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Effectiveness of Nursing Practices Guideline on Nurses Practice at Hemodialysis Units in Medical City Directorate

Ali T. Shnishil[1], PhD(c),Khalida A.Mansour, PhD[2]
[1](Academic Nurse, Ministry of Health, Iraq)
[2](Assistant Professor, Adult Nursing Department, College of Nursing,University of Baghdad, Iraq)

Abstract: *Nurses practice guideline act as compass for their practice and skill, it is play important role to direct, implement and evaluate hemodialysis nurses practice.*
Study aimed *to determine the effectiveness of nursing practice guideline on hemodialysis nurses practice at medical city directorate and determine relationship between nurses' practice and their general information.*
Methodology: *A quasi-experimental study was carried out at hemodialysis units at Iraqi Hemodialysis Center and Renal Transplantation Center in Medical City Directorate started from April 24th, 2016 through July 1st, 2017, purposive (non-probability) sample of (30) nurse who were worked hemodialysis units, were selected from Iraqi hemodialysis center and kidney transplant center.*
The data were collected through the use of constructed questionnaire, which consist of two parts (1) demographic data of that consist from 7items (2) hemodialysis nurses practice check list taken from that which consist from 3 sections of (79) items.
Validity of the study was determined through the panel of (10) experts and the reliability of the study questionnaire through the pilot study.
Descriptive statistical analysis procedure (frequency, percentage and mean of score) and inferential analysis procedure (person correlation coefficient, chi-square test, t-test and Z score)were used to data analysis.
Results: *The findings of the present study indicate that the implementation of nursing practice guideline for hemodialysis nurses was effective, the practices, improved in first and second post-test of follow-up as compared with the pre-implementation of the practice guideline test.*
Nurses' practice was not accepted in pre-implementation of guideline as determined by mean of score in majority of items, improvement in nurses practice was clearly observed through the post1 and post 2 test after implementation for all items in all domains, the items scored accepted.
Improvement in patients' satisfaction was clearly observed through measuring mean of score of items related to satisfaction and a statistical significant difference from pre-implementation to post1 and post2 after implementation of nursing practice guideline
The study recommended thatproviding an opportunity for nurses to enrolled in training sessions and conferences to improve their practice and keep updating knowledge concerning hemodialysis nursing care.
Keywords:*Nurses' Practice, Hemodialysis Units*

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I. Introduction

Guidelines use of management of specific clinical situations recently increasing to be as a vital component of the future delivery of health care. However, many of practical guidelines that have been drawn up which have ignored and carless of many clinics and hospitals. when the process of guidelines development and clinical pathways can be an intellectually stimulating activity, while it comes to dissemination, intervention and judgement, most health care staff feel uncertainty about the purpose and validity of guidelines. Nursing care standards that are showed and produced by the nurse through the nursing practices involve assessment, diagnosis, outcome identification, planning, implementation and evaluation. The nursing process consider as a principles and fundamentals of clinical decision making, clinical guidelines and compasses all important activities of nurses in providing care to all patients [(1)].

The aim of initiatives worldwide of measuring and evaluating the type and quality of renal care is to identify practice patterns, meet and support health provider in improving the quality of their domestic care delivery system or to gives policy-makers transparency and the public [(2)].

The quality of nursing care has highest level when is provided and promoted based on professional and practical guidelines. Nursing practice perfection or good is result of implementation of ethical standards, application of scientific knowledge helps to provide patient care and needs to provide more than just that. A

nurse qualification needs to critical thinking, problem solving approach and find best solution for patients' and his/her family need to assist patients in maintaining or improving their health [(3)].

Guidelines play role to help practical decision-making with the aim of improving care. Although, if rigorously developed guidelines can do precisely that, developed guidelines must have supporting of development and criticized resulting for being logic, avoid unnecessary effort, unduly influenced by industry, unrealistic or simply not evidence based [(4)].The application of nursing practice at all situation for all nurses regardless of role helps to estate of guidelines and helps nurses in decision making, nurses needs to be supported by outlining practice for estimate goals of profession, provide the public and others about their expectations toward nurses practice and used as a legal reference for reasonable and prudent practice [(5)].

II. Methodand Material

Method

Research design

A Quasi-experimental design was followed to conduct study.

Setting

This study carried out inhemodialysis unit at Iraqi Hemodialysis Center and Renal Transplantation Center in Medical City Directorate in Baghdad City.

Subject:

A purposive (non-probability) sample of (30) nurse who work in hemodialysis units and agree to participate in study.

