

Assess the Practice and Perceived Barriers of Staff Nurses in Adopting Protocol on Post Insertion Care Bundle in Prevention of Central Line Associated Blood Stream Infection



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Abstract

Bloodstream infections are considered to be associated with a central line if the line was in use during the 48-hour period before the development of the bloodstream infection. Care bundles, in general, are groupings of best practices with respect to a disease process that individually improve care, but when applied together, result in substantially greater improvement. The present study was conducted to assess the practice and perceived barriers by staff nurses working in ICU and CCU in adopting protocol on post insertion care bundle in prevention of Central Line Associated Blood Stream Infection (CLABSI) in selected hospitals of Indore. The study used descriptive research design. Purposive sampling technique was used to select 50 staff nurses working in ICU and CCU as per the predetermined inclusion criteria. Selected samples were given the knowledge and barrier questionnaire regarding post insertion care bundle which was filled by them, an observational checklist was also used to assess the practices of the sample. At the end samples were taught about CLABSI and its prevention and thereafter post insertion care bundle protocol was given to unit in-charge of ICU and CCU. The study finding revealed that only 4% scored excellent in the knowledge questionnaire and majority of 82% of staff nurse's practices were found to moderately satisfactory. So the study concluded that there is a great need for the staff nurses to update their knowledge and improve their practices regarding post insertion care bundle for preventing CLABSI and providing post insertion care bundle while caring patients with central line catheter to prevent fatal complication in ill patients.

Keywords: Central line associated blood stream infection, Post insertion care bundle, Staff nurses, Practice, Barrier to practice.

Background

Catheter-related bloodstream infections (CR-BSIs) are defined as bacteremia and/or fungemia in a patient with an intravascular catheter with at least one positive blood culture obtained from a peripheral vein, clinical manifestations of infection (i.e., fever, chills, and/or hypotension), and no apparent source for the bloodstream infection except the catheter. Bloodstream infections are considered to be associated with a central line if the line was in use during the 48-hour period before the development of the bloodstream infection. If the time interval between the onset of infection and device use is greater than 48 hours, there should be compelling evidence that the infection is related to the central line.¹

An estimated 250,000 to 500,000 CLABSI occur in US hospitals each year. CLABSI are an important cause of morbidity and excess cost of care for hospitalized patients. Studies of CLABSI that control for the underlying severity of illness suggest that the attributable mortality rate is 4% to 20%. An estimated 500 to 4000 patients die annually from CLABSI in the United States, and the reported range for patient care cost attributed to CLABSI is \$3700 to \$29,000 per episode.²

An article on Prevention of central venous catheter-related infection in the intensive care unit states that, prevention of catheter-related infection involves several measures which should be used in combination, like use of a checklist to guide catheter insertion and maintenance; adequate training of the nursing staff

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involved in the management of vascular access and an adequate patient-to-nurse ratio; the use of maximal sterile barrier precautions during catheter insertion; preference for a chlorhexidine-based solution for skin antisepsis; cleaning hands with an alcohol-based hand rub solution before any manipulation of the infusion line; and removing any useless catheters and dressings. Healthcare workers caring for a patient with a central venous access device need to be adequately trained, and assessed as being competent in using CVCs and adhering to infection prevention practices.³

Need of the study & Literature review

A catheter-associated bloodstream infection is serious, but often can be successfully treated with antibiotics. The catheter might need to be removed if patient develops an infection. Central venous catheterization is commonly used in critically ill patients and may cause different complications, including infection.⁴

A 2008 University Health System Consortium benchmarking study assessed 19 academic medical centers (719 patients with 1,032 central venous catheter insertions and 7,781 catheter days) for adherence with best practices to reduce CR-BSIs. Results showed a relatively high CR-BSI rate (7.07 per 1,000 catheter days). Compliance varied widely, and all centers performed poorly at providing evidence of adherence to best practices.⁵

“Care bundle” is groupings of best practices that pertain to a specific disease process. The Institute for Healthcare Improvement is one source for these bundles. Implementing all practices in the bundle together results in better outcomes than using the practices individually. The evidence supporting the bundle components is adequately established to be deemed a standard of care.⁵

A study done at Rajiv Gandhi Cancer Institute New Delhi proved that major complications of central venous catheters are infection (1.27%), breakage/leakage (0.5%), dislodgement (0.31%) and occlusion (0.06%).⁶

From the above cited literature we understand that handling CVC requires skill as well as the theoretical knowledge of CVC care. Hence I felt the need of conducting post insertion care bundle in order to prevent central line associated blood stream infection. This would help the future nurses to gain adequate knowledge

regarding safe handling of the Central Venous Device and prevent complications.

Problem Statement

A descriptive study to assess the practices and perceived barriers as expressed by nurses in adopting protocol on post insertion care bundle in prevention of central line associated blood stream infection in hospitals of Indore.

Objectives

To explore the current nursing practices adopted by the nurses while giving care to patients with central line.

