Original Research

Evaluation of an Instructional Program on Nurses' Knowledge of the Pediatric Postural Drainage Guidelines

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The objective: to evaluate how well nurses at Mosul hospitals have knowledge of the pediatric postural drainage guidelines as a result of an educational program.

The Methodology: From September 5, 2023, to March 17, 2024, pediatric wards in Mosul hospitals conducted a study of quasiexperimental by a single study group. Using the purposive sample of non-probability for current research. The sample consisted of thirty nurses who were employed in pediatric wards. In order to evaluate program on knowledge of nurses', lectures of program also questionnaire were created and complete obtainable to nurses. The program comprised 5 lectures, and the questionnaire was separated into 2 sections: the first portion asked about demographics, while the second half assessed the nurses' knowledge of the pediatric postural drainage guidelines. A group of experts (17) who defined the construct and content clarity conducted the validity test. So as to statistically estimate the dependability instruments, pilot study was conducted during October 23–24, 2023. Ten nurses are employed non-randomly at the Ibn Al-Atheer Teaching Hospital. The Cronbach's alpha value obtained with SPSS version 26 is 0.805.

The results illustrate the statistical knowledge of nurses for the sample with regard to the pediatric postural drainage guidelines. They indicate that all areas of the nurses' knowledge were at an unsatisfactory or fail level in the pre-test but at a good or excellent level in the post-test.

The Recommendations: The significant link between a nurse's knowledge of pediatric postural drainage guidelines and the outcomes of the instructional program is evidence of this.

Keywords: Evaluate, Instructional Program, Nurses' knowledge, pediatric postural drainage guideline.

Introduction

The phrase "chest physiotherapy" (CPT) refers to a set of procedures intended to increase lung capacity, strengthen the muscles supporting the respiratory system, and get rid of secretions from the respiratory system. In hospital intensive care units (ICUs), especially pediatric ICUs, CPT is

frequently used to enhance oxygenation, promote secretion clearance, help patients transition off of mechanical ventilation (MV), and lessen the negative consequences of extended bed rest[1].

The pediatric patient is situated Gravity draws secretions to a chief bronchus or else trachea during postural drainage, ensuring that bronchus a specific piece is by means of perpendicular as possible; the secretions remain formerly also cough out otherwise suctioned, and the pediatric patient is held in this posture for up to 15 minutes, therapy of postural drainage remains administered 4 to 6 times a day to pediatric and those on MV, percussion also vibration treatments whitethorn be used in addition to therapy of postural drainage 2. Percussion is musically arresting the wall of chest through hands transfused, also so-called tapotement, clapping, or cupping the determination of drumming remains to disintegration profuse lungs secretions consequently that they container be additional effortlessly detached, percussion is achieved on a piece of one segment lung near 2 min at the time 3.

The diagnosis of pediatric, the lobes of lung or pieces complicated, the cardiac position, and somewhat abnormalities structural of wall chest and also spine should all be known to the nurse, chest auscultating both after and before procedure aids in areas locating that need drainage and also evaluating how well treatment remains working[4].

The Study objectives:

1. To estimate nurses' knowledge level for pediatric postural drainage guidelines

2. To evaluate effect of lectures program on knowledge nurses' leve for pediatric postural drainage guidelines by comparing the pretest with posttest results.

3. To find out the associations between demographic factors with outcomes of program with regard to the Pediatric Postural Drainage Guidelines.

Materials and Procedures:

Study design: study of quasiexperimental by a single pretest-posttest group to evaluate effect of program on knowledge level for nurses regarding pediatric postural drainage guidelines at medicinal pediatric ward of hospitals in Mosul city from September 5, 2023, to March 17, 2024.

The study sample: comprised thirty nurses who worked at Teaching Hospitals of Al-Khansaa, Ibn Al-Atheer, Ibn Sina, Al-Salam, with General Mosul Hospital. Using the purposive sample of non-probability for current research for present study.

Research instrument: The program was lessons and questionnaires were created and given for sample toward evaluate effect of lectures program on their knowledge level regarding pediatric postural drainage guidelines, lectures of program were five lectures, two lectures each week, and the questionnaires included two sections. Initial portion refers to the demographic details, and the next part includes the nurses' knowledge about pediatric postural drainage guidelines and consists of four parts. = (0-1) answers scores, not acceptable = (2) answers scores, acceptable = (3) answers scores, good = (4) answers scores, and excellent = (5) answers scores; however, the estimates for total level of knowledge are failure = (0-4) answer scores, not acceptable = (5-8) answer scores, acceptable = (9-12) answer score, good = (13-16) answer scores, and excellent = (17-20) answer scores.