Assessment of nurses needs of hemodialysis practice:

The objective of this assessment is to evaluate the need of hemodialysis nurses for practice guidelines through assessing their knowledge in pre, during and post hemodialysis. Data were collected from (40) nurses who were working at the hemodialysis center during the period from Each nurse was given a time period between (30) minutes to answer the questions. The results of the assessment indicated that the majority of nurses had knowledge deficit and improper practices toward hemodialysis management Therefore, this assessment revealed that there are needs to construct a practice guideline for nurses to improve their practices.

Construction of nursing practice guideline:

The nursing practice guideline was developed according to the results of the assessment of nurses need, review of the related literature and previous studies such as (Japanese Society for Dialysis Therapy Clinical Guideline 2015, European Best Practice Guidelines on Hemodialysis 2007 and Nephrology Nursing Standards and Practice Recommendations (2008)). To improve the nurses practice and the guideline was consisted from:

- Hemodialysis nursing procedure (pre-during and post hemodialysis practices).
- Infection control at hemodialysis units (hand wash, wear personal protective equipment and dialysis machine and units beds cleansing).
- Nurse-patient education (education toward diet, medications and treatment).
- Nurse-patient monitoring (monitoring and checking general health status of patients)

Implementation of Practice Guideline:

The implementation of nursing practice guideline started on 5th September 2016 – 20th September 2016. The nurses who met the study criteria were informed to insure their agreement in the study and discuss the plan of nursing practice guideline and the collection of data. The implementation of the guideline.

Tool of the study

A study instrument was designed and constructed by the researcher to measure the variables underlying the present study. A construction was employed through review of literature and related studies.

Nurses practice checklist: consisted of two parts(Nurses Demographic Characteristic and nurses practice check list)

Part1: A demographic data sheet, consisted of (7) items, which included Gender, age, nurses' education level, years of employment, years of experiences at hemodialysis units, training in Iraq and training out Iraq.

Part 2:nurses' practice check list designed to measure the nurses practice consists of (79) items that concerned with:

Section one: This section is composed of (39) items; they presented the nurses pre-hemodialysis practice which contain three subdomains prepare patient, equipment and hemodialysis machine.

Section two: This section is composed of (28) items; they presented the nurses practice during hemodialysis such as hand wash, wear personal protective equipment, prime dialysis machine and patient monitoring and educating

Section three: This section is composed of (12) items; they presented the nurses end-hemodialysis practice which contain as hand wash, wear personal protective equipment, prepare machine to disconnect and patient discharge

Method

1- An approval request was provided to the nurses to obtain their participation agreement with study.

2- Validity: Content validity for the early developed instrument was determined through the panel of experts (who have had more than 5 years' experience in their specialty field) to investigate the clarity, relevancy, and adequacy of the questionnaire in the order to achieve the present study's objectives. A preliminary copy of the questionnaire was designed and presented to (10) experts. They were (6) faculty members from college of nursing /university of Baghdad, (4) nephrology faculty member from ministry of health (Al-Kindy Teaching Hospital and Ghazi Al-Hariry surgical specialist hospital).

3- Determination of reliability of the questionnaire was based on the inter-observation method.

III. Statistical analysis

Descriptive statistical analysis procedure (frequency, percentage and mean of score) and inferential analysis procedure (person correlation coefficient, chi-square test, t-test and Z score) and use SPSS were used to data analysissoftware package version 20.

IV. Results

The table(I)show that more than half of study sample were female, with age (≤ 35) years. Majority of the study sample were nursing institute graduate. Most of the study sample were ≥ 10 years with years of experience in hospital. Most of the study sample were≥ 10 years with years of experience in hemodialysis. Concerning of the Training in Iraq the study sample were with ≥ 5 training sessions and with ≥ 2 training sessions Training out Iraq.

Tables (II,III and IV) show there is significant association between nurse's practice (pre-test, post 1and post 2) guideline follow-up(p-value < 0.05), which reflect that the nurses practice affected by nursing practice guideline.

Table (V) show there is no significant association between nurse's practice and their age(pretest, post 1and post 2) guideline follow-up(p value >0.05), there is no differences between age and nurses' practice.

Table (VI) show there is no significant association between nurse's practice and their gender (pretest, post 1and post 2) guideline follow-up(p-value >0.05), there is no differences between gender and nurses practice.

Table (VII) show there is no significant association between nurse's practice and their education level (pretest, post 1and post 2) guideline follow-up(p value >0.05), there is no differences between education level and nurses practice.

