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ORIGINAL RESEARCH

Nurses' Knowledge and Skills Regarding Care Bundle guideline in Mosul Hospitals

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ABSTRACT

Objectives: This study aimed to assess the knowledge levels and skills regarding care bundle guidelines among nurses in Mosul hospitals.

Methodology: A descriptive study was conducted at pediatric teaching hospitals in Mosul City from November 1, 2022, to May 1, 2023. A purposive sample of 60 nurses working in pediatric teaching hospitals was selected for the study. A questionnaire consisting of three parts was used, including demographic information, nurses' knowledge regarding care bundle guidelines (with four sections), and nurses' skills regarding care bundle guidelines (with four sections). The validity of the questionnaire was established through an expert panel review, and its reliability was assessed using a pilot study with a Pearson's correlation coefficient of r=0.786 ($p \leq 0.05$) for test-retest reliability.

Results: The knowledge results for nurses' understanding of care bundle guidelines indicated that 53.3% (32) of them had an unacceptable level of knowledge regarding infection prevention and control. There were no significant relationships between knowledge results and demographic variables, except for the general employment period ($p \leq 0.05$).

Conclusion: The researcher typically concludes that the nurses of the pediatric department in Mosul hospital do not have appropriate and adequate knowledge and skills regarding care bundle guideline. There is no significance correlation between the nurses' knowledge and all demographic characteristics except general employment period with nurses' knowledge.

Recommendations: Based on the findings, it is recommended to provide training courses and workshops for nurses in the pediatric departments of Mosul hospitals regarding care bundle guidelines.

Keywords: Nurses' knowledge, Skills, Care Bundle Guideline.

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INTRODUCTION

Hospital Acquired Infection (HAI) is a major challenge to the healthcare system and its prevention and management take a top priority for pediatric and neonatal patients' safety in acute-care hospitals worldwide through applying effective infection prevention and control (IPC) measures (Storr et al., 2017).

Inadequate environmental hygiene and low adherence to infection prevention and control measures are the leading causes of increased HAI rates "(Musu et al., 2017).

"Pediatric and neonatal patients are faced with increased risks of healthcare-associated infection and life-threatening conditions because of the low immunity to many pathogens, and exposure to many invasive devices, parenteral nutrition, prolonged hospitalization, and persistent processes in Intensive Care Units (ICU) are among the risk factors associated with Hospital Acquired Infection (HAI)"(Ibrahim et al., 2021).

"The bundle of care an efficient means to prevent and control (HAI),the main types of HAIs are Device associated infections (DAIs), including the following: Ventilator-Associated Pneumonia (VAP), Central Line-Associated Bloodstream Infection (CLABSI), and Catheter-Associated Urinary Tract Infection (CAUTI), Invasive devices in pediatric department are the utmost common threat factors for HAI and applying the bundle strategy is recommended for the avoidance of invasive device-related infections "(Ibrahim et al., 2021).

However, little research has been done on the prevalence of HAIs in pediatric and neonatal patients, this study focused on enhancing nurses' knowledge, skill and practice following the implementation of preventive bundle guidelines regarding HAI in pediatric departments, studies that assess nurses' knowledge, skill and practice regarding infection control standards in pediatric departments are also urgently required and recommended (Sharma et al., 2018).

Pediatric and neonatal nurses in intensive care units (ICUs) are in the best position to apply evidence-based guidelines to their performance because they provide nursing care to pediatric patients at their bedsides 24 hours a day, as a result, they play a critical role in the prevention of HAIs. However, pediatric nurses must be aware of the issue and knowledgeable about the most recent research evidence to follow such practices. inadequate knowledge(Richards et al., 2017).

The Importance of the Study

Healthcare-associated infection (HAI) in pediatric departments leads to a raise in morbidity and mortality rates, long stays in pediatric departments, and financial burdens in the community (Haque et al., 2018).

"The United States Centers for Disease Control and Prevention (USCDC) estimates that, on any given day, one in 31 hospital pediatric and neonatal patients and one in 43 nursing home residents has a healthcare-associated infection, the problem of infection and spread of Antimicrobial resistance (AMR) does not spare long-term care facilities where the European Centers for Disease Control (ECDC) estimated that 4.4 million episodes of healthcare-associated infections occur every year in the European Union (EU) and European Economic Area (EEA) countries, similarly, the CDC estimated that, on any given day, one in every 43 nursing home residents has HAIs "(Who Organization, 2022).