Validity: A panel of 17 experts who assessed content's appropriateness, applicability, and clarity established the program lectures' and the questionnaire tool's validity.

Study reliability: In order to estimate statistical questionnaire reliability, a pilot study was done from October 23–24, 2023, involving ten nurses non-random from pediatric ward in Mosul hospitals was not included in original study sample, by using SPSS version 26, the Cronbach's alpha result was (0.805).

Data collection: From September 5, 2023, to March 17, 2024, thirty nurses from Teaching Hospitals of Al-Khansaa, Ibn Al-Atheer, Ibn Sina, Al-Salam, with General Mosul Hospital made up the study sample. The data were gathered from the pediatric department of the Mosul hospital.

The Result:

Table 1: Statistical Demographic Results of the Study Participants.

	Demography	Items	The sample	
			F.	**%**
1.	Age	(21-30) years	**25**	**83.3**
		(31-40) years	4	13.3
		(41-50) years	1	3.3
2.	Gender	male	8	26.7
		female	**22**	**73.3**
3.	Level of Education	secondary degree	9	30.0
		diploma degree	10	33.3
		bachelor degree	**11**	**36.7**
4.	General Employments Period	(1-5) years	**21**	**70.0**
		(6-10) years	7	23.3
		(11-15) years	2	6.7
5.	Period in Current Unit	Lease than 1 year	**17**	**56.7**
		(1-2) year	5	16.7
		(2-3) years	7	23.3
		More than 5 years	1	3.3
6.	Name of the Hospital	Alkhansaa hospital	6	20.0
		General mosul hospital	6	20.0
		Ibin seena hospital	6	20.0
		Ibin Alatheer hospital	6	20.0
		Alsalam hospital	6	20.0
7.	Training Courses	No	**30**	**100.0**
		Yes	0	00.0
	The Total		**30**	**100.0**

F. =Frequency, %=Percentage

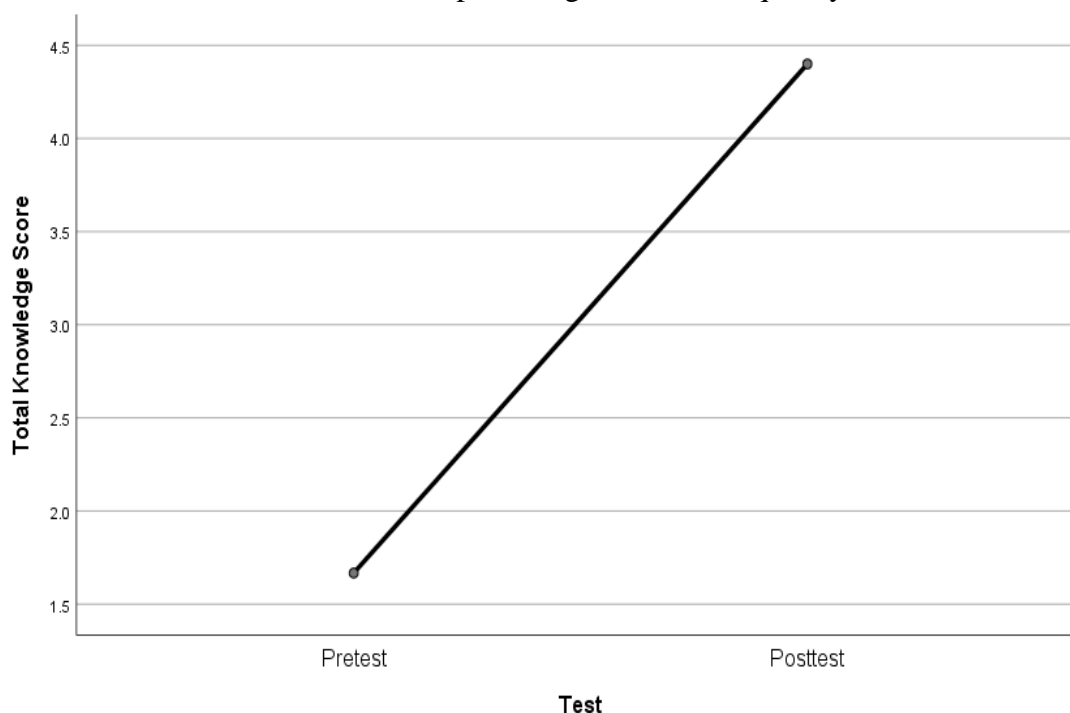**Table 2: Statistic Knowledge Outcomes for Sample regarding Pediatric Postural Drainage Guidelines Study**

