemodialysis unit and five rooms (waiting room, doctors

room, nurses room, female bath room, and male bath room) outside hemodialysis unit. Every room that used for hemodialysis therapy has a television for recreation and devices for hemodialysis therapy every device connected with a chair for setting.

### Subjects:

A purposive sample composed of 50 pediatric nurses caring of children undergoing hemodialysis therapy (25 nurses and 25 children from children's Hospital and 25 nurses and 25 children from El-Zahra Hospital) according to the following inclusion and exclusion criteria:

#### Inclusion criteria:

##### For nurses:

Nurses caring of children with CRF undergoing hemodialysis therapy regardless their gender, age, level of education.

##### For children:

Children with CRF and aged between 6-18 years.

#### Exclusion criteria:

##### For children:

1- Children with other chronic diseases.

2- Children at the terminal end stage of life.

#### Tools of data collection

##### 1- Interview Questionnaire Form:

Tools for data collection was used of the following tools:

It was designed by the researcher and reviewed by supervisors related to national and international literature (*Emond, 2019; Hockenberry & Wilson, 2018*) then written in simple Arabic language to cover the required data based on scientific literature as follows:

It included three parts to assess data about the following:

**Part I:** It was used to assess demographic characteristics that included:

a. Characteristics of studied children it included: Diagnosis, age, gender, level of education, sources of health care (family, nurses or doctors), residence (rural or urban) and duration of hemodialysis.

b. Characteristics of studied nurses it included: Age, level of education, job title, number of experience years, training courses for hemodialysis therapy, residence and sons.

**Part II:** To assess nurses knowledge regarding: Renal failure and hemodialysis therapy. It included 10 closed ended questions in form of Multiple Choice Question (MCQ) including the following:

a. Renal failure, as: Definition, causes, signs and symptoms, diagnosis, complications and treatment (6 questions).

b. Hemodialysis therapy, as: Definition, types, importance and complications (4 questions).

#### ❖ Scoring system:

The Questionnaire was contained of 10 questions, the total scores of these questions were 10 grades, the correct answer was scored by "one score" and the incorrect answer was scored by "zero".

These scores summed-up and converted into a percent score.

#### It was classified into 3 categories:

- **Good** level of knowledge if score  $\geq 80\%$ .
- **Average** level of knowledge if score  $60 < 80\%$ .
- **Poor** level of knowledge if score  $< 60\%$ .

**Part III:** Quality of life scale: This tool is adapted from (*Varni & Limbers, 2011*) to determine the needs of children undergoing hemodialysis therapy. (Some modifications in role of pediatric nurse regarding physical, social and emotional needs of children undergoing hemodialysis therapy were done to adapt the nature of the present study). This scale includes 25 items to score role of pediatric nurse regarding needs of children undergoing hemodialysis therapy. This scale is grouped to three domains:

- **Physical needs** contain 14 items.
- **Social needs** contain 7 items.
- **Emotional needs** contain 4 items.

#### ❖ Scoring system:

A scoring system was followed to assess role of pediatric nurse regarding children's needs undergoing hemodialysis therapy. The scale was contained of 25 items, the total scores of these items were 48 grades, each statement was assigned a score according to nurses' role, responses were always done (2 grades), sometimes done (1 grade) and never done (zero). These scores were summed and were converted into a percent score.

It was classified into 2 categories: **satisfactory** role if score  $\geq 75\%$ , or **unsatisfactory** role if score  $< 75\%$ .

**Content and Face Validity and Reliability:** Validity: It was ascertained by a group of experts in pediatric nursing department (5). Their opinions elicited regarding the format, layout, consistency, accuracy and relevancy of the tool, reliability analysis by measuring of internal consistency of the tool through **Cronbach's Alpha test.**

Tool	Cronbach's Alpha
Structured questionnaire format	0.764

#### Operational Designed

The operational design for this study consisted of three phases, namely preparatory phase, pilot study and fieldwork.

