

Assessment of the level of knowledge and practice on intravenous cannulization among staff nurses of selected tertiary care hospital in Dhaka city

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 stylet available, inserted to the vein to administer medications, fluids or blood transfusions. The Objective of the study was to find out the level of knowledge and practice on intravenous cannulization among staff nurses of selected Tertiary Care Hospital in the Dhaka city. The study was descriptive type of cross-sectional in nature. The main study was conducted from March-August 2013 in Dhaka Medical College Hospital, Bangabandhu Sheikh Mujib Medical University, Delta Medical College Hospital, Dhaka, Bangladesh. The instruments used for the study were self-administrated questionnaire and observational checklist. A total of 290 staff nurses who met the inclusion criteria were selected from different units of hospital by using simple random sampling technique. Mean age of the respondents was 32.11 ± 5.3 years. The majority of respondents were female (87.2%). Maximum, 94% of respondents were completed upto Diploma in Nursing. Among the respondents, 18.3%, 50%, 24.3% and 6.9% had expressed one type of IV cannula, two types of IV cannula, three types of IV cannula and 6.9% four types of IV cannula. A majority of 49.7 % had found Good knowledge level followed by 25.5% had average knowledge, 21.7% had excellent knowledge and 3.1% had poor knowledge. About 53.8 % had found poor knowledge level followed by 39.3% had average knowledge and 5.9% ad Good knowledge, whereas only 1.0% had excellent knowledge regarding indication and contraindication on IV cannulization. About 2.67% respondents had Excellent, 12% had Good, 73.33 % had Average Practice and 12% had poor practice.

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Introduction

Intravenous therapy is important in the modern medicine. Millions of patients are receiving infusion therapy for life saving and for correcting the metabolic disorders through drugs, nutrition, solutions and blood products.¹ Peripheral intravenous cannulization is most widely used procedure in a hospital or in a community setting. Peripheral venous devices were introduced more than 40 years ago.² Today's hospitals rely on intravenous catheters as essential tools to deliver intravenous medications, blood products and nutritional fluids. Although intravenous cannulization is a key procedure in almost all departments of health care, it also has its own disadvantages when not taken proper care of. These vascular access devices cause many types of complications like intravenous (IV) phlebitis, thrombophlebitis, catheter embolism, bleeding, nerve, tendon or ligament damage, needle stick injuries, sepsis, etc.³ Nosocomial infections are associated with vascular access devices that are the major concern in today's medical care. 30% of the nosocomial bacteraemias in the US hospitals are associated with intravenous catheters.⁴ The annual incidences of septic phlebitis in the US is unknown but it is the most common cause of fever after the third post-operative day, occurring in at least 12% of patients who have undergone surgery. 9% of ICU patients with central venous catheters develop fever and bacteraemias and have positive results of the culture of the venous catheter tip. The International incidences in the developing countries are unknown.⁵ Nurses who are able to plan and carry out nursing care with knowledge, skill and confidence are better ambassadors for their speciality. Nurses practice

within a changing and evolving health care environment and therefore they are required to develop their knowledge, skill and attitude. As no study was done before in Bangladesh, I think this study created new knowledge to scientific community.

Material and methods

This study was descriptive type of cross-sectional study conducted to explore the level of knowledge and practice on intravenous cannulization among staff nurses of selected tertiary care hospitals in the Dhaka city, Bangladesh. The study was conducted among three tertiary care of hospitals in the Dhaka city. The duration of study was six months from March 2013 to August 2013. Study population was all staff nurses of selected at three tertiary care of hospital. Selection of sample was followed by a Simple Random Sampling Technique with population proportional to size accordingly. Our sample size was 290. Staff Nurses must be Valid registered from Bangladesh Nursing Council (BNC) and Staff Nurses having at least two year clinical job experience in the clinical setting were included in this study. To find out the reliability, validity and practicability for the modification of questionnaires, pre-test had been done among 10(ten) staff nurses working in the National Institute of Cardiovascular Diseases & Hospital (NICVDH) before finalizing the instruments. According to the result of pre-test necessary modification was done. All interviewed questionnaire was checked for its completeness accuracy and consistency to exclude missing or inconsistent data. Data were checked cleaned and edited properly before analysis.

Result

Among the respondents, 70.7% (n=205) were in the high age group (25-35 yrs.), 1.7% (n=5) were equal or above age group (≥ 45 years), while 4.5% (n=13) were younger age than age (< 25 years). Similarly, 23.1% (n=67) were 35-45 years. The mean age of the respondents was 32.11 years (SD 5.3) (Figure 1).

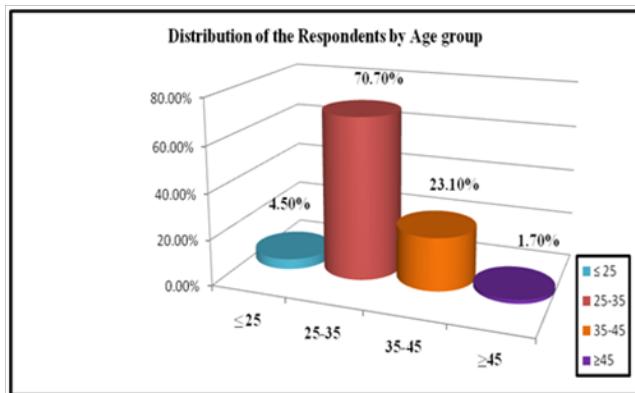


Figure 1 Age group distribution.

