ORIGINAL ARTICLE

The Study of the observance status of tracheostomy standard principles by nurses in selected teaching hospitals in Tehran

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ABSTRACT

Tracheostomy is one of the most prevalent surgical methods in the intensive care unit for keeping airway open for the patient requiring respiratory support. According the performed studies, the occurrence rate of complications resulted from tracheostomy has been reported from 6% to 66%. So the way of implement of standard care by nurses is effective in surgical success and reduces complications after surgery. Therefore, this study has been performed by the goal of determining the observance status of tracheostomy standard principles by nurses in selected teaching hospitals in Tehran. This study is a descriptive study that has been performed by fully enumerative sampling method on 42 nurses working in in selected teaching hospitals in Tehran in 2013. For data collection, it was used a checklist made by researcher which the content validity and reliability of the methods was measured through the observers methods. For data collection, the researcher attended in different working shifts in selected hospitals and in case tracheostomy care, an evaluation checklist of tracheostomy care which was selected at hand by the researcher was completed for each nurse at least three times. Then, the demography questionnaire was completed by those nurses. At the end, data were analyzed with statistical tests using the software Aspyas 17. Among 42 surveyed nurses, 38 individuals (90.5%) were women and 4 individuals (9.5%) were male. The mean age of samples was 30.81. Most cases were contractual employees (40.5%) with no history of passing the tracheostomy course (83.3%), with experiences less than 10 years (83.3%). According to statistics, only 2 patients (4.8%) performed tracheostomy care in standard form. In the study of evaluated items in evaluation checklist of tracheostomy care it becomes clear that none of nurses used hydrogen peroxide and surgery gowns for patient care and 21.4% of samples used sterile gloves and 26.1% of nurses washed their hands properly before doing care.More attention after tracheostomy in selected hospitals in Tehran is in accordance with standard operating procedures. It seems necessary to do some arrangements by the directors regarding the use of standards in the care of patients with tracheostomy.

Keywords: *tracheostomy, standard care, tracheostomy care*

INTRODUCTION

Tracheostomy is one of the most prevalent surgical methods in the intensive care unit which has been done under the general or local anesthesia. [1]. the purpose of doing tracheostomy is to keep the respiratory airway of patient by making a hole on the wall of trachea.

Tracheostomy as other surgeries can lead to complications that include bleeding, tracheostomy tube obstruction, infection and tracheitis. With standard care, these complications can be prevented [2]. According to the results of the study of Anil and Lalwani in 2008, doing care after tracheostomy surgery is very important. In case of using aseptic techniques during surgery and nursing care after surgery, it will be prevented the development and progression of infection, pneumonia and lung abscess [3].

With the respect to that the nurse is a health care professional who typically spends the most time with patients [4], therefore, from the perspective of legal and moral, he/she should be accountable for the

quality of care provided [5], thus enhancing the quality of work for doing care is the most important factor which can be accelerated patient's recovery [6].

Some Part of the problems with the tracheotomy and substandard and inadequate care can be due to improper implementation of nurses and other part of the physicians [7] and these harmful events are due to reception of health and medical care which leads to death and injuries which can be prevented by standard methods [8]. So the nurses have a vital role in sustaining and improving health care and they are the main foundation of improvement process of the care quality which is very fruitful in achieving the goals of care [9].

Although, it is possible the employees are given several guidelines to improve the quality of tracheostomy care as the guide in tracheostomy care but some employees of these units may have inadequate required skills and knowledge in the care of these patients. Researches related to quality of care and following up of adult patients undergoing tracheostomy who have been transferred to the public unit are very limited and even the complications related to the illness and even their death is still high [10]. Thus our aim of this study is a comparative investigation of the degree of conformity of patients' care with tracheostomy by nurses in selected hospitals in Tehran with standards as well as the study of potential barriers affecting the standard of tracheostomy care by nurses.

MATERIALS AND METHODS

This study is a descriptive study that has been performed by fully enumerative sampling method on 42 nurses working in in selected teaching hospitals in Tehran in 2013. In this study, the data collection instrument including the checklist made by researcher and that is "evaluation checklist of tracheostomy care" which was completed by the researcher. The content validity and reliability between observers was used to determine the validity which its rate was 95.8% which is over 70%.

