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Assessing the Factors that Influence Cannula (Venflon) Care, A Descriptive Study Among Health Professionals at the Tamale Teaching Hospital

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ABSTRACT

Intravenous (IV) cannulization is common invasive procedure used in clinical practice of hospital. Intravenous cannulization is the methods of insertion of a flexible plastic device with a sty let available, inserted to the vein to administer medications, fluids of blood transfusions. The Objective of the study was to find out the level of knowledge and practice on intravenous cannulization among nurses of Tamale Teaching Hospital in Tamale city. The study was descriptive type of cross-sectional in nature. The main study was conducted from January-March 2016 in Female Medical, Male Medical and Pediatric ward. The instruments used for the study were self-administrated questionnaire. A total of 49 categories of nurses who met the inclusion criteria were selected from the three (3) wards of hospital by using stratified sampling with simple random sampling technique within the strata. Mean age of the respondents was 27.39±5.3 years. The majority of respondents were male (53.1%). Maximum, 92% of respondents were completed up to Diploma in Nursing. Among the respondents, 49% spend 5-6 hours of their time in the ward with IV connectors, 22.4% spend 1-2 hours, and 26.5% spend 3-4 hours with IV connectors. A large-scale Regional study, using an updated (i.e. adding the zero device) yet similar questionnaire and targeting nurses, physicians, and students, is warranted to determine knowledge deficits and best education practices to increase knowledge in these three healthcare providers. Once the deficits and education mode(s) are determined then programmes can be established to meet these needs with research initiatives implemented and outcome criteria assessed for effectiveness. It is imperative that nurses rise to the challenge and take the lead to assist in solving this problem.

Keywords: Cannula, cannula, Intravenous, occlusion, phlebitis

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INTRODUCTION

Intravenous (IV) cannulation is the commonest invasive procedure among hospitalized patients. It is however associated with risks and complications that can have an adverse impact on the clinical outcome of the patient. Peripheral intravenous (IV) cannulas provide relatively easy and comfortable venous access for hospitalized patients allowing for sampling of blood as well as administration of fluids, medications, parenteral nutrition, chemotherapy, and blood products. Although cannulas provide necessary vascular access, there are some associated complications such as phlebitis, local site infection, occlusion, extravasation and cannula related bloodstream infections (CRBSI). These complications lead to patient discomfort, increased medical treatment, length of hospital stay and cost of treatment. This can also as well result in to increased morbidity and mortality in our setting. Phlebitis or vein inflammation is a common complication of IV therapy with between 20% to 60% of patients developing phlebitis, depending on the population under study. When accompanied by thrombus formation it is referred to as thrombophlebitis. The more serious complication of IV therapy, bacteremia, occurs in about 0.8% of cases in our setting (Tuoyire D., & Debrah S., 2015). Many risk factors of phlebitis have been identified in other studies. These include lengthy cannulation periods, cannula material, cannula size and infusate characteristics. Factors which are more patient specific include gender, insertion site, concurrent infection and presence of underlying medical illnesses. Early phlebitis is possibly related to the insertion procedure such as poor hand hygiene, poor skin preparation, inexperienced personnel doing insertion and multiple attempts at different sites with the same IV cannula.

The intravenous connector is the gatekeeper of the intraluminal fluid pathway and is used in hospital as well as community settings (O'Hanlon et al., 2010). Care and maintenance of IV connectors has been shown to be related to catheter occlusions and catheter-related bloodstream infections (Rupp et al., 2011). Proper care and maintenance of an intravenous connector is foremost to successful patient outcomes including the avoidance of occlusion, bloodstream infections and thrombus formation (Gallieni et al., 2012). These issues are important to patients and clinicians because there are related to mortality and tragic patient care errors have occurred (Simmons, 2010). Education is one major tool that can help eliminate problems and increase positive outcomes. Needle free IV connectors first entered the healthcare system in 1991. Design focused on simple needle free connection to reduce the rate of needle stick injuries to healthcare workers (Casey and Elliott, 2011). The first design was what is referred to as split septum. It allows a blunt cannula to connect by entering an existing slit. By the mid-1990s the design had advanced to allow direct luer connection without the added cannula. All of the various connectors had associated reflux with disconnection. This reflux

resulted in increased catheter occlusion (Casella and Jarvis, 2007). With every disconnection fibrin layers built up on the inner surface of the intraluminal fluid pathway which led to partial or total occlusion (Rummel et al., 2011). To resolve the occlusion problem, the positive pressure connector entered the market in the late 1990s. This design moved the reflux from disconnection to connection. With connection, a negative pressure occurs and then with disconnection the pressure is released with a final push. This final push is designed to clear the catheter. Reduction in occlusion rates with the use of a positive pressure connector has been irregularly reported in the literature (Schilling et al., 2013). However, the intraluminal fluid pathway continues to experience the on-going surface conditioning of fibrin caused by reflux. By the year 2000 positive pressure connector designs had been associated with an increase in catheter-related bloodstream infections (CR-BSIs) (Marschall et al., cited 2011). In 2004 an intraluminal protection system entered the market. It has zero reflux with connection or disconnection. Recent evidence reveals that occlusions and CR-BSIs occur less frequently using a zero-fluid displacement connector design (Caillouet, cited 2012).

To prevent the re-entry of blood associated with negative IV connectors, the nurse during disconnection is required to apply pressure to the syringe barrel, close the catheter clamp and then remove the syringe. In addition, when the nurse initiates a procedure she must insert the syringe into the connector, put pressure on the syringe barrel and then open the clamp, otherwise the reflux that was minimized with disconnection will occur when the clamp is opened. The clamping sequence with positive pressure connectors is just the opposite (Gallieni et al., 2012). In order for the negative pressure to occur the clamp must be open with connection and not clamped until after disconnection. If the clamping sequence used with negative system connectors is used with a positive pressure connector it prevents the final disconnection push and over time can lead to suboptimal connector action. The zero-fluid displacement design requires no special clamping sequence. Knowing whether a positive or negative pressure system is being used is important. There are institutions that have several different IV connectors available for use by nurses and healthcare personnel.