"bundle care guidelines are used to equip the nurses with proper knowledge and skills in the field of infection control. Effective application of bundles of care for ensuring that evidence-based practice is delivered and improves the quality and safety of pediatric department care when applied correctly. Further research is recommended to enhance the elements of the bundles and to evaluate new applications for them" (Lachman and Yuen 2009).

AIMS OF THE STUDY

1. To assess the nurses' knowledge levels regarding Care bundle guidelines in Mosul hospitals.
2. To measure the nurses' skill levels regarding Care bundle guidelines in Mosul hospitals.
3. To find out the relationships between the socio-demographic variables and the nurses' knowledge

level and skills regarding Care bundle guideline in Mosul hospitals.

METHODOLOGY

Design of the study: A descriptive study was carried out at pediatric teaching hospitals in Mosul City to assess the nurse's knowledge level and skills regarding care bundle guidelines from 1st of November / 2022 till 1st of May / 2023.

Sample of the study: the selection of the sample was using the non-probability (Purposive) sample that was chosen for the current study. The study sample consisted of (60) nurses, (60) nurses working in the Al-Khansaa Teaching Hospital, Ibn Al-Atheer Teaching Hospital, Ibn Sina Teaching Hospital, Al-Batol Teaching Hospital, and General Mosul Hospital.

Study Tool: The questionnaire was constructed and provided for nurses to assess their knowledge and skills which consists of three parts. The first part concern demographic information, while another part was contained the nurses' knowledge regarding the Care bundle guideline and contains five sections. The last third part was contained the nurses' skills regarding the Care bundle guideline and contained five sections". "The estimated evaluation of the nurses' knowledge and skills are failure = (0-1) answer knowledge score, not acceptable = (2) answer knowledge score, acceptable = (3) answer knowledge score, good = (4) answer knowledge score, Excellent =(5) answer knowledge score. But the estimate for total knowledge and skills are failure =(0-4) answer knowledge score, not acceptable =(5-8) answer knowledge score, acceptable =(9-12) answer knowledge score, good =(13-16) answer knowledge score, excellent =(17-20) answer knowledge score.

Validity of the study: The validity of the questionnaire tool was established through a panel of experts whom specified the content clarity, relevancy, and adequacy.

Reliability of the study: To evaluate statistically the reliability of instruments (the questionnaire tool), the pilot study was carried out during the period from 27th November 2022 to 8 December 2022. Non-randomly (10) nurses from pediatric department in Mosul hospitals (this sample was excluded from the original study sample). The Pearson's coefficient of correlation result is (r= 0.786) and are significant at $p \leq 0.05$ level was used to estimate the scale (test-retest) by using SPSS version 26.

Data collection: The data were collected from the pediatric department in Mosul hospital. The study sample consisted of (60) nurses, nurses working in the Al-Khansaa Teaching Hospital, Ibn Al-Atheer Teaching Hospital, Ibn Sina Teaching Hospital, Al-Batol Teaching Hospital, and General Mosul Hospital, 1st of November / 2022 to the 1st of April / 2023.

RESULTS:

Table (1): The Demographic Variables of the Respondents in the Study

The Demographic Variables		Items	The sample	
			F.	%
1.	**Age**	(24-27) Years	**36**	**60.0**
		(28-31) Years	16	26.7
		(32-35) Years	4	6.7
		(36-39) Years	4	6.7
2.	**Gender**	Male	22	36.7
		Female	**38**	**63.3**
3.	**Level of education**	Secondary degree	10	16.7
		Diploma degree	20	33.3
		Bachler degree	**30**	**50.0**

4.	**General years of experience**	(1-5)	**50**	**83.3**
		(6-10)	6	10.0
		(11-15)	4	6.7
5.	**The period in the current unit**	(1-5)	**54**	**90.0**
		(6-10)	4	6.7
		(11-15)	2	3.3
6.	**Training courses**	Yes	16	26.7
		No	44	73.3
Total			60	100.0

F. = Frequency, % = Percentage

Table (1) presents the demographic characteristics of the study sample, that 60% (36) of the sample at age (24-27), 63.3% (38) of the sample are female, 50% (30) of the sample at Bachler stage of educational level, 83.3% (50) of the sample at (1-5) years of general employments period, 90% (54) of the sample at (1-5) years of the period in the current unit, 73.3% (44) of the sample not having training courses related to study subject.

