Evaluation of nurses Practice toward Children Safety Post Cardiac Catheterization Procedure

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Abstract

Background: Safety child post cardiac catheterization is mainly one responsibility of nurse's staff, its main goal is to prevent or reduce series complication that could occur post catheterization. However, cardiac catheterization is simple invasive procedure that used mainly for diagnosis and therapeutic purposive. After catheterization procedure, several complications may raise and lead to increase morbidity and mortality incidence among children. Early nursing intervention can minimize burden of care. Safety measures of child in hospital become a basic care health, as indicated by all health organizations. The responsibility of the nurses should include ensuring patient`s safety without accidental harm in addition to the quality of care.

Method: A descriptive design was used to evaluate nurses' practice toward children's safety post cardiac catheterization, sample of 60 nurse were participated in Shaheed Almuhrab center cardiac surgery, nurses practice was evaluated by observation checklist that include 20 items concerning preventive measure to prevent complication after catheterization. Direct observation method was used; the data was analyzed by SPSS program.

Results: the result included that 75% of the studied nurses recorded a fair level of practices about children's safety post cardiac catheterization. However, 13.3% of them recorded inadequate level of practices, and 11.7 % of them with adequate level of practices.

Conclusions: most nurses at cardiac care center have fair level of practices regarding safety of child post cardiac catheterization. However, the aspire to develop their practice to adequate level.

Recommendations: enrolled nurses at training sessions about safety of children post cardiac catheterization, and focusing on issue of patient safety through nursing academic curriculums.

Key wards: child safety, cardiac catheterization, practice, nurses

Introduction

Cardiovascular catheterization is one of the most diagnostic and therapeutic techniques accessible to cardiologists today [(1)] It involves putting a catheter into an artery or vein, typically from the femoral or jugular access site, and guiding it with x-ray guidance into the heart[(2)] Through the use of a diagnostic catheter, the adequateness of the coronary artery blood supply [(3)] Pediatric cardiac catheterization an adult catheterization are similar procedur[(4)] The coronary arterial disease is more prevalent in adults and relatively rare in children, with apparent differences[(5)] In pediatrics, there are different techniques, treatments, and purposes used[(6)] The pediatric cardiac catheterization lab performed a wide range of therapeutic procedures, including percutaneous pulmonary valve implantation, balloon angioplasty of stenotic lesions, embolization and device closure of vessels, device closure of septal defects, and valval pasty of stenotic valves[(7)] The optimal sedative choice is made after a thorough evaluation of the patient [(8)] The prevalence of problems during cardiac catheterization ranges from 1.5 to 9% overall[(9)] the problems, which are typically transient, can include minor issues including bleeding, sensitivity to drugs or dye, allergic skin reaction to latex or tape, bruises, irregular heartbeats, transient pain, small infections, nausea, and vomiting. Additionally, there is a chance for more serious but less common side effects, such as severe bleeding, hematomas, heart or lung issues like irregular heartbeats and lung or heart failure, stroke, heart attack, blood vessel or nerve damage, blood clots in the legs or lungs, failure of medical equipment, and renal failure with potential need for dialysis. Patients with renal failure who were older than 70 years old, female, and at increased risk for vascular problem [(10)] [(11)] [(12)] The nurse is essential to providing comprehensive care for patients with heart issues and those who have had cardiac catheterization treatments.

Additionally, the nurse is in the role of monitoring the patient for any warning signs of a change in condition, ensuring patient safety during transport, delivering medication, helping with basic personal care requirements, managing bleeding, and maintaining hemostasis. Patients will be better able to manage their illness and reduce their risk of developing vascular complications if a care protocol that has been approved is used [13]This protocol should be based on the various educational needs of nurses and take other relevant considerations into account [14] Cardiac catheterization is also used to diagnose pulmonary arterial hypertension or to treat stenotic heart valves via percutaneous balloon vavluplasty(15) Nurses play a major role in providing nursing care to patients who undergo cardiac catheterization , such care is presented into three different episodes that include pre catheterization , intra catheterization , and post catheterization . nurses practice so critical concerning this procedure in order to reduce the risk and prevent complications that may be associated with this catheterization [16] As we know patients with heart disease are at risk of sudden heart attack and life threatening conditions [17] Also exertion or emotional stress can deteriorate their health status. Sometimes a little more time is sufficient to save patients life[18] Vascular Complications: Femoral artery damage or damage after pediatric Cardiac Catheterization includes bleeding, hematoma, arteriovenous fistula, pseudo aneurysm, thrombosis and occlusion[19] The role of the pediatric catheterization laboratory has evolved in the last decade as a therapeutic modality[20] According to the WHO, in 2005, 30% of the whole death was lead to cardiovascular illnesses [21] The important part of the clinical performance is Dec annulation of sheath (inserter) from either the femoral or radial approach takes place outside the catheterization room and done by doctor or nurse[22] Procedure of the Dec annulation of sheath from arterial basin can influence the final effect of catheterization [23] Safe process of sheath Dec annulation requires specific standardized health care professional and provision of highly specialized compression aids to allow rapid mobilization of patient after procedure and reduction of complications as well [24]

Methods

Design

A descriptive design was used to achieve the purposes of the current study for evaluation of nurses' practice toward children's safety post cardiac catheterization was used to achieve the purposes of the current study that. This study started from November 2022 to May 2023.