Also, the use of 'pulled' nurses or agency nurses can make appropriate care difficult and inconsistent (O'Grady et al., 2012). Occluded central venous access devices (CVADs) can cause an increase in the use of thrombolytic and cost for patients and the institution, as well as a delay in treatment, and a decrease in patient satisfaction. Occlusions are also associated with increased CR-BSI. Micro-organisms, especially *Staphylococcus aureus* and *Staphylococcus epidermidis*, the two most common micro-organisms associated with CR-BSIs (Gallieni et al., 2008), adhere to fibrin. The intraluminal protection provided by the IV connector with zero fluid displacement has made a recent positive impact on complication reduction but will not be

discussed in this article as its use was not widespread during the implementation of this study. The problem of CR-BSI is well defined by the Centers for Disease Control & Preventions (CDC) in relation to devices with connectors (O'Grady et al., 2002). Patients with long-term vascular access devices and those who are immunosuppressed are at increased risk for acquiring CR-BSIs, also called catheter-associated bloodstream infections (CA-BSIs), by microbes that frequently gain access through an IV connector septum (Menyhay and Maki, 2012).

In general, to prevent catheter-related complications, patient care relies completely on nurses appropriately swabbing prior to access, with the intervention based on specific device type, and flushing after usage. The purpose of flushing is to clean the intraluminal surface of fibrin and prevent surface conditioning. One flushing option is using a pulsatile (push-pause) method creating turbulent flow (Dougherty, 2000). Complications may arise in the vein as a result of the cannulation procedure, the four main groups of complication are:

1. Hematoma: A collection of blood, which can result from failure to puncture the vein when the cannula is inserted or when the cannula is removed. Selection of an appropriate vein and gently applying pressure slightly above the insertion point on removal of the cannula may prevent this.

2. Infiltration: When infusion enters the subcutaneous tissue instead of the vein. To prevent this, a cannula with accurate trim distances may be used. It is essential to fix the cannula in place firmly.

3. Embolism: This can be caused by air, a thrombus, or fragment of a catheter breaking off and entering the venous system. It can cause a Pulmonary Embolism. Air emboli can be avoided by making sure that there is no air in the system. A thromboembolism can be avoided by using a smaller cannula.

4. Phlebitis: An inflammation of the vein resulting from mechanical or chemical irritation or from an infection. Phlebitis can be avoided by carefully choosing the site for cannulation and by checking the type of infusion used.

Quality of working life has become one of the most important issues concerning productivity in the world. Despite its importance, very little has been done about it in Africa, and especially Ghana. However, there have been tremendous efforts by the Ghana Health Services to improve the quality of services through refresher trainings and workshops in the area of quality health services delivery. In spite of this, nurses are still lacking in the knowledge of cannula care there by making it difficult to have that quality services through cannula care processes and management.

It is therefore important to review the use and management of cannula care in our hospitals since 80 to 90 percent of patients who are put on admissions in our hospitals receive infusion through cannula venflon (Tagalakis V., 2011). The use of cannula venflon has become very common in our hospitals which has pose a lot of management lapses and problems associated with the usage. It is estimated that more than 60% of the patients who receive infusions in Ghana have some kind of bacterial infection during and after the usage of cannula venflon (Casey and Elliott, 2012).

The question to be asked is that; Why is there a high rate of infection associated with cannula (venflon) usage in Ghana despite the refresher trainings and workshops organized by the Ghana Health Services for practicing nurses to improve their knowledge and skills in patient care as well as management of patients in all areas.

The current research sought to address the factors that influence the use of cannula (venflon) care and its challenges as well as assessing the knowledge of nurses on the management of patients regarding cannula care at the Tamale Teaching Hospital.

Definition of Intravenous Cannula (Venflon)

What is an intravenous cannula? A cannula, which is commonly referred to as a Venflon, is a small flexible plastic tube that is inserted through the skin into one of the veins. If it is inserted in a very clean way (aseptic) and, if free from other complications, it can stay in for three (3) days. If it is not inserted using an aseptic technique, for example in an emergency, it will need to be removed within 24 hours because there is a higher risk of it becoming infected.

Indications and use of Intravenous Cannula (Venflon)

Peripheral venous cannulation is indicated for short-term use in many clinical situations. These mainly include administration of:

- IV fluids;
- Drugs;
- Blood and blood products;
- Dyes and contrast media.

Common sites of insertion are the cephalic or basilic veins of the lower arm; or the dorsal venous arch located on the back of the hand (Lavery, 2011). The superficial veins of the lower limbs may also be cannulated, but these tend to be avoided as they are associated with a higher risk of infection and embolism (RCN, 2010).

Several factors must be considered when selecting a site for peripheral venous cannulation. The risk of infection or phlebitis can be minimized by considering the following:

- The general condition of the veins;

- Avoidance of points of flexion;
- The type of drug to be administered (determined by the osmolality or pH);
- Speed of drug delivery;
- Duration of intended therapy;
- The size of the cannula versus the size of the vein.

Infection Control

Insertion of a cannula must be performed using an aseptic non-touch technique (Department of Health, 2003). Thorough hand cleaning according to the Hand Hygiene Policy (NUH, 2011) must be performed to reduce the risk of cross-infection to the patient. Gloves should be worn in line with standard precautions and the NUH Glove Selection Guideline (2011).

Peripheral Venous Cannulation Guidelines

All disposable equipment must be sterile and single use only, and should be disposed of in accordance with local policy. (RCN 2010; NUH 2011) Visibly dirty skin should be washed with soap & water (Perucca, 2011). The following procedure is then applied:

Clean and prepare the skin with 2% chlorhexidine gluconate in 70% alcohol solution using a swab, cloth or other applicator.

Apply ensuring the skin is wet for 30-60 seconds (rub for 5-10 seconds and then lay swab over the skin for the rest of the time). This should be allowed to air dry for up to 1 minute (Weinstein, 2010).

Following cleaning, the skin should not be touched or re-palpated, as the cleaning regimen will have to be repeated (Dougherty and Lister, 2011).

The need to remove hair by shaving has not been substantiated (Weinstein 2007). Shaving the skin prior to cannulation is not recommended as it can cause micro abrasions which can become a focus for infection. If excessive hair needs to be removed it should be clipped (RCN, 2010).

The cannula should be secured & covered with a sterile dressing which should be transparent, easy to apply and remove, waterproof, semipermeable and comfortable for the patient (McGovern 2010; Dougherty and Lister 2011).

There should be no more than 2 unsuccessful attempts by the same practitioner on one patient at any given time. If the attempts are unsuccessful, the patient must be reassured and another (more experienced practitioner) should undertake subsequent cannulation (Weinstein 2010.)

Indications

The main indications for the insertion of a peripheral venous cannula are:

- Administration of intravenous medicines.
- Transfusions of blood or blood components.

- Maintenance or correction of hydration levels if unable to tolerate oral fluids.
- Potential venous access.

