

## Original Article

# Effectiveness Of Simulation On Knowledge And Practice Regarding Surgical Count Performance Among Staff Nurses Working In Operation Theatre Of Selected Hospitals In Mangalore, Dakshina Kannada.

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## ABSTRACT

**Background of the study**

Nurses play a significant role in surgical safety measures. A serious post operative complication that threatens patient safety is the retention of an item used during surgery. The scrub and circulating nurse are responsible for ensuring the accuracy of counts and documentation of all items used for surgery. Any strategy to improve counting methods should be tested and evaluated among nurses working in the operation room setting.

**Statement of problem**

Effectiveness of simulation on knowledge and practice regarding surgical count performance among staff nurses working in operation theatre of selected hospitals in Mangalore, Dakshina Kannada

**Objectives of the study**

- 1.To determine the pre test level of knowledge and practice on surgical count performance among staff nurses working in operation theatres.
- 2.To find out the effectiveness of simulation on level of knowledge and practice regarding surgical count performance among staff nurses working in operation theatres.
- 3.To find out the correlation between level of knowledge and practice regarding surgical count performance among staff nurses working in operation theatres.
- 4.To find out the association between the pre-test level of knowledge and practice and selected demographic variables of staff nurses.

**Hypotheses**

Hypotheses will be tested at 0.05 level of significance

H<sub>1</sub>:There will be a significant difference between mean pre test and post test level of knowledge on surgical count performance among staff nurses.

H<sub>2</sub>:There will be a significant difference between mean pre test and post test practice score on surgical count performance among staff nurses.

H<sub>3</sub>:There will be significant correlation between pre test level of knowledge and practice on surgical count performance among staff nurses.

H<sub>4</sub>:There will be significant correlation between post test level of knowledge and practice on surgical count performance among staff nurses.

H<sub>5</sub>:There will be significant association between the pre test level of knowledge and practice and selected demographic variables of staff nurses.

**Conceptual framework**

The conceptual framework for the present study was based on the concepts of Imogene M King's goal attainment theory.

**Methodology**

An evaluative approach was used to assess the effectiveness of

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simulation on knowledge and practice regarding surgical count performance among staff nurses. The sample size comprised of 60 staff nurses who were selected using convenience sampling technique and the data were collected using structured knowledge questionnaire and structured observational checklist on surgical count performance.

## Results

The overall post test mean knowledge score was 25.32(84.39%) with SD  $\pm$  2.56, which was higher compared to the pre test mean 15.10(50.33%) with SD  $\pm$  3.55. The overall gain in knowledge was 34.06%. The overall post test mean practice score 10.28(85.69%) with SD  $\pm$  0.61, which is higher compared to the pre test mean 3.23(26.94%) with SD  $\pm$  1.44. The overall gain in practice score was 58.75%. The findings of the study revealed that simulation was effective in improving the knowledge and practice regarding surgical count performance among staff nurses.

## Keywords:

Simulation, Surgical count performance, Operation theatre.

## 1.Introduction or back ground

Surgery is an essential component to provide recovery to the patient to maintain positive health. Data from 56 countries including India showed that the annual volume of major surgery was an estimated 187 million operations per year. Approximately one surgery for every 25 individuals per year. An estimated 63 million people undergo surgical treatment for traumatic injuries, 31 million for malignancies and 10 million for obstetric interventions in a year.<sup>1</sup>

Post-operative complications in surgery may frequently be unavoidable. Some complications result from human error. One such complication which is frequently under reported is gossypiboma or retained swab. It is a costly error that can result in devastating patient injuries and associated complications like infection, pain, obstruction, reoperation, septic shock and even death.<sup>2</sup>

The retained swab in surgery occur 1 in 3,000 cases of major surgeries and 1 in 5,000 cases of abdominal operations. Its actual occurrence rate is believed to be much higher. Retained swab is mainly due to under-reporting of occurrences because of the fear of medico-legal repercussions.<sup>3</sup>

All members involved in the surgical procedure have a responsibility for ensuring all items that are accounted, from the start to the end of the procedure. Performing surgical counts accurately and efficiently is a basic peri-operative intervention that makes sure all the items used were taken back from the patient.<sup>4</sup>

All nursing staff working in operation theatre plays a crucial role to reduce sentinel events related to retained surgical items resulting in death or permanent loss of function. The main responsibility for counts and checks of all items, lies with the scrub nurse and the circulating nurse. The documentation of all items counted, dispensed on to the sterile field and management of items removed from the sterile field, lies with the circulating nurse.<sup>5</sup>

## Need for the study

Peri-operative nursing is devoted to the ethical principle of beneficence- do no harm. In order to maintain the safety of patient undergoing surgical intervention peri-operative nurses have developed standard nursing care practices regarding aseptic technique, patient positioning and counting of sponges and instruments and its proper documentation.<sup>6</sup>

At a large hospital roughly 1 of every 1,500 open chest or abdomen operations a sponge or instrument is left inside a patient. For the patient, the misplaced item means another operation, a dangerous inflammatory reaction, or even death. For doctors and hospitals, there are law suits, financial losses and disciplinary actions.<sup>7</sup>

