International Journal of Medical Surgical Nursing
Vol. 1: Issue 1
www.journalspub.com

Effectiveness of Protocol on Standard Precautions for the Prevention of Infections in Terms of Practice Among Staff Nurses Working in Tertiary Care Hospital, Bhubaneswar, Odisha

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ABSTRACT

Nosocomial infection in the severe care unit (ICU) is connected with enlarged mortality, morbidity and span of stay. It is defined as contamination that begins 48 hours after charge to hospital. The commonest types are ventilator-associated pneumonia (VAP), central line-associated bloodstream infection (CLABSI), catheter-related urinary tract infection (CAUTI) and surgical site infection (SSI). The common pathogens include Staphylococcus aureus, Pseudomonas aeruginosa, Candida, Escherichia coli and Klebsiella species. Antimicrobial resistance is increasing and has emerged from selective pressure from antibiotic use and transmission via health workers. Prevention of infection is fundamental and can be achieved through good antimicrobial use and infection control, including hand hygiene. Grouped, easy-to-follow best practice activities called 'Care bundles' have been developed to prevent VAP, CLABSI, CAUTI, and SSI. The study was conducted to assess the effectiveness of protocol on standard precaution for the prevention of infection in terms of practice among staff nurses working in Tertiary care hospital at Bhubaneswar. Aim of the study was to know the effectiveness of protocols in terms of gain in posttest level of practice scores. A preexperimental research design was used for the present study. The sample consisted of 60 staff nurses working in ICU who met the inclusion criteria. The sample was selected by Convenience sampling technique. The data were obtained by socio-demographic tool and observation check-list. Data were analyzed by descriptive statistics and paired 't' test. The mean of postpractice level (X1= 23.28) was apparently higher than the mean of prepractice level (X^2= 21.43). Paired 't' test was found to be highly significant. The significant difference between mean pre- and postpractice level was significant t = 6.728 at degrees of freedom 59 and the corresponding p value is 0.000(<0.05). Hence, it was concluded that protocols on standard precautions is effective in improving practices of staff nurses.

Keywords: infections, practice, protocols, standard precautions

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INTRODUCTION

Health is a common theme in most cultures. Every nation gives importance to health of its people. Health is a primary factor in the actualization of human potential. Health is defined by WHO as "a state of complete physical, mental and social wellbeing and not merely an absence of disease or infirmity. From this definition, it is clear that health is multi-dimensional. To attain the different components of health, efforts should begin at the individual level [1–4].

An infection occurs when a live human body interacts physically and

immunologically with a foreign microorganism; and the consequences that results from invasion of normal human body by a foreign microorganism can produce harm and potential death, where this is known as an infectious disease [5–9].

Infectious diseases are disorders caused by organisms – such as bacteria, viruses, fungi or parasites. Many organisms live in and on our bodies. They are usually innocent or even helpful, but under convinced situations, some creatures may cause disease.

The patient is exposed to a variety of microorganisms during hospitalization. Contact between the patient and a microorganism does not by itself necessarily result in the development of clinical disease – other factors influence the nature and frequency of nosocomial infections. The option of exposure important to infection be contingent somewhat on the features of the microorganisms, counting resistance to antimicrobial agents, inherent virulence, and quantity (inoculums) of communicable substantial [9–14].

A nosocomial infection is contracted because of an infection or toxin that exists in a certain location, such as a hospital. People now practice nosocomial infections interchangeably with the relations health-care related infections (HAIs) and hospital-acquired contaminations. For a HAI, the infection must not be present before someone has been under medical care.

As medical care becomes more composite and antibiotic battle growths, the cases of HAIs will raise. The good news is that HAIs can be prevented in a lot of healthcare situations [2].

In the United States, the Centers for Disease Control and Prevention assessed roughly 1.7 million hospital-associated contaminations, from all kinds of microorganisms, counting bacteria and fungi shared, cause or contribute to 99,000 deaths each year. In Europe, where hospital surveys have been conducted, the category of gram-negative infections are estimated to account for two-thirds of the 25,000 deaths each year. Nosocomial infections can source severe pneumonia and contaminations of the urinary tract, bloodstream and additional portions of the body [14–18].