Majority of respondents were female (87.2 %) and minority were male (12.8%) (Table 1).

Table 1 Gender distribution

Gender	Frequency	Percentage
Male	37	12.8
Female	253	87.2
Total	290	100

Figure 2 demonstrate that 94% (n=273) of respondents were completed upto Diploma in Nursing, 5% (n=15) were Bachelor in Nursing, 1% (n=02) were completed Master in Nursing/ MPH.

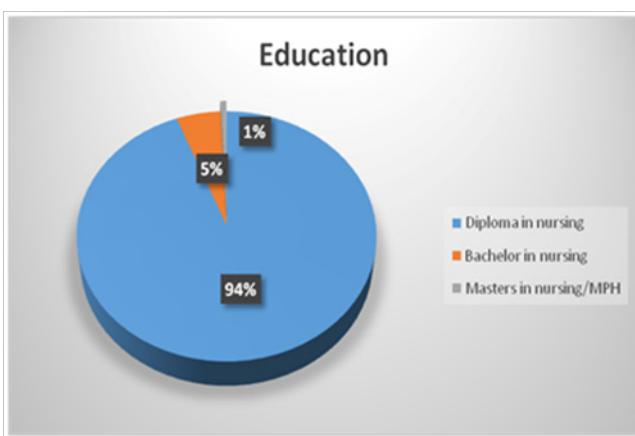


Figure 2 Distribution of professional education.

Table 2 illustrate distribution of respondents' knowledge on types of IV cannula. Among the respondents (n=290), 18.3% (n=53) had expressed one type of IV cannula have. 50% (n=145) had expressed two types of IV cannula. 24.3% (n=72) had expressed three types of

IV cannula and 6.9% (n=20) had expressed four types of IV cannula. Maximum respondents were 50% (n=145) which had expressed two types of IV cannula and minimum were 6.9% (n=20) which had expressed four types of IV cannula. 50% (n=145).

Table 2 Distribution of Respondents' Knowledge on Different Types of IV Cannula

Types of IV Cannula	Frequency	Percentage
One	53	18.3
Two	145	50
Three	72	24.8
Four	20	6.9
Total	290	100

Multiple responses

A majority of 49.7 % (n=144) had found Good knowledge level followed by 25.5% (n=74) had average knowledge, 21.7% (n=63) had excellent knowledge and 3.1% (n=9) had poor knowledge (Figure 3).

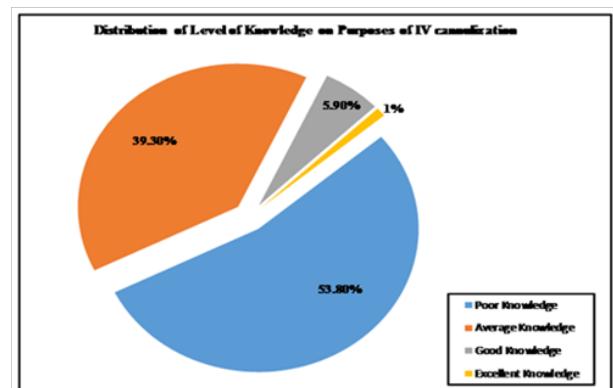


Figure 3 Level of knowledge on concept of IV cannulization.

Figure 4 shows that level of knowledge on indication and contraindication of IV cannulization among the respondents. About 53.8 % (n=156) had found poor knowledge level followed by 39.3% (n=114) had average knowledge and 5.9% (n=17) had Good knowledge, whereas only 1.0% (n=03) had excellent knowledge.

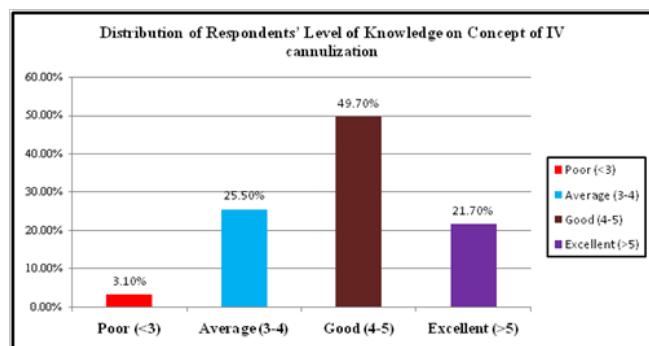


Figure 4 Level of knowledge on indication and contraindication of IV cannulization.

Table 3 shows that 75 respondents had performed 90%-100% among taken consent, used non-touch techniques, holding for coming blood into chamber, cleaned the skin with antiseptic swab, and released tourniquet after placed IV cannula, 70% - 89% had achieved on Used non-dominant arm, Flushed IV cannula after insertion and Dispose of waste in accordance place, 40%-69% had done on Assembled all equipment, Maintained hand hygiene, Applied a tourniquet firmly, Permitted solution to dry on the skin, Apply dressing after insertion and Less than 40% had completed on Used personal protective

equipment correctly, Put on clean gloves, Used a circular motion, moving from the center outward, Checked any leakage or damage or contaminated before insertion, Used transference adhesive paper and Kept complete documentation.

