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RESEARCH PAPER

**KNOWLEDGE AND PRACTICE OF POST-OPERATIVE WOUND INFECTION PREVENTION AMONG NURSES IN THE SURGICAL UNIT OF A TEACHING HOSPITAL IN NIGERIA**

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**ABSTRACT**

This study was carried out to determine the level of knowledge and practice of post operative wound infection prevention among nurses in the surgical unit of Obafemi Awolowo University Teaching Hospital, Ile-Ife. The study was a cross-sectional descriptive survey involving the use of structured self administered questionnaire. A purposive sample of 100 nurses who work in the surgical units participated in this study. Data analysis was done using SPSS version 16. The findings showed that 66% of the participants had good knowledge of infection control while 68% had poor knowledge of prevention of post operative wound infection. Application of sterile dressings to the surgical wound and strict adherence to asepsis were the most occurring precautionary measures adopted by nurses in the prevention of post operative wound infection. Excess work load and poor attitude featured most frequently among the respondents as factors that militate against the prevention of post operative wound infection. The findings of this study suggest that nurses had poor knowledge and attitude of infection control and poor attitude towards infection control. Therefore, there is an urgent need for continuing education programmes for the nurses to improve their knowledge and attitude for better patient care.

**Key words:** Nurses, Knowledge, Practice, Surgical wound, Infection, Prevention

**INTRODUCTION**

Surgical site infections (SSI) previously referred to as wound infection is one of the most common causes of health care associated infection. It is also one of the most important complications of a surgical intervention. Its occurrence significantly prolongs duration of patients' hospital stay, and increases the risk of morbidity and mortality. Certain factors, intrinsic and extrinsic, are known to be responsible for surgical site infections. Intrinsic factors include advanced age, malnutrition, metabolic diseases, smoking, obesity, hypoxia, immune-suppression, and length of pre-operative stay. Extrinsic factors consist of application of skin antiseptics, pre-operative shaving, antibiotic prophylaxis, and pre-operative skin preparation, inadequate sterilization of instruments, surgical drains, surgical hand's scrubs, and dressing techniques.

SSI is one of the most common nosocomial infections among surgical patients. In United State of America Surgical site infection account for 14%-16% of all health care associated infections (Mangram et al, 1999). The incidence of surgical site infection in Bangladesh range from 11% - 30% (Parvin et al, 2001). However, there is a paucity of

information about surgical site infection in Nigeria. In fact, it has been suggested that the incidence of surgical site infections may be higher due to poor state of health facilities.

Surgical site infection is an infection that occurs after an operation within 30 days if no implant or within one year if an implant is administered in the organ (Mangram et al., 1999). The cardinal signs of wound infection are pain, tenderness, localized swelling, redness or heat.

Post operative wound infection is a major source of illness and a less frequent cause of death among surgical patients (Nichols, 2004). Post operative infection is the most common nosocomial infection and according to the Centre for Disease Control (2008), 67% of these infections occur within the incision and 33% occur in an organ or space around the surgical site. Surgical wound infection is mostly caused by extrinsic contamination of an intravenous agent (such as propofol) by the anaesthetic personnel who harbored pathogens in lesions on their hands, scalp and in their nares. Lapses in aseptic techniques and reuse of single use vials for several patients are contributory factors in the occurrence of surgical wound infections.

Surgical wound infections prolong patients' hospital stay, and increase cost of care. It places a greater economic burden on the patient and family. Efforts to reduce the frequency and severity of surgical wound infection continue to focus on peri-operative issues, infection control practices in the operating room, preparation of a surgical site, timing and choice of antibiotics, and physiologic support of a patient during and immediately following a procedure. The peri-operative nurse is an important infection control agent. It is important for the surgical nurses to understand the basic pathophysiology of post-operative wound infection and the evidence for preventive strategies.

The implementation of quality measures including antibiotic prophylaxis, hair removal using a clipper, tight control of pre- and post-operative glucose levels and avoiding hypothermia are all recognized key quality measures in reducing infection (Wick et al., 2008). The timing of surgical prophylaxis and the appropriate use of antimicrobial prophylaxis is an agreed quality indicator and represents a significant intervention in preventing SSIs (McKibben et al., 2005; Humphreys and Cunney, 2008). There is need for nurses to have adequate knowledge about the preventive measures to ensure quality care for the post operative patients. The objectives of this study were to assess nurses' level of knowledge of post operative wound infection and evaluate their practice regarding postoperative wound infection prevention.