Complications Associated with Cannula (Venflon)

Accidental Damage A nerve, tendon or artery may be inadvertently punctured causing pain, damage or haemorrhage as well as loss of confidence for the nurse. The nurse may also lose confidence in undertaking the procedure Phlebitis. This is characterized by pain and discomfort resulting from inflammation of the intima of the vein. The three main types are: Mechanical - damage/irritation by a cannula that is too large for the vein, or inadequate securement of the cannula which allows for movement. Chemical – drugs which cause irritation (ph <5 or >9 or extreme osmolarity or vesicant. Vesicant drugs can cause blistering and necrosis if they leak into the surrounding tissues (Scales, 2008). Bacterial - poor hygiene or aseptic techniques leading to infection (Dougherty and Lister, 2011). Haematoma may form if the cannula pierces the front and/or back wall of a vein. This can occur during insertion or removal of the cannula and may render the vein unsuitable for further cannulation (Perucca, 2010). In the event of a haematoma occurring, firm pressure should be applied for 3-5 minutes. The risk of this occurring can be reduced through good vein and device selection and competent technique. Extravasation This is the leakage of vesicant fluids or drugs into surrounding tissues which can cause local necrosis (East Midlands Cancer Network, 2012). Prolonged Bleeding Time This may be due to a medical condition or drug therapy. It increases the risk of bruising/haematoma formation, and worsens the consequences of inadvertent arterial puncture. Blood Spillage See local infection control guidelines (NUH, 2010d) Needle or Blood Phobia Patients may experience mild to severe needle/blood phobias due to past experiences (Dougherty and Lister, 2011). It is advisable to establish if the patient is known to have any concerns or anxieties before commencing cannulation as this may adversely affect the practitioner's success and further compound the patient's fears (Weinstein, 2007). Anxiety can cause constriction of peripheral veins thereby making the procedure more difficult (Dougherty and Lister, 2011). A careful explanation and a confident manner is essential. Vasovagal Faint/Syncope This is due to enervation of the autonomic nervous system. It is important to ensure that the patient is sitting/lying in a chair/bed whilst undertaking the procedure (Phillips, Collins and Dougherty 2011). However, if the patient begins to feel faint or appears pale and sweaty, the procedure should be stopped immediately.

Cannula Care and Removal

Your hospital should have a policy detailing the frequency with which observations of a peripheral venous cannula site should be made and recorded. Some hospitals have specific

forms for this purpose. As a minimum, this should include checking the insertion site regularly for signs of redness or swelling. The patient should also be asked to comment.

After inserting a peripheral intravenous cannula, you should ensure the nurse caring for the child or young person has an appropriate care plan and understands any specific care needs resulting from the procedure. Cannulation can result in inflammation of the vein (phlebitis). *Mechanical phlebitis* can be caused by trauma or irritation from the cannula, particularly if it is not secured effectively. It can be minimized by avoiding cannulation over bony prominences and joints and applying a stabilizing dressing. *Chemical phlebitis* is caused by medicines or infusions (Winkelstein and Kline, 2013).

The risk of infection leading to sepsis can be reduced by ensuring good hand hygiene; always using gloves; maintaining asepsis and using alcohol wipes to clean the site. The cannula should be removed if there are any signs of infection or inflammation. Removing the cannula can be painful and some children can be distressed by this. Preparation is important and gaining the assistance of the child in removing tape from the site can be helpful. After turning off the infusion, remove the tape, pull the cannula out of the vein and exert firm pressure at the site until any bleeding stops. (Pressure on the cannula during removal is painful and should be avoided). To remove transparent dressings, pull opposite edges to loosen the bond. Apply a dry dressing or plaster to the puncture site. (Hockenberry, Wilson, Winkelstein and Kline, 2013). You should then inspect the tip to ensure the cannula is intact.

MATERIALS AND METHOD

This study was a descriptive type of cross-sectional study conducted to explore the level of knowledge and practice on intravenous cannulization among staff nurses of selected departments of the Tamale Teaching Hospital, Tamale. The study was conducted among three departments of the Hospital for accuracy and non-biasness. The study lasted for about three months for the researchers to be able to interview all eligible respondents who were willing in participating in the study. The eligibility criteria for the study was all categories of nurses who practice the use of cannula insertion in their respective departments. The selection of the respondents using the eligibility criteria was followed with stratified sampling in choosing the department as well as simple random sampling in selecting the units within each strata. The sample size of the research was 90 nurses from all three departments to be studied.

Also, the study will give preference to Staff Nurses with valid registration from the nurses and mid-wives council of Ghana as well as Staff Nurses having at least two-year clinical job experience in the clinical setting where they work. To find out the reliability, validity and practicability for the modification of questionnaires, a pre-test was conducted among 10 (ten) staff nurses working in the Tamale Central Hospital of the Tamale Metropolis before finalizing

the instruments for the collection of data. All interviewed questionnaire were checked for completeness accuracy and consistency to exclude missing or inconsistent data. Data was checked, cleaned and edited properly before analysis.

Profile of the Study Area

The Tamale Teaching Hospital is a regional hospital in Tamale in the Northern region of Ghana. It serves as a referral hospital for the three northern regions of Ghana. It cooperates with the University for Development Studies in Northern Ghana to offer undergraduate and graduate programs in medicine, nursing and nutrition. It is the third teaching hospital in Ghana after the Korle Bu Teaching Hospital and the Komfo Anokye Teaching Hospital.

Tamale, officially called Tamale Metropolitan Area, is the capital town of the Northern Region of Ghana. Tamale is Ghana's fourth-largest city. It has a 2013 projected population of 360,579 according to the 2010 census and the fastest-growing city in West Africa. The town is located 600 km (370 mi) north of Accra. Most residents of Tamale are Muslims, as reflected by the multitude of mosques in Tamale, most notably the Central Mosque. The city is the third in Ghana for a Teaching hospital to constructed which was established in 2005 for the northern belt to help other smaller facilities to within the area to refer complicated medical cases for further investigations.

The hospital was established in 1974 and was formerly known as the Tamale Regional Hospital. It was to provide various health care services to the people of the three Northern regions of Ghana namely, the Northern, Upper East and Upper West regions.

In 2005, the Northern Regional Coordinating Council decided to partner the Ghana Health Service to upgrade the hospital to the status of a Teaching Hospital. The upgrade made the hospital the third teaching hospital in the country. The upgrade was to help with the training of health professionals from the University of Development Studies, Tamale Campus.