Setting of the Study: The research took place at Shaheed Almuhrab center cardiac surgery in Babylon city, in the cardiac ICUs and cardiac wards**.** After bringing a request to facilitate a task from the College of Nursing, University of Baghdad, to the specialized centers where samples were collected.

Sample of the Study The study's sample was chosen using a non-probability (purposive sampling) method. The study involves (60) nurses from Shaheed Almuhrab center cardiac surgery in Babylon City who work in the medical ICU and cardiac medical ward.

Instrument of the: the instrument in the research show was selected according to objectives of the study after reviewing related literature review. The questionnaire format consists of (2) parts which are: **part I:** nurse's socio- demographic characteristic1sheet he first section of the questionnaire is dedicated to collecting basic information about the nurse, such as her age and marital status., gender, educational level, experience years in unit of cardio care unit, did you participant in training about patient safety. **part II**: to evaluated nurse's practice about safety post cardiac catheterization this part checklist consists from (20) item include nurse's practice about safety post cardiac catheterization. This scale was self-development with supervisor with adequate validity and reliability. It included item related to transfer from operation room to ward and using management immediately, cheek up, follow up and observation.it was scored by direct observation of the researcher during nurse care .it scored as nurse sometimes, always and never. The total scale of knowledge was categorized as inadequate, fair and good.

Validity of the Instrument: was achieved by panel of experts that reported adequately.

Data Collection Methods: the researcher participants were told that taking part in the study was fully voluntary and that they could stop at any time if they so desired. moment. According to the subject's consent sheet, the researcher further guaranteed them that the confidentiality of the data would be protected and that it would be securely before and after the study.

Methods of Statistics The data was analyzed using SPSS, an application developed specifically for social science research. (SPSS, version 26). Both descriptive and inferential statistics were used to analyze the data. The reliability of the survey was calculated using the

correlation coefficient, and a significance level of 0.05 was used.

Results

Table (1): Distribution of Nurses according to their Socio-demographic Characteristics

List	Characteristics		f	%
1	**Age (Years)** **M±SD= 31 ± 7**	20 – less than 30	30	50
		30 – less than 40	22	36.7
		40 – less than 50	7	11.7
		50 and more	1	1.7
		Total	**60**	**100**
2	**Gender**	Male	29	48.3
		Female	31	51.7
		Total	**60**	**100**
3	**Nursing qualification**	Secondary school	9	15
		Diploma	24	40
		Bachelor	23	38.3
		Postgraduate	4	6.7
		Total	**60**	**100**
4	**Years of experience in ccu** **M±SD= 9 ± 7**	1 – less than 6	**20**	33.3
		6 – less than 11	24	40
		11 – less than 16	8	13.3
		16 – less than 21	4	6.7
		21 and more	4	6.7
		Total	**60**	**100**
5	**Training in Children Safety Course**	No	35	58.3
		Yes	25	41.7
		Total	**60**	**100**

f: Frequency, %: Percentage, M: Mean, SD: Standard Deviation

The descriptive analysis in table 4-1 shows that average age for nurses is 31±7 years, the high percentage of age group refers to 20-less than 30 years among 50% of them. The gender variable refers that 51.7% of nurses are females and 48.3% of them are males. Regarding nursing qualification, the highest percentage among nurses refers to "diploma degree" in nursing as reported by 40% of nurses and 38% of them are graduated with "bachelor degree" in nursing. The average years of experience among nurses refer to 9±7 years and the highest percentage is seen with years of experience of "6-less than 11" among 40% of nurses. Concerning participation in training courses about children's safety, 41.7% of nurses reported they have participated while 58.3% of them are not participated

Table (2): Evaluation of Nurses' Practices about Children's Safety Post Cardiac Catheterization

List	Practices items	Scale	f (%)	M	Eval.
1	The child transport from Cath lab to CCU by trolley	Never	0(0)	3	inadequate
		One	0(0)		
		Two	0(0)		
		Third	60(100)		
2	Transfer the child to bed by transfer sheet	Never	60(100)	0	inadequate