The researchers at Columbia University conducted a study to compare the counting discrepancies and effect on cost of surgery performed between 2000 and 2004. It was found that 1,062 count discrepancies were reported in 1,53,263 surgical procedures. The study concluded that count discrepancies increased with long surgery duration. The incremental

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operation theatre cost for each case with count discrepancy was high than normal cost.<sup>8</sup> Continuing educational programmes should be conducted to improve the knowledge of staff nurses and practice should be observed frequently to make sure policies related to count were strictly followed by staff nurses. An incident report system to identify the actual and potential risks to patient safety related to counting, need for procedural changes and policy enactment or changes, should be implemented.<sup>9</sup>

From these figures, studies and reasons, the investigator felt that the prevention of a retained foreign object after surgery is highly important during post operative period. Hence the investigator felt the need to enhance the knowledge and practice of staff nurses in operation theatre by simulation method for performing correct surgical count.

## **2. Material and Methods**

### **Research design**

Pre experimental one group pre test, post test design has been adopted to attain the objectives of the present study.



### **Research setting**

Based on the geographical proximity of the setting, feasibility to conduct the study, familiarity and the availability of the subjects, the investigator selected Yenepoya Medical College and Yenepoya Speciality Hospital, Mangalore to carry out the study.

### **Variables**

#### **Independent variable**

In this study, independent variable refers to simulation regarding surgical count performance.

#### **Dependent variable**

In this study, the dependent variables refer to knowledge and practice level of staff nurses working in operation theatre.

#### **Attribute variables**

Age, gender, educational qualification and years of experience in operation theatre were the attribute variables in this study.

### **Population**

The target population of the present study comprised of staff nurses working in operation theatres of selected hospitals at Mangalore.

### **Sample and sample size**

The sample size of the present study consists of 60 staff nurses working in operation theatre of selected hospitals at Mangalore.

### **Sampling Technique**

In this study, Convenience sampling technique was adopted to select the samples.

### **Development of simulation content**

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The development of the first draft of the simulation content was based on objectives, literature review, opinion of experts and personal experience.

### **Development and description of the tool**

A structured knowledge questionnaire and a structured observational checklist was prepared based on the review of the related literature, consultation with subject experts and investigator's personal experience. The tools were prepared and written in English. It consisted of three parts (Part I, Part II and Part III).

#### **Part I: Demographic proforma**

It includes age, gender, educational qualification and years of experience of staff nurses in operation theatres.

#### **Part II: Structured knowledge questionnaire**

The Structured knowledge questionnaire was prepared to assess the knowledge of staff nurses regarding surgical count performance. It consisted of thirty multiple choice questions, divided into three sections.

Section A consists of nine items regarding strategies to count different surgical items.

Section B consists of six items regarding factors influencing and complications of retained foreign body.

Section C consists of fifteen items regarding knowledge of staff nurses regarding nurses responsibility in surgical counting.

The level of Knowledge have been classified as,

#### **Level of Knowledge    Knowledge Score**

|                     |           |         |
|---------------------|-----------|---------|
| Inadequate          | <50%      | (0-14)  |
| Moderately adequate | 50 - 75%  | (15-22) |
| Adequate            | 75 - 100% | (23-30) |

#### **Part III: Structured Observational Checklist**

The Structured observational checklist was prepared by the investigator to assess the practice of staff nurses regarding surgical count performance. It consisted of twelve items, divided into three sections.

Section A consists of six items regarding initial count of surgical items.

Section B consists of three items regarding final count of surgical items.

Section C consists of three items regarding documentation of surgical items.

The level of practice have been classified as,

#### **Level of practice    practice Score**

|                     |           |          |
|---------------------|-----------|----------|
| Inadequate          | <50%      | (0 - 6)  |
| Moderately adequate | 50 - >75% | (6 - 8)  |
| Adequate            | 75 - 100% | (9 - 12) |

#### **Content validity**

The first draft of the demographic proforma, structured knowledge questionnaire, structured observational checklist and simulation content were given to nine experts in the field of medical surgical nursing and medicine. Modifications were suggested for some questions and were incorporated, and the final draft was prepared.

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### **Pre- testing of the tool**

After the permission from Medical superintendent, the tool was pre-tested by administering it to ten staff nurses working in operation theatre in Yenepoya Nursing Home, Mangalore. The words were understandable, the tool was found to be feasible and clear.

### **Reliability of the tool**

Reliability of the tool was computed using Karl-Pearson's correlation coefficient by split half method. The reliability obtained was 0.98 and the tool was found to be highly reliable.

### **Pilot study**

After obtaining formal permission from the Medical Director of Yenepoya Nursing Home Mangalore, the pilot study was conducted from 21/10/13 to 27/10/13 among ten staff nurses working in operation theatre selected by convenience sampling technique.. On the first day, pre test was conducted by using structured knowledge questionnaire to assess knowledge and structured observational checklist was used to observe the practice of staff nurses. On the same day simulation on surgical count performance was administered. The post test was conducted on the seventh day using the same tools. There were no problems identified in the pilot study. The tool was found feasible, practicable and no changes were made after the pilot study.