The mandate of the hospital is set by Act 525 of the Ghana Health Service and Teaching Hospitals Act of 1996. The stipulations of the mandate empowers the hospital to function in three critical areas namely, the provision of advanced clinical health services, supporting the training of undergraduates and postgraduates in medical sciences and finally, undertaking research into health issues for the purpose of improving health care.

The hospital is located in the Tamale Metropolis with a total surface area to be 490,000 sq meters, of which 122,500 sq meters have been developed with modern buildings which includes an ear center.

Study Population

The study population taken into consideration was all nurses in the Tamale Teaching Hospital who have given care to one or more patient(s). This category of staff was chosen because of

the profession and its relation and relevance to the use of venflon in the hospital. The hospital was selected because of its autonomous system, number of patients placed on medical care a day, as well as the number of employees who fall within the eligibility criteria. Five hundred and seventy-five nurses were sampled to come out with the sample size of the study.

Study Method and Design

Descriptive survey is the chosen research design adopted for the study. The researcher deemed this design appropriate because the study intended eliciting data on personal knowledge and experience on the care for cannula within a cohort. The study also assessed the sample population of the study. It is the believe of the researcher that the descriptive survey method is the most appropriate measure of obtaining data on personal knowledge, facts and perceptions of medical science.

Instruments of the Study

The study primarily employed the use of questionnaires in the collection of useful information for the study. This questionnaire was the primary source of data collected for use in the analysis to achieve the set objectives for the study. The questionnaires were structured and closed which enabled the respondent respond on time and also for the researcher to easy analyze the responses given. The use of secondary data from the hospital administration was collected through newsletters and minutes of meeting to support the research work.

Sampling Technique and Sample Size

The sampling frame (population) for the study is estimated to be 575 nurses. Stratified sampling technique was employed in selecting the three department under study, of which simple random sampling was used to draw out respondents who satisfy the eligibility criteria and willing to respond to the study. A total of 30 respondents will be selected from each Strata to make a total of 90 respondents to be gathered from the study population for analysis and interpretation.

To arrive at the sample size chosen, the researcher, with the permission of the hospital's administrator as well as the medical director, will have access to the sampling frame that will give the researcher the ease to achieve the sample size. As part of the protocols of achieving the sample size, the researcher sampled the first 30 nurses who pass the eligibility criteria for selection. This was repeated for the other strata to complete the sample process.

Data Collection Technique

The data collection technique was mainly through structured questionnaires and self-administered interviews. The questionnaire was distributed to eligible staff who completed and returned the questionnaires to the researcher on time which enabled the researcher to meet the deadlines for the research. The questionnaire was structured in the same way to ensure that all respondents answered the same questions in order to have uniform response which aided easy

analysis. It involved mostly close ended questions. Also, secondary sources of data on hospital history and other vital information was sorted from the hospital to help complete the study.

Data Analysis

The instrument (questionnaire) that was used for data collection composed of closed ended questions was collated, edited, coded and entered so it could be treated quantitatively by the use of the Statistical Package for the Social Sciences (SPSS). The data was cleaned to get rid of errors so that the accuracy of the data and the validity of the work not be compromised or affected. In the data analysis, descriptive statistics was the most used to describe the responses of the nurses and other variables in frequency tables, means and standard deviations.

RESULTS AND DISCUSSION

Demographics of Respondents

The study was conducted in the Tamale Teaching Hospital where demographic data of the respondents who willingly responded to the research was collected and analyzed below. A total of 49 health workers were interviewed from the Tamale Teaching hospital.

The study looked at the educational status of the respondents. It is revealed that most of the respondents 32 (65.3%) have Diploma as their highest level of education achieved while 2 (4.1%) acquired the midwifery certificate as their highest certificate. Also, it is indicated that masters, and degree recorded 3 (6.1%) and 8 (16.3%) respectively. This tells us that a marginal number of the nurses who work with the Tamale Teaching Hospital have not yet upgraded themselves since the completion of their nursing courses.

The research found that majority of the respondents 41 (83.7%) are full time workers of the hospital while a few of the respondents work at their respective wards on part-time workers of the facility.

The study also revealed areas the respondents are specialised in. 25 (51%) of the respondents are within the medical-surgical area specialised in while the telemetry and Iv Therapy recorded 1 (2%) each. Also, other areas of specialisation include General 10 (20.4), Critical care 5 (10.2%), Paediatric specialist 3 (6.1%), and Midwifery and Oncology with 2 (4.1%) each.

Nurses knowledge on Cannula care and Management of device

The research to interview nurses to find out their level of knowledge and management of cannula in the Tamale Teaching Hospital where 49 nurses from the Female Medical, Male Medical and Pediatric wards were sampled using the stratified sampling method.

It is indicated that majority of the respondents 24 (49%) spend at least 5-6 hours within their shift in the care and management of cannula while 22.4% of the respondents spend at least 1-2 hours of their shift in the insertion, management and care of cannula. It was also recorded

that 13 respondents representing 26.5% also spend at least 3-4 hours of their shift on insertion, management and care of cannula. This tells us that an appreciable number of nurses use and manage cannula in the Tamale Teaching Hospital.

The researchers wanted to ascertain whether in service training was carried out from time to time to enhance the knowledge also skills of the nurses in management of cannula while majority of the nurses have contact and also manage cannula in their respective wards. It was found that most of the response (77.6%) indicated that no in service training are conducted from time to time to enhance their knowledge on cannula management while a few (22.4%) of the respondents said, there was in service training organised from time to time.

When respondents were asked whether they know the types of IV connectors commonly used in fluid administration, it was revealed that 8 (16.3%) respondents know about this types of connectors while 40 (81.6%) have little or no idea about the types of IV connectors commonly used.

The knowledge of nurses about the maintenance of IV connectors was also enquired. It was indicated that 14.3% of the respondents said all types of IV connectors are maintained the same way while 79.6% of the respondents said types of IV connectors have different ways of maintenance. Also 6.1% of the respondents did not respond to this question due to "I don't Know"

26-50 and 51-75 percent of time spent on policy guide by respondents recorded a valid percentage of 36.7% and 36.7% respectively. Also, some respondents (6.1%) spend from 76-100 percent of their time following the institutions policy guide on IV connectors. 16.3% of the respondents say they spend 0-25 percent of their time on IV connector policy guide line for the Hospital.

The responses from the respondents on how important changing and maintaining IV connectors according to policy has to do with decreasing blood stream infection.

