

Original Research Article

A Study to Assess the Effectiveness of Structured Teaching Program Regarding the Knowledge on Prevention of Surgical Site Infection, Among Nurses in a Selected Hospital

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ABSTRACT

Background: Surgical site infections may lead to many complications like increasing the duration of hospitalization, extra expenses and burdens in the patients. The knowledge of health care providers, especially the nurses would make a significant impact in the speedy recovery and prevention of these complications.

Materials and methods: The research approach adopted for the study was one group pre-test and post-test quasi experimental design. The study comprises of 40 nurses of selected Hospital who fulfilled inclusive criteria selected by Convenient Sampling method. Knowledge questionnaire was used for data collection. The content Validity of the tool was established in consultation with guide and 12 experts from the field of Medical Surgical Nursing. Reliability coefficient of knowledge questionnaire was calculated using Carl Pearson Coefficient of Correlation. Formal permission was obtained from concerned authority from selected hospital for data collection. Data were tabulated and analyzed.

Results: The study revealed that the mean score among nurses was 15(46%) during pre test rose up to 24(77.60%) in the post test evaluation. Result interpreted that there was a significant increase in knowledge level of nurses after administration of structured teaching program. It is evident that the calculated 't' value was greater than the table value of 't' at 0.05 level. This indicates that planned teaching was effective in improving the knowledge of the nurses. The study also revealed that there is a significant association between demographic characteristics, such as total years of professional experience, years of experience in current position with the knowledge score.

Conclusion: The study was done to assess the effectiveness of structured teaching program regarding the knowledge on prevention of surgical site infection, among nurses. The result of this study shows that the most of the nurses had excellent knowledge after administration of structured teaching program. The study also revealed that there is a significant association between demographic characteristics such as total years of professional experience, years of experience in current position with the knowledge score. This study will help the nurse to develop appropriate teaching material to improve knowledge regarding prevention of surgical site infection.

Key Words: structured teaching program, knowledge, surgical site infections

INTRODUCTION

Surgical site infection is a type of healthcare-associated infection in which a wound infection occurs after an invasive (surgical) procedure. Surgical site infections have been shown to compose up to 20% of all of healthcare-associated infections. At

least 5% of patients undergoing a surgical procedure develop a surgical site infection.

Many organizations have been working to prevent Healthcare Associated Infections but still the issue continues to challenge the healthcare community. The issue of Healthcare Associated Infections cannot be solved by one institution or

agency alone. To truly effect a change, individuals at the federal, state, and local levels, in the public and private sector, must work together in a joint collaboration effort to address this healthcare challenge. [1]

The creation of surgical wound disrupts the integrity of the skin and its protective function. Exposure of deep body tissues to pathogens in the environment places the patient at risk for infection of surgical site, a potentially life threatening complication. In post operative patients, surgical site infections are the most common nosocomial infection, with 67% of these infections occurring within the incision and 33% occurring in organ or space around the surgical site. [2]

In spite of advances in infection prevention practices, surgical site infections (SSIs) remain a substantial cause of morbidity and mortality among patients. [3]

The studies carried out in India indicate an overall infection rate of 4.04 to 30 per cent for clean surgeries and 10.06 - 45 per cent for clean contaminated surgeries. [4]

Despite improvements in operating room practices, instrument sterilization methods, better surgical technique and the best efforts of infection prevention practitioners, surgical site infections (SSIs) remain a major cause of nosocomial infections- and rates are increasing globally. Moreover, in countries where resources are limited, even basic life-saving operations, such as appendectomies and cesarean sections, are associated with high infection rates and mortality. In these countries, therefore, it makes sense to focus on preventing SSIs in those procedures most frequently performed or those having the highest SSI rates. To reduce the risk of nosocomial SSIs in developing countries, a systematic but realistic approach must be applied with awareness to the patient, the healthcare staff and the hospital. [5]

Surgical asepsis prevents the contamination of surgical wounds. The risk of infection is high because of the break in skin integrity due to the surgical incision.

