Original Research Article

Assessment of Nurses Practices for the Prevention and Management of Central Line Insertion Associated Blood Stream Infection (CLABSI)

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Abstract

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Central line insertion is a very common procedure in the hospital setting of Pakistan, which is facing a high (CLABSI) central line-associated bloodstream infection rate (9/1000 days mainline). Limited resources Infection always cost-effective and it increased the burden of the hospital and increased the suffering of the patients as well as patient's families. The study aimed to assess the nursing practices for adherence to standard protocols towards the management of central line insertion and prevention from central line-associated bloodstream infection. A cross-sectional study was conducted in a tertiary care hospital. The sample size was 200 nurses who were working in Intensive Care Units. A simple random sampling technique was used to collect the data. The study tool comprises an observational checklist consisted of 26 items. The study duration was 4months. Ethical considerations followed by taken written consent. Nurses have good self-reported experiences and practices to manage central line insertion. In this study, the results show that the most nurses were working in the Intensive Care Unit (93.3%) and neonatal intensive care unit (75.0%) reported that they wash their hands and wipe the access port and catheter axis before reaching the catheter. All units used an iodine antiseptic solution powder fear at the place of insertion. This study will help the nurses to increase their understanding and knowledge about the care of central line insertion. This study will guide the nurses to reduce the infection rate through best practices linked to central line insertion and during handling of the central venous pressure.

Keywords: Central line, Central venous catheter, Infection, Nursing procedure, Practice

INTRODUCTION

The central catheter is a thin and long tube that is used by admin of medicines to give fluids, blood materials, and nutrients. It aids as a trustworthy venous assess to numerous events for example medicine. Measurement of administration, blood sample, and central venous pressure (Zakhour et al., 2016). However, the facility of middle line venous catheters treatment of the patient, its uses lie in high-risk diseases like central line-related bloodstream infection. CLABSI can be discovered in Central line, or within 2 days of removing the catheter, when there are no other reasons by which the infected disease can be diagnosed. CLABSI is linked with an

increased rate of care, prolonged stay in hospital leading to more deaths (Ho and Chenoweth, 2017). Every case of CLABSI increases the cost of care to 33,000, and the hospitalization period by three weeks (Harron et al., 2016). Assistance in implementing CLABSI prevention guidelines lower CLABSI rates in some countries. For example, one study provided 46 reports of CLABSI and the rates dropped in the US between 2008 and 2013. However, other studies reported 204 cases in 2000 and 25 cases annually (Bell and O'Grady, 2017). This is a major challenge of central line insertion in the medical system, reducing costs and avoiding related diseases and deaths. Early infection control measures can help lower CLABSI rates resource in limited states, but many types of research have made significant progress in Central line infection rates and mortality rates compared to developed countries (Aloush et al., 2018).

Maintaining the trolley during the procedures is very important and it helps to reduce the physical activity and enhance the safety of the patient as discussed in the study of Denmark. Before the procedure, the most important point is self-preparation and patient preparation. Maintaining a patient position and the responsibility of the health care provider explains the procedure to the patient (Lutwick et al., 2019). The study was conducted in the island in which the researcher educates the patient and the caregiver is aware and available to provide consent. Pros and cons of the procedure should be reviewed by the medical teams and written consent obtained. Before any preoperative procedure, it is recommended that we take a moment to take the correct action in the right place, to ensure that you are with the right patient (Haddadin and Regunath, 2019). Patient assessment e.g. date, last mealtime, x-ray, coagulation tests, must be seen before the procedure. The value of the patient's history in advance tested and obtained is currently a reasonable estimate of preoperative risk discussed in the study by the University of South Florida, Tampa, Florida, and (U.S.A) the United States of America. Although not evidence-based, historical examination and physical examination of all patients before surgery appear to be important until other evidence-based guidelines are available. Clinical and ignorance prediction can provide important evidence (Bhama et al., 2019). The study was conducted by Alberta Health Service who shows record of the procedure type, time out, any complication about the procedure, size and type of the catheter, removal time, and outcome of the procedure (Champ, 2018).

A study held at Creighton University which described the best area chosen by central line insertion, author says that usually the doctor inserts the femoral cannula, but the line is supervised by a nurse. Generally, the femoral vein line is not preferred because the area of the groin is difficult to keep neat and clean and patients feel uncomfortable during mobilization. Nurses should be monitoring the site of bleeding, hematoma, and infection.