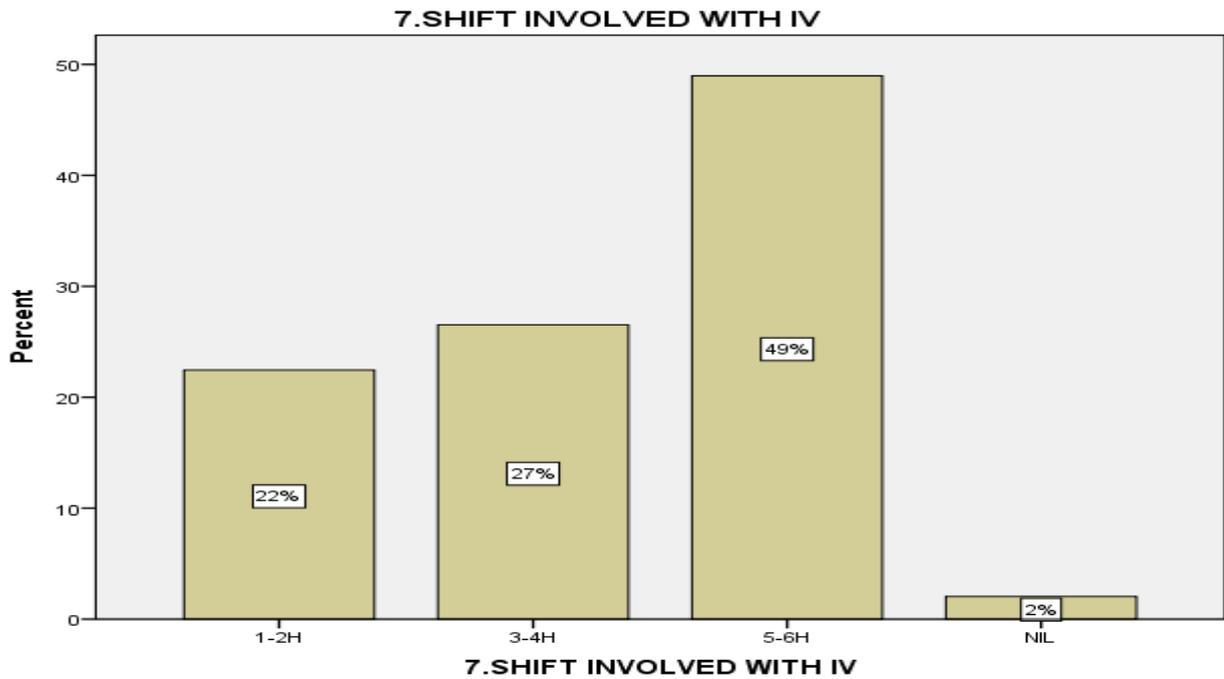


Figure 1: How Many hours in your shift are you involved with Cannula Management

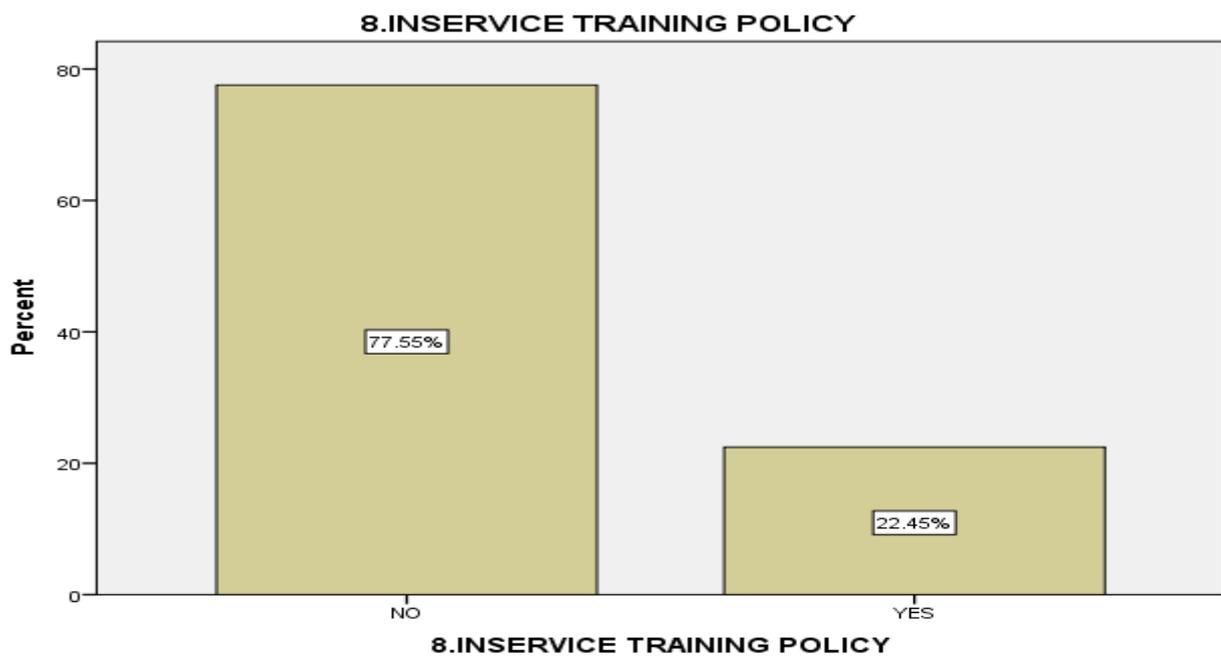


Figure 2: In-Service Training Education for Health Workers in the Tamale Teaching Hospital