#### Preparatory Phase

This phase included reviewing of literature related to nurses' knowledge about renal failure and hemodialysis and the role of the pediatric nurse regarding children's needs undergoing hemodialysis therapy by using textbooks, articles, journals and internet. This served to develop the study tool for data collection. During this phase, the researcher also visited the selected places to get acquainted with the personnel and the study settings. Development of the tool was under supervisors' guidance and experts' opinions were considered.

#### Pilot Study

A pilot study carried out on (5 children) and (5 nurses) those represent 10% of the study sample at Pediatric Hemodialysis Unit at Children's Hospital affiliated to Ain Shams University Hospitals. In order to test the applicability of the constructed tool and the clarity of the included questions related to nurses' knowledge about renal failure and

hemodialysis and the role of the pediatric nurse regarding children's needs undergoing hemodialysis therapy. The pilot has also served to estimate the time needed for each subject to fill in the questions. The pilot participants were included in the main study sample.

### Fieldwork

The actual field work was carried out over 4 months period started from the beginning of January 2018 until the end of April 2018; the researcher was available two days weekly (Tuesdays and Wednesdays) during morning shifts from 10 Am to 12 Pm periodically in different sessions at renal dialysis unit. The researcher was introduced herself to participants in the previously mentioned setting, explained the aim of this study. Each participant was interviewed individually to gather the necessary data of the study. The participants were asked to give their responses according to the study tools. The required time to collect data from each child about 5-10 minutes, while the questionnaire for knowledge was filled by nurses who took 10-20 minutes and quality of life scale related to the role of pediatric nurse regarding children's needs undergoing hemodialysis therapy was filled by the nurses in 15-30 minutes. Clarification was made by the researcher.

### Administrative Designe

Approval obtained through an issued letter from the Dean of Faculty of Nursing, Ain Shams University to the Director of the previously mentioned setting. The researcher then explained the purpose and the methods of data collection.

### Ethical Considerations

The research approval was obtained from the Faculty Ethical Committee before starting the study.

### Statistical Analysis

Data collected from the studied sample was revised, coded and entered using Personal Computer (PC). Computerized data entry and Statistical analysis were fulfilled using the Statistical Package for Social Sciences (SPSS) version 22. Data were presented using descriptive statistics in the form of frequencies, percentages. Chi-square test ( $\chi^2$ ) was used for comparisons between qualitative variables. Spearman correlation measures the strength and direction of association between two ranked variables. Significance of the results: highly significant at p-value <0.001, statistically significant was considered at p-value <0.05, non-significant at p-value>0.05.

### Results

Table (1): reveals that, 44% of the studied children their age ranged from 13-15 years, the mean age of them was  $12.75 \pm 6.12$  year. In relation to the educational level of the children under study, it was found that, 36% of them had Preparatory level. Also, 70% of the studied children their sources of health care were family, nurses and doctor. Moreover, 56% of the studied children were residing in urban areas. Also, 40% of the children under study their duration of hemodialysis ranged from 1 to 4 years.

This table (2): illustrates that, there were highly statistically significant relation between total knowledge of the studied nurses about renal failure and hemodialysis and their educational level, years of experience and attend training courses at ( $P < 0.01$ ). Also, there were statistically significant relation with their age and job at ( $P < 0.05$ ). While, there were no significant relation with their residence or having other children at ( $P > 0.05$ ).

This table (3): shows that, there were highly statistically significant

relation between total role of the studied nurses regarding to the needs of children undergoing hemodialysis therapy and their educational level, years of experience and attend training courses at ( $P < 0.01$ ). Also, there were statistically significant relation with their age and job at ( $P < 0.05$ ). While there were no

significant relation with their residence or having other children at ( $P > 0.05$ ).

Table (4): demonstrates that, there was highly significant positive correlation between total nurse's knowledge about renal failure and hemodialysis and their total role regarding to the needs of children undergoing hemodialysis therapy.

**Table (1):** Number and percentage distribution of the studied children according to their demographic characteristics (n=50).

