

A Study To Assess The Effectiveness Of Practical Guideline On Maintaining Aseptic Technique While Preparing And Administering The Intravenous (IV) Transfusion By The Staff Nurses Working In Medical- Surgical Wards

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Abstract: Intravenous fluid administration is not only common in the hospital; it is also increasingly common in the home for the replacement of fluids, administration of medications, and provision of nutrients when no other route is available. It helps the research workers to develop a thorough understanding and insight into previous works and trends that have emerged. The review can also help in reaching a number of important specific goals. **Objective:** To assess the knowledge of the staff nurses regarding Intravenous Transfusion before and after administration of Practical Guideline on Maintaining Aseptic Technique while Preparing and Administering Intravenous Transfusion in selected Government Hospitals of Gujarat State. To assess the performance of the staff nurses regarding Intravenous Transfusion before and after administration of Practical Guideline on Maintaining Aseptic Technique while Preparing and Administering Intravenous Transfusion in selected Government Hospitals of Gujarat State. **Results:** In the overall and specific content area, mean gain scores were comparatively higher after exposure to Practical Guideline on IV Transfusion. The findings indicate that the Practical Guideline is a suitable and effective method of instruction for updating and enhancing the knowledge as well as skills of staff nurses on aspects of IV Transfusion. [Chetna P NJIRM 2017; 8(1): 44-47]

Key words: Intravenous (IV) Transfusion, reduction of complications of IV, Health

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Introduction: Intravenous therapy is indicated for the administration of drugs, nutrition, infusion solutions and blood products, for correcting metabolic problems and for life saving measures (Mac Farlane et al., 1980; Blatz and Bosco, 1990). Intravenous infusion is an invasive procedure and is a major responsibility of the staff nurses to maintain asepsis practices while preparing the intravenous infusion for the patients. These are involved hand washing, use of gloves and gowning. Sterilization of articles by boiling, cold sterilization, fumigation, radiation, hot- air sterilization or autoclaving.

Hypotheses: This study based upon following hypotheses :

- H_1 : The mean Post-Test knowledge score of Staff Nurses exposed to Practical Guideline on Maintaining Aseptic Technique while Preparing and Administering Intravenous Transfusion is significantly higher than their mean Pre-Test Knowledge score determined by Structured Knowledge Test.
- H_2 : The mean Post-Test Performance score of Staff Nurses exposed to Practical Guideline on Maintaining Aseptic Technique while Preparing and Administering Intravenous Transfusion is significantly higher than their mean Pre-Test Performance score determined by Structured Observational Check List.

Aims and Objectives:

1. To assess the knowledge of the staff nurses regarding Intravenous Transfusion before and after administration of Practical Guideline on Maintaining Aseptic Technique while Preparing and Administering Intravenous Transfusion in selected Government Hospitals of Gujarat State.
2. To assess the performance of the staff nurses regarding Intravenous Transfusion before and after administration of Practical Guideline on Maintaining Aseptic Technique while Preparing and Administering Intravenous Transfusion in selected Government Hospitals of Gujarat State.

Methods:

Study design: The conceptual framework adopted for the study was based on a "SYSTEM MODEL". i.e. input, process and context. The study was experimental in nature with one group pre-test post-test design. The Practical Guideline on Maintaining Aseptic while Preparing and Administering IV Transfusion was developed by reviewing the extensive literature on IV Transfusion in terms of knowledge and skills. The samples of 40 Staff Nurses were selected through non-probability purposive sampling technique.

Variable:

- Independent Variable: Practical Guideline on Maintaining Aseptic Technique while Preparing and Administering Intravenous Transfusion.

- Dependent Variable: Knowledge and Psychomotor Skill of Samples
- Changes in dependant variable = [Status of the dependent variable at the after observation] – [Status of the dependant variable at the before observation].

Criteria for sample selection:

1. Samples working in the Medical - Surgical Wards
2. Samples those were willing to participate in the study.

Tools used:A Structured Knowledge Test to assess Staff Nurses knowledge regarding IV Transfusion and a Structured Observational Check List to assess their skill to perform IV Transfusion.