The risk of infection was increased in the femoral central line instead of the jugular vein (Castro et al., 2019). Hand washing is an essential practice for central line insertion. Hand-washing can be achieved with alcohol-based hand rubbing or a water-based antiseptic *solution.* Nurses should performed aseptic technique during the procedure using a sterile glove before handling the new line when guidewire change (Ling et al., 2016). On the completion of this procedure, it is the responsibility of the staff nurse to check the backflow of the blood, central venous pressure, all lumens are on the proper place, the central venous line is appropriately dressed with date and time mentioned on it, and the place of the central venous pressure line documented in patients chart. Some research papers have been done in the Middle East country to investigate CLABSI. Reports of these studies were unpredictable. Kuwait study reported 14.9 cases / 1000 central venous catheter days (Salama et al., 2016). In another study in Saudi Arabia, the rate is 2.9 Case / 1000 Central Venice catheter days (Al-Tawil et al., 2016). Jordan's study, CLBSI rate was 8.1 / 1,000 hospital entries (Al-Rawajfah et al., 2013). In India, death rate toward patients with CLABSI rises from 17.3% (Singh et al., 2016) to 24.1% (Mishra et al., 2017). Health-related injuries (HAI) are a cause of disease and death prevention in Saudi Arabia and internationally. It is associated with increased survival and mortality, the cost of antibiotics, and total hospital costs. There are approximately 250,000 major-line hemorrhagic infections (CLABSIs) each year at the international State level, with a death ratio of 0.8 million per 3 days and 12% - 25% of deaths. The proportion of HABs from CLABSI is between 14.2% and 38.5%, with rates ranging from 2.2 to 29.7 / 1000 CL for 7 days, and deaths associated with raw devices at 16.8% -41.9% (Hogle et al., 2019).

Based on this previous retrospective study over twelve months in multiple hospital systems, the occurrence of blood flow with a median venous catheter was not catheterized per 1,000 days with central venous tubes (0.88 versus 1.10 lesions of catheterization). More study is needed to identify the reduced risk of middling catheters and to determine the best method to reduce these risk factor. The basic aim of this study is to assess the nurse's practices and knowledge of centerline insertion associated with bloodstream infection among the public hospital of the Lahore. Our unit has a high CLABSI (Khan et al., 2019). Central line insertion is a very common procedure in the hospital setting of Pakistan, which is facing a high CLABSI rate (9/1000 days mainline). Therefore, the researcher intends to introduce CLABSI Introduction-based Prevention Packages. The practice is to improve our class rates in Neonatal ICU (Shabbir et al., 2017). Limited resources Infection is always cost-effective and it increases the burden of the hospital and increases the suffering of the patient and family too. To reduce the infection among the

hospital, it is important to conduct a study among the public hospital to control infection rate and make it strictly implemented to stick with the guidelines of centerline insertion while performing the procedure. The purpose of this study was to investigate nurses' knowledge and procedures about central line infection in a government public hospital in Pakistan. Reviewing nurses' knowledge of central line enrollment care. To determine the nurse's practices related to intravenous central line insertion linked to a bloodstream infection. To identify the knowledge, practice regarding the general aspect of central line infection bloodstream infection.

Gap analysis

Many researchers from decades have been working on the practices of Nurses towards (CLABSI) techniques and implementation, but rare work has been done over practices and of nurses regarding central line insertion, In this research, we will check the nurses practice in government, Sami government, a private hospital of Lahore through direct observation using a valid checklist and non-participants questionnaire patient (Yum, 2019). These methods aim to improve the infection rate of central line catheters. The advantage of using change cycles is that they are part of the normal day-to-day activity of the entire organization and do not accumulate a load of data. Although PICCs have become an essential tool for patient care, these seemingly universal tools are associated with significant, often overlooked complications. Research program dedicated to investigate the appropriateness, safety, and reasonable benefits from PICCs is needed to enhance and guide the use of this technology Figure 1.
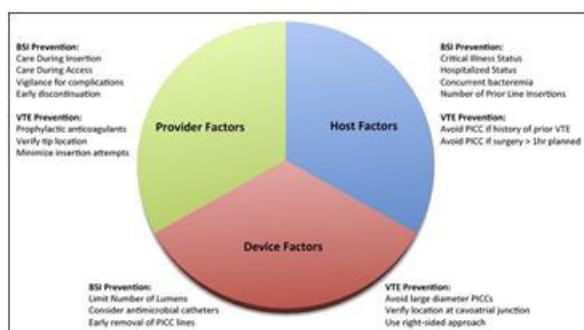
Figure 1. Conceptual framework for prevention (Chopra et al.,2012)

MATERIAL AND METHODS

Study Design

A cross-sectional study was related to evaluating the nursing practices regarding central line insertion and management. This study conducted an audit over

three months starting from January 2020 to April 2020.