As per a report by WHO outlined the problem of hospital acquired infections that patient safety incidents occur in 4% to 16% of all hospitalized patients, and that hospital acquired infections affects hundreds of millions patients globally. High income countries had pooled health care acquired infection rates of 7.6%. Hospital-wide prevalence of health care acquired infections varies from 5.7% to 19.1% with a pooled prevalence of 10.1% with higher quality studies providing higher incidence rates. Research on hospital acquired infections in India reveals several concerning trends. In Indian ICUs, the rate of vancomycin resistant enterococcus a dangerous hospital infection is five times the rates in the rest of the world. According to a report by Global Antibiotic Resistance Partnership Research estimates that of the approximately 190,000 neonatal deaths in India each year occur due to sepsis. Over 30% are attributable to antibiotic resistance [19–23].

Hospital-acquired infections add to functional disability and emotional stress of the patient and may in some cases, lead to disabling conditions that reduce the quality of life. The enlarged span of stay for diseased patients is the highest funder to cost. Prolonged stay not only increases

direct costs to patients or payers but also indirect costs due to lost work. The enlarged use of drugs, the need for separation, and the use of added laboratory and other analytical studies also donate to costs. Hospital-acquired infections add to the imbalance between resource allocation for primary and secondary health care by diverting scarce funds to the administration of possibly avoidable situations [23–29].

The progressing age of patients acknowledged to health care locations, the greater occurrence of chronic diseases amongst admitted patients, and the enlarged use of diagnostic and beneficial actions which affect the host defenses will provide continuing pressure on nosocomial infections in the future. Organisms causing nosocomial infections can be transmitted to the community through discharged patients, staff, and visitors. If organisms are multi-resistant, they may cause significant disease in the community [30–34].

Measures of infection control include identifying patients at risk of nosocomial infections, observing hand hygiene, following standard precautions to reduce transmission and strategies to reduce VAP, CRBSI, CAUTI. Ecological factors and architectural lay out also requirement to be highlighted upon. Infection prevention in special subsets of patients – burns patients, include identifying sources of organism, identification of organisms, isolation if required, antibiotic prophylaxis to be used selectively, early removal of necrotic tissue, anticipation of tetanus, early nourishment and investigation. Immuno lacking and Transplant receivers are at a developed risk of resourceful infections. Room ventilation, cleaning and decontamination, protective clothing with care regarding food requires special consideration. Monitoring and Surveillance are prioritized depending upon the needs. Selected infection control players should administer the process and help in gathering and assembling of data. Hospital acquired infections (HAIs) is a major safety concern for both health care providers and the patients. Considering morbidity, mortality, increased length of stay and the cost, efforts should be made to make the hospitals as safe as possible by preventing such infections [35, 36].

METHODOLOGY

A pre-experimental research design was used for the present study. The study was conducted in the intensive care units that included General ICU and Neuro-surgery ICU unit of Pradyumna Bal Memorial hospital, Bhubaneswar. The sample consisted of 60 staff nurses working in ICU who met the inclusion criteria. The sample was selected by using Convenience sampling technique. The data was obtained by socio-demographic tool and observation checklist. Data were analyzed by descriptive statistics and paired ‘t’ test [37–40].

RESULTS

Majority of the staff nurses (86.7%) were females, Maximum subjects (46.7%) were in the age group of 21–25 years, 71.7% subjects were having educational qualification of General Nursing and Midwifery, Highest source of knowledge was Information Booklet (46.7%), Maximum subjects (43.3%) were having Total years of Work experience of 1-3 years, Maximum subjects (73.3%) have not attended any infection control CNE program.

Table 1 and Figure 1 depicts that out of 60 subject’s assessment of practice regarding existing practice assessment of infection control revealed that majority 51 (85%) of them had good practice, minority 7 (11.7%) had average practice, and remaining 2 (3.3%) had poor practice. The mean for overall practice of staff nurses

was 21.43 (SD=3.96). Distribution of pretest practice scores according to at and above median is 39(65%) and below median is 21 (35%). The pre-test median is 22. This decrease in total practice indicates that the staff nurses need more motivation and reinforcement on infection control practices.