Table (VIII) show there is no significant association between nurse's practice (During and End hemodialysis) and their years of experience in hospital (pretest, post 1and post 2) guideline follow-up(p value >0.05) but there is significant association between nurse's practice (pre-hemodialysis) and their years of experience in hospital, there is no differences between years of experience in hospital and nurses practice.

Table (IX) show there no significant association between nurse's practice (During and End hemodialysis) and their years of hemodialysis (pretest, post 1and post 2) guideline follow-up(p-value >0.05) but there is significant association between nurse's practice (pre- hemodialysis) and their years of hemodialysis, there is no differences between years of hemodialysis and nurses practice.

Table (X) show there is no significant association between nurse's practice (During and End hemodialysis) and their training in Iraq (pretest, post 1and post 2) guideline follow-up(p-value >0.05) but there is significant association between nurse's practice (pre- hemodialysis) and their training in Iraq, there is a difference between training in Iraq and mean of score of practice.

Table (XI) show there is no significant association between nurse's practice (During and End hemodialysis) and their training out Iraq (pretest, post 1and post 2) guideline follow-up(p value >0.05) but there is significant association between nurse's practice (pre-hemodialysis) and their training out Iraq, there is no difference between training out Iraq and nurses practice.

Table (I): Participants' Sociodemographic and Employment Characteristics

Variables	Frequency	Percent
Gender		
Male	14	46.7
Female	16	53.3
Age		
≤35	12	40.0
≥35	18	60.0
Educational status		
Nursing school	1	3.3
Nursing high school	1	3.3
Nursing institute	21	70.0
Nursing college	7	23.3
Years of experience in hospital		
≤10 years	17	56.6
≥10 years	13	43.4
Years of experience in hemodialysis		
≤10 years	18	60.0
≥ 10 years	12	40.0
Training in Iraq		
≤5	21	70.0
≥5	9	30.0
Training out Iraq		
≤2	24	80.0
≥ 2	6	20.0

Table(II) Distribution and Association of Hemodialysis Nurses Practice (Pre-dialysis) according of Nursing Practice Guideline

Stage	Pre-dialysis		
	No	Mean	SD
Pre	30	28.6	1.1
Post 1	30	29.2	1.1
Post 2	30	29.2	1.3
F = 3.0, df= 2,87; p = 0.05			

Significant level at p value ≤ 0.05, No. = number, SD= Standarddeviation,df= degree of freedom, p= probability

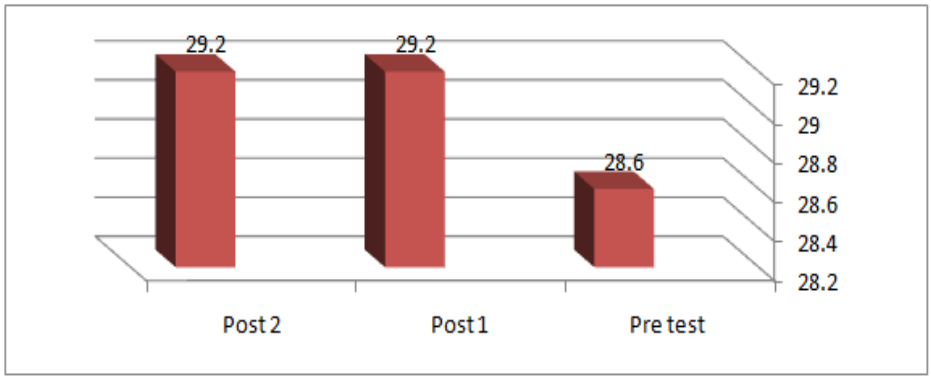

Figure (I) Distribution of Pre-Hemodialysis Nurses' Practice Score according of guideline

Table(III) Distribution and Association of Hemodialysis Nurses' Practice (During dialysis) according of Nursing Practice Guideline

Stage	During dialysis		
	No	Mean	SD
Pre	30	55.4	2.1
Post 1	30	62.0	2.4
Post 2	30	67.4	2.6
F = 191.7, df= 2,87; p = 0.001			

Significant level at p value ≤ 0.05 No number, SD= Standarddeviation,df= degree of freedom p= probability