Setting

This current study was held in three government, a semi-government, and a private hospital of Lahore.

Target population

Intensive Care Unit nurses were included in this study, during the insertion of the central line and care of the central line catheter.

Sample Size

Single population proportion formula, n = n/1+ (N) (E) was used to calculate the sample size. The calculated sample size was 300 nurses. The sample size calculates according to Slovene's formula (Solvin, 1960). So, the total sample size is 200 after calculation according to the availability of the staff.

Sampling Technique

Sample Selection

This research study was used as a simple random sampling technique.

Inclusion Criteria

The inclusion criteria of the study were all male and female adults above 16 to 45.

Exclusion Criteria

The following people were excluded from this study. Disable children and neonate, the sick patient who suffered from sepsis male and female and those adults who are not willing to participate

Equipment

Checklist adapted from (Taylor et al., 2014; Yepez et al., 2017) was used to collect data from the nurses. Self-administered structured questionnaire was used to evaluate the knowledge regarding central line insertion infection. The questionnaire was divided into two parts:

Table 1. Sociodemographic characteristics of the study participants among central line insertion

Sr	Characteristics	Response	Frequency	Percent
1	**Sex**	Male	51	25.0%
		Female	149	74.0%
2	Age	18–30 years	58	29%
		31 45years	108	54%
		46–60 years	34	17%
3	Religion	Muslim	149	74.5%
		Non-Muslim	51	25.5%
4	Educational Status	Diploma	164	80.5%
		Technical institute of nursing	34	17.0%
		Bachelor degree of nursing	5	2.5%
5	Years of experience	<10	74.8	37.0%
		10-<20	75	37.5%
		20 & more	51	25.5%
6	Type of intensive care unit	Medical	38	19.0%
		Neonatal	46	23.0%
		Surgical	84	42.0%
		Cardiac	32	16.0%

Part I

The first section of the questionnaire contains elements such as age, gender, professional experience, and qualifications.

Part II

This section (13) examines the actual practice of CVC change, the type of bandage and the frequency of changes, the use of antiseptic solutions, the management group, the integrated protocols for CLB prevention, and the hand wash associated with the issue of solid wall adherence. Also, nurses were asked about key implementation barriers and adherence to evidence-based practices.

Ethical Consideration

The rights of the members of the research were respected before data collection. Formal approval was obtained from the Institutional Review Board of the Lahore School of Nursing, The University of Lahore. Informed consent was taken from each respondent after explaining the objectives of the study. All materials and data gathering was held in reserve trustworthy. Participants were kept on unspecified over all the study. They were also been educated that they have the rights to withdraw at any time during the study process. There was no harm or risk in this study. Data was placed under the key and locked, kept confidential.

RESULT ANALYZING METHOD PLAN

Table 2 to 6 gives different practices of the performance

of the nursing in which the nurses will have excellent performance if the score >75. If the nurse practices score is from 61 to 74, it means she is giving good performance score and if the nurse practices is <60 that means she is performing poor practices. This method was used in overall results.

RESULTS

Socio-demographic results from a total of 220 participants, 200 were interviewed with a 97% response rate. The participants were between 18-60 years with a mean age of 32 years. Of the total participants, 51(25.5%) were male and 149 (74.5%) were female. The respondents predominantly were between the ages of 18 to 30, 58(29%), age of 31-45 responses 108(54%), and the age of 46-60 responses 34(17%). Of the total respondents interviewed, 149 (74.5%) were Muslims, and 51 (25.5%) non-Muslims. Regarding the educational status of the respondent, 17(32.0%) were diploma holders, Technical institute of nursing 34 (17.0%), and Bachelor degree of nursing 5 (25%) (Table 1). Nursing self-reporting on the current practice of CLABSI preventive measures is shown in Table 2. The majority of nurses working in MICU and NICU (70.0% and 50.0%) reported that they always wash their hands before and after CVC care. One third (35.0% and 35.0%) of nurses were working in CICU and SICU and this statistic was significant. 60% of MICU wards nurses used gloves whenever other wards 40% of nurses have not follow these practices. The majority of nurses (93.3%) in MICU and 63.3% of nurses in NICU reported they always scrub the access port compared to approximately one third (37.0%) in PICU and 30.0% in the SICU. 93% MICU nurses daily inspection of the catheter insertion site but CICU. SICU, NICU 30% used daily inspection of