The clients own pathogens, pus those found in the Operating Room, create an unsafe environment if personnel neglect to uphold strict aseptic technique. [6]

A study conducted in Germany to assess the decrease of deep sternal surgical site infection rates after cardiac surgery by a comprehensive infection control program showed a significant decrease of deep sternal surgical site infection from 3.61% down to 1.83 % with a bundle of interdisciplinary infection control measures such as methicillin-resistant *Staphylococcus aureus* (MRSA) screening, bacterial decolonisation measures, hair clipping instead of shaving, education, good stewardship for antibiotic prophylaxis, change of surgical gloves after sternotomy and after sternal wiring, new bandage techniques, leaving the wound primarily covered for at least 48. [7]

A study conducted in 2003 by Hilburn to determine the effect of use of an alcohol gel hand sanitizer by care givers on infection types and rates in an acute care facility demonstrated a 36.1% decrease in infection rates during a 11 month time period when they used the hand sanitizer, when compared the findings with data from the same unit during when they did not use sanitizers. [8]

In 2003, the Australian Council for Safety and Quality in Health Care suggested that the incidence of SSI nationally was between 2-13 per cent of surgical patients. This contributes significantly to the estimated 7,000 deaths attributable to health care associated infections in Australia each year. A review of the medical literature shows that the appropriate use of antibiotics; appropriate hair removal; maintenance of postoperative glucose control for major cardiac surgery patients; and establishment of postoperative normothermia for implemented reliably, drastically reduce the incidence of SSI and virtually eliminate instances of preventable SSI. [9]

The surgical team (consisting of the surgeon, anesthetist, and perioperative nurses) has the formidable task of

performing over 23 million surgeries each year in the U.S. Each member of the surgical team is important, but perhaps none as important as the perioperative nurse. As the patient's advocate, the nurse ensures patient safety and provides holistic care in each phase of the surgical experience. This research paper focuses on the nurse's role in the perioperative process, with an emphasis on infection control practices in the Operating Room. [10]

Problem Statement

"A study to assess the effectiveness of structured teaching program regarding the knowledge on prevention of surgical site infection, among nurses in a selected hospital".

Objectives of the Study

1. To assess the knowledge of the nurses regarding prevention of surgical site infection.
2. To find out the effectiveness of structured teaching program regarding the knowledge on prevention of surgical site infection, among nurses
3. To find out the relationship between post-test knowledge score with selected demographic variables.

MATERIALS AND METHODS

The research approach adopted for the study was one group pre-test and post-test quasi experimental design. The study comprises of 40 nurses of selected Hospital who fulfilled inclusive criteria selected by Convenient Sampling method. Knowledge questionnaire was used for data collection. The content Validity of the tool was established in consultation with guide and 12 experts from the field of Medical Surgical Nursing. Reliability coefficient of knowledge questionnaire was calculated using Carl Pearson Coefficient of Correlation. . The items were coded and the reliability was calculated. The reliability coefficient was found to be 0.83 which indicated that tool was reliable. Formal permission was obtained from concerned

authority from selected hospital for data collection.

Hypotheses

- H1: There is significant difference between pretest and post test knowledge score regarding prevention of Surgical Site Infection, among Nurses.
- H2: There is significant association of post-test knowledge regarding prevention of Surgical Site Infection, among nurses with selected demographic variables.

RESULTS

Analysis and interpretation is based on the objectives of the study. The analysis was done with the help of inferential and descriptive statistics.

Section I: Distribution of nurses according to their demographic characteristics.

Table 1: Percentage wise distribution of nurses according to their demographic characteristics. N=40

Demographic Variables	No. of Nurses	Percentage (%)
Age(yrs)		
20-25 years	6	15
26-30years	19	47.5
31-35 years	13	32.5
Above 35 years	2	5
Professional qualification		
RGNM (Diploma)	32	80
BSc Nursing (Degree)	8	20
Total years of professional experience		
0 to 3year	9	22.5
4 to 7years	19	47.5
8 to 11 years	11	27.5
12 years or more	1	2.5
Duration of employment in current Position.		
0 to 3year	17	42.5
4 to 7years	21	52.5
8 to 11 years	2	5
12 years or more	0	0
Exposure to in-service education		
Yes	16	40
No	24	60
Source of information		
Mass media	15	37.5
As a part of curriculum	12	30
Books and journals	13	32.5

Section II: The assessment of nurses' knowledge regarding prevention of surgical site infection.

Fig: 1 reveals that there is a major difference in the pre and post test scores and therefore it can be understood that a teaching programme can improve nurses' knowledge.

Level Of Knowledge Score	Pre test		Post test	
	f	%	f	%
Poor	2	5	0	0
Average	32	80	0	0
Good	6	15	13	32.5
Excellent	0	0	27	67.5

Section III: Effectiveness of teaching program regarding prevention of surgical site infection among nurses.

