



## Microbiology

## Impact Of Training On Knowledge And Practices Of Nurses Regarding Hospital Infection Control Practices in a tertiary Care Hospital in Central India

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**ABSTRACT**

**Introduction-** The issue of healthcare-associated infections has always been one of the most important public health problems in many countries throughout the world, contributing to morbidity, mortality and additional cost. To improve hygiene behaviour of nursing staff training sessions and increasing the educational facilities for recognition and control of infection has been recommended

**Material and methods-** A Three day training course was conducted which included lectures on important topics of hospital infection control. A pre-test was conducted on the first day of the session. A post-test was then conducted on the last day of the session using the same proforma. The test questions were then assessed and score was given.

**Results-** The data from our study indicates that the current state of nurses' knowledge related to hospital acquired infection is poor, particularly in concepts of standard precautions and sterilization and disinfection. But the knowledge of hand hygiene was known by 45 % of nursing staff. Considerable improvement was noticed in post test score of all the seven aspects of infection.

**Conclusion-** Training sessions and workshops conducted at regular intervals of time and updating health care worker will help to control the spread of nosocomial infections and providing a better patient care

**KEYWORDS :** health care associated infection , nurses, training, knowledge and practices

## Introduction-

The CDC healthcare-associated infection (HAI) prevalence survey found that on any given day, about 1 in 25 hospital patients has at least one healthcare-associated

infection. The issue of healthcare-associated infections has always been one of the most important public health problems in many countries throughout the world, contributing to morbidity, mortality and additional cost<sup>2</sup>. Consistent and strict adherence to standard precautions guidelines by the health care workers (HCW) plays a major role in controlling such infections. However, compliance rate with the use of such measures by the HCW has been seen to be non-satisfactory. Among the HCW, it is the professional nurse who provides first-hand bedside care and her actions has a direct role in positive patient outcome which can be imparted by control and prevention of infection. To improve hygiene behaviour of nursing staff, training sessions and increasing the educational facilities for recognition and control of infection has been recommended<sup>3</sup>.

Different studies have been conducted in different regions of the world showing either poor knowledge in infection control practices or lack of implementation of such knowledge into day-to-day practices, which can be improved by continual education and regular training<sup>3,7</sup>.

Therefore, the present study was conducted to assess the impact of training on knowledge and practices regarding hospital infection control amongst nursing staff working in a tertiary care centre.

**Material and methods-**

The study was conducted in the department of Microbiology, Government Medical College and Hospital, Nagpur. A total of 219 nurses from different wards and Intensive Care Unit (ICU) were included in the study. Consent was taken from the participants. The approval of Institutional Ethics committee, Government Medical College & Hospital, Nagpur was obtained.

A Three day training course was conducted which included lectures on important topics of hospital infection control such as concept of

standard precautions, practical application of this knowledge, needle stick injuries, sterilization and disinfection in wards and Operation Theatre (OT), concept of Central line associated blood stream infection (CLABSI), Catheter associated urinary tract infection (CAUTI). A pre-test was conducted on the first day of the session consisting of a set of 20 self designed multiple choice questions with four responses for each item, to be answered individually within 15 minutes. Every item had only single correct answer. Questions covered important broad categories of infection control namely standard precautions, hand hygiene, safe injection practices, sterilization and disinfection, spill management and PEP, OT sterilization and microbiological sample collection and transport. A post-test was then conducted on the last day of the session using the same proforma. The total score was calculated by adding all correct answers and ranged from 0 to 20. The test questions were then assessed and score was given.

**Results** – The score of nurses before and after three days of training on Infection control was assessed which was as shown in table 1

**Table 1. Scores in relation to different aspects of Infection control**

S.No	Questions category	Pre-test (%)	Pre-test (%)
1	Concept of standard precautions	35	68
2	Hand hygiene	45	71
3	Safe injection practices	37	67
4	Sterilization and disinfection	29	64
5	Spill management and PEP	39	69
6	OT sterilization	38	72
7	Microbiological sample collection and transport	42	74

The data from our study indicates that the current state of nurses knowledge related to HAI is poor, particularly in concepts of standard precautions and sterilization and disinfection. But the knowledge of hand hygiene was known by 45 % of nursing staff. Some of them were

knowing the recommended period of disinfectant but were not knowing the exact five movements of hand washing. The knowledge regarding safe injection practices and OT sterilization were also not enough to nursing staff but improvement was noticed in post test score of all the seven aspects of infection.

**Discussion :** The results of present study highlighted some facts on the knowledge and practices regarding knowledge and practices of hospital infection control amongst the participants who represented the nursing staff of a tertiary care centre. In the pre-test we could assess the basic knowledge and attitude of the nurses on the topic prior to training which was utilized further during lectures as a focusing tool. The post-test served as the result of training session i.e. how much knowledge was gained by the participants during the training. And as per our expectation the result of training was good.

Hand hygiene is the simplest and the most important but seems to be the most neglected step in prevention of hospital infection. During discussion in the training session with the participants, it was found that frequency of hand washing per shift was not acceptable and there was very low level of compliance with hand washing, particularly before touching the patient and also in between examination of two patients. And the reasons mentioned leading to non-compliance with hand hygiene were hectic duty schedules, inadequate hand washing facilities in or near the patient care area, non-availability of soap or disinfectants, busy working hours, understaffing/overcrowding, patient care being priority, wearing of gloves, low risk of acquiring infection from patients. Chandak et al 2011<sup>8</sup> also reported the same factors mentioned by the nursing staff for non compliance for hand hygiene. However, a good hand hygiene knowledge and compliance was seen in some studies<sup>9,10,11</sup>

Knowledge in sterilization and disinfection procedure was quite low. Though the participants were aware of the difference between sterilization and disinfection, commonly used hospital disinfectants but knowledge regarding correct application of disinfectants on equipments, various methods of OT sterilization was poor. There was a lack of concept of correct use of disinfectants on instruments. This knowledge of nursing staff regarding sterilization and disinfection in the present study is in accordance with the Jain M et al<sup>9</sup> and Sadeghi N et al<sup>12</sup>.

In safe injection practices, participants reported faulty practices in handling multi dose vials, intravenous fluids, insulin vials and syringes, recapping of needles, disposal of syringes. This knowledge of nursing staff regarding safe injection practices in our study coincides well with other studies<sup>13,14</sup>

Participants though well versed with spill management techniques and reportedly followed acceptable practices in this regard. They showed a low understanding for the appropriate use of PPE. Compliance with barrier nursing techniques was found but the use of eye goggles, change of gowns in I.C.U and before exit from the operation theatre was not satisfied. Similar findings were reported by Chandak et al 2011<sup>8</sup>.

Surprisingly the knowledge of sample collection and transport in nursing staff was not very poor in the present study whereas Chandak et al 2011<sup>8</sup> reported poor knowledge regarding the same.

**Conclusion:** We observed that knowledge of the participants in prevention of hospital acquired infections improved significantly after three days training session in the present study. The participants showed an improved understanding of importance of this concept in the post-test. This indicates that such a training programme is essential for improving the infection control practices.

It is observed in many other studies also that training sessions and workshops conducted at regular intervals of time and updating HCW with newer concepts in patient care, along with induction courses of newly joined staff, will help to control the spread of nosocomial infections and providing a better patient care.

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