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AN EXPERIMENTAL STUDY ON EFFECTIVENESS OF BETADINE VERSUS NORMAL SALINE FOR CATHETER CARE IN REDUCING THE OCCURRENCE OF URINARY TRACT INFECTION AMONG PATIENTS WITH INDWELLING CATHETERS IN SELECTED HOSPITALS AT BENGALURU

Ms. Meghashree V [1], Mrs. Mamatha G C [2]

Lecturer[1], Professor[2], Department of Medical Surgical Nursing, College of Nursing Sciences, Dayananda Sagar University, Bengaluru.

ABSTRACT

A nosocomial infection is also known as a hospital-acquired infection, is an infection which is developed by the hospital environment, such as one acquired by a patient during a hospital visit or one developing among hospital staff. Such infections include fungal and bacterial infections and are aggravated by the reduced resistance of individual patient. Urinary tract infections are responsible for over a third of all hospital acquired infections. Most of these (at least 80%) follow some type of invasive procedures or instrumentation of the urinary tract, usually catheterization. Urinary tract infections associated with urinary catheters is the leading cause of secondary nosocomial bacteremia. Approximately 20% of hospital- acquired bacteremia are due to indwelling catheters and the mortality associated with this condition is about 10%. At this point it was important to prevent the occurrence of catheter associated urinary tract infection through a proper catheter care and to promulgate the best solution to be used for catheter care among patients with indwelling catheter in preventing catheter associated urinary tract infections. **Methods:** The research design used in the study was randomized block design. Non-probability purposive sampling technique was used for selection of samples. The data was collected from 30 catheterized patients using CAUTI checklist. Post test was conducted after 5 days of catheter care to know the incident rate of Urinary Tract Infection using the same CAUTI checklist and urine microscopy reports. **Results:** The overall

mean percentage in the pre test and post test was, In Betadine group (Experimental group A) the pre test mean percentage is 37.39% and the post test mean percentage is 75.65%. Enhancement in mean percentage is 38.26%. with the significant t value 6.24 at 0.05 level. In Normal saline group (Experimental group B) the pre test mean percentage is 37.39% and the post test mean percentage is 76.15% the Enhancement in mean percentage is 38.76% with the significant t value 6.69 at 0.05 level. There is no significant association found between the incident rates of Urinary Tract Infection and the selected demographic data. The study findings shows that normal saline is more effective when compared with betadine in preventing the occurrence of urinary tract infection among catheterized patients.

INTRODUCTION

According to recent National Nosocomial Infections Surveillance (NNIS) system report, nosocomial UTIs rates ranged from 3 - 7% of every 1000 urinary catheterized patients. (NNIS report, 2011).

Most hospital-acquired UTIs are associated with catheterization, and most occur in patients without signs or symptoms referable to the urinary tract. Catheter associated bacteriuria is the most frequent health care associated infection worldwide, accountingfor up to 40% of hospital-acquired infections

Urinary tract infections (UTI) associated with urinary catheters is the leading cause of secondary nosocomial bacteremia. Approximately 20 percent of hospital- acquired bacteremia acquired due to catheter associated urinary tract infection and the mortality associated with this condition is about 10 percent.

OBJECTIVES OF THE STUDY

- To assess the incidence rate of urinary tract infection among patients receiving cathetercare with betadine.
- To assess the incidence rate of urinary tract infection among patients receiving cathetercare with normal saline.
- To compare the incidence rates of urinary tract infection among patients receivedcatheter care with betadine and those who received catheter care with normal saline.
- To find the association between incidence rates urinary tract infection with selectedsocio demographic variables.

METHOD

RESEARCH APPROACH

An experimental research approach was used in this study

RESEARCH DESIGN

Randomized block design was use in this study

RESEARCH SETTING

The study was conducted at PMSSY hospital in Bengaluru

POPULATION

The target population of the study is adult patients with indwelling catheters

The accessible population in this study was adult patients who are above the age group of 20 years at selected hospitals Bengaluru.

SAMPLE

Adult patients who are above the age group of 20 years at selected hospitals Bengaluru.