Table 2. Nurses self-report of current practice related to care of the central venous catheter

S #	Clinical practices	Response	MICU N=30		NICU N=30		SICU N=40		C=ICU N=100	
			N	%	N	%	N	%	N	%
1	Hand washing before and after access the CVC	Always	20	70.0%	15	50.0%	14	35.0%	35	35.0%
		Sometime	9	20.0%	9	30.0%	16	40.0%	38	38.0%
		Never	1	10.0%	6	20.0%	10	25.0%	27	27.0%
2	Wearing sterile gloves during insertion of CVC	Sometime	10	33.3%	9	30%	14	35.0%	41	41.0%
		Never	2	6.7%	6	20.0%	11	27.5%	25	25%
3	Wearing personal protective equipment during CVC insertion (mask, surgical gown, cap, full body sterile drape	Always	17	56.7%	21	70.0%	15	37.5%	36	36.0%
		Sometime	12	40.0%	7	23.0%	14	35.0%	38	38.0%
		Never	1	3.3%	2	6.7%	11	27.5%	26	26.0%
4	Scrub the access port & catheter hub with alcohol 70% before and after access the catheter	Always	28	93.3%	19	63.3%	15	37.5%	30	30.0%
		Sometime	2	6.7%	10	33.3%	15	37.5%	47	47.0%
		Never	0	0.0%	1	3.4%	10	25.0%	23	23.0%
5	Daily inspection of the catheter insertion site	Always	22	73.3%	11	36.7%	14	35.0%	35	35.0%
		Sometime	6	20.0%	12	40.0%	15	39.5%	39	39.0%
		Never	2	6.7%	7	23.3%	10	25.5%	26	26.0%

Table 3. Nurses' self- reported practice

S#	Self-reported practice	Response	MICU N=30		NICU N=30		SICU N=40		CICU N=100	
			N	%	N	%	N	%	N	%
1	Antiseptic solution for preparation& maintenance of CVC site	Povidone–iodine	21	70.0%	13	43.3%	18	45.0%	46	46.0%
		70% alcohol	8	26.7%	12	40.0%	16	40.0%	39	39.0%
		0.5% chlorhexidine gluconate with alcohol	1	3.3%	5	16.7%	6	15.0%	15.0	15.0%
2	Unite protocol for prevention of CLABSI infection	Saline flush after the end of care	21	70.0%	6	20.0%	14	35.5%	36	36.0%
		Antibiotic lock	7	23.3%	6	20.0%	10	25.0%	26	26.0%
		Heparin lock	2	6.7%	18	60.0%	16	40.0%	38	38.0%
3	Frequency of inspection of the catheter insertion site	Once \ day	15	50.0%	13	43.3%	19	47.5%	46	46.0%
		Twice \ day	11	36.7%	11	36.7%	13	32.5%	36	36.0%
		More than twice	4	13.3%	6	20.0%	8	20%	18	18.0%
4	Type of dressing used in the majority of patients	Gauze & tap	16	53.3%	16	53.3%	21	52.5%	53	53.0%
		Transparent (semi permeable)	14	46.7%	14	46.7%	19	47.5%	47	14.0%
5	Frequency of changing CVC dressing	Every shift	19	63.0%	11	36.7%	10	25.0%	26	26.0%

Table 3. Continue

	Every day	10	33.3%	12	40.0%	18	45.0%	47	47.0%
	Only when indicated as (soiled, loosened)	1	3.3%	7	23.3%	12	30.0%	27	27.0%

Table 4. Nurses self-reported practice related to management of administration set and access port