Figure 5 illustrates level of practice on IV cannulization. About 2.67% (n=02) respondents had Excellent, 12% (n=09) had Good, 73.33 % (n= 55) had Average Practice and 12% (n=09) had poor practice.

Table 3 Distribution of Respondents' Practice by Observational Checklist (n=75)

SL	Performance criteria	n	%
1	Explained the procedure	28	37
2	Taken consent	75	100
3	Used personal protective equipment correctly	0	0
4	Assembled all equipment	32	43
5	Used non-dominant arm	54	72
6	Maintained supine position during insertion	60	80
7	Maintained hand hygiene	40	53
8	Applied a tourniquet firmly	48	64
9	Put on clean gloves.	11	15
10	Cleaned the skin at the site of entry with antiseptic swab.	74	99
11	Used a circular motion, moving from the center outward	2	3
12	Permitted solution to dry on the skin	30	40
13	Used a no-touch technique for any part of the needle or cannula.	75	100
14	Checked any leakage or damage or contaminated before insertion.	10	14
15	Holding for coming blood into IV cannula chamber.	74	100
16	Released the tourniquet after placed IV cannula.	68	91
17	Flushed IV cannula after insertion	63	84
18	Apply dressing after insertion	46	62
19	Used transference adhesive paper	6	8
20	Labeled the dressing with the date and time of insertion.	9	12
21	Dispose of waste in accordance place.	56	75
22	Kept complete documentation.	16	21

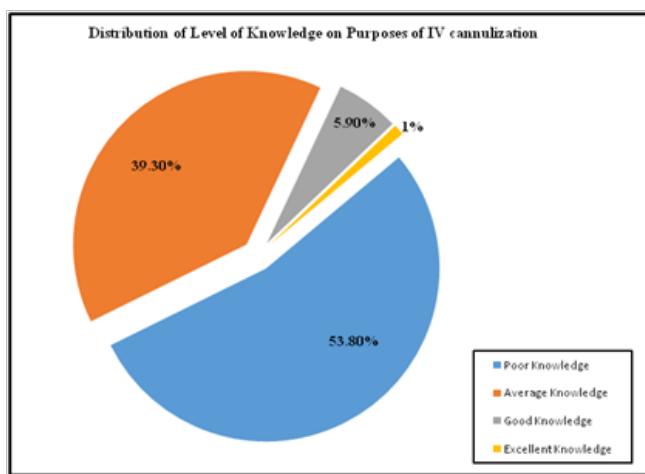


Figure 5 Level of practice on IV cannulization.

Discussion

Nurses wholly and solely responsible for the patient who get admitted in the hospital as well as community. The present study was conducted to assess the level of knowledge and practice on IV cannulization among staff nurses of selected tertiary care hospital in the Dhaka city. About half of the nurses had good knowledge. So there is huge scope to upgrade rest half of the respondents to get better service from them. More than half of the nurses had poor knowledge on indication and contraindication of IV cannulization. This scenario is really alarming. In terms of practice about three-fourth of the nurses did average practice. A study was conducted to assess the knowledge of undergraduate nurses with a sample size of 250. The study shown that one third of the samples had poor knowledge in IV cannulization, 42% of the samples did not care about aseptic techniques, 25% of them performed cannulization well but did not know the complication of the peripheral venous cannulization.⁶ Another study was conducted to compare the knowledge of IV cannulization among graduates and under graduate nurses. The study shown that nearly half of the graduate nurses had inadequate knowledge about the complication like infiltration and phlebitis compared to 68% of the under graduate nurses, 57.6% of the graduates performed IV cannulization aseptically compared to 32% of the under graduate nurses.⁷ Study was planned and applied in 2 stages. Stage I was applied to determine the knowledge of nurses working in the internal medicine, surgery, obstetrics and Gynaecology, pediatrics. Stage II consisted of observation of all patients who had intravenous catheters for symptoms of phlebitis

for 5 days and the interventions the nurses used for the patients who had phlebitis. In stage I, questionnaires were used to determine the knowledge of the nurses; in stage II, 2 investigators observed the patients. Nurses were found to have high knowledge levels, but their practices were not suitable to their knowledge levels. Of the patients who participated in the study, 67.24% showed symptoms of phlebitis. Study found that there was a significant relationship between the selection of the vein and the occurrence of phlebitis in patients who had an intravenous catheter. Study found that nurses were having less knowledge in selection of cannulation site.⁸

Conclusion

It is concluded that half of the nurses were not knowledgeable on every aspect of IV cannulization. In the clinical area, nurses should be kept sufficient knowledge. The staff nurse need to involve in identify the care of patient with IV cannulization and safe practices. Otherwise patient will be sufferer as well as country.

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None.

Conflict of interest

The author declares no conflict of interest.

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