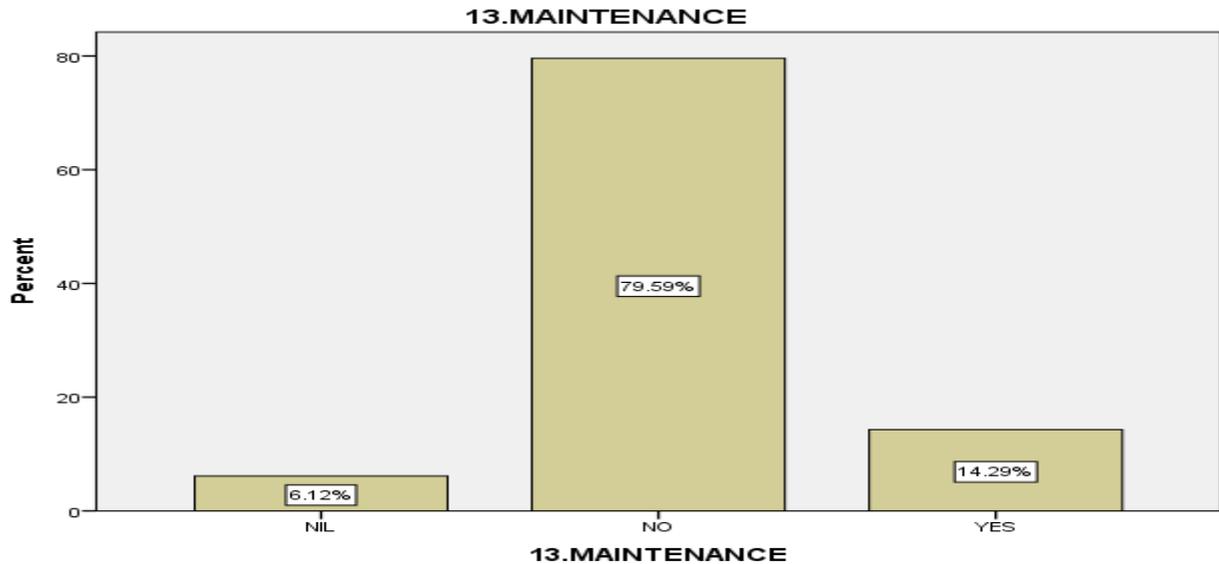


Figure 3: Knowledge of Maintenance of Types of IV connectors

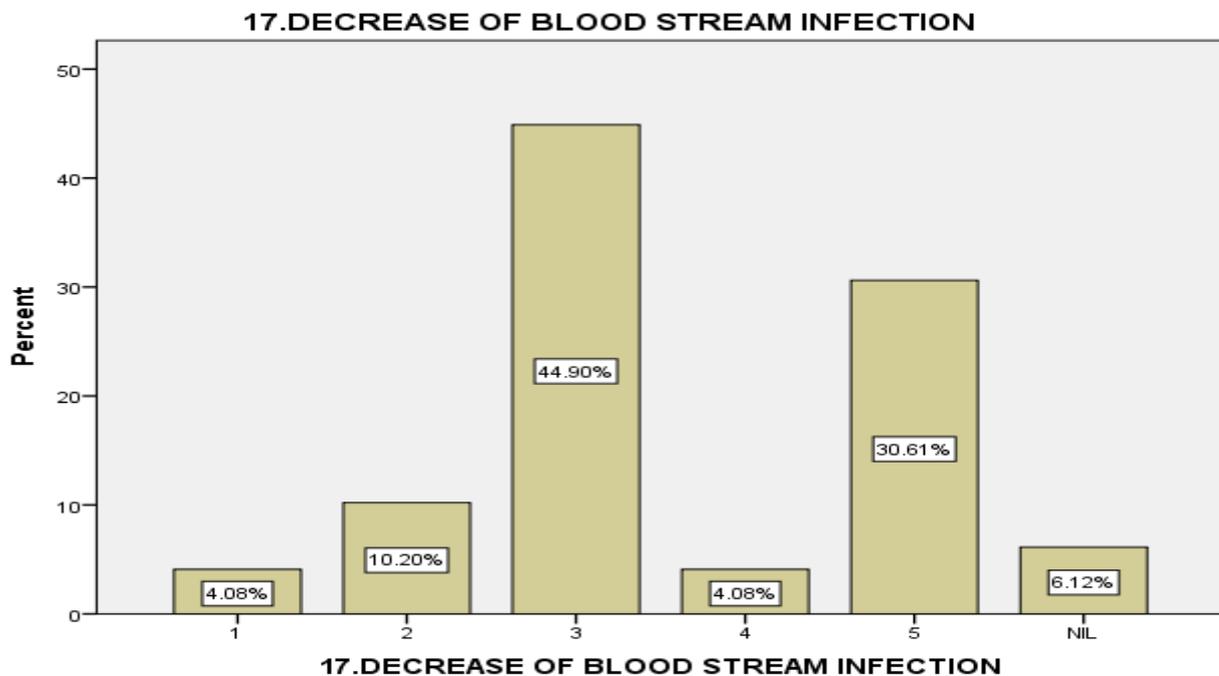


Figure 4: Knowledge of respondents on changing and maintaining IV connectors according to policy has decreased Blood stream infection

From the figure 1 denotes not important, 2 denotes somewhat not important, 3 represents important, 4 represents somewhat important, while 5 indicates very important from the Likert scale. It is recorded for important and very important, 44.9% and 30.6% respectively while Not important and somewhat important to be 4.1% and 10.2% respectively. This tells us that respondents believe that changing and maintaining IV connectors according to policy guide helps reduce blood stream infection from the practical ground.

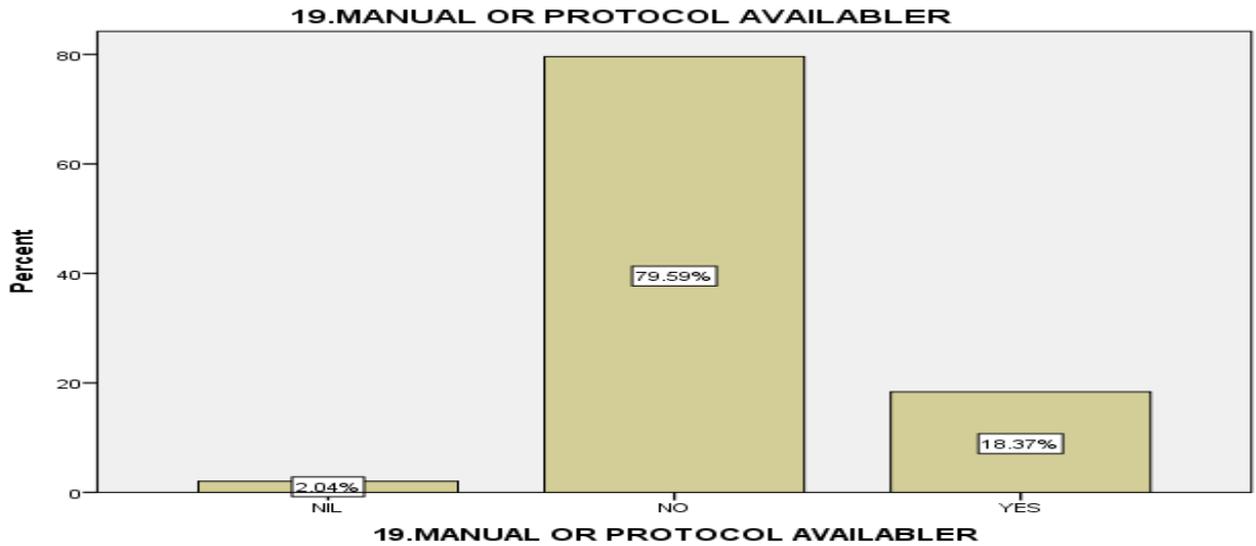


Figure 7: Availability of Manual or Protocol present in the ward regarding IV connectors