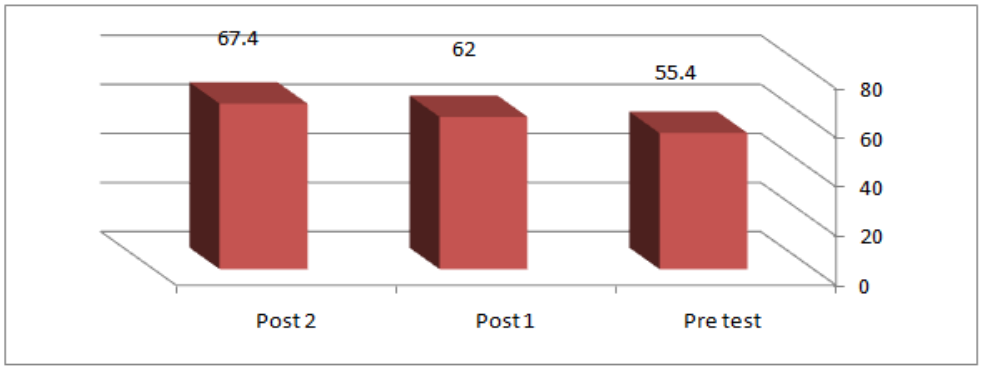

Figure (II) Distribution of During Hemodialysis Nurses' Practice Score according of guideline

Table(IV) Distribution and Association of Hemodialysis Nurses Practice (End dialysis) according of Nursing Practice Guideline

Stage	End dialysis		
	No	Mean	SD
Pre	30	50.7	1.7
Post 1	30	51.8	1.9
Post 2	30	55.3	1.9
F = 171.5, df= 2,87, p = 0.0001			

Significant level at p value ≤ 0.05 No number, SD= Standarddeviation,df= degree of freedom, p= probability

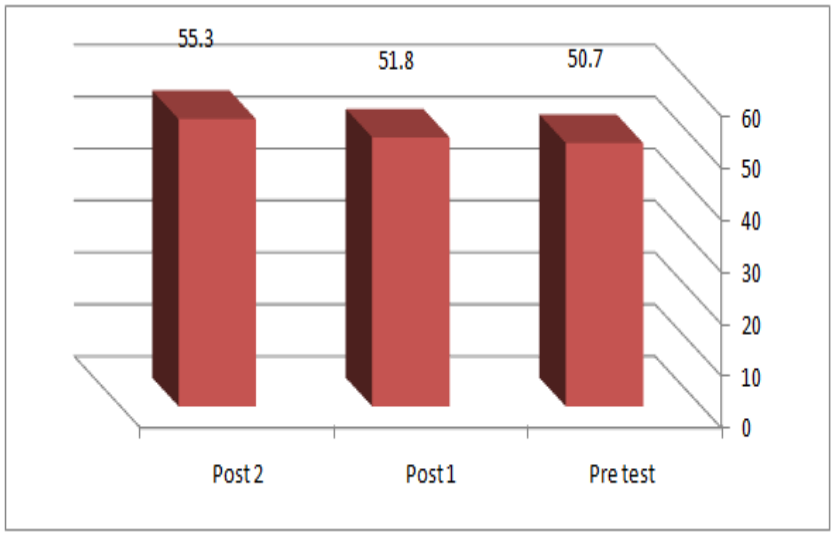

Figure (III) Distribution of End Hemodialysis Nurses' Practice Score according of guideline

Table (V) Distribution and Association of nurses practice and their age

Pre-hemodialysis	Age					
	Pre-test		Posttest 1		Posttest 2	
	No.	Mean ± SD	No.	Mean ± SD	No.	Mean ± SD
Accepted	7	31.6 ± 9.2	18	34.7 ± 7.6	17	35.1 ± 7.7
	t= 1.3, df=28, p= 0.2		t= 0.3, df=28, p= 0.7		t= 0.05, df=28, p= 0.9	
During hemodialysis	Age					
	Pretest		Post test1		Posttest 2	
	No.	Mean ± SD	No.	Mean ± SD	No.	Mean ± SD
Accepted	0	00	25	34.6 ± 7.7	29	35.1 ± 8.4
			t= 0.7, df=28, p= 0.4		t= 0.2, df=28, p= 0.8	
End of hemodialysis	Age					
	Pretest		Post test1		Posttest 2	
	No.	Mean ± SD	No.	Mean ± SD	No.	Mean ± SD
Accepted	18	36.7 ± 8.6	22	36.1 ± 7.9	29	34.6 ± 7.8
	t= 1.2, df=28, p = 0.2		t= 1.1, df=28, p= 0.2		t= 1.9, df=28, p= 0.06	

Significant level at p value ≤ 0.05,No number,df= degree of freedom, SD= standard deviation, t = t test, p= probability