Table 2 and Figure 2 reveals that out of 60 subject's assessment of practice regarding post practice assessment of infection control revealed that majority 54 (90%) of them had good practice, minority 4 (6.7%) had average practice and remaining 2 (3.3%) had poor practice. The mean for overall practice of staff nurses was 23.28 (SD=4.10). Distribution of pretest practice scores according to at and above median is 38 (63.3%) and below median is 22 (36.6%). The pretest median is 24. This is an expected finding. It reflects the positive role of the protocols on standard precautions in orientating staff about protocols; strictly adhere to them and thus reducing the risk of exposing skin or mucous membranes to potentially infectious materials.

Table 3 and Figure 3 shows that the analysis of mean practice score is apparently higher in posttest group in comparison to the pretest group. The paired 't' value is found to be 6.728 at degrees of freedom 59 and the corresponding *P* value is 0.000 (<0.05). This indicates that there is statistically significant difference between the practice scores in post- and pretest group. Hence, the research hypothesis can be accepted at 5% level of significance and can be inferred that there is significant difference between pre and post practice level regarding infection control. Improvement in the total level of performance which done among studied group regarding infection control pre and post practice there was significant improvement in the level of total performance from 85% to 90% respectively at P ≤0.05 from figure 4.

From figure 5 it is clear that there is a significant association between pre-practice level and source of information regarding infection control (information booklet) as P = 0.022 (<0.05).

Table 1. *Frequency and percentage distribution of pretest level of practice of ICU staff nurses regarding infection control protocols. n = 60.*

Practice	Frequency	Percentage
Poor practice	2	3.3
Average practice	7	11.7
Good practice	51	85.0

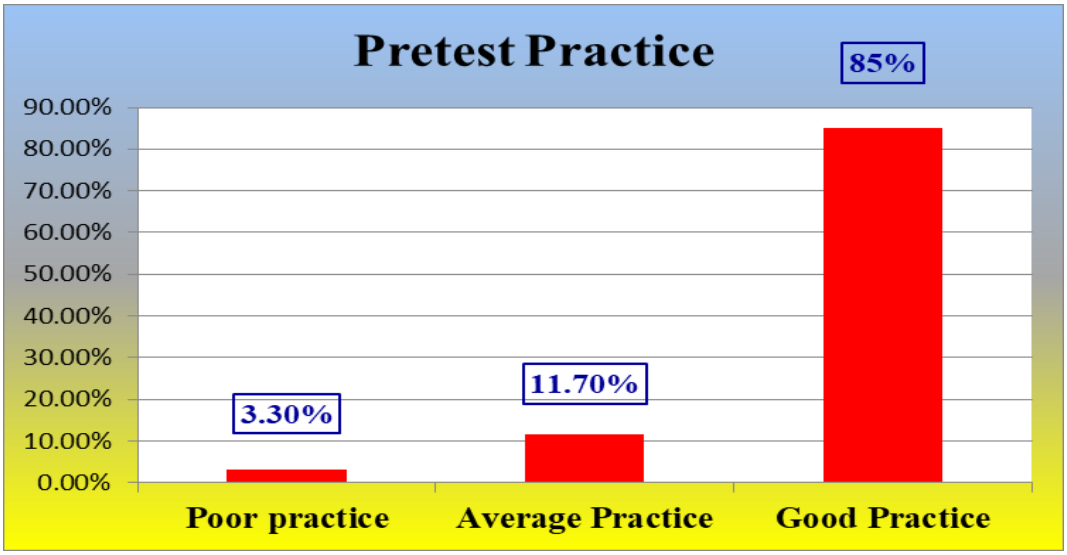

Fig. 1. *Percentage wise distribution of prepractice level of ICU staff nurses regarding infection control protocols.*

Table 2. *Frequency and percentage distribution of posttest level of practice of ICU staff nurses regarding infection control protocols. n = 60.*

Practice	Frequency	Percentage
Poor practice	2	3.3
Average practice	4	6.7
Good practice	54	90.0