## **MATERIALS AND METHODS**

**Area of Study:** The study was carried out in Obafemi Awolowo University Teaching Hospitals Complex; Ile-Ife, Osun State, Nigeria. The hospital is a tertiary healthcare institution which provides a wide range of health care services to medical and surgical patients. The surgical unit consists of surgical out patients unit, male, female, and paediatric surgical wards, a main operating theatre and other smaller operating theatres. There are qualified Nurses who work in these units.

**Study Population:** This consisted of three hundred and thirty three Nurses who work in the surgical wards and operating theatre.

**Sampling Method:** Purposive sampling method was used to select one hundred participants. The sample consists of Nurses who were on duty through the five days period of the study and who consented to participate in the study.

**Sample Size:** The sample size was one hundred Nurses. The size was determined using young's rule of sample size determination which says thirty (30%) of the total population is adequate for this type of study.

**Method of Data Collection:** Approval was obtained from the ethical review committee of the institution and participants consent was obtained. Self developed structured questionnaire was used to collect data. They were given to Nurses on morning and afternoon duties in the surgical wards and operating theatre for completion. Same were retrieved immediately. The study lasted for five days (Monday -Friday).

**Data Analysis:** Data were cleaned, collected, coded and organized and analyzed using statistical package for service solution version 16. Result were presented with descriptive statistics namely, frequency counts and percentages.

## **RESULTS**

Table 1 represents the socio demographic characteristic of the studied population, The 100 participants duly completed and returned the questionnaire, representing 100% return rate. Seventy percent (70%) were within the age range of 25 - 55 years. Majority (66%) were females, 80% were diploma holders, and more than half (52;52%) were in the rank of senior nursing officer and above. Majority of the participants 46 (46%) had work only between 1 - 5 years in the surgical units.

Although majority (66%) of the nurses has good knowledge of infection control (see table 2), yet, majority 60 (60%) of the nurses also has poor knowledge about the prevention of post operative wound infection (see table 3).

As regards the precautionary measures adopted by the nurses in the prevention of post operative wound infection (table 4), majority of the participants (73%) believed that exemption of staff with upper respiratory tract infections and sterile dressing of incision site are precautionary measures mostly adopted. The nurses were asked to indicate factors they believed militate against their prevention of post operative infection among those listed based on literature review (table 5). Majority, 87 (24.6%) indicated work demand as the most implicated. However, other factors such as poor attitude on the part of the nurses (79) and inadequate facilities such as sterilizing equipments (76) featured prominently among the factors.

**Table 1. Socio demographic characteristic of research participants**

<b>Age categories (in years)</b>	<b>Frequency</b>
26-30	29
31-35	18
36-40	8
41-45	7
46-50	5
51-55	3
> 55	30
<b>Gender</b>	<b>Frequency</b>
Male	34
Female	66
<b>Highest (Educational) Professional Qualification</b>	
RN /RM	45
Post RN/RM Diploma	46
Certificated in Perioperative	9
BNSc Nursing	
<b>Designation</b>	
Nursing Officer II	41
Nursing Officer I	7
Senior Nursing Officer	13
Principal Nursing Officer	4
Chief Nursing Officer	7
Assistant Director Nursing Service	28
<b>Year of Experience in surgical unit</b>	<b>Frequency/Percentage</b>
1-5 years	46
6-10 years	19
11-15 year	15
16-20	10
> 20	14

n =100

**Table 2 – Nurses' knowledge of infection control**

<b>Level of knowledge</b>	<b>Frequency/percentage</b>
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Good knowledge	66
Fair knowledge	17
Poor Knowledge	17

n = 100

**Table 3 Nurses' knowledge about prevention of post operative wound infection**

Level of knowledge	Frequency/percentage
Good knowledge	32
Fair knowledge	8
Poor Knowledge	60

n= 100

**Table 4- Precautionary measures adopted by the nurses in the prevention of post operative wound infection**

Precautionary Measure	Frequency	Percentage
Short time preoperative stay	67	12.2
Surgical Consciousness	68	12.4
Exemption of staff with upper respiratory tract infection	73	13.3
Strict adherence to aspesis	71	12.9
Sharing/skin preparation	68	12.4
Control of visitors and workers movement (traffic)	68	11.3
Proper hand Scrubbing, gowning and gloving	62	11.3
Sterile dressing of incision site	73	13.3