SAMPLE SIZE

The sample of this study comprised of 30 patients with indwelling catheter insitu from different wards of PMSSY Hospital, Bangalore.

SAMPLING TECHNIQUE

Non-probability purposive sampling technique was used to select the samples for the study

INCLUSION CRITERIA

- Patients those who are above the age of 20 years
- Patients those who are catheterized more than 24 hours.
- Catheterized patients who are available at the time of Data collection.

EXCLUSION CRITERIA

- Patients those who are not willing to participate in the study
- Patients those who are critically ill
- Pediatric patients

SELECTION AND DEVELOPMENT OF RESEARCH TOOL

Standard Catheter associated Urinary Tract Infection assessment checklist was selected for the study and was used to assess the symptoms of urinary tract infection and urine analysis and microscopic reports as a confirmation test for the presence of Urinary Tract Infection

DESCRIPTION OF THE TOOL:

The tool for data collection is structured in four sections

Section I- demographic profile; which includes age, gender, religion, marital status, education, occupation, habits, diet of the patient and total fluid intake per day

Section II- Clinical profile; which includes the details about patient's diagnosis, indication for catheterization, duration of catheterization, previous history of catheter associated urinary tract infection and the area of treatment (ward)

Section III- CAUTI assessment checklist; which includes symptoms of catheter associated urinary tract infection.

Section IV- Urine microscopy report

RESULTS AND FINDINGS

The study results show that, the catheter care was effective in the both groups that is betadine group and normal saline group. Whereas Normal saline is better than betadine in preventing the catheter associated urinary tract infection as per the present study.

There was significant enhancement in the effectiveness of catheter care withbetadine and normal saline.

The analysis of mean and SD scores of the catheter care is In betadine group (exp.Group A) the pre test mean % score is 37.39% the post test score is **75.65%** with the enhancement of pre test and post test is 38.26%.In the normal saline group (exp. Group B) the pre test mean % score is 37.39%the post test mean % score is **76.15%** with the enhancement of pre test and post testis 38.76%

The study proved that there is significant difference in the incidence rates of UTI between two groups of catheter care. And there is no significant association between the incidence rates of UTI and the selected socio demographic data.

Table 1: **ANALYSIS AND INTERPRETATION OF DEMOGRAPHIC DATA**

Sl.No.	Demographic variable	Betadine group (exp. Group A) N=15		Normal saline group (exp. Group B) N=15	
		Frequency	Percentage%	Frequency	Percentage %
1.	**Age in years**				
	20- 30 years	3	20%	3	20%
	31- 40 years	6	40%	5	33.33%
	41- 50 years	3	20%	4	26.67%
	Above 50years	3	20%	3	20%
2.	**Gender**				
	Male	6	40%	5	33.33%
	Female	9	60%	10	66.67%
3.	**Religion**				
	Hindu	8	53.33%	11	73.34%
	Muslim	5	33.34%	2	13.33%
	Christian	2	13.33%	2	13.33%
	Others	0	0	0	0
4.	**Marital status**				
	Married	15	100%	15	100%

	Unmarried	0	0	0	0
5.	**Education**				
	No formal education	2	13.33%	2	13.33%
	Primary education	11	73.34%	11	73.34%
	Graduate	2	13.33%	2	13.33%
6.	**Occupation**	12	80%	13	86.67%
	Employed				
	Unemployed	3	20%	2	13.33%
7.	**Habits**				
	Smoking	2	13.33%	2	13.33%
	Alcohol	4	26.67%	3	20%
	Tobacco chewing	3	20%	2	13.33%
	None	6	40%	8	53.34%
8.	**Diet**				
	Vegetarian	0	0	2	13.33%
	Mixed type ofdiet	15	100%	13	86.67%
9.	**Fluid intake**				
	1000ml-2000ml	3	20%	5	33.33%
	2001ml-3000ml	6	40%	5	33.33%
	3001ml-4000ml	6	40%	5	33.33%
	Above4000ml	0	0	0	0