Table(VI) Distribution and Association of nurses practice and their Gender

Gender	Pre- hemodialysis					
	Pretest		Post test1		Posttest 2	
	Accepted		Accepted		Accepted	
	No.	%	No.	%	No.	%
Male	3	21.4	11	78.6	10	71.4
Female	4	25.0	7	43.8	7	43.8
	Fisher's Exact p = 0.5		χ^2= 3.7, df=1, p=0.5		χ2= 2.3, df=1, p=0.1	
Gender	During hemodialysis					
	Pretest		Post test1		Posttest 2	
	Accepted		Accepted		Accepted	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Male	0	0.0	12	85.7	13	92.9
Female	0	0.0	13	81.3	19	100.0
			χ^2= 0.1, df=1, p=0.7		χ^2= 1.1, df=1, p=0.2	
Gender	End of hemodialysis					
	Pretest		Post test1		Posttest 2	
	Accepted		Accepted		Accepted	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Male	9	64.3	12	85.7	13	29.9
Female	9	59.3	10	62.5	16	100.0
	χ^2= 0.2, df=1, p=0.6		χ^2= 2.1, df=1, p=0.1		χ^2= 1.1, df=1, p=0.2	

Significant level at p value ≤ 0.05,df= degree of freedom, χ^2= chi square test, p= probability

Table(VII) Distribution and Association of nurses practice and their education level

Education Level	Pre- hemodialysis					
	Pretest		Post test1		Posttest 2	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
High school	1	100.0	0	0.0	0	0.0
Institute	6	28.6	13	61.9	13	61.9
College	0	0.0	5	71.4	4	57.1
Total	7	23.3	18	60.0	17	56.2
Test	χ^2= 6, df=3, p=0.1		χ^2= 3.4, df=3, p=0.3		χ2= 2.8, df= 3, p=0.4	
Education Level	During hemodialysis					
	Pretest		Posttest-1		Posttest-2	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
School	0	0.0	1	100.0	1	100.0
High school	0	0.0	0	0.0	1	100.0
Institute	0	0.0	17	81.0	20	95.2
College	0	0.0	7	100.0	7	100.0
Total	0	0.0	25	33.3	29	96.7
Test			χ^2= 6.6, df=3, p=0.08		χ^2= 0.4, df=3, p=0.9	
Education Level	End of hemodialysis					
	Pretest		Post test1		Posttest 2	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
School	1	100.0	1	100.0	1	100.0
High school	0	0.0	0	0.0	1	100.0
Institute	12	57.1	16	76.2	20	95.2
College	5	71.4	5	71.4	7	100.0
Total	18	60.0	22	77.3	29	96.7
Test	χ^2= 2.6, df=3, p=0.4		χ^2= 3.2, df=3, p=0.3		χ^2= 0.4, df=3, p=0.9	

Significant level at p value ≤ 0.05, df= degree of freedom, χ^2= chi square test, p= probability

Table(VIII) Distribution and Association of Nurses'Practice and Their Years of Experience in Hospital

Yearsof experience in hospital	Pre-hemodialysis					
	Pretest		Posttest-1		Posttest-2	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
>10	12	92.3	82	94.3	82	94.3
≤ 10	6	25.0	10	58.8	9	52.9
Total	18	60.0	92	88.5	91	87.5
Test	$\chi2$= 2.7, df=1, p=0.01				$\chi2$= 22.2, df=1, p=0.001	
Years of experience in hospital	During hemodialysis					
	Pretest		Posttest-1		Posttest-2	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
>10	0	0.0	10	76.9	12	92.3
≤ 10	0	0.0	15	88.2	17	100.0
Total	0	0.0	25	83.3	29	96.7
Test			χ^2= 0.6, df=1, p=0.4		χ^2= 1.3, df=1, p=0.2	
Years of experience in hospital	End of hemodialysis					
	Pretest		Posttest-1		Posttest-2	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
>10	10	76.9	11	84.6	12	92.3
≤ 10	8	47.1	11	64.7	7	100.0
Total	18	60.0	22	73.3	29	96.7
Test	χ^2= 2.7, df=1, p=0.09		χ^2= 1.5, df=1, p=0.2		χ^2= 1.4, df=1, p=0.2	

Significant level at p value ≤ 0.05,d.f.= degree of freedom, χ^2= chi square test, p= probability