It was used " Yes- No and Not required," rating method to determine the rating of each care; score 1for each feature of the checklist which seemed desirable in the view point of the researcher and score -1 for undesirable feature and zero for not required items were considered. At the end, the total score of evaluation checklist of tracheostomy care was calculated based on percentage and were examined by statistical tools. And desirable feature and errors or defects existed in the process of tracheotomy care and degree of conformity with existing standards was determined which the minimum score is 80%.

In this study, it has been used a fully enumerative sampling method in this way that the researcher went to different working shifts (morning, evening and night) in selected educational hospitals of Tehran; meantime his introduction and expressing the research's goal, and after obtaining the necessary permits and licenses from Ethics Committee of martyr Beheshti Medical Sciences University and getting the license of sampling from Tehran Medical Science University and martyr Beheshti Medical Sciences University and officials of two elected hospital and getting the written consent consciously from the nurses, first, an evaluation checklist of tracheostomy care was completed for each nurse at least three times by the researcher At the end, data were analyzed with statistical tests using the software Aspyas 17.

RESULT

This study has been performed on 42 nurses caring tracheostomy patients in two selected hospitals affiliated to martyr Beheshti and Tehran Medical Sciences University. 29 nurses belonged to selected Tehran Medical Sciences University and 13 nurses belonged to selected martyr Beheshti Medical Sciences University. The mean age of under surveyed individuals was 30.81. The samples included 38 women (90.5%) and 4 males (9.5 %). Most of nurses were contractual (40.5%), with experience less than or equal to 10 years (83.3%), with no history in passing tracheostomy courses (83.3%) and with circulating shift (83.4%).

Table 1: Evaluation of standard care from a tracheostomy with a fixed number 0.8

The mean scores of evaluation checklist of standard tracheostomy care	Number	Mean	SD	P-Value
Selected Hospital of Tehran Medical Sciences University	29	0.46	0.21	<0.001

Table 2: Evaluation of standard care from a tracheostomy with a fixed number 0.8

Selected Hospital of martyr Beheshti Medical Sciences University	13	0.29	0.12	<0.001
Total	42	0.41	0.2	<0.001

Among 42 nurses under survey, the mean score of only 2 persons (4.8%) is based on the standard. (I.e. their mean score is over 0.8). Moreover, the mean score for standard care evaluation of tracheostomy was 0.46 among

29 samples in selected hospitals of Tehran Medical Science University and the mean score for standard care evaluation of tracheostomy was 0.29 among 13 samples in selected hospitals of martyr Beheshti Medical Science University, regarding the least rate of standards which is 80%, both groups were under the standard level. In comparing the two hospitals together, and by considering P-Value= 0.008 nurses in selected hospitals of Tehran Medical Sciences University care significantly better from tracheostomy's patients rather than the nurses in selected martyr Beheshti Medical Science and University.