The table compares the pre and post test knowledge. It is seen that the mean score

was 15 during pre test rose up to 24 in the post test evaluation. Therefore the effectiveness of the study is proven.

Table 2: Effectiveness of teaching program regarding prevention of surgical site infection N=40

Knowledge score	Maximum score	Mean	Standard deviation	Mean percentage	t-value	p-value
Pre Test	15	10.50	2.20	42.00	27.81	0.000
Post Test	24	19.40	1.90	77.60		

Section IV: Association of Knowledge Score with Demographic Variables

The table 3 describes that, the demographic characteristics, such as total years of professional experience, years of experience in current position was statistically significant ie, there is association with the post-test level of knowledge regarding prevention of surgical site infection.

Table.3 Association of Knowledge Score In Relation To Demographic Variables

Demographic Variables	No. of Nurses	Mean knowledge score	F-value	p-value
Age(yrs)				
20-25 years	6	20±1.83	1.37	0.2675 NS,P>0.05
26-30years	19	18.95±1.90		
31-35 years	13	19.46±1.69		
Above 35 years	2	21.5±1.5		
Professional qualification				
RGNM (Diploma)	32	19.03±1.86	6.67	0.2267 NS, P>0.05
BSc Nursing (Degree)	8	20.88±1.55		
Total years of professional experience				
0 to 3year	9	18.77±1.75	3.36	0.0292 S,P<0.05
4 to 7years	19	18.84±1.72		
8 to 11 years	11	20.81±1.64		
12 years or more	1	20±0		
Duration of employment in current Position.				
0 to 2 year	17	18.76±2.19	1.16	0.034 S,P<O.05
3 to 5years	21	19.81±1.82		
6 to 8 years	2	20.5±0.5		
9 years or more	0	0±0		
Exposure to in-service education				
Yes	16	20.56± 1.71	12.49	0.1901 NS,P>0.05
No	24	18.62± 1.69		
Source of information				
Mass media	15	19.80±1.83	0.58	0.564 NS,P>0.05
As a part of curriculum	12	19.00±1.14		
Books and journals	13	19.31±2.27		

DISCUSSION

Post-operative wound infection still remains one of the most important causes of morbidity and is the most common nosocomial infection in surgically treated patients. [11]

Prevention of SSIs is one of the most important challenges in delivering optimum nursing care. Although all health professionals involved in patient care are responsible for ensuring patient safety in this regard, nurses play a major role since they are usually involved in each step around the clock. [12] According to literature; nurses' role in the prevention of SSIs is very

crucial. [13] Therefore, nurses must have adequate knowledge and good practice regarding the prevention of SSIs.

The present study was carried out among 40 nurses to assess the effectiveness of structured teaching program regarding the knowledge on prevention of surgical site infection.

A structured teaching programme was administered to the subjects. The present study assessed the knowledge of nurses regarding prevention of surgical site infection before administration of structured teaching program and found that maximum number of patients 32 (80%) had average

knowledge, Six (15%) had good knowledge, remaining 2 (5%) had a poor knowledge. None of the subjects found to have excellent knowledge. After the structured teaching programme the post-test showed that the maximum number of samples 27 (67.5%) had excellent knowledge, 13 (32.5%) had gained good knowledge and none of the sample had inadequate knowledge.

The comparison of pre-test knowledge scores and post-test knowledge scores of the subjects shows that the overall mean in the pre-test was 10.50 with SD 2.20 and in the post-test 19.40 with SD 1.90. The overall improvement mean was 8.9 with 't'-value 27.81 which was highly significant at $P > 0.05$ level. This showed that there was a significant improvement in knowledge of staff nurses after the structured teaching programme.

The study also revealed that the association of knowledge score with demographic characteristics, such as total years of professional experience, years of experience in current position was statistically significant.

CONCLUSION

The study was conducted among nurses to assess the effectiveness of structured teaching program regarding the knowledge on prevention of surgical site infection. The study revealed that a structured teaching may increase the knowledge of nurses regarding the prevention of surgical site infections. Prevention of surgical site infection is essential to the speedy recovery of patients and to reduce the duration of hospitalization and its associated expenditure. Improper management and caring of surgical site will lead to many complications and may even cause death. Improving knowledge among staff nurses is a vital component of preventing these surgical site infections.

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How to cite this article: Suresh JT. A study to assess the effectiveness of structured teaching program regarding the knowledge on prevention of surgical site infection, among nurses in a selected hospital. *Int J Health Sci Res*. 2018; 8(9):154-159.