Table(IX) Distribution and Association of Nurses'Practice and Their Years of Hemodialysis

hemodialysis years	Pre- hemodialysis					
	Pretest		Posttest-1		Posttest-2	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
>10	15	88.4	16	94.2	16	94.2
≤ 10	5	27.4	6	29.9	8	55.6
Total	20	66.6	22	73.3	24	80.0
Test	$\chi2$= 1.7, df=1, p=0.01		$\chi2$= 1.9, df=1, p=0.01		$\chi2$= 2.3, df=1, p=0.01	
Hemodialysis years	During hemodialysis					
	Pretest		Post test1		Posttest 2	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
>10	0	0.0	10	83.3	11	91.7
≤ 10	0	0.0	15	83.3	18	100.0
Total	0	0.0	25	83.3	29	96.7
Test			χ^2= 0.0, df=1, p=1		χ^2= 1.5, df=1, p=0.2	
Hemodialysis Years	End of hemodialysis					
	Pretest		Posttest-1		Posttest-2	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
>10	9	75.0	10	83.3	12	100.0
≤ 10	9	50.0	12	66.7	17	94.4
Total	18	60.0	22	73.3	29	96.4
Test	χ^2= 1.8, df=1, p=0.2		χ^2= 1.02, df=1, p=0.3		χ^2= 0.7, df=1, p=0.3	

Significant level at p value ≤ 0.05,df= degree of freedom, χ^2= chi square test, p= probability

Table(X) Distribution and Association of nurses practice and their training in Iraq

Training in Iraq	Pre-hemodialysis					
	Pretest		Posttest-1		Posttest-2	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
>2	13	86.7	15	95.5	15	95.5
≤ 2	4	26.7	7	46.7	6	40.0
Total	17	56.6	22	73.3	21	70.0
	χ2= 2.71, d.f.=1, p=0.01		χ2= 2.9, d.f.=1, p=0.01		χ2= 3.1, d.f.=1, p=0.01	
Training in Iraq	During hemodialysis					
	Pretest		Posttest-1		Posttest-2	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
>2	0	0.0	13	86.7	14	93.3
≤ 2	0	0.0	12	80.0	15	100.0
Total	0	0.0	25	83.3	29	96.7
Test			χ^2= 0.2, d.f.=1, p=0.6		χ^2= 1, d.f.=1, p=0.3	
Training in Iraq	End of hemodialysis					
	Pretest		Post test1		Posttest 2	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
>2	10	66.7	12	80.0	14	93.3
≤ 2	18	53.3	10	66.7	15	100.0
Total	18	60.0	22	73.3	29	96.7
Test	χ^2= 05., d.f.=1, p=0.4		χ^2= 0.6, d.f.=1, p=0.4		χ^2= 1.03, d.f.=1, p=0.3	

Significant level at p value ≤ 0.05,df= degree of freedom, χ^2= chi square test, p= probability

Table(XI) Distribution and Association of nurses practice and their training outside Iraq

Training out Iraq	Pre- hemodialysis					
	Pretest		Posttest-1		Posttest-2	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
>2	15	93.8	16	94.2	17	96.3
≤ 2	5	25.0	9	58.3	10	62.3
Total	20	66.6	26	86.6	27	90.0
	χ2= 5.7, d.f.=1, p=0.01					
Training out of Iraq	During hemodialysis					
	Pretest		Posttest-1		Posttest-2	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
>2	0	0.0	5	83.3	6	100.0
≤ 2	0	0.0	20	83.3	23	95.8
Total	0	0.0	25	83.3	29	96.7
Test			χ^2= 0.0, d.f.=1, p=0.1		χ^2= 0.2, d.f.=1, p=0.1	
Training out of Iraq	End of hemodialysis					
	Pretest		Posttest-1		Posttest-2	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
>2	6	100.0	5	83.3	6	100.0
≤ 2	12	50.0	17	70.8	23	95.8
Total	18	60.0	22	73.3	29	96.7
Test	χ^2= 5, d.f.=1, p=0.02		χ^2= 0.0, d.f.=1, p=0.1		χ^2= 0.2, d.f.=1, p=0.1	

Significant level at p value ≤ 0.05,df= degree of freedom, χ^2= chi square test, p= probability

V. Discussion

Part I: Discussion of the hemodialysis nurses' demographic data:

Throughout the course of this study, it showed that the (53.3%) of the study sample were females(table I), this result agrees with Bakey's (2009) who showed in a study conducted in hemodialysis at Baghdad Teaching Hospitals that the majority of the study sample (51%) were females and the remaining were male.Concerning the nurses ' age, the highest proportion of study sample (60. 0%) was (≥ 35) years old, and this result agrees with Uğur, et al.(2007) who stated that (73,9%) of the nurses in hemodialysis units in Ankara were under 30 years old and Jawad (2015) who found that the majority of nursing staff age was more than 30 years.