The Questions of Evaluation Checklist of the standard tracheostomy care	Frequency (percent)		
	Yes	**No**	**Not required**
Doctor's order was checked before suctioning	37 (88.1)	1 (2.4)	4 (9.5)
Before doing care, the tools are fully prepared.	38(90.5)	1 (2.4)	3 **(7.1)**
Before working, proper functioning of oxygen pulmotor was examined.	34 (81)	6 (14.2)	2 (4.8)
Before working, proper functioning of suction apparatus was examined.	40(95.2)	2 (4.8)	
Hands were washed properly before the doing the procedure.	11(26.1)	23 (52.4)	9 (21.5)
Procedure was explained to the patient.	13 (31)	16 (38.1)	13 (30.9)
Before doing care, private environment was provided for patient.	23(54.8)	8 (19.1)	11 **(26.1)**
In case of doctor's order, sedative was injected to patient before suctioning and changing wound dressing.	18(42.9)	6 (14.3)	18 (42.8)
For doing suctioning, conscious patient is located in a semi-upright or sitting position and unconscious patient is located in the lateral position to the nurse.	39(92.8)	1 (2.4)	2 (4.8)
In unconscious patients, oral pharyngeal secretions were evacuated at first.	13 (30)	21 (50)	8 (20)
Nelaton catheter with appropriate size and serum N / S were prepared at the patient's side.	42 (100)		
Nelaton sterile catheter was ready at the patient's side.	42 (100)		
Before suctioning, some breaths were given to the patient by oxygen 100% and ambu bag.	21 (50)	10 (26.2)	10 (23.8)
Before suctioning, the inner tube was removed by turning unlike clockwise.	27(64.2)	2 (4.8)	13 (31)
Non-sterile gloves were used to remove the old wound dressing.	39(92.8)	2 (4.8)	1 (2.4)
After removal of the contaminated inner tube, hydrogen peroxide was placed in a liquid.		30 (71.4)	12 (28.6)
After removal of the inner tube of hydrogen peroxide liquid, serum N / S was placed for some seconds and then rinsed.	9(21.4)	18 (42.9)	17 (35.7)
After rinsing the inner tube, the damp was caught by sterile gauze.	17(40.5)	8 (19)	17 (40.5)
Sterile gloves were used for tracheal suctioning.	9(21.4)	26 (61.9)	7 (16.7)
At every stage of the process, the dominant hand was remained sterile.	28(66.6)	7 (16.7)	7 (16.7)
Normal saline or sterile distilled water was used to dilute the secretion inside the tracheostomy tube.	40(95.2)	2 (4.8)	
During suction, the gown was used.		42 (100)	
During suction, the mask was used.	13 (31)	29 (69)	
Before suctioning, 7 to 10 cm from the tip of the catheter was placed in physiological serum.	16(38.2)	26 (61.8)	
The catheter entered by closed suction into the trachea.	36(85.7)	6 (14.3)	

Catheter was removed of tracheostomy tube with light suction.	41(97.6)	1 (2.4)	
The suction's catheter was removed out of the tracheostomy tube in rotational form.	41(97.6)	1 (2.4)	
The suction with appropriate pressure between 120-80 mmHg was used.	41(97.6)	1 (2.4)	
The suction was stopped in case of reduction of pulse to 20 beats.	10(23.8)	6 (14.3)	26 (61.9)
The suction was stopped in case of increasing the pulse to 40 beats per minute.	8(19)	6 (14.3)	28 (66.7)
The suction was stopped in case of the presence of arrhythmia.	13(31)	3 (7.2)	26 (61.9)
The suction was stopped in case of decrease in oxygen saturation less than 90%.	16(38.1)	2 (4.8)	24 (57.2)
The patient encouraged to cough during suctioning.	25(59.5)	13 (31)	4 (9.5)
The appropriate time of suctioning (15-10 seconds) to prevent hypoxia was observed.	39(92.9)		3 (9.2)
Between each suctions, the tip of suction's catheter was placed in a sterile liquid and was suctioned for 1 to 2 seconds.	39 (92.9)	1 (2.4)	2 (4.8)
The distances between suctions (3-2 min) were observed.	36 (85.7)	3 (7.1)	3 (7.2)
The patient was permitted to breathe deeply 4 to 5 times with high oxygen content.	33 (78.6)	6 (14.3)	3 (7.1)
After suctioning the patient was given a mouthwash.	11 (26.2)	25 (59.6)	6 (14.3)
Cuff pressure control and its maintenance were done between 20 and 25 mm Hg in each of working time.	5 (11.9)	35 (83.3)	2 (4.8)
Around the pipe, and a stoma was cleaned by the applicator soaked in serum N/S or hydrogen peroxide at the end of work.	30 (71.4)	4 (9.5)	8 (19)
Cleaning the stoma secretion was done from the stoma to outside.	36 (85.7)	3 (7.7)	3 (7.1)
Each applicator was used once to clean the stoma secretion.	27 (64.3)	7 (16.7)	8 (19)
Sterile gloves were used for changing dressing of tracheostomy which was done recently (before restoration stoma).	17 (40.5)	13 (31)	12 (28.5)
While dressing of the place was examined and recorded in the term of redness, inflammation and secretion.	40 (95.2)	1 (2.4)	1 (2.4)
The folded gauze was used in appropriate method for dressing around tracheostomy tube.	34 (81)	5 (11.9)	3 (7.2)
4 × 4 drained sterile gauze was used to cover around the stoma.	40 (95.2)	1 (2.4)	1 (2.4)
The lack of use from gauze cut by scissors for dressing around the stoma was observed.	22 (52.4)	11 (26.2)	9 (21.6)
In the case of need for replacing the strap of tracheostomy tube, the other partner was used to help to hold the tube in place.	22 (52.4)	7 (16.7)	13 (30.9)
After changing the band around the neck, tightening the band around the neck was checked so that the one finger can pass.	23 (78.6)	5 (11.9)	4 (9.6)
After suctioning and dressing, the respiratory rate, depth and its symmetry were examined in the patient.	15 (35.7)	16 (38.1)	11 (26.1)
Breath sounds were compared before and after	16 (38)	13 (31)	13 (31)