The Structured Knowledge Test on IV Transfusion has two sections:

Section - I : Consists of six items on personal data such as Age, Sex, Professional Qualification, Total Professional Experience of sample, present working department and attendance of ISE programme on IV.

Section - II: Comprised items on knowledge regarding Intravenous Transfusion. There are total 40 multiple choice items having one correct answer. Total items were 40 and total maximum score was 40. 40 items

Table 1: ‘t’ Value of area wise Pre-Test and Post-Test knowledge Scores of Samples regarding IV Transfusion [N=40]

| No | Areas | Pre-Test Knowledge Score of Sample | | Post-Test Knowledge Score of Sample | | Mean difference | ‘t’ | Level of Significance Value |
|----|---------------------------------|------------------------------------|------|-------------------------------------|------|-----------------|------|-----------------------------|
| | | Mean Score | S.D. | Mean Score | S.D. | | | |
| 1 | Related to Anatomy & Physiology | 1.78 | 1.80 | 1.95 | 1.77 | 1.95 | 3.80 | 0.05 |
| 2 | Fluid and Electrolyte Balance | 3.35 | 5.0 | 7.1 | 1.25 | 3.75 | 6.39 | 0.05 |
| 3 | Indications of IV Therapy | 2.73 | 6.16 | 3.68 | 2.58 | 0.95 | 3.51 | 0.05 |
| 4 | Nursing responsibility | 2.35 | 4.30 | 6.03 | 2.67 | 3.68 | 2.89 | 0.05 |
| 5 | Aseptic Technique | 3.05 | 4.17 | 8.05 | 1.41 | 5.0 | 7.79 | 0.05 |
| 6 | Drug Calculation | 1.35 | 7.07 | 2.68 | 3.0 | 1.33 | 4.15 | 0.05 |
| 7 | Complications | 2.32 | 2.73 | 4.35 | 2.31 | 2.03 | 3.01 | 0.05 |

Analysis of data collected on Structured Observational Check List are based on following headings— i) Comparison of Pre-Test and Post-Test Mean of performance score of performing IV Transfusion, task wise Mean, Mean percentage and percentage Gain.

were divided in seven sub-areas of the content – related Anatomy and Physiology, fluid and electrolyte balance, indication of IV, nursing responsibility during IV, aseptic technique during IV, drug calculation, and complications of IV. Out of 40 items, 15(37.5%) falls in to knowledge aspects, 07 (17.5%) lies into comprehension whereas 18 (45%) belongs to application aspects. Key answer was prepared.

Structured Observational Check List: Comprised of 20 items on performance of IV Transfusion. There are 3 main task named as preparation phase, performance phase and after care phase. Each sub task has score of one mark thus total of 20 score. So total items were 20 and a maximum score of 20 was comp

Observation and results:

Data analysis: Analysis of data collected on Structured Knowledge Test are based on following heading :-

- i. Data collected on Section-I deals with description of the sample characteristics such as age, sex, professional qualification, total professional experience, present working department and attend ISE on IV Transfusion terms of frequency and percentage.
- ii. Data collected on Section—II deals with comparison of Pre-Test and Post-Test Mean of knowledge score, Standard Deviation and area wise Mean, Mean percentage and percentage Gain each area.

To test the null hypothesis ‘t’ test is used. Data analysis had been done with help of computer to compute Mean, S.D. and SE of both the groups on

each major task. ‘t’ value probability 0.05 is accepted as level of significance. ‘t’ value probability 0.05 is considered to reject the stated null hypothesis. When ‘t’ (computed) does equal or exceed than the ‘t’ (theoretical), it is rejection of the null hypothesis at the 0.05 level of significance. When null hypothesis is

rejected and research hypothesis is accepted, it is concluded that 'there is significant difference between mean score of samples. The table shows that all the area significant even at 1% level, indicating significant improvement in knowledge scores per the area particularly: 'aseptic technique' is the area which the nurses have shown improvement in knowledge as indicated by high 't' value.