Regarding the educational status, highest percentage (70.0%) of the sample was nursing institute graduate (table I). This result is consistent with Ibrahim's (2009) shows that the majority (81.3%) of health care workers were nurses with a Diploma in nursing. This agrees with Youne's (2012), knowledge and performance among nurses before and after receiving a training program on patient' fall in hemodialysis unit, showthat the majority of nursing staff were having a diploma qualification. In relation to years of experience in hospitals, the (56.6%) of the dialysis nurse have (≤10 years). This finding is come in agreement with Motamed's (2006) who show that the majority (40.6%) of the nurse staff had 0-5 years of experience in hospitals.

Concerning years of experience in hemodialysis, the highest percentage (60.0 %) of the study sample is (≤10) years. These results agree with Uğur, et al., (2007) stated that (68,9 %) had 0-5 years of experience in hemodialysis unit.As for the results of training in Iraq, the highest percentage (70.0 %) of the study sample have (≤ 5) sessions. The training abroad the highest percentage (80.0 %) of the study sample have (≤ 2) sessions (table I).

Part II:Association between of hemodialysis nurses' practice in pretest, posttest 1 and posttest 2 period of nursing practice guideline

High quality level of nursing services regarding of the per-phase care or intra-phase care practice guideline consider as important to nurses' performance improvement aspect of hemodialysis units and enhancing factor toward patients' outcomes. It helps to improve hemodialysis patients' morbidity and mortality rate so it acts to minimize the cost on the heath institutions. Also, it will provide continuous cycle to save the patients and care givers [(6)].

The effectiveness of the nursing practice guideline to improve quality of nursing care for hemodialysis patients by nurses who work in the hemodialysis unit are discussed in this chapter. Data analysis of the present study had revealed that the implementation of the nursing practice guideline had a positive effect on the hemodialysis nurses' quality care tables (II, III and IV).

Comparison of pre-hemodialysis nurses' practice guideline in the pretest, posttest 1 and posttest 2 period at hemodialysis unite

The nurses practice pre-hemodialysis phase, domain and sub domain show that the nurses practice was not accepted before beginning guideline and improvement in nurses practice was clearly observe through the after first and second follow-ups that improvement of the nurses practice is affected by guideline (table II).

All items of the first sub domain preparation of equipment was accepted in in pre, post 1 and post 2 test except uses alcohol swab or povidone –iodine and wearing sterile gloves, Gown, and mask was not accepted in pre-test and the improve to accepted in post1 and post 2 test. The researcher shows that the because the nurses have morning and afternoon dialysis work time so they pay best practice to gain time and may be as a result of routine and daily recurrent practice.

Related to second sub domain "prepare the patient" of pre-hemodialysis phase the result shows all items not accepted in pre-test except measuring blood pressure, assess baseline fluid status, asking the patient to evacuate the bladder before starting the procedure and put him in comfortable position was record accepted, the improvement in nursingpractice was clearly observe though post 1 and post 2 follow-up, but some items still not accepted though three period these are measurement of temperature, pulse and respiratory in post test1and assesses laboratory results in three period of testing are not accepted.

About the third sub domain "machine preparation" of pre-hemodialysis phase the result shows all items not accepted in pre-implementation of nursing guideline, while the improvement in nursing practice was clearly observed though post 1 and post 2 follow-up on all items of machine preparation.

Hemodialysis educational protocol or guideline has a several advantages such as: decreased urgent hemodialysis, minimized time wasting at hospital or centers which lead to enhanced resources, early insertion of patient vascular access, increasing probability self-care choices, well planned hemodialysis time as needed, patient adherence improvement, relief fear and stress, and decrease mortality rate and cost effective [(7)].

Hemodialysis is complicated life keep procedure which can cause of some risks for patients. Probably more than 2 to 4% of end stage renal failure patient who treated by hemodialysis died related to hemodialysis complications. The latest studies that obtained some suggestions from nurses and patients toward quality of

health and safety regard the hemodialysis unit showed that more 50% of the patients feel with fear and anxious from an error can be happened during providing hemodialysis treatment. Additionally, nurses at hemodialysis units who have a lack with standardized hemodialysis policies compliance their procedures featured with rush and unplanned skills toward patients in hemodialysis treatment that caused threat of patient safety and treatment quality [(8)].

Comparison of Intra-hemodialysis nurses' practice guideline in the pretest, posttest 1 and posttest 2 period at hemodialysis unite

Regarding the intra-hemodialysis phase the nurses practice was not accepted before implementation of nursing practice guideline in most items and the effectiveness of implementation of guideline was clearly observed though first and second follow-up (table III).