knowledge	estimate	Study group			
		Pre-test		Post-test	
		F.	%	F.	%
Nurses' knowledge about the anatomy of the respiratory system in general in children	Fail	**19**	**63.3**	0	00.0
	Non-acceptable	8	26.7	3	10.0
	Acceptable	3	10.0	3	10.0
	Good	0	00.0	6	20.0
	Excellent	0	00.0	**18**	**60.0**
Nurses' knowledge about the anatomy of lung lobes	Fail	**21**	**70.0**	0	00.0
	Non acceptable	8	26.7	4	13.3
	Acceptable	1	3.3	7	23.3
	Good	0	00.0	6	20.0
	Excellent	0	00.0	**13**	**43.3**
Nurses' knowledge about breathing sounds and secretions	Fail	**13**	**43.3**	1	3.3
	Non acceptable	9	30.0	5	16.7
	Acceptable	8	26.7	5	16.7
	Good	0	00.0	4	13.3
	Excellent	0	00.0	**15**	**50.0**
Nurses' knowledge about the main objective of postural drainage and common complications	Fail	13	43.3	0	00.0
	Non-acceptable	**14**	**46.7**	0	00.0
	Acceptable	3	10.0	4	13.3
	Good	0	00.0	9	30.0
	Excellent	0	00.0	**17**	**56.7**
The Total'		**30**	**100.0**	**30**	**100.0**

Fail = 0–1 score. Unacceptable = 2 scores, Acceptable = 3 scores, Good = 4 score, Excellent = 5 scores. %= percentage, and F = frequency.

Table 3: Statistic Outcomes of study on total knowledge related to the pediatric postural drainage guidelines

knowledge	estimate	pre-test		post-test	
		F.	%	F.	%
Total Knowledge	Fail	11	36.7	0	00.0
	Non-Acceptable	**18**	**60.0**	0	00.0
	Acceptable	1	3.3	5	16.7
	Good	0	00.0	8	26.7
	Excellent	0	00.0	**17**	**56.7**
Total		**30**	**100.0**	**30**	**100.0**

Failure = 0–4 score. Unacceptable = 5-8 score, Acceptable = 9–12 score, Good =13–16 score, Excellent = 17–20 score. %= percentage, and F = frequency.

Figure (1): The Means Plots Distributions of Total Nurses' Knowledge Results (pretest, posttest) for sample in the Study

Table 4: Statistical Alterations for Samples Paired t-test of Study Knowledge regarding Pediatric Postural Drainage Guidelines

groups	Test	Mean	Std. D.	t	P.value	Sig.
study group	Pretest	1.67	0.547	-16.503	**0.000**	**HS**
	Posttest	4.40	0.770			

Standard Deviation (Std. D.), t-test (t-test), and significant at the P-value ≤ 0.05 level (Sig)

Table 5: Results Alterations ANOVA-based statistical differences for pre- posttests Study Knowledge regarding Pediatric Postural Drainage Guidelines

	Total Squares	Df.	Square Mean	F	Sig.
Between Groups	112.067	1	112.067	251.284	**0.000**
Within Groups	25.867	58	0.446		
Total	137.933	59			

Bonferroni (ANOVA), significant = the P.value ≤ 0.05

Table 6: Results Association among nurses' demographic variables with program's outcomes.

	Demographic	Study Group	
		Pre	Post
1.	Age	0.493	0.201
2.	Gender	0.322	0.530
3.	Level of education	0.593	0.424
4.	Years	0.858	0.592
5.	Hospital Name	0.354	0.323
6.	Name of ward or unite	0.790	0.267
7.	Periods	0.566	0.463

Significance = P-value ≤0.05.

The Discussion:

Part 1: The Demographic of Respondents in Study

Research sample's demographic characteristics as shown in Table (1), that 73.3% (22) of the study sample are women, that 83.3% (25) of the study sample are 21–30 years old, and that 36.7% (11) of the study sample have a bachelor's degree. 70.0% (21) worked for one to five years in a general employment period, 56.7% (17) worked for less than a year in the current unit, and 20.0% (6) worked at a selected hospital. Finally, 100% (30) of the study group sample did not have training courses related to the study subject. Of the study sample These results agree with Awad, M. K., & Ajil, Z. W. (2021). who find that 40.0 % were from age group of 20-25 years, 80.0% were female, 37.5% of the subject were bachelor stage, 55.0% of subjects were doing years of general employments [5].