		One	0(0)		
		Two	0(0)		
		Third	0(0)		
3	Connected the child to cardiac monitor on arrival	Never	0(0)	1.82	Fair
		One	25(41.7)		
		Two	21(35)		
		Third	14(23.3)		
4	Checking distal pulse	Never	30(50)	0.68	Poor
		One	9(15)		
		Two	17(28.3)		
		Third	4(6.7)		
5	Hand washing before any procedure	Never	15(25)	1.16	Fair
		One	20(33.3)		
		Two	15(25)		
		Third	10(16.7)		
6	Assessing the puncture site	Never	2(3.3)	1.88	Fair
		One	22(36.7)		
		Two	16(26.7)		
		Third	20(33.3)		
7	Assess the puncture site Every hour	Never	2(3.3)	1.64	Fair
		One	25(41.7)		
		Two	23(38.3)		
		Third	10(16.7)		
8	Checked for ECG	Never	0(0)	1.88	Fair
		One	25(41.7)		
		Two	15(25)		
		Third	20(33.3)		
9	Checked for spo2	Never	0(0)	1.96	Fair
		One	19(31.7)		
		Two	24(40)		
		Third	17(28.3)		
10	The nurse educated parent to immobilizing the affect limb to 6 - 8 hour	Never	0(0)	2.02	Fair
		One	17(28.3)		
		Two	24(40)		
		Third	19(31.7)		
11	Administering IV fluids According to physician order	Never	0(0)	2.02	Fair
		One	17(28.3)		
		Two	24(40)		

		Third	19(31.7)		
12	The nurse applies pressure on the place of the catheter after sheath removal until the bleeding stops	Never	2(3.3)	2.06	Good
		One	13(21.7)		
		Two	22(36.7)		
		Third	23(38.3)		
13	When child fully awake, start to give fluid and soft diet	Never	0(0)	1.88	Fair
		One	25(41.7)		
		Two	15(25)		
		Third	20(33.3)		
14	Check Input and output chart	Never	30(50)	0.68	inadequate
		One	9(15)		
		Two	17(28.3)		
		Third	4(6.7)		
15	Check urine output during 8 hour	Never	60(100)	0	inadequate
		One	0(0)		
		Two	0(0)		
		Third	0(0)		
16	If urine not passed, intervention done	Never	30(50)	0.68	inadequate
		One	9(15)		
		Two	17(28.3)		
		Third	4(6.7)		
17	Start giving medication as prescribed while the child is not full awake	Never	0(0)	1.88	Fair
		One	25(41.7)		
		Two	15(25)		
		Third	20(33.3)		
18	Monitor vital signs every 15 minutes for the first hour, then every 30 minutes for the next hour, then hourly	Never	0(0)	1.88	Fair

		One	25(41.7)		
		Two	15(25)		
		Third	20(33.3)		
19	The nurse observe bleeding signs at site of puncture	Never	2(3.3)	2.06	adequate
		One	13(21.7)		
		Two	22(36.7)		
		Third	23(38.3)		
20	Educate the parent about home care before discharge	Never	2(3.3)	2.06	adequate
		One	13(21.7)		
		Two	22(36.7)		
		Third	23(38.3)		

M: Mean, Eval: Evaluation. Poor= 0 –1, Fair = 1.1 – 2, Good= 2.1– 3

The table 4-4 presents the items of nurses' practices about children's safety post cardiac catheterization; the findings indicate that nurses show fair level of practices among most of items except **items 2** (Transfer the child to bed by transfer sheet), **item 4** (Checking distal pulse), **item 14** (Check Input and output chart), **item 15** (Check urine output during 8 hour), and **item 16** (If urine not passed, intervention done) that show **poor** level and **item 1** (The child transport from Cath lab to CCU by trolley), **item 12** (The nurse applies pressure on the place of the catheter after sheath removal until the bleeding stops), **item 19** (The nurse observe bleeding signs at site of puncture), and **item 20** (Educate the parent about home care before discharge) that show **good** level.

Table (4-5): Overall Evaluation of Nurses' Practices about Children's Safety Post Cardiac Catheterization Procedure

Practices	f	%	M	SD	Evaluation
Poor	8	13.3	29.82	8.314	inadequate
Fair	45	75			
Good	7	11.7			
Total	**60**	**100**			

f: Frequency, %: Percentage M: Mean for total score, SD: Standard Deviation for total score

Poor= 0 – 20, Fair= 20.1 – 40, Good= 40.1 – 60

This table exhibits that nurses show fair level of practices regarding children's safety post cardiac catheterization as reported by by 75% of them (M±SD= 29.82 ± 8.314). (M±SD= 29.82 ± 8.314).

Discussion:

in table (1) shows that average age for nurses is 31±7 years, the high percentage of age group refers to 20-less than 30 years among 50% of them. The gender variable refers that 51.7% of nurses are females and 48.3% of them are males. Regarding nursing qualification, the highest percentage among nurses refers to "diploma degree" in nursing as reported by

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