S#	Self-reported practice	Response	MICU N=30		NICU		SICU		CICU	
			N	%	N	%	N	%	N	%
1	Change of administration set for clear fluid									
		Daily	18	60.0%	19	63.3%	26	65.0%	62	62.0%
		48hrs	4	13.3%	9	30.0%	13	32.5%	32	32.0%
		72hrs	4	13.3%	1	3.3%	1	2.5%	3	3.0%
		96hrs	4	13.3%	1	0%	0	0%	3	3.0%
2	Change of administration set for blood & blood product									
		Immediately after the end of infusion	17	50.0%	22	73.3%	24	60.0%	67	67.0%
		Daily	1	10.0%	6	20.0%	16	40.0%	30	30.0%
		48hrs	6	20.0%	2	6.7%	0	0%	2	6.7%
		Others	6	20.0%	0	0.0%	0	0%	1	1.0%
3	Change of administration set for TPN									
		Immediately after the end of infusion	18	60.0%	20	70.0%	29	72.5%	65	65.0%
		24hrs	12	40.0%	10	30.0%	11	27.5%	35	35.0%
4	Needleless access device change (3 way)									
		Daily	20	60.0%	23	76.7%	26	65.0%	54	54.0%
		48hrs	5	20.0%	5	16..7%	14	35.0%	46	46%
		72hrs	5	20.0%	2	6.7%	0	0%	0	0%
		Other	0	0.0%	0	0.0%	0	0%	0	0%

Table 5. Nurses compliance to Center for Disease Control (CDC) evidence-based guidelines

	Recommendations	Agree/ Disagree	Frequency	Percent
1	Education of all health care provider about CVC catheter insertion and maintenance care and prevention of CLABSI.		115 85	57.5% 42.5%
2	Perform hand washing either by washing hands with conventional soap and water or with alcohol-based hand rubs (ABHR) before and after any contact with CVC.		127 73	63.5% 40.5%
3	Prepare skin with a >0.5% chlorhexidine preparation with alcohol before central venous catheter insertion and during dressing changes NB: chlorhexidine not available and they are use povidone-iodine instead.		119 81	59.5% 40.5%
4	Use sterile gauze or sterile transparent, semipermeable dressing to cover the catheter site.		130 70	65.0% 35.0%
5	Change gauze dressing every 2 days or when clinically indicated.		122 78	61.0% 39.0%
6	Replace fluid administration sets for clear fluid no more frequently than 96 h but at least every 7 days.		119 81	59.5% 40.5%
7	Replace administration sets for blood, blood products, or fat emulsions within 24 hours of initiating the infusion.		130 70	65.5% 35.0%
8	Change needleless connectors no more frequently than every 72 hours or according to manufacturers' recommendations.		128 72	64.0% 36.0%

Table 5. Continue

9	Scrub the access port with appropriate antiseptic.	**128**	**65.0%**
		72	**35.0%**
10	Use maximal sterile barrier precautions, including the use of a cap, mask, sterile gown, sterile gloves, and a sterile full body drape, for the insertion of CVCs.	**131**	**65.5%**
		69	**34.5%**

Table 6. Barriers for implementing evidence-based guidelines

Variable	Yes/no	frequency	Percent
Lack of training		**163**	**81.5%**
		37	**18.5%**
Unfamiliar with the guidelines		**176**	**88%**
		24	**12.0%**
Lack of policy about CLA BSI bundles		**187**	**93.5%**
		13	**6.5**
Lack of standard clinical procedure of maintenance catheters		**188**	**94.0**
		12	**6.0**
Lack of policy about CVC nursing records		**189**	**94.5**
		11	**5.5**
Shortage of nurses and over-workload		**156**	**78.0**
		44	**22.0**

preventive measure. All wards 70% used saline flush via protocol in MICU and more than half of nurses 30% used saline flush in the NICU, SICU, reported that heparin lock Table 2. Table 3 showed nurses self-esteem in patient care and dressing practices. Intensive care units are used at Povidone-iodine antiseptic solution injection sites and gauze and tape dressings are used. Also, most nurses change their dressing every shift. Daily inspection of the insertion site was done by more than half (50%) of nurses in MICU compared to other units and in another hand, 63.3% percent of nurses change dressing every shift. Practice of nurses related to management of administration set and access port is shown in Table 4. Change of infusion set for fluid 65% in CICU but in the other hand, half of nurse's administration clear fluid in another unit. Total parental nutrition fluid administration in SICU ratio was almost 72.5% but in other departments, 60% follow these practices and 40% population need education and practices. Table 5 compared the results to the CDC guideline and summarized the compliance as a percentage reported practices varied across the units and were not always consistent with the published guidelines. Table 6 provides information about the barriers encoun-tered in implementing clinical response certification guidelines. When information was received about nurses' hospital disruptions, they said that lack of training was an issue. The lack of a standard method for looking after CVCs and recording procedures were also recognized. In addition, (30%) of nurses testified that shortage of nurse and work overburden was also a barrier for compliance with best practices.