suction.			
Date and time of tracheostomy care were recorded.	34 (81)	1 (2.4)	7 (16.7)
Hand washing was observed at an end of work.	31 (73.8)	2 (4.8)	9 (21.6)
All observations were recorded in the nursing report.	40 (95.2)		2 (4.8)

Based on the obtained results, nurses' evaluated performance was weak in this study in the following points: None of the nurses put inner tube in a liquid of hydrogen peroxide after removing it. Also, none of the nurses used the gown in providing care for patients with a tracheostomy. Cuff Pressure controlling in each working shift (11.09%), the use of sterile gloves for suctioning (21.4%), the correct way to wash hands before tracheostomy care (26.1 percent), giving the mouthwash to patient after suction (26.1%), giving priority to the patient's pharyngeal secretions suctioned in unconscious patients (30%), using masks during suctioning (31%), explaining the procedure to the patient (31%), checking the breath rate, depth and symmetry of it after suctioning of patients (35.7%), comparing the breath sounds before and after suctioning (38%), placing the beginning of the suction catheter inside of physiology serum before suctioning (38.2%) and getting the moisture of the inner tube with sterile gauze after rinsing (40.5%).

DISCUSSION AND CONCLUSION

For the purpose of the research, the research findings were in compatible with the Ne'mati et al research (2013) which the results of their study also shows that the procedure after tracheostomy care in hospitals is not desirable that the main cause are the physician's incompetent order, the lack of treatment and nursing order, as well as experimental and stylish action and implementation imprecise doctor's order by nurse or doing cares as routine in units. In the study of Moondrop et al in 2012, it has also been referred to insufficient standard instructions for caring of patients with tracheostomy and staff training in hospitals [12]. In this regard, the results of the study Garoba and Turner (2009) demonstrates the insufficient and the lack of standard instruction of care of patients with tracheostomy [13].

According to carried researches and the research done by the researcher, it seems the lack of standardized guidelines special for the care of tracheostomy in hospitals with supervision on its implementation can be effective on the lack of observance of the standard care for the patients with tracheostomy. In the view point of researcher and based on the evaluation checklist of tracheostomy care in this study, the management of the organization to achieve the highest level of standard care for patients with a tracheostomy has an important role, in this context, managers should be aware of all stages of the standard care and give all equipment and facilities necessary for the proper performance with the instructions to their employees. In addition, by recognizing the strengths and weaknesses of nurses by holding training courses which is required for nurses assist in the better standards implementation.

With the attention to the important role of nurses in the care of patients with a tracheostomy, the researcher knows the nurses' manpower capabilities as the requisite standard of care for patients with a tracheostomy, and this will be achieved when the nurses have sufficient interest to their job and in this regard, they study and search in all fields specially the instruction of standard care for their progress and obtain the require information and skill in this field for doing standard care of tracheostomy. With regard to this point that more skills in this job is as the result of more theoretical and practical knowledge and it will have more self-confidence and independence, so one of the necessities of using standard instruction of standard care of tracheostomy is having the sufficient and required skills.

The researcher believes that regarding the results of this study, it seems that managers should provide necessary facilities in order to achieve the standards instructions and the correct implementation in addition to be aware of the importance and benefits of standard tracheostomy care. Also manager's attention to settling the affair, providing efficient manpower, creating a balance between patients and nurses in hospitals and encouragement of the staffs who does the tracheostomy care in accordance with the standards and reduce the amount of non-nursing duties which caused the staffs move away from patient are necessary to do in order to achieve the standard implementation by these conditions. It should be noted that no limitations were found in in the implementation of this study.

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