Categories not exclusive (italics) n = 100

**Table 5- Factors militating against prevention of post operative wound infection**

Factors	Frequency	Percentage
Inadequate facilities such as sterilizing equipments	76	21.5
Work demand	87	24.6
Discouragement by colleagues	45	12.7
Poor attitude by nurses	79	22.3
Use of incorrect aseptic technique	67	18.9
<b>Total</b>	<b>354</b>	<b>100.0</b>

Categories not exclusive. n = 100

## DISCUSSION

The participants' characteristics (age distribution, gender distribution, educational status, and years of experience in the surgical unit) show consistency with the characteristics of the nursing personnel in Nigeria's health institutions. The inequality between male and female population gave credence to the general belief that the nursing profession is dominated by females, while the findings on highest educational/professional level, attests to the fact that the number of higher educational degree holders working in the wards are still limited and that most nurses work outside their specialty (if any) . These findings highlights the need for improvement in the nurse/clinicians' workforce and proper placement after specialization.

Furthermore, the findings on the years of experience in the surgical units show that the participants were more in the category of 1 - 5 years which affirms the observation that nurses are moved rapidly across units and are not allowed adequate time to acquire specific knowledge and skills in areas of specialty. The findings reveal that majority of the nurses 66 (66%) has good knowledge of infection control. This is possibly due to the fact that they were exposed to general information on infection and its control measures in their basic schools of nursing, but have not had any specific specialty course in the management of post operative patients. The findings regarding the participant's knowledge about the prevention of post operative wound infection show that 68% has poor knowledge. This is possibly due to the fact that only 6% of the participants have had additional exposure in perioperative nursing

training during which they would have learnt more about surgical wound infections. This suggests the need for specialty training for nurses and appropriate placement after the training.

Generally, these findings are in line with the work of Michalopoulos and Sparo (2003) in which they found that nurses and physicians, lack awareness of aseptic techniques despite the availability of a large number of relevant and well established research findings and guidelines. It is also important to continually expose nurses to seminars and conferences where current information and research findings on best practices are disseminated.

As regards precautionary measures adopted, majority of the nurses (73%) supported strict adherence to asepsis and sterile dressing of incision sites. This agrees with the findings by Boyce and Pittet (2002) which reveals that health workers places higher value on adherence to asepsis by washing hands more with antiseptic agents before and after providing care for surgical patients. On factors militating against the prevention of post operative wound infection, majority of the participants identified work demand (87%) and poor attitude by nurses (79%) as the most common factors. This supports the general call by nurses on the need for improvement in nurse-patient ratio in our health institutions, in order to meet the World Health Organization Standards and to ensure quality care. Experiences of 'burnout' resulting from increased work demand may have been responsible for the poor attitudes identified amongst the nurses since 'burnout' is associated with poor quality care (Aiken et al 2007).

Nevertheless, the prevention of surgical wound infection is a major concern of all health workers and health policy makers. Nursing is crucial to the success of any preventive programme aimed at reducing the incidence of surgical site infections in our health care facilities. Nurses therefore, must possess adequate knowledge and demonstrate positive attitude towards achieving the goal of prevention of surgical site infections.

## **Conclusion**

Nurses role are key in the prevention of postoperative wound infection and as such, they need adequate knowledge on infection control. Thus, every nurse working in the surgical unit must strive to acquire and update their knowledge in order to improve their practice. If this is done, it will reduce the length of hospital stay for patients and reduce the cost of hospitalization.

## **Recommendations**

From the results of this study, the following recommendations were made:

1. Education and training services programme should be conducted to improve nurses' knowledge and practice about post operative wound infections.
2. All necessary facilities required to maintain sepsis should be made available at all time.
3. A replication of this study using observation checklist should be done to assess the level of practice.
4. In addition, there must be a written infection control policy and procedures that would serve as guidance for surgical unit nurses.

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#### **AUTHOR(S) CONTRIBUTION**

All authors (Famakinwa, T.T., Bello, B.G., Oyeniran, Y.A., Okhiah, O. and Nwadike R.N.) participated significantly in the research work and the preparation of this article.