Research Article

Effectiveness of Isotonic Saline Nasal Care on Nasal Hygiene

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ABSTRACT

The risks of acquiring nosocomial infection are three times higher in Intensive Care Unit than any other departments. The respiratory tract is the most common site of infection. Nasal cleansing is thus the first means of prevention against complication. The study was conducted with the aim to determine the effectiveness of isotonic saline nasal spray on nasal hygiene among patients in intensive care unit. Samples were selected from the Intensive care unit who met the inclusion criteria and assigned 15 samples each for the experimental and control group. The pretest assessment for mucus secretion was done by performing an anterior rhinoscopy for both the groups. A saline nasal care where isotonic saline nasal spray was administered 4 times a day for 1 week for the study group whereas the control group received routine care. Post assessment was done by performing an anterior rhinoscopy for the both the groups at the end of intervention. The results of the study shows that an isotonic saline nasal spray has a significant effect in the mucus secretions ranged from 3.4 ± 0.60 to 1.6 ± 0.50 in the experimental group and there is a significant difference was also found between the experimental and control group at $p<0.05$. The results of the study concluded that there is an improvement in nasal hygiene among intensive care unit patients after the administration of isotonic saline nasal spray and can be practiced as a daily routine nasal care.

Keywords: isotonic saline nasal spray, anterior rhinoscopy, nasal hygiene, intensive care unit, nosocomial infection.

INTRODUCTION

The respiratory tract is the most common site of infection by pathogens [1]. The respiratory tract comes in direct contact with the physical environment and is exposed to airborne microorganisms which become a frequent site of infection [2]. A wide range of organisms can infect the respiratory tract, like viruses, bacteria, fungi and parasites [4]. The risks of acquiring nosocomial infection are three times higher in Intensive Care Unit (ICU) than any other departments. The healthcare-associated infections are a major source of morbidity, mortality and also monetary burden on the patients [5]. The Center for Disease Control and Prevention estimates that 10% acquired some kind of nosocomial infection of all the patients admitted in hospitals. Annually, approximate of 40 million patients are admitted to hospitals, about 2 to 4 million people may develop after entering the hospital [6].

The care of critically ill patients in the intensive care unit (ICU) is a primary component of health care. Intensive care units create potential for recovery in patients who are critically ill. Critical care units increasingly use high technology medicine for patient care like hemodynamic monitoring, parenteral nutrition, ventilator support, hemodialysis, and a used of powerful drugs. The use of high-tech medicine service has brought in its wake the dangerous and frequent complication of nosocomial infections [7]. The healthcare staff usually performs oral hygiene and nasal hygiene routinely in patients who are hospitalized where nasal hygiene with saline solution or with other medicated solution is sometimes being neglected for the patients in ICU[8]. The factors like hypoxia or acidosis and hypotension may lead to proteins proteolysis secreted in the nasal mucosa causing antibacterial effects [9].

Patients in Intensive Care Unit had undergone invasive procedures such as nasotracheal intubation or nasal suctioning or nasogastric feeding tube placement or rhinoscopy. The use of high-tech medicine service has brought in its wake the dangerous and frequent complication of nosocomial infections [10]. Nasal cleansing is one of the prominent care, a simple act of hygiene but a real aspect of daily healthcare. It offers protection to the entire respiratory system preventing the spread of viruses and bacteria to the lower respiratory tract such as the bronchi, bronchioles [11].

Nasal cleansing is thus the first means of prevention against complications. Often nasal care is being neglected by the health care personnel for the patients, which can prevents spreading of infections and complications for who are already critically ill. Providing a nasal care is a very simple method which can be performed while giving the daily routine care by the health care staff. Using of nasal spray or drops can prevent the spread or accumulation of the microorganism in the nasal cavity [12]. With this background the study was conducted to determine the effect of saline nasal care on nasal hygiene among patients in the intensive care unit.

MATERIALS AND METHODS

The research design deployed for the study was quasi experimental with pretest – posttest experimental and control group design. Thirty samples who met the inclusion criteria were selected by using convenience sampling technique from intensive care unit and allocated 15 samples each for experimental control group. An authorized permission was taken from the Ethical Committee of the Institution and the informed consent was obtained from the patients and the care giver. The pre-test assessment of mucus secretions was done by performing an anterior rhinoscopy using a nasal speculum. A saline nasal care where isotonic saline nasal spray or drops were administered 2 drops each nostril 4 times a day for 1 week for the experimental group whereas the control group received routine care. Post assessment was done by performing an anterior rhinoscopy for both the experimental and control group at the end of one week after the intervention. Confidentiality was maintained throughout the procedure. Data were analyzed using both descriptive and inferential statistics.

RESULTS AND DISCUSSION

Table 1: Frequency and percentage distribution of pretest and posttest of nasal hygiene among intensive care unit patients in experimental and control group.

Nasal hygiene	Interpretation	Experimental group (n=15)				Control group (n=15)			
		Pretest		Post Test		Pretest		Post Test	
		No.	%	No.	%	No.	%	No.	%
Mucus Secretion assessment	Absent	0	0	7	46.66	0	0	0	0
	Serosal	1	6.66	7	46.66	1	6.66	2	13.33
	Seropurulent	7	46.66	1	6.66	8	53.33	8	53.33
	Purulent	7	46.66	0	0	6	40	5	33.33

The Table 1 depicts that with regard to mucus secretion assessment, 7(46.66%) had purulent, 7(46.66%) had seropurulent and 1(6.66%) had serosal in the pretest whereas in the post test, 7(46.66%) had no secretion, 7(46.66%) had serosal and 1(6.66%) had seropurulent in experimental group.