Concerning the first and second sub-domain "infection control practice" and "Prepare patient access to dialysis machine" of intra hemodialysis was not accepted before implementation of guideline for all items except wearing gown and plastic apron, and tapes IV tubes securely, these items become accepted at post-1and posttest-2follow-up.

Regarding the third "Prepare patient access to dialysis machine and fourth "nurse –patient education" sub domain of intra hemodialysis was not accepted before implementation of guideline for all items except the items related fixing the atrial and venous tube the nurse does it perfectly even before implementation of guideline, these items become accepted at post-1and posttest-2follow-up.

Comparison of End hemodialysis nurses' practice guideline in the pretest, posttest-1 and posttest-2 period at hemodialysis unite

Concerning of first "Infection control" and second "Prepare to disconnection" sub domain of end hemodialysis phase the data shows the nurses practice was not accepted in all items before implementation the guideline and become accepted after implementation of guideline and this improvement clearly observed in first and second test follow-up (table IV)

Nursing care guidelines may make nurses have the ability to recognized patients' quality of care and safety measurements and lead to improvement it. Such as prevent measures of hemodialysis lines clots, avoid hemodialysis equipment and facilitation fall, prevent medications errors, avoid needle dislocation, and patient fall prevention. It also improves the nurse infection control measures adherence such as hand hygiene, safety of vascular access, safety of water management, immunizations for hemodialysis nurses and patients, environmental and equipment cleaning-disinfection, and follow policies and standardized procedures that applied in hemodialysis unit, in relation to applying health patients' ambulation during entering or going out the unit, and isolation [(9)].

Association between hemodialysis nurses practice and their general information

Association between hemodialysis nurses practice and their Age (tableV)

The findings indicated that there was no significant association between nurse's practice and their age(pretest, posttest-1and posttest-2) guideline follow-up(p-value >0.05). This result was disagreed with Al-Hakkak's (2004) who presented that there was a significant relationship between nurses' practices and their age related to nurses who worked in hemodialysis units at Baghdad Teaching Hospitals. The researcher state that the nurse practice does not necessarily depend on age and may depend on nurse punctuality and perseverance to adherence to his/her profession roles.

Association between hemodialysis nurses practice and their gender

The findings indicated that there was no significant association between nurse's practice and their gender (pretest, post 1and post 2) guideline follow-up(p-value >0.05) (table VI).

Association between hemodialysis nurses practice and their nursing education level (table 14)

The findings indicated that there was no significant association between nurse's practice and their nursing education level (pretest, post 1and post 2) guideline follow-up(p value >0.05) (table VII). Aiken (2011) indicate that the increase in the proportion of nurses with higher educational degrees decreased the risk of mortality and improve care, and the evidence based practice cannot obtained or improved without an entireunderstanding of its fundamental science background.

Association between hemodialysis nurses practice and their years of experience in hospitals

The findings indicated that there was no significant association between nurse's practice (during and end of hemodialysis) and their years of experience in hospital (table VIII) (pretest, post 1and post 2) guideline follow-up (p value >0.05) but there was significant association between nurse's practice (pre-hemodialysis) and their years of experience in hospitals (p value <0.05).

Association between hemodialysis nurses practice and their years of hemodialysis experience

The findings indicated that there was no significant association between nurse's practice (during and end of hemodialysis) and their years of hemodialysis experience (table IX) (pretest, post 1and post 2) guideline follow-up(p value >0.05) but was significant association between nurse's practice (pre hemodialysis) and their years of experience at hemodialysis units (p-value < 0.05).This finding was disagrees with Al-Hakkak's (2004) who stated that there was a significant relationship between nurses' practice and those working out hemodialysis units and years of experience in hemodialysis unit, the researcher showed that the majority of hemodialysis staff years of experience in hospital are at hemodialysis units the nurse practice may base on traditions, feelings and what learned practice from each other more than sciences and their skills are not directed by evidence based practice guides.

Association between hemodialysis nurses practice and their training in Iraq –out Iraq(table X and XI)

The findings indicated that there was no significant association between nurse's practice (during and end hemodialysis) and their training in Iraq –abroad (pretest, post 1and post 2) guideline follow-up(p-value >0.05) but there was significant association between nurse's practice(pre-hemodialysis) and their and their training in Iraq (p-value < 0.05), the researcher showed that this findings may be reflect a weakness of trainings plans of hemodialysis centers. The limitation of authority can be given to nurses after their training can be encounter with unite or setting policy.

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