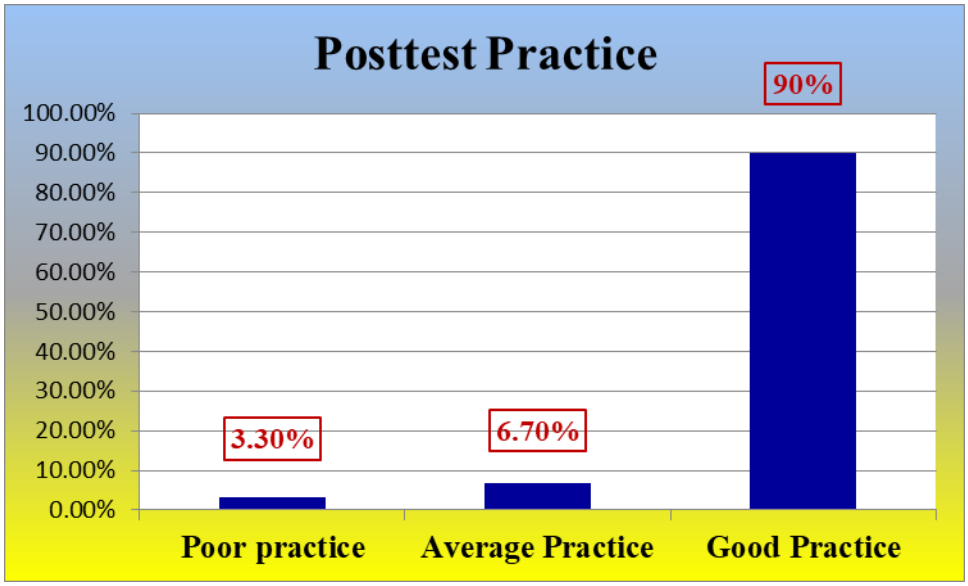

Fig. 2. *Percentage wise distribution of postpractice level of ICU staff nurses regarding infection control protocols.*

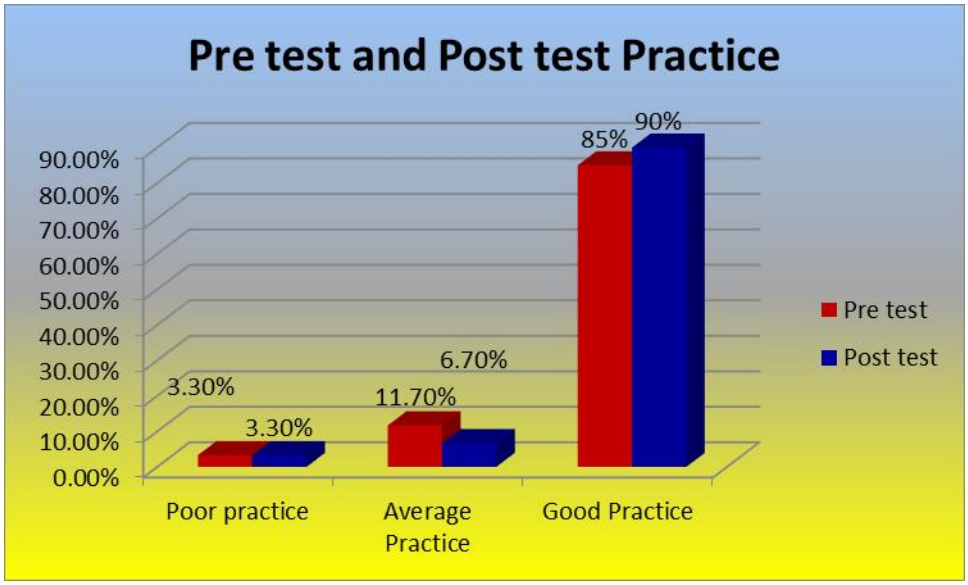

Fig. 3. *Percentage distribution of pre- and posttest level of practice.*

Table 3. *Effectiveness of protocol on level of practice among ICU staff nurses. 60.*

Practice	Mean	SD	t-test	P value
Pretest	21.43	3.96	6.728	P=0.000 (<0.05)
Posttest	23.28	4.10		