To assess the knowledge of staff nurses regarding post insertion care bundle.

To identify the barriers in adoption of post insertion care bundle while giving care to patients with central line.

To determine the association between central line associated blood stream infection and selected socio demographic variables of staff nurses.

To identify the association between central line associated blood stream infection and clinical variables of patients with central line catheter (diagnosis, days on central line catheter, onset of CLABSI).

Hypotheses

H1: There is significant association between practices of nurses and selected demographic variables at the level of $p \leq 0.05$.

H2: There is significant association between practices of nurses and selected clinical variables of patients at the level of $p \leq 0.05$.

Research Methodology

Research Approach: Quantitative approach was used in the study.

Research Design: Descriptive research design

Population: Staff nurses working in ICU and CCU.

Sampling technique: Non probability purposive sampling was used in the study.

Sample size: 50

Procedure

The knowledge of staff nurses regarding post insertion care bundle was assessed with structured knowledge questionnaire.

The barrier of staff nurses in adopting post insertion care bundle was assessed with open ended question.

Observation of the practice of staff nurses while caring central line inserted patients was done with the observational checklist.

Post insertion care bundle protocol and teaching about CLABSI and its prevention was given to the staff nurses.

Post procedure

Nurses were encouraged to practice post insertion care bundle while caring central line inserted patients.

Post insertion care bundle protocol was given to the unit in-charge of ICU and CCU for reference and application.

Findings

Section I: Frequency and Percentage of Socio demographic variables

Regarding the socio demographic variables, 76% staffs were in the age group of 20-30 years while only 4% were above 40 years of age. Majority of the staff nurses were Bachelors in Science i.e., 56% while not less than 44% were GNM. Nearly half of the staff nurses 42% were having clinical experience more than 5 years while only 6% had less than 1 year of clinical experience. Majority of staff nurses 42% were having more than 5 years of experience in handling patients with central line catheter and only 6% had less than 1 year of experience. Concerning the monthly income 72% had a monthly income of Rs. 16,020 - 32,049 wherein only 6% had monthly income between Rs. 8010 - 12019.

Section II: Frequency and Percentage of Clinical variables

Majority of the patients 48% were on central line inserted for 4-6 days whereas 18% were for more than 6 days. Majority of the patients i.e., 94% had no CLABSI while 2% developed it within 4-6 days. Out of the total samples 32% were diagnosed of cardiac disease and only 10% had

gastrological problems. All of the samples i.e., 100% had jugular vein insertion.

Section III(a): Knowledge score among staff nurses regarding post insertion care bundle

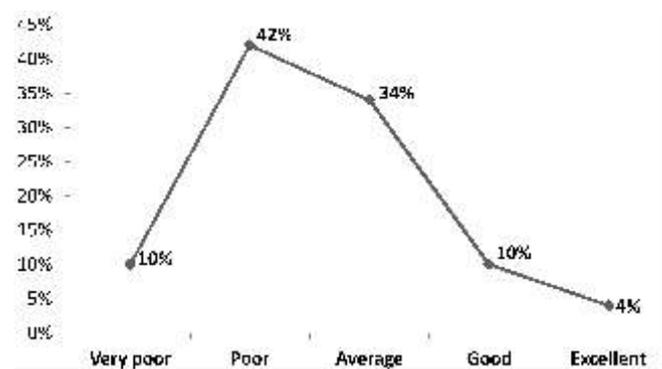


Fig 1: Line diagram showing the knowledge score of the staff nurses

The data in the Fig.1 depicts that 21(42%) of the respondents scored poor knowledge grade, 17(34%) scored average, 5(10%) scored good and same number scored very poor knowledge and only 2 (4%) scored excellent knowledge.

Section III(b): Frequency and Percentage Distribution of Open Ended Questionnaire Regarding Barriers of Nurses in Adopting Post Insertion Care Bundle

1. What are the barriers you feel while implementing post insertion care bundle in preventing CLABSI?

22(44%) nurses out of 50 reported that there was no barrier in implementing post insertion care bundle. Out of 38 others who admitted having certain barriers in its implementation, 5(10%) participants highlighted lack of time, due to increased patient ratio 11(22%), multiple doctor's round 1(2%), and huge amount of file work 1(2%), all of which adds on to the reason for not finding time.

2(4%) staffs said they feel burdened due to the workload and 1(2%) staff said there were multiple reasons including the ones stated above that made a barrier in implementation of post insertion care bundle. Lack of knowledge is another reason in which 3(6%) staffs felt they were not confident in implementing post insertion care bundle and 4 (8%) staffs said they did not even know about post insertion care bundle.

2. Do you think incidence of CLABSI is high in your

hospital? If yes, what are the reasons behind the incidence rate of CLABSI?