Demographic characteristics	N	%
<b>Age (year)</b>		
6-9	7	14
10-12	12	24
13-15	22	44
16-18	9	18
<b>Mean SD 12.75 ± 6.12</b>		
<b>Educational level</b>		
Primary	10	20
Preparatory	18	36
Secondary	7	14
Illiterate	5	10
<b>Sources of health care</b>		
Family	2	4
Nurses	5	10
Doctor.	8	16
All of the above	35	70
<b>Residence</b>		
Rural	22	44
Urban	28	56
<b>The duration of hemodialysis</b>		
Less than one year.	9	18
From 1 to 4 years	20	40
From 5 to 8 years	15	30
From 9 years and above	6	12

**Table (2):** Relation between demographic characteristics of the studied nurses and their total knowledge about renal failure and hemodialysis (n=50).

Demographic characteristics	Total knowledge						x <sup>2</sup>	P-Value	
	Good (n=12)		Average (n=25)		Poor (n=13)				
	N	%	N	%	N	%			
Age (year)	< 20	0	0.0	0	0.0	3	23.1	13.42	0.02*
	20-24	0	0.0	5	20	2	15.4		
	25-30	2	16.7	3	12	8	61.5		
	31-40	4	33.3	14	56	0	0.0		
	≥ 40	6	50	3	12	0	0.0		
Educational level	Diploma	2	16.7	9	36	11	84.6	29.01	.000**
	Diploma and specialization	2	16.7	3	12	1	7.7		
	Health Technical Institute.	3	25	3	12	1	7.7		
	Bachelor of Nursing.	1	8.3	10	40	0	0.0		
	Master of Nursing	3	25	0	0.0	0	0.0		
Job	Ph.D. Nursing	1	8.3	0	0.0	0	0.0	14.22	0.01*
	Nurse	2	16.7	21	84	13	100		
	Supervisor	10	83.3	4	16	0	0.0		
Years of experience	1 – 5	0	0.0	1	4	6	46.2	17.14	.003**
	6 - 11	1	8.3	5	20	7	83.8		
	12 - 17	3	25	18	72	0	0.0		
	≥18	8	66.7	1	4	0	0.0		
Attendance of training courses	Yes	11	91.7	22	88	3	23.1	22.19	.001**
	No	1	8.3	3	12	10	76.9		
Residence	Urban	8	66.7	19	76	7	83.8	5.294	0.178
	Rural	4	33.3	6	24	6	46.2		
Having other children	Yes	9	75	20	80	11	84.6	5.814	0.181
	No	3	25	5	20	2	15.4		

\*Significant at  $p < 0.05$ . \*\*highly significant at  $p < 0.01$ .

**Table (3):** Relation between demographic characteristics of the studied nurses and their role regarding to the needs of children undergoing hemodialysis therapy (n=50).

Items	Total role of the nurse				x <sup>2</sup>	P-Value	
	Satisfactory (n=22)		Unsatisfactory (n=28)				
	N	%	N	%			
Age (year)	< 20	0	0.0	3	10.7	7.516	0.081
	20-24	3	13.6	4	14.3		
	25-30	5	22.7	8	28.6		
	31-40	8	36.4	10	35.7		
	≥ 40	6	27.3	3	10.7		
Educational level	Diploma	4	18.2	18	64.3	28.56	.000**
	Diploma and specialization	0	0.0	6	21.4		
	Health Technical Institute.	4	18.2	3	10.7		
	Bachelor of Nursing.	10	45.5	1	3.6		
	Master of Nursing	3	13.6	0	0.0		
Job	Ph.D. Nursing	1	4.5	0	0.0	12.64	0.03*
	Nurse	10	45.5	26	92.9		
	Supervisor	12	54.5	2	7.1		
Years of experience	1 – 5	0	0.0	7	25	21.89	.002**
	6 – 11	2	9.1	11	39.3		
	12 – 17	12	54.5	9	32.1		
	≥18	8	36.4	1	3.6		
Attendance of training courses	Yes	20	90.9	16	57.1	19.68	.002**
	No	2	9.1	12	42.9		
Residence	Urban	14	63.6	20	71.4	6.148	0.136
	Rural	8	36.4	8	28.6		
Having other children	Yes	18	81.8	22	78.6	6.902	0.121
	No	4	18.2	6	21.4		

\*Significant at  $p < 0.05$ . \*\*highly significant at  $p < 0.01$ .