Table 2: ANANLYSIS AND INTERPRETATION OF CLINICAL SYMPTOMS

Clinical symptoms	Betadine group (exp. Group A) N=15		Normal saline group (exp. Group B) N=15	
	Frequency	Percentage %	Frequency	Percentage %
Fever	4	26.66%	3	20%
redness around meatus	4	26.66%	3	20%
Pruritis	4	26.66%	3	20%
4. swelling around meatus	-	-	2	13.33%
5. suprapubic tenderness	5	33.33%	4	26.66%
6. pus discharges	-	-	-	-
7. cloudy urine	4	26.66%	3	20%
8.burningsensation	5	33.33%	6	40%

Table 3: ANALYSIS AND INTERPRETATION OF URINE MICROSCOPIC FINDINGS OF SAMPLES

Urine microscopy	Betadine group (exp. Group A) N=15		Normal saline group (exp. Group B) N=15	
	Frequency	Percentage %	Frequency	Percentage %
Epithelial cells	5	33.33%	3	20%
Pus cells	4	26.66%	3	20%
RCB	2	13.33%	1	6.66%
Bacteria	4	26.66%	3	20%

TABLE :4 COMPARISON OF OVERALL PRE-TEST AND POST-TEST MEAN PERCENTAGE SCORES/ EFFECTIVENESS OF CARE IN BETADINE GROUP (EXP. GROUP A) AND NORMAL SALINE GROUP (EXP. GROUP B)

Groups	Values	Mean	SD	Mean%	Paired t test value
Betadine group (exp. Group A)	Pre test	8.6	1.85	37.39	**6.24**
	Post test	17.4	5.18	75.65	
	Enhancement	8.8	3.33	38.26	
Normal saline group (exp.Group B)	Pre test	8.6	1.83	37.39	**6.69**
	Post test	17.9	5.68	76.15	
	Enhancement	9.3	3.83	38.76	

The statistical paired 't' test indicates the enhancement in the mean score is found to besignificant at 0.05 level (at 28 df=2.05) for all the aspects under the study.

Table: 5 ASSOCIATION BETWEEN INCIDENCE RATES OF URINARY TRACT INFECTION AND THE SELECTED DEMOGRAPHIC VARIABLES

Sl.no.	Demographic variables	Frequency		DF	Chi square X^2	Table value
		Betadine group	Normal saline group			
1	**Age in years**					
	20- 30 years	3	3			
	31-40 years	6	5	3	0.472	7.84
	41-50 years	3	4			
	Above 50 years	3	3			
2	**Gender**					
	Male	6	5	1	0.059	3.84
	Female	9	10			
3	**Marital status**					
	Married	15	15	1	0	3.84
	Unmarried	0	0			
4	**Education**					
	No formal education	2	2	2	1.216	5.99
	Primary education	11	11			
	Graduate	2	2			
5	**Occupation**					
	Employed	12	13	2	0.193	5.99
	Unemployed	3	2			
6	**Habits**					
	Smoking	2	2			

	Alcohol Tobacco chewing None	4 3 6	3 2 8	3	2.267	7.84
7	**Diet** Vegetarian Mixed type of diet	 0 15	 2 13	1	0	3.84
8	**Fluid intake** 1000 – 2000 ml 2001 – 3000 ml 3001 – 4000 ml Above 4000 ml	 3 6 6 0	 5 5 5 0	3	0.188	7.84

***significant at p < 0.05 level**

The above table shows that there is no significant association between the incident rates of urinary tract infection and the selected demographic data. Hence the hypothesis (H2) is rejected at p<0.05 level.

DISCUSSION

Catheter care with betadine and normal saline both were effective in bringing down the risk of occurrence of urinary tract infection in the catheterized patients, normal saline was found to be more effective compared with the betadine in preventing the occurrence of catheter associated urinary tract infection according to this study.

RECOMMENDATION;

- A study can be conducted with large number of samples.
- A study can be conducted at different settings
- A study can be conducted to prevent the other nosocomial infections among the patients admitted in ICUs

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