28(56%) staffs out of 50 did not think that their hospital had any high incidence of CLABSI. Out of the others who agreed having CLABSI incidences in the hospital, 12(24%) said the reason could be improper hand washing as they find insufficient time for it. 5(10%) nurses said they felt aseptic technique is not followed strictly during procedure, 2 (4%) said improper dressing is done on the central line and 3(6%) said it is because the central line is not removed within 7 days.

3. Are you provided with protocol of post insertion care bundle for preventing CLABSI? If yes, which protocol?

15(30%) of the staff nurses said they are provided with central line bundle checklist whereas 35(70%) admitted that no such thing has been provided by the hospital for preventing CLABSI.

4. Did you get any education or training program for insertion and maintenance of central line catheter? If yes, then what and when.

38(76%) staffs said they did not get any education or training programme for insertion and maintenance of central line. Out of the 12 who accepted in attending classes on the topic,7(14%) said they got it at the time of induction and training period about prevention of catheter related blood stream infection.5(10%) said they had a class during in-service education about central line insertion and maintenance.

5. What are your suggestions for effectively practicing post insertion care bundle in preventing CLABSI?

When the sample were asked for suggestions for effectively practicing post insertion care bundle, 29(58%) staffs said more in-service classes are needed on various topics like insertion and maintenance of catheter, catheter site care, hand washing and post insertion care bundle. 13 (26%) staffs suggested administrative remedies like proper nurse patient ratio in the ICU as per norms and quality supervision done by supervisor as well as quality check and infection control team.

Hand washing area to be made accessible and provision of hand rub at every bedside was suggested by 3(6%)

staffs in the ICU. 5(10%) staffs said the best way would be to decrease staff burden by limiting paper work and fixing certain hours for physician rounds to save time which can be utilized for effective care.

Section IV: Practice score of staff nurses regarding post insertion care bundle.

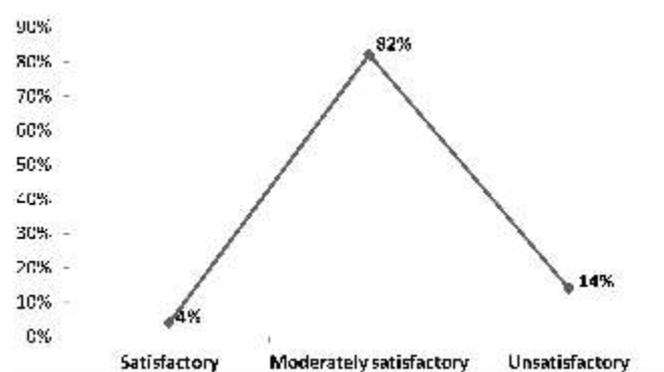


Fig 2: Line diagram showing the practice of staff nurses

Fig.No.2 depicts that 41(82%) of the staff nurses practice regarding post insertion care bundle was moderately satisfactory, 7(14%) was unsatisfactory and (4%) had satisfactory practice.

Section V: Association between practice of nurses with selected socio demographic variables of staff nurses.

There was significant association found between practice of staff nurses and selected socio demographic variables such as professional experience and experience in caring for patients with central line catheter (at df 6, χ^2 value = 3.83).

Section VI: Association between practices of nurses with selected clinical variables of patients with central line catheter.

There was no significant association between practice of staff nurses and selected clinical variables such as diagnosis and site of catheter insertion except onset of CLABSI (df 4 with χ^2 value = 15.48).

Discussion

Association between practice of nurses with selected clinical variables of patients with central line catheter.

The study intended to assess the practice and knowledge among staff nurses regarding post insertion care bundle and barriers while implementing post insertion care bundle. The findings showed that there was significant association between practice of staff nurses and clinical variables such as for onset of CLABSI (at df_4 χ^2 value = 15.48) Hence H_2 ie there is a significant association between practice of nurses with selected clinical variables of patients with central line catheter at the level of $p \leq 0.05$ was accepted.

The above findings were supported in the study done by Dr. Curtis Sessler⁷ on Catheter-related bloodstream infection (CRBSI) prevention. It included improved hand hygiene, use of full-barrier drapes, skin preparation with chlorhexidine, site care with semi permeable gauze, preferential use of the subclavian site, and consideration of antibiotic/antiseptic-impregnated catheters. Similarly, reliance on chlorhexidine rather than providone can reduce the risk for CRBSIs by 50%. With respect to the employment of antiseptic-impregnated catheters, it was indicated that current recommendations suggest they should be adopted if the rate of CRBSI remains > 2% despite other preventive measures.

Conclusion

Nursing as a profession is responsible to account for its competence and performance. Outcome is mechanism to evaluate quality, improve effectiveness and link practices to professional accountability. Providing post insertion care bundle while caring for patients with central line catheter prevent fatal complication in them. The nurse plays an important role in monitoring the patient's progress and has to make decision which is beneficial to the client's life. Therefore, the staff nurses need to keep themselves updated regarding knowledge and new techniques being implied in post insertion care bundle for preventing CLABSI.

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