Part II

1. The study sample's statistical knowledge

The study sample's statistical knowledge of the pediatric postural drainage guidelines as shown in table (2), that nurses' pre-test scores on the anatomy of the pediatric respiratory system were 63.3% (19) at the failure level, whereas their post-test scores were 60.0% (18) at the excellent level. In the pre-test, 70.0% (21) of the nurses' knowledge of the anatomy of the lung lobes was at a failing level, whereas in the post-test, 43.3% (13) of them were at an excellent level. In the pre-test, 43.3% (13) of the nurses' knowledge regarding breathing sounds and secretions was at a failing level; in the post-test, 50.0% (15) of them were at an excellent level. In the pretest, 43.3% (13) of the nurses scored poorly on the understanding of the primary goal of postural drainage and frequent problems; in the posttest, 56.7% (17) of the nurses scored exceptionally well. This result agree with Anwar Abd ElAziz, et al. ,(2021) that shows , bulk of results in terms of measuring knowledge of nurses' COVID-19 showed significant variations among the pretest and post-test following the educational program in terms of nurses' safety knowledge. Prophylactic action against (covid-19) Pretest and posttest results for isolation precaution showed significant differences, and most results regarding the assessment of nurses' knowledge regarding the

removal and disposal of protective equipment showed significant differences between the two tests following the educational program[6].

2. The study sample's statistical total knowledge:

The study sample's statistical total knowledge on the pediatric postural drainage guideline as shown in table (3), 60.0% (18) of the study sample scored non acceptable on the pre-test, but 56.7% (17) scored excellently on the post-test. This result agrees with Hassan, A. M., Fathy Attia, A. M., and Mohamed, N. T. (2022), They discover that following the application of program, the percentage of nurses with weak knowledge, which was 70% before the program, dropped to 3.3%. Conversely, 10% of nurses scored well prior to the introduction of the educational program, and that number rose to 70% following the program. Between the execution of the educational program before and after, there was a statistically significant change (P = 0.001).[7]

Part III

1. Statistical Alterations for Samples Paired t-test

Research sample's statistical differences regarding knowledge of the pediatric postural drainage guidelines (paired samples t-test) as shown in Table (4), Relationships between the study's pre- and post-test results are highly significant. This result agrees with Al-Wily, M. A. S., and Aziz, A. R. (2020). indicates that the research group's pre- and post-test results exhibit extremely significant links with the oxygen administration procedures for pediatric patients. The study compares pretest and post-test knowledge scores using paired "t" tests [8].

2. The study's statistical differences (ANOVA)

The study's educational program's pre- and post-test statistical differences (ANOVA) in relation to the pediatric postural drainage guidelines as shown in Table (5). Relationships between the study's pre- and post-test results are highly significant. These results disagree with Abdullah, et al., (2020) It displays the condensed outcomes of many measurements The primary impact of assessing

results time at pre-test and post-test remained significant on changes in mean of NPC score in the ANOVA for beforehand and afterward intervention [9].

Part IV: The study's statistical Association relationships:

The study's statistical relationships between the nurses' demographic data and the learning outcomes as shown in Table (6), no significant relationships have been found among results of pretest and posttest results for sample with any of demographic variables. These results agree with Mohamed Thabet, et al., (2021) shown the relationship between the demographic features of nurses and their overall degree of knowledge. A significant association was discovered among overall knowledge score of nurses with their residency at P<0.034, education at P=0.209, and experience years at P=0.144. But when it came to their age and married status, there was no significant association[10].

The Conclusion:

Pediatric ward nurses at Mosul hospitals lack the necessary and proper knowledge about the pediatric postural drainage guidelines. Regarding the pediatric postural drainage guideline, there is a significant association among sample's pre- and post-test findings. The significant high association between the nurse's knowledge of the pediatric postural drainage guidelines and the research sample's pre- and post-test scores shows the effect of instructional program. The nurse's expertise and every demographic do not significantly association.

The Recommendations:

1. To improve the nurses' knowledge of this important issue, specialized programs, training courses, and seminars on pediatric postural drainage guidelines might be created and implemented in pediatric wards.
2. Hiring more nurses, particularly those with bachelor's grades in nursing, to staff pediatric wards in accordance with their qualifications.

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