DISCUSSION

The present study showed that nurses were provided with limited education regarding the prevention of CLABSI such as those presented in Tables 1 and 5. Therefore, compliance rates were very low with the recommendation of the Centers for Disease Control. These results were in agreement with (Taylor et al., 2014) who reported limited medical education and nursing in their education. In contrast, a similar study by (Snarski et al., 2015) reported that all healthcare professionals who implemented CVCs in most centers participating in their study, reported specialized training. These results are consistent with previous reports from previous studies that revealed patient-to-nurse ratios that would help reduce CLABSI and associated deaths (Lee et al., 2018; Yepez et al., 2017). A recent study revealed that a higher ratio of nurses and doctors to patients is associated with increased survival rates (Han et al., 2010; Harron et al., 2016). In 89% of the centers, personnel were required to undergo specific training prior to managing patients with CVC (Ling et al., 2016). In addition, this study suggests that a large amount of nurses have implemented some protective measures to prevent CLABSI. Nursing practice differs among nurses in different intensive care units. Neonatal intensive care nurses were more committed to evidence-based guidelines for the prevention of CLABSI than other unit nurses. The increase in the percentage of nurses resulted in a significant decrease in the quality of care and increased CLABSI rates (Checkley et al., 2014; Sakr

et al., 2015). The ICU staff is challenged by the high workload of patients with critical needs. The workload in the ICU puts some pressure on employees' resources. This workload can affect nurses and other health care activities, and can negatively affect the quality of care (Klintworth et al.,2014; Ling et al., 2016). Another change in nursing practice was the rate of management change to clear fluids. Although the CDC recommends management change, it occurs only for more than 96 hours when the administration determines blood transfusion and parenteral nutrition (McDonald et al., 1998). The literature describes several barriers to implementing the CLABSI guidelines and may explain compliance changes to some extent. You will be invited to CLABSI to apply the CLABSI Terms and Conditions (Salama et al., 2016; Latif et al., 2015). These constraints include resource scarcity, organizational structure and staffing capabilities (Al-Tawil et al., 2016; Al Qadire, 2017). The CVC suggested the use of chlorhexidine to disinfect the skin before the start or change of dressing. In addition, the safety and efficacy of chlorhexidine in children younger than 2 months has not been resolved (O'Grady et al., 2011). In this study, chlorhexidine was not used in the hospital, and povidone iodine was used to prepare the skin and change the dressing. This can be clarified by lack of proper solution in the market. The outer surface of the catheter axis is the main entry point into the microorganism that makes blood flow CLABSI. Therefore, it is advisable to rub the access port with a suitable disinfectant (chlorhexidine, povidone iodine 70% alcohol) for 15 seconds and allow the port to be dried and used with sterile equipment (Castro et al., 2019; Haddadin and Regunath, 2019; Khan et al., 2019). Research has shown that more than half of nurses have complied with the CDC recommendation to clean CVC before closing the port. In addition, the CDC recommended replacing redundant connectors or shut-off valves every 72 hours or in accordance with manufacturers' recommendations to reduce infection (Deason and Gray, 2018). The current study showed that about half of the nurses in the various units followed the CDC's recommendation. This resulted in an agreement with (Chopra et al., 2012; Khan et al., 2019) which stated in its study that only one-third of the nurses studied were replacing needles connector after 72 hours. Through the observations of practices, work improved at clinical work place. The documentation of change dressing and insertion of central line catheter date indicate the infection prevention recommendations. Through proper record of dressing and following the protocol during insertion helps to maintain the departmental CLABSI rate comparison with other departments.

Limitation

This study had very short time period. It is not generalized because it was conducted in a tertiary care hospital of Intensive Care Units. The sample size was very small.

CONCLUSION

The present study provides a picture of current nursing practice to prevent CLABSI in children's intensive care units. The results revealed differences in the prevention of infection nursing practice among the nurses of the Intensive Care Unit studied. Additionally, this study demonstrates the absence of a fixed protocol for the prevention of CLABSI in the studied intensive care unit. This indicates the need to develop a protocol to prevent CLABSI based on existing evidence-based guidelines. There is also a need to implement preventive protocols, establish a compliance system, and monitor CLABSI.

RECOMMENDATIONS

In Intensive Care settings, there is need to appoint trained and specialized nurses. Every health care provider has a responsibility to evaluate the ongoing need for central venous access, its care and ensure prompt removal when no longer necessary to use. Routine evaluation by every health care team member will ensure that appropriate handling and care of central line is being performed to help reduce the risk of central line catheter associated complications.

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