In control group, with regard to mucus secretion assessment 8(53.33%) had purulent, 6(40%) had seropurulent and 1(6.66%) had serosal in the pre-test whereas in the posttest, 2(13.33%) had serosal and 8(53.33) had seropurulent and 5(33.33%) had purulent.

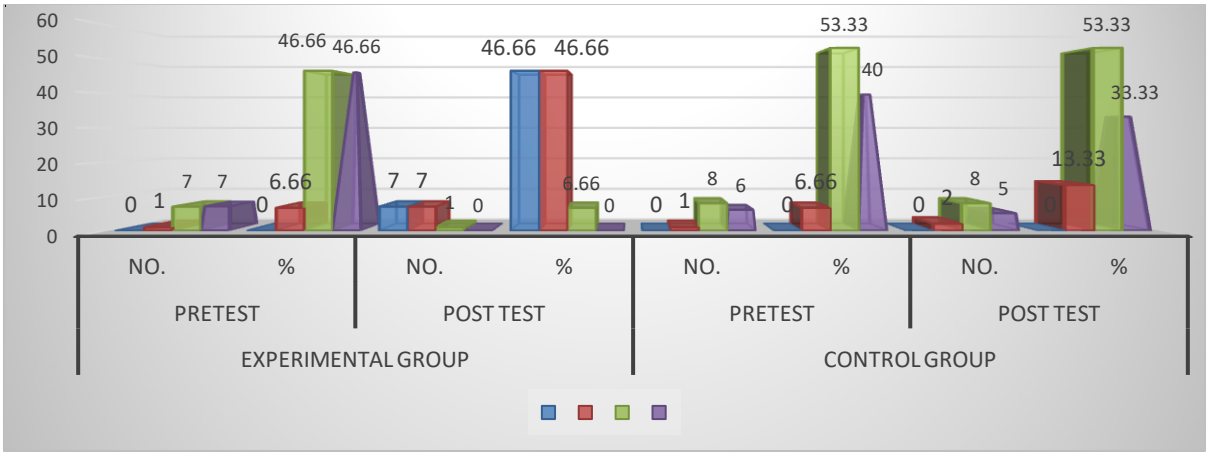

Figure 1: Frequency and percentage distribution of pretest and posttest of nasal hygiene among intensive care unit patients in experimental and control group.

Table 2: Comparison of pretest and posttest level of nasal hygiene among Intensive care unit patients in the experimental group.

Variables	Pretest		Post Test		Paired 't' Value
	Mean	S.D	Mean	S.D	
Nasal hygiene	3.4	0.60	1.6	0.50	**t=7.282 p=0.005 S***

*p<0.05, S – Significant

The Table 2 shows that the pretest mean score of nasal hygiene in the experimental group was 3.4 ± 0.60 and posttest mean score was 1.6 ± 0.50. The calculated paired 't' value of t = 7.282 was found statistically significant at p<0.05 level.

Table 3: Comparison of post-test level of nasal hygiene among intensive care unit patients between the experimental and control group.

Variables	Experimental Group		Control Group		Unpaired 't' Value
	Mean	S.D	Mean	S.D	
Nasal hygiene	1.6	0.50	3.2	1.85	**t=3.404 p=0.005 S***

*p<0.05, S – Significant

The table 3 shows that the posttest mean score of nasal hygiene in the experimental group was 1.6 ± 0.50 and posttest mean score of nasal hygiene in the control group was 3.2 ± 1.85. The calculated unpaired't' value of t = 3.404 was found statistically significant at p<0.05 level.

The study findings revealed that majority of the intensive care unit patients had purulent and seropurulent mucus secretion which can be due to the long duration of stay in the intensive care unit, where the patients are on ventilator assistance or with nasogastric tube insertion. The findings revealed that the isotonic saline nasal care on nasal hygiene implemented among the intensive care unit patients in the experimental group was found effective in improving the nasal hygiene in experimental group than the control group patients. The findings of the present study supported by Orhan Ozturan (2018) who found that after the saline nasal spray, the nasal secretion and blocked nose was significantly lower and also concluded that a daily nasal spray with saline can improve the nasal hygiene in patients admitted in Intensive Care Unit [13]. Similarly, Liselott Tano et al (2013) conducted a study on a daily nasal spray with saline prevents symptoms of rhinitis. During the spray period the number of days with nasal secretion and/or blocked nose was significantly lower than that during the observation period. The study findings concluded that a daily nasal spray with saline can prevent nasal symptoms of common cold in a population of healthy adults [14]. Rabago D et al (2014) who had conducted a study to investigate the effect of nasal drops and spray on nasal hygiene among critically ill patients and showed significant improvement in the experimental group than the control group. The study was concluded that the used of saline nasal drops and spray are effective for nasal hygiene [15]. These study findings are accordance with the present study however the result of the study lacks in microbiological investigation of nasal swap. Hence the investigators planned to conduct further study measuring the related microbiological investigations.

CONCLUSION

The study finding shows that isotonic saline nasal care was effective for nasal hygiene in intensive care unit patients. Performing an isotonic saline nasal care is a very simple method which can be performed while giving the daily routine care by the health care staff thereby can prevent the spread or accumulation of the microorganism in the nasal cavity further preventing infections and complications for the critically ill patients. Performing a proper isotonic saline nasal care can help improve the quality of the patients.

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