**Table (4):** Correlation between the nurse's knowledge about renal failure and hemodialysis and their total role regarding to the needs of children undergoing hemodialysis therapy.

Items	Total role of the nurse
Total knowledge	$r = 0.416$ $P = .000**$

(\*) Statistically significant at  $p < 0.05$ --(\*\*) highly significant at  $p < 0.01$

## Discussion

Chronic kidney Disease (CKD), is a clinical syndrome derived from the slow, gradual, and irreversible loss of kidney function, is characterized by a drop in the glomerular filtration rate, causing the loss of the kidneys' regulating, excretory, and endocrine functions. CKD is a frequent pathology. Together with high morbidity and mortality rates, it is considered a worldwide public health problem that has a negative impact on patients' quality of life. Its incidence and prevalence in the pediatric population has been increasing (*Abumwais, 2013*).

When CKD is diagnosed early, conservative treatment is applied with dietary restrictions and the use of medicines. At more advanced stages, the use of Kidney Replacement Therapies (KRT) such as (HD), Peritoneal Dialysis (PD), and kidney transplant is recommended (*Kolff and Berk, 2013*).

**The current study aimed to** assess role of pediatric nurse regarding children's needs undergoing hemodialysis therapy.

Children with CKD demand complex care, nurses take an important role in the care giving process. This becomes essential for achieving good results in improving these individuals' quality of life. That's why nurses need to be well prepared so that the nursing care given to children and adolescents is as close as possible to the ideal (*Hassan, 2012*).

Regarding the characteristics of the studied children, the current study showed that, less than half of them were in the age group (13-15 years), and had preparatory educational level; moreover more than half of them were females. This was in accordance with the study of (*Mitsnefes, 2010*), who was about " Mortality risk among children treated with dialysis for ESRD" mentioned that, more than one

third of the studied children were in the age group (13-15 years). But half of them had primary educational level, and more than half of them were females.

This could be rationale by the fact that boys received more care and attention than girls. This level "primary level" because it was related to their age group. Concerning the characteristics of the studied nurses, the current work revealed that, less than half of them were in the age group (31-40 years), had diploma as an educational level, and their years of experience ranged from 12 to 17 years. Also less than half of them were staff nurse as a job title, while more than half of them attended training courses for hemodialysis therapy, and This was in disagreement with (*Bayoumi, 2013*), who studied "Predictors of quality of life in hemodialysis pediatric patients" reported that, more than one third of them had years of experience in the range of (12-17 years). But less than one third of them were in the age group (30-40 years), more than two thirds of them had nursing diploma, and didn't attend training courses regarding hemodialysis therapy. From the researchers view these years of experience related to nurses age group.

Studied pediatric nurses who had a diploma so that, they attended training courses in order to improve their performance. The current study mentioned that, less than two thirds of the studied nurses had correct knowledge about the complications of hemodialysis. Meanwhile, more than two thirds of them had correct knowledge about the definition of renal failure. This was supported by (*Ali, 2013*), who conducted a study about " Assessment of Nurses' Knowledge and Practice Provided to the Patients Under Going Hemodialysis " clarified that, two thirds of the studied nurses had satisfactory knowledge about the complications of hemodialysis. But more than half of the studied nurses had satisfactory knowledge about the definition of renal failure. The studied nurses had satisfactory knowledge about

the complications of hemodialysis and definition of renal failure it could be due to their experience and their attended training courses.

As regard the total knowledge of the studied nurses about renal failure and hemodialysis, the current work reported that, half of them had an average level. This wasn't in accordance with (*Al-Mawsheki et al., 2016*), who conducted a study about "Nurses' Knowledge and Practice Regarding Care for the Patients during Hemodialysis" mentioned that, the majority of the studied nurses had adequate total knowledge regarding renal failure and hemodialysis, this could be explained by the researcher that, the majority of the studied nurses had new graduation and fresh information.