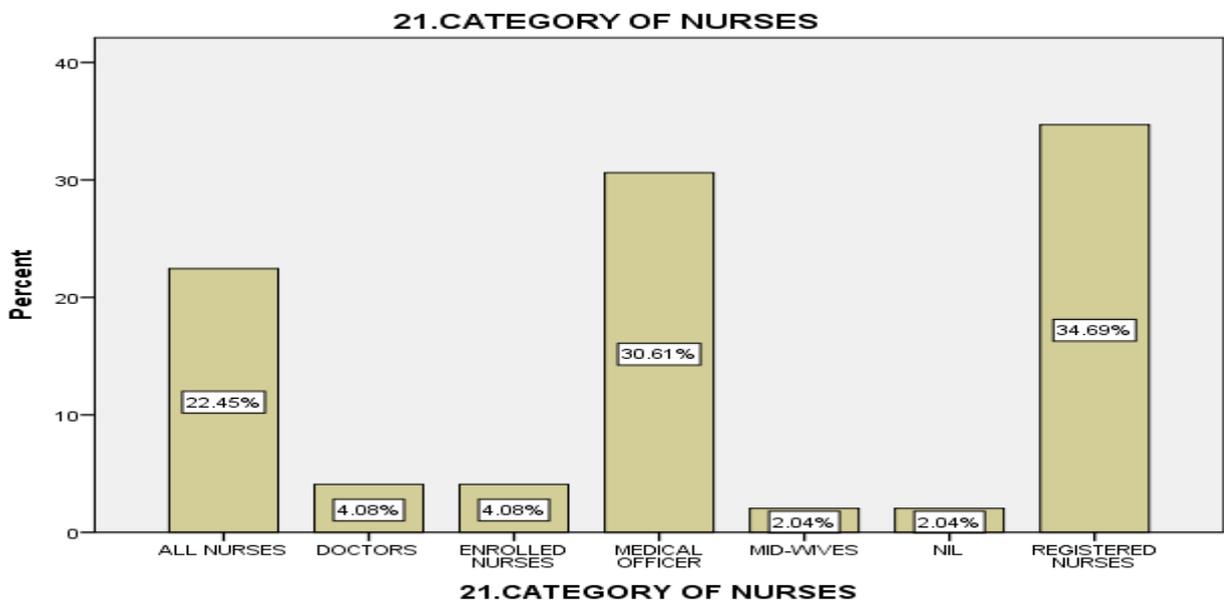


Figure 8: Category of Clinicians Who insert, manage, and care for Cannula in the ward

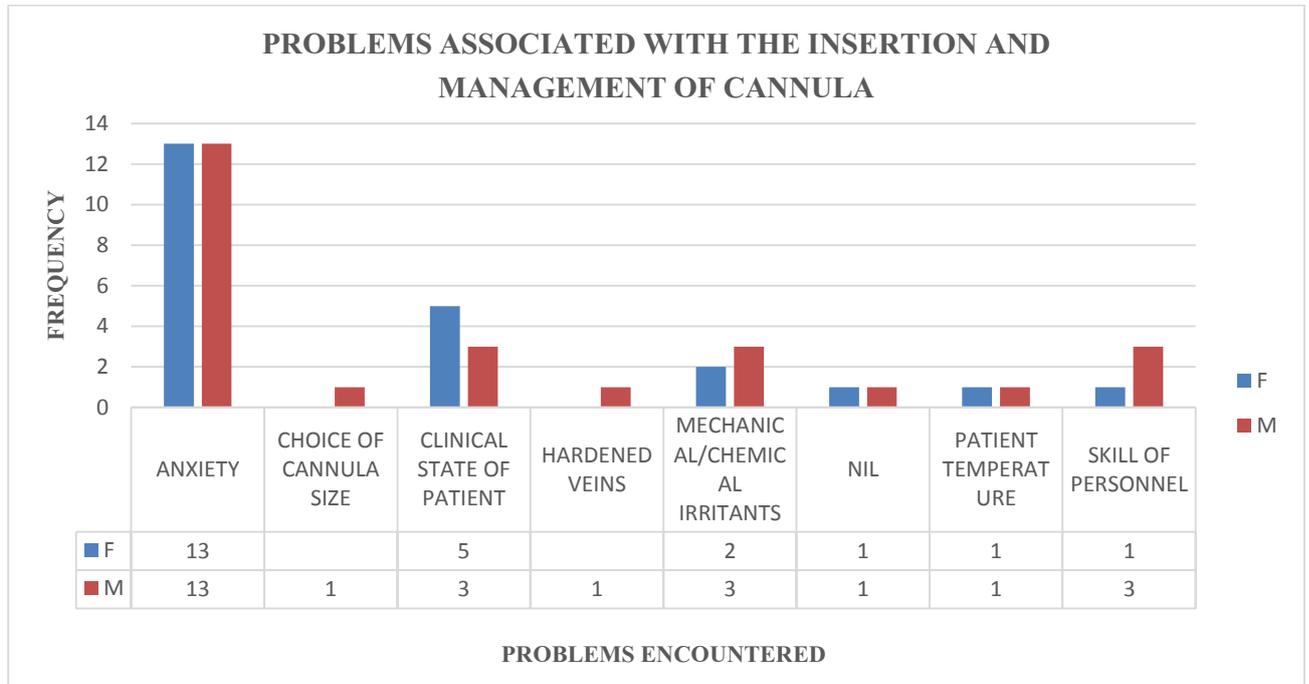


Figure 1: Problems/Challenges with the insertion and management of Cannula

Table 1: Shows the Educational Status of respondents

Education level	Frequency	Percent
Certificate	4	8.2
Degree	8	16.3
Diploma	32	65.3
Masters	3	6.1
Midwifery	2	4.1
Total	49	100.0

Table2: Shows the Area Specialised by Nurses in the Ward

Category of nurses	Frequency	Percent
Valid Critical care	5	10.2
General	10	20.4
Iv therapy	1	2.0
Medical-surgical	25	51.0
Midwifery	2	4.1
Oncology	2	4.1
Paediatric specialist	3	6.1
Telemetry	1	2.0
Total	49	100.0

Table 3; Marital Status of Respondents

Variable	Frequency	Percent
Valid Married	366	98.1
Single	7	1.9
Total	373	100.0

Table 4; Respondents Religion

Variable	Frequency	Percent
Valid Christian	17	4.6
Muslim	348	93.3
Traditionalist	8	2.1
Total	373	100.0

Table 5; Respondents Level of Education

Variable	Frequency	Percent
Valid Primary	51	13.7
Secondary	13	3.5
Tertiary	8	2.1
None	301	80.7
Total	373	100.0

Table 6; Gravidity of Respondent (Primigravidae?)