Table (2): Statistical Knowledge Results for Nurses in regarding care bundle guideline

Knowledge		Estimate	F.	%
1	**Nurses' knowledge regarding infection prevention and control**	Fail	16	26.7
		Unacceptable	**32**	**53.3**
		Acceptable	12	20.0
		Good	0	0.0
		Excellent	0	0.0
2	**Nurses' knowledge regarding ventilator-associated pneumonia**	Fail	6	10.0
		Unacceptable	**34**	**56.7**
		Acceptable	20	33.3
		Good	0	0.0
		Excellent	0	0.0
3	**Nurses' knowledge regarding catheter-associated bloodstream infection**	Fail	18	30.0
		Unacceptable	**30**	**50.0**
		Acceptable	10	16.7
		Good	2	3.3
		Excellent	0	0.0
4	**Nurses' knowledge regarding catheter-associated urinary tract infection**	Fail	22	36.7
		Unacceptable	**26**	**43.3**
		Acceptable	10	16.7
		Good	2	3.3
		Excellent	0	0.0
Total			**60**	**100.0**

Failure = (0-1) answer knowledge score, Not acceptable = (2) answer knowledge score, Acceptable = (3) answer knowledge score, Good = (4) answer knowledge score, Excellent = (5) answer knowledge score. F=Frequency, %= percentage.

Table (2) shows the statistical knowledge results for nurse's in concerning the care bundle guideline, that Nurses' knowledge regarding infection prevention and control 53.3% (32) of them at not acceptable level. The normal values and nursing consideration Nurses' knowledge regarding ventilator-associated pneumonia are 56.7% (34) of them at an acceptable level. Nurses' knowledge regarding catheter-associated bloodstream infection are 50% (30) of them at unacceptable level. The Nurses' knowledge regarding catheter-associated urinary tract infection are 43.3% (26) of them at unacceptable level.

Table (3): Statistical Skills Results for Nurses regarding care bundle guideline.

	Skills	Estimate	F.	%
1.	**Nurses' skills regarding infection prevention and control**	Fail	**30**	**50.0**
		Unacceptable	22	36.7
		Acceptable	8	13.3
		Good	0	0.0
		Excellent	0	0.0
2.	**Nurses' skills regarding ventilator-associated pneumonia**	Fail	18	30.0
		Unacceptable	**22**	**36.7**
		Acceptable	16	26.7
		Good	4	6.7
		Excellent	0	0.0
3.	**Nurses' skills regarding catheter-associated bloodstream infection**	Fail	16	26.7
		Unacceptable	**26**	**43.3**
		Acceptable	16	26.7
		Good	2	3.3
		Excellent	0	0.0
4.	**Nurses' skills regarding catheter-associated urinary tract infection**	Fail	20	33.3
		Unacceptable	**30**	**50.0**
		Acceptable	10	16.7
		Good	0	0.0
		Excellent	0	0.0
	Total		**60**	**100.0**

Failure = (0-1) answer knowledge score, Not acceptable = (2) answer knowledge score, Acceptable = (3) answer knowledge score, Good = (4) answer knowledge score, Excellent = (5) answer knowledge score. F=Frequency, %= percentage

The table (3) presents the statistical skills results for nurse's regarding care bundle guideline . That Nurses' skills regarding infection prevention and control are 50% (30) of them at Fail level, Nurses' skills regarding ventilator-associated pneumonia t are 36.7% (22) of them at not acceptable, Nurses' skills regarding catheter-associated bloodstream infection are 43.3% (26) of them at unacceptable level, Nurses' skills regarding catheter-associated urinary tract infection are 50 % (30).

Table (4): Statistical Total Knowledge and Skills Results for Nurses in Concerning the care bundle guideline

	Items	Estimate	F.	%
1.	**Knowledge**	Fail	4	6.7
		Not Acceptable	**34**	**56.7**
		Acceptable	22	36.7
		Good	0	0.0
		Excellent	0	0.0
2.	**Skills**	Fail	4	6.7
		Not Acceptable	**40**	**66.7**
		Acceptable	14	23.3
		Good	2	3.3
		Excellent	0	0.0

Failure = (0-4) answer knowledge score, Not acceptable = (4-8) answer knowledge score, Acceptable = (9-12) answer knowledge score, Good = (13-16) answer knowledge score, Excellent = (17-20) answer knowledge score. F=Frequency, %= percentage

Table (4) shows the statistical total knowledge and skills results for nurses regarding care bundle guideline. The knowledge results are 56.7% (34) of them at not acceptable level, and the results of the skill are 66.7 % (40) of them also at not acceptable level.