Table 2: 't' Value of task wise Pre-Test and Post-Test Performance Score of Samples for Performing IV Transfusion [N=40]

| No | Areas | Pre-Test Knowledge Score of Sample | | Post-Test Knowledge Score of Sample | | Mean difference | 't' | Level of Significance Value |
|----|-------------------|------------------------------------|------|-------------------------------------|------|-----------------|------|-----------------------------|
| | | Mean Score | SD | Mean score | SD | | | |
| 1 | Preparation Phase | 2.53 | 3.80 | 5.5 | 1.8 | 2.54 | 4.32 | 0.05 |
| 2 | Performance Phase | 3.57 | 2.13 | 9.7 | 1.89 | 5.7 | 3.67 | 0.05 |
| 3 | After Care Phase | 1.0 | 2.86 | 2.78 | 1.64 | 2.31 | 2.78 | 0.05 |

The table shows that all the area significant even at 1% level, indicating significant improvement in performance scores per the task particularly: 'preparation phase' is the task which the nurses have shown improvement in performance as indicated by high 't' value.

It is concluded that 't' value of 39df is > t (theoretical) 2.02 at probability of 0.05 level of significance. So, it is considered that stated null hypothesis is rejected and research hypothesis is accepted that there is a significant difference in Mean Pre-Test and Mean Post- Test Performance score of sample exposed to Practical Guideline.

Table 3: Relationship between Mean and Mean percentage of Post-Test Scores of Knowledge and Performance[N=40]

| Post-Test Score of sample exposed to study | | | |
|--|-------|-------------------|-------|
| Knowledge Score | | Performance Score | |
| Mean | Mean% | Mean | Mean% |
| 35.62 | 89.05 | 17.98 | 89.90 |

The maximum possible knowledge score of the applied Structured Knowledge Test was 40. The above table shows that the mean Post-Test Knowledge Score is 35.62 and the mean percentage is 89.05%. It shows that the sample obtained 89.05 % of knowledge and out of knowledge they implemented 89.90 % in their practice. It shows relationship between Post-Test knowledge score and performance score of sample. Thus, after exposure to Practical Guideline sample used more than 94% knowledge in to practice.

It is concluded that 't' (cal) value of 39df is > t (theoretical) 2.02 at probability of 0.05 level of significance. Hence, it is considered that stated null hypothesis is rejected and research hypothesis is accepted that there is a significant difference in Pre-Test and Mean Post- Test Knowledge score of sample exposed to Practical Guideline.

Discussion: Sample characteristics revealed that the entire sample were female, in the age group of above 40 years. Majorities were with General Nursing and Midwifery as their professional education.

In the overall and specific content area, mean gain scores were comparatively higher after exposure to Practical Guideline on IV Transfusion. The findings indicate that the Practical Guideline is a suitable and effective method of instruction for updating and enhancing the knowledge as well as skills of staff nurses on aspects of IV Transfusion.

The highest gain was in the area of aseptic technique was 55.55%. Thus, there was lowest Mean percentage of Pre-Test knowledge score regarding drug calculation (1.35) followed by fluid and electrolytes balance (3.35). There was knowledge deficit in all the area. The highest Mean Post-Test score was in the area of aseptic technique (8.05). Increase in Mean percentage concerned to the area of Complication of IV therapy was 40.5%, drug calculation was 44.17%, nursing responsibility 52.5%, and indication for IV therapy was 23.75%.

The lowest Mean percentage of Pre-Test 32.5% in a performance phase, this indicates that maximum skill deficit existed in this task. Concerned with other task the percentage gain in the area were—preparation phase was 49.67%, performance phase was 55.68%, and after care phase was 59.71%. Thus, there was deficit in performance phase in all tasks.

Recommendations: A similar study can be conducted with a larger sample. The study could be replicated on a group of student nurses. A similar study can be done by using other teaching strategies. A similar study can be conducted to test the effectiveness of Practical Guideline among the groups of different nursing students.

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| Conflict of interest: None |
| Funding: None |
| Cite this Article as: Chetna P, Dipti T A Study to Assess the Effectiveness of Practical Guideline on Maintaining Aseptic Technique. <i>Natl J Integr Res Med</i> 2017; 8(1):44-47 |