Variable	Frequency	Percent
Valid Primigravidae	118	31.6
Multigravidae	255	68.4
Total	373	100.0

Table 7; Parity of Respondent

Variable	Frequency	Percent
Valid 1-2	162	43.4
3-4	93	25.0
None	118	31.6
Total	373	100.0

Table 8; Trimester of Pregnancy at ANC Registration

Variable	Frequency	Percent
Valid 1-2 months	18	4.8
3-4 months	182	48.8
5-6 months	149	39.9
7-8 months	24	6.4
Total	373	100.0

Table 9; Age of Respondents

Variable	Frequency	Percent
Valid 18-22	2	9.1
23-28	18	81.8
34-38	2	9.1
Total	22	100.0

Table 10; Professional Qualification of respondents

Variable		Frequency	Percent
Valid	Certificate in nursing	16	72.7
	Diploma in Nursing/Midwife	2	9.1
	Certificate in clinical medicine	2	9.1
	Others	2	9.1
	Total	22	100.0

Table 11; Attitude of ANC service providers

Variable		Frequency	Percent
Valid	1-2 poor	49	13.1
	3-4 fair	69	18.5
	5-6 good	199	53.4
	7-8 excellent	56	15.0
	Total	373	100.0

Table 12; Structure in which ANC services are delivered

Variable		Frequency	Percent
Valid	Room	360	96.5
	Under a Tree	11	2.9
	On a veranda	2	.5
	Total	373	100.0

Table 13; Average Time Spent on Each Client during ANC

Variable		Frequency	Percent
Valid	1-20 minutes	110	29.5
	21-40 minutes	200	53.6
	41-60 minutes	52	13.9
	60+ minutes	11	2.9
	Total	373	100.0

e of drugs

Variable		Frequency	Percent
Valid	Yes	92	24.7
	No	281	75.3
	Total	373	100.0

Table 15; Decisions in the House

Variable	Frequency	Percent
Valid Husband	67	18.0
Husbands mother	42	11.3
Husbands father	32	8.6
Wife	15	4.0
Family head	52	13.9
Spiritualist	32	8.6
All of the above	133	35.7
Total	373	100.0

Table 16; Traditional Factors Influencing the use of ANC Services

Variables	Frequency	Percent
Valid Restriction from certain Foods	143	38.3
“Pregnancy Outdooring”	185	49.6
Hiding the pregnancy for the first five months	24	6.4
Others	21	5.6
Total	373	100.0

The study revealed that 46.9% of the respondent said they clean IV connectors with alcohol each time they assess it. 51.0% said they do not clean the IV connectors with alcohol before assess it. Also, some of the respondents (2.0%) did not respond to this question.

Practice of insertion of IV Connectors using SOP/Policy documents

The researchers wanted to find out whether there is an electronic or manual protocol or the guide lines regarding IV connectors in the ward. It was indicated that 79.6% of the respondents said, there is no manual printed or electronic version in the ward but 18.4% said there is a manual or electronic version of the manual present in the ward. This indicates that some wards have the policy guide line either hard copy or soft copy specifically for their ward of operation. On the category of clinicians who perform insertion and management of IV connectors in the wards. It was revealed that all nurses and some doctors do perform the processes involved in IV connectors.

With regards to whether clinicians follow the standard operating procedure guideline for IV connectors when performing one, it was indicated that 28.6% of the respondents said they do follow the SOPs while 57.1% said they do not follow the SOPs in performing the processes of insertion and management of IV connectors. 14.3% did not respond to the question regarding the SOPs.

Problems/Barriers that hinder Cannula care amongst Nurses

The research wanted to find out whether there are problems associated with the insertion, management and care of cannula with respect to infection. It was indicated that 55.1% of the

total response said they have not come across issues of infection due to cannula while 42.9% said they have ever come across infection issues regarding to cannula care and management. The researcher sought to find out the problems and challenges faced by health workers with IV connectors. It was realized the most pressing problem was right type of IV connectors (44.9%) provided by the hospital management for use while the attitude of nurses recorded the least with 4.1%. Other challenges also hinder the success management and care of IV connectors which are inadequate supply, and Patient attitude recorded 32.7% and 14.3% respectively.

Also the study found that 26 respondents said patient anxiety is one of the major problems and challenge of insertion, management and care of cannula. Also, it was seen that 8 respondents also said the clinical stage of the patient is one of the challenges faced during the insertion, management and care of cannula. Other problems and challenges faced are choice of cannula (1), Hardened veins (1), mechanical/chemical irritants (5), and patient temperature (2).

Determining ways of improving cannula management and care in the Tamale Teaching Hospital

This question regarding the improving of cannula management and care was asked, qualitative response was given in respect to the improvement of cannula management and care in the various clinical wards. The following were sampled common responses from the respondents as to help them be able to perform their duties as pointed out in the research;

1. Organize in service training for nurses and health workers who deal directly or indirectly cannula periodically
2. Proper monitoring to ensure that the cannula insertion and management sites of the Tamale Teaching Hospital use the policy guide on IV connectors
3. Providing adequate logistics, that is providing the right types of IV connectors for nurses and health workers to use

CONCLUSION

The insertion and daily use of IV cannulas is associated with risks and complications that can have an impact on the clinical outcome of the patient. The present study was undertaken to investigate nurse's knowledge on insertion management and care of cannula in the Tamale Teaching Hospital. A large-scale Regional study, using an updated (i.e. adding the zero device) yet similar questionnaire and targeting nurses, physicians, and students, is warranted to determine knowledge deficits and best education practices to increase knowledge in these three healthcare providers. Once the deficits and education mode(s) are determined then programmes can be established to meet these needs with research initiatives implemented and outcome criteria assessed for effectiveness. It is imperative that nurses rise to the challenge and take the lead to assist in solving this problem.

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