### **Data collection procedure**

Prior to data collection permission was obtained from the authorities concerned. The data was collected from 02/12/2013 to 31/12/2013. Data collection was done from Yenepoya Medical College and Yenepoya Speciality Hospital by the same data collection procedure used in the pilot study.

## **3.Findings**

### **Findings related to demographic variables of staff nurses**

The majority of the subjects 28 (46.67%) were in the age group of 21 - 25 years and only 9 subjects (15%) belong to the age group of 31 – 35 years. The findings of the present study revealed that majority of subjects 40 (66.67%) were females and 20 subjects (33.33%) were males. The majority of subjects 44 (73.33%) had diploma in General Nursing and Midwifery and 16 subjects (26.67%) had Degree in Nursing. Majority of subjects 23 (38.33%) were between 0 - 2 years of experience and only 5 subjects (8.33%) between 4 - 6 years.

Findings related to pre test level of knowledge and practice regarding surgical count performance among staff nurses

The pre test mean score for knowledge was 4.08 (45.37%) with SD  $\pm$  1.91 in strategies to count items. In the aspect of factors influencing and complications, the mean was 3.23 (53.89%) with SD  $\pm$  1.59 and mean was 7.78 (51.89%) with SD  $\pm$  1.62 that was found in the aspect of nurses responsibility on surgical count. The overall knowledge pre test mean was 15.10 (50.33%) with SD  $\pm$  3.55. 25 subjects (41.67%) had inadequate, 35 subjects (58.33%) had moderately adequate and none of subjects had adequate knowledge regarding surgical count performance.

The pre test mean practice score was 2.13 (35.56%) with SD  $\pm$  1.33 in the aspect of initial counting. The pre test mean was 0.95 (31.67%) with SD  $\pm$  0.53 in final counting and in the aspect of documentation pre test mean was 0.15 (5%)  $\pm$  0.40 and the overall mean practice score was 3.23 (26.94%) with SD  $\pm$  1.44. All the subjects had inadequate level of practice 60 (100%) regarding surgical count performance in the pre test.

Findings related to effectiveness of simulation on knowledge and practice regarding surgical count performance

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In the aspect of strategies to count items had the maximum enhancement of 40.56% in the post test and the minimum enhancement was in the factors influencing and complications 30.83%. The overall enhancement was 34.06%.majority of the subjects 56 (93.33%) gained adequate knowledge and 4 subjects (6.67%) had moderately adequate knowledge regarding surgical count performance.

The maximum enhancement of post test practice score 71.67% was in the aspect of documentation. Minimum enhancement 42.77% was in the area of final count and the overall enhancement was 58.75. Majority of subjects 55 (91.67%) performed adequately and 5 subjects (8.33%) had moderately adequate practice.

The mean post test knowledge score 25.32 was higher than the pre test knowledge score 15.10 with an enhancement of 10.22. The calculated 't' value 4.33 was greater than the table value ( $t_{59} = 1.67$ ) at 0.05 level of significance. The mean post test practice score 10.28 was higher than the pre test practice score 3.23 with an enhancement of 7.95. The calculated 't' value was 15.84 which was greater than the table value ( $t_{59} = 1.67$ ) at 0.05 level of significance. The above findings revealed that the simulation was effective in enhancing the knowledge and practice regarding surgical count performance among staff nurses.

Findings related to correlation between the pre test and post test level of knowledge and practice

The result revealed that there was significant correlation between knowledge and practice in pre test as well as post test as calculated correlation coefficients were greater than the table value. Further in post test strong positive correlation was observed ( $r = 0.88$ ) compare to pre test ( $r = 0.49$ ), improvement in knowledge influence the better practice.

Findings related to association between the pre test knowledge scores and selected demographic variables

There was no significant association between any of the selected demographic variables and the pre test level of knowledge at 0.05 level of significance.

Findings related to association between the pre test practice scores and selected demographic variables

There was significant association between the pre test level of practice with selected demographic variables such as age and years of experience of the samples and there was no association with the remaining selected demographic variables such as gender and educational qualification.

#### **4. Conclusion**

The present study was undertaken to assess the effectiveness of simulation on knowledge and practice regarding surgical count performance among staff nurses working in operation theatres, and it was found that simulation was effective in improving the knowledge and practice.

#### **5. Acknowledgements**

With sincere gratitude and humility I acknowledge the Almighty God for his abundant grace to complete this study successfully.

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## YENEPOYA UNIVERSITY ETHICS COMMITTEE

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### ETHICAL CLEARANCE

The Study titled "Effectiveness of simulation on surgical count performance among staff nurses working in operation theatre of selected hospitals in Mangalore, Dakshina Kannada" by Fobby Paul, M.Sc Nursing, Department of Medical Surgical Nursing, Yenepoya Nursing College, on scrutiny by the Yenepoya University Ethics Committee has been given Ethical Clearance to conduct the study for the stipulated period.

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