Table (5): Statistical Relationships of Nurses between the Demographic Variables with Results of the Knowledge

	The Demographic Variables	Knowledge	
		P. value	Sig.
1	**Age**	0.374	NS
2	**Gender**	0.147	NS
3	**Level of education**	0.421	NS
4	**General employments period**	**0.013**	**S**
5	**The period of working in the current hospital**	1.000	NS
6	**Training courses**	0.145	NS

Relationship is significant at P. value ≤ 0.05 level.

Table (5) presents the statistical relationships of nurses between the demographic variables with results of the knowledge. There are not significant relationships between the knowledge results and all the demographic variables except general employments period (0.013) at P. value ≤ 0.05 level.

DISCUSSION

Table (1) presents the demographic characteristics of the study sample, that 60% (36) of the sample at age (24-27), 63.3% (38) of the sample are female, 50% (30) of the sample at bachler stage of educational level, 83.3% (50) of the sample at (1-5) years of general employments period, 90% (54) of the sample at (1-5) years of the period in the current unit, 73.3% (44) of the sample not having training courses related to study subject"

Table (2) shows the statistical knowledge results for nurses regarding the care bundle guideline, that Nurses' knowledge regarding infection prevention and control 53.3% (32) of them at not acceptable level. Nurses' knowledge regarding ventilator-associated pneumonia are 56.7% (34) of them at an acceptable level. Nurses' knowledge regarding catheter-associated bloodstream infection are 50% (30) of them at unacceptable level. The Nurses' knowledge regarding catheter-associated urinary tract infection are 43.3% (26) of them at unacceptable level. This result agree with Kanaka R and Padma K (2016) that shows among 30 sample of nursing students 5 (16.7%) have inadequate knowledge, 15 (50%) have moderately adequate knowledge regarding and, 10 (33.3%) have adequate knowledge regarding pediatric oxygenation.

The table (3) presents the statistical skills results for nurse's regarding care bundle guideline. That Nurses' skills regarding infection prevention and control are 50% (30) of them at Fail level, Nurses' skills regarding ventilator-associated pneumonia t are 36.7% (22) of them at not acceptable, Nurses' skills regarding catheter-associated bloodstream infection are 43.3% (26) of them at unacceptable level, Nurses' skills regarding catheter-associated urinary tract infection are 50 % (30). These results agree with Aloushan1A. et al. (2019) that shows and conclude in the study was practices 4.55±1.76, the main factors which were associated with poor practice were workload and lack of local guidelines12.

Teeee (4) shows the statistical total knowledge and skills results for nurses regarding care bundle guideline. The knowledge results are 56.7% (34) of them at not acceptable level, and the results of the skill are 66.7 % (40) of them also at not acceptable level. This result disagrees with Didi U. and Victoire (2017) that shows among 73.8 % of the nurses' sample had a level of knowledge classifiable as poor, 21.1% moderate and 3.1% good. Also, that explained

that nurses' sample had in adequate nurses' knowledge regarding oxygen administration.

Table (5) presents the statistical relationships of nurses between the demographic variables with results of the knowledge. There are not significant relationships between the knowledge results and all the demographic variables except general employments period (0.013) at P. value ≤ 0.05 level. This result agrees with Paswan V (2018) he explains in his study there was non-significant association between ages, gender, with the result of the study.

CONCLUSION

According to the consequences of the present study, the researcher typically concludes that the nurses of the pediatric department in Mosul hospital do not have appropriate and adequate knowledge and skills regarding care bundle guideline. There is no significance correlation between the nurses' knowledge and all demographic characteristics except general employment period with nurses' knowledge.

RECOMMENDATIONS:

1. Ministry of health, Nineveh Health Directorate to enhance Training courses and workshops for nurses of the pediatric department in Mosul hospitals regarding care bundle guideline
2. The head nurses of the pediatric department an application of educational posters in the nurse's office related to care bundle guideline for increasing knowledge and skills of the nurses.

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