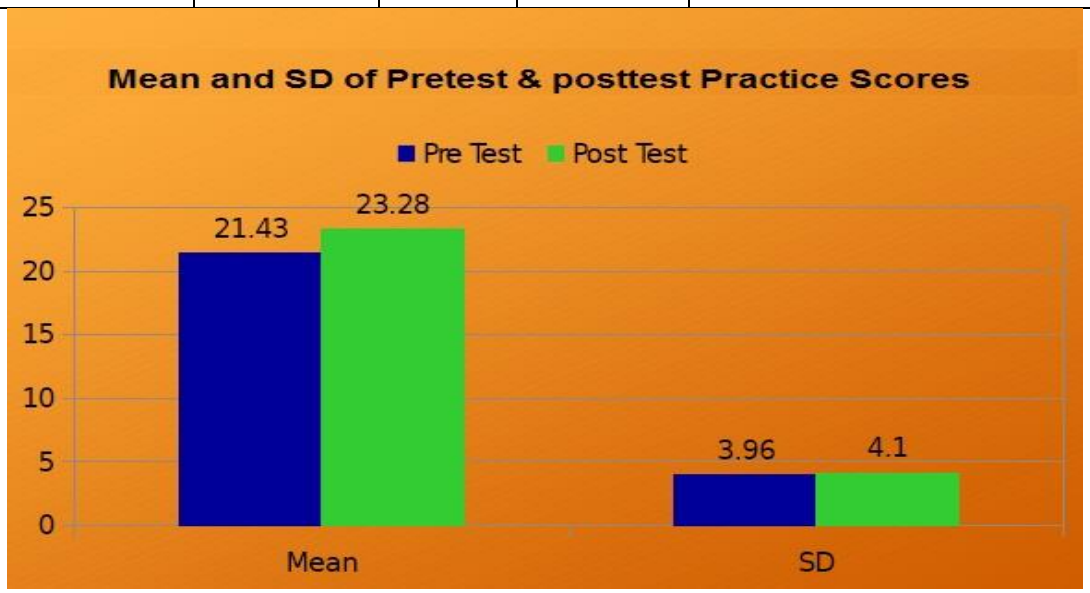

Fig. 4. *Mean and SD distribution of pre- and posttest practice scores.*

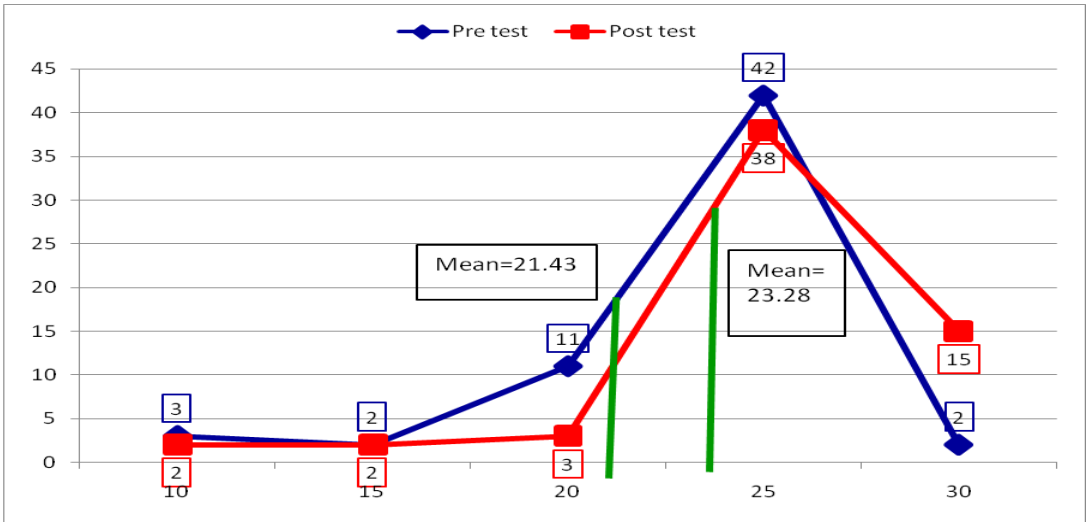

Fig. 5. *Frequency polygon showing the distribution of pre- and posttest practice scores.*

CONCLUSION

The study was concluded that the infection control protocols on standard precautions are effective in improving practices of staff nurses and prevention of infection in ICU. The nurses are responsible for providing a clean and safe environment to patient and detect early signs of infection.

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