Concerning the physical needs of children undergoing hemodialysis therapy, the current study mentioned that, more than two thirds of the studied nurses and half of them always (measure the weight and height of the child and compare it with the basic measurements, and measure the vital signs of the child) respectively. This wasn't supported by the study of (*El-Arbagy et al., 2016*), who was about "prevalence of "ESRD" " revealed that, less than half of the studied nurses and more than two thirds of them (measured the weight and height of the child and compared it with the basic measurements, and measured the vital signs of the child) respectively. Nurses should be made comparison between present child growth measurement and basic growth measurement so that, any growth abnormality could be detected.

Regarding the social and emotional needs of the children undergoing hemodialysis therapy, the current work showed that, more than one third of the studied nurses always (advise the parents of the child to go to the social worker to do the necessary work for the necessary expenses for treatment, and help the child

to adapt the disease and accept the changes) respectively. This was in agreement with (*Varni and Limbers, 2011*), who studied "Measuring pediatric health-related quality of life" mentioned that, two thirds of the studied nurses helped the child to adapt the disease and its associated changes. Good communication and relation from nurses with children because it built a trust relation and helped the child to accept disease and its changes.

The current study reported that, there was high statistically significant relation between the total knowledge of the studied nurses about renal failure and hemodialysis and their educational level, years of experience, and attending training courses. Also there was statistically significant relation with their age and job. This was in accordance with (*El-Sayed et al., 2016*), who conducted a study about "Effect of nursing intervention on the quality of life of children undergoing hemodialysis" who clarified that, there was high statistically significant difference between the total knowledge of the studied nurses about hemodialysis and their educational level and attending training courses, meanwhile there was statistically significant difference with their job. From my point of view total knowledge of the studied nurses about hemodialysis might be affected by their educational level, attending courses and experience.

Also the current work showed that, there was high statistically significant relation between the total role of the studied nurses regarding the needs of children undergoing hemodialysis therapy and their educational level, years of experience and attending training courses. This was supported by the study of (*McDonald and Craig, 2014*), which was about "Long-term survival of children with end stage renal disease" reported that, there was high statistically significant difference between the role of the studied nurses towards need

of the children undergoing hemodialysis and their years of experience, attending previous courses, and their educational level. The good performance of pediatric nurse regarding children's needs undergoing hemodialysis therapy rationale by their educational level, years of experience and attending training courses.

As regard the correlation between the nurses knowledge about renal failure and hemodialysis and their total role regarding the needs of children undergoing hemodialysis therapy, the current study mentioned that, there was highly significant positive correlation between them. This was in agreement with (*Kull et al., 2013*), whose study was "about Quality of life in children and adolescents with chronic kidney disease: a comparative study between different disease stages and treatment modalities" showed that, there was positive correlation between the knowledge of the studied nurses about renal failure and hemodialysis and their role regarding the different needs of children undergoing hemodialysis therapy. From my point of view the total role of pediatric nurse regarding children's needs undergoing hemodialysis therapy improved by their knowledge about renal failure and hemodialysis.

### **Conclusion**

**Based on the findings of this study it can be concluded that:**

The current study concluded that, the role of pediatric nurse regarding needs of children undergoing hemodialysis therapy namely physical, social and emotional needs are affected by their educational level, years of experience and attendance of training courses. In addition, there was a positive correlation between the nurse's total knowledge about renal failure and hemodialysis therapy and their total role regarding the needs of children undergoing hemodialysis therapy.

### **Recommendations**

In the light of the study finding, the following recommendations are suggested:

- 1- Periodic assessment of knowledge, and practice and continuous course training for all nurses who are providing care for children undergoing hemodialysis therapy, based on children's actual needs assessment.
- 2- Assessing study factors affecting nurse's performance positively for better quality of pediatric patient undergoing hemodialysis therapy.
- 3- Designing and distributing printed booklets or pamphlets containing explanation about needs of children undergoing hemodialysis therapy.
- 4- Further research is recommended to study the effect of a training program on pediatric nurses' knowledge, and practice for providing better quality of care for pediatric patient undergoing hemodialysis therapy.

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