

Impact of training session on infection control practices among health care workers in tertiary care Centre.

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Introduction-Hospital acquired infections (HAIs) is a major safety concern for both health care providers and the patients. A breach in infection control practices facilitates transmission of infection.

Aim - The aim of this study was to determine impact of training about knowledge of infection control practices among health care workers in tertiary care hospital.

Objectives - The present study was carried out -

1) To determine the effectiveness of training session conducted on infection control practices among healthcare workers.

2) To assess the knowledge among healthcare workers.

Methodology- The study was conducted at Kamala Nehru Hospital affiliated with Bharatratna Atalbihari Vajpayee Medical College, Pune involved 40 healthcare workers to whom a questionnaire was distributed regarding policies, practices and awareness relating to infection control practices in healthcare setting before and after training. Training session was conducted about infection control practices in healthcare setting. Pre & Post training score was calculated & compared. The data was analysed using appropriate statistical methods.

Results - Total 10 questionnaires about infection control practices were distributed among forty healthcare workers before and after training session. The percentage score (i.e., correct answers) of all questions asked was improved after training session and out of that score of seven questions was found to be statistically significant.

Conclusion - Our study concluded that knowledge about infection control practices among health care workers was improved after training. The training session conducted by Department of Microbiology has contributed in improving knowledge of healthcare workers about Infection control practices in healthcare setting and it will ultimately help in improving their attitude and day to day practices while giving healthcare to patients. Continuous teaching and monitoring of staff regarding infection control practices will encourage them to follow correct protocols according to standard guidelines.

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I. Introduction

Hospital-acquired infection (HAI) (also known as nosocomial infection) is defined as a localized or systemic condition resulting from an adverse reaction to an infectious agent or its toxin that develops in a patient 48 hours or more after admission to a hospital and was not incubating at the time of admission.^[1] 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. This attributes to the importance of hospital infection control practices.

Prevention of hospital acquired infections requires the basic understanding of epidemiology of nosocomial infection which includes host-agent-environment relationship. Since the 1800s, hand hygiene has been recognized as the single best method to prevent the spread of pathogens and nosocomial infections. Hospital infection prevention and control (IPC) is a practical, evidence-based approach preventing patients and health workers from being harmed by avoidable infections.

A breach in infection control practices facilitates transmission of infection which is prevented by proper cleaning and disinfection of hospital environment. Sterilization and disinfection are the basic components of hospital infection control activities. Every day, a number of hospitals are performing various surgical procedures. Even more number of invasive procedures are being performed in different health care facilities.

Hence, adequate decontamination techniques for medical and surgical devices are needed in all the health care facilities. The health care providers are equally responsible for the reduction and elimination of such infections.

Hospital waste is 85% non-infectious and only 15% infectious^[2]. However, poor segregation can cause the mixing of non- infectious with infectious waste and increase the total hazardous waste volume. Biomedical waste is hazardous since it has an inherent potential for dissemination of infection, both nosocomial i.e., within health care settings as well as risk of infection to persons working outside health care facilities, like waste handlers, scavenging staff and also to the general public. It is therefore highly desirable that all service officers concerned with the administration of hospitals and other health care workers take all steps to adhere to the laid down directives.

Therefore, present study was undertaken to evaluate the impact of training session of healthcare workers on 'Infection control Practices in healthcare setting'.

II Methodology

The observational study was conducted at Kamala Nehru Hospital affiliated with Bharatratna Atalbihari Vajpayee Medical College, Pune involved 40 healthcare workers to whom a questionnaire was distributed regarding policies, practices and awareness relating to infection control practices in healthcare setting before and after training. Training session was conducted about infection control practices in healthcare setting. Pre & Post training score was calculated & compared. The data was analysed using paired T test using appropriate software.

III Results

Forty Hospital staff members were included in the study. They were subjected to the questionnaires before and after the training session. The percentage score of correct answers given by the participants were observed and analyzed using appropriate statistical method.

Serial No.	Questions	Score before training (%)	Score after training (%)	P value	Significance
1)	How many hand hygiene moments are there?	25%	63%	0.0000209	Significant
2)	What should be the duration of contact for hand rub and hand hygiene?	17.5%	50%	0.00009983	Significant
3)	Which of the following statement is true? a) Cleaning should be done from most soiled area to less soiled area b) Use broom to clean OT c) Double dipping of mop should be avoided d) No stroke technique of mopping should be followed	40%	60%	0.05832	Non-significant
4)	Which is not the step of spill management? a) Put no entry sign board b) Put absorbent material c) Use of 10% sodium hypochlorite d) Use of 70-80% Alcohol	42.5%	60%	0.006492	significant
5)	The major risk factor for hospital acquired infection is – a) Obstructive uropathy b) An indwelling urinary catheter c) Phimosis d) A renal stone	87.5%	90%	0.3235	Non-significant
6)	Human anatomical waste should be disposed in which color-coded bag?	82.5%	100%	0.006492	Significant
7)	Sharps should be disposed in which of the following?	77.5%	100%	0.001729	Significant
8)	All of true with regard to hand hygiene Except- a) It includes hand wash and alcohol hand rub b) It is the single most important standard precaution in infection control practices c) There are five moments for hand hygiene d) Wearing gloves replaces the need for hand hygiene	10%	15%	0.1031	Non-significant

9)	As per BMW segregation 2016 rules, contaminated recyclable waste are to be disposed in-	32.5%	85%	<0.001	Significant
10)	Write the name of agency with which our hospital has done the MOU for Biomedical waste treatment.	57.5%	95%	0.000029	Significant

IV Discussion

Health care associated infections affect hundreds of millions of patients worldwide every year and lead to increased morbidity and mortality to patients. Hand hygiene is the most important effective and simplest measure to prevent Hospital acquired infection. In present study, Hand hygiene moment knowledge before training was 25% and after training score was 63%. Similarly, a study in Department of Internal Medicine, University of Geneva Hospitals, and Institute of Social and Preventive Medicine, University of Geneva, Switzerland by Pittet D *et al* showed improved compliance from 48% before campaign and 66% after campaign [3]. However, a study in Mississippi showed 97% improved compliance for hand hygiene moment [4].

Out of 40 staff members in present study, knowledge about duration of Hand rub & Hand hygiene improved from 17.5% to 50% after training Session. A similar study in Uttarakhand by Goyal A *et al* which showed Hand hygiene duration knowledge as 70% [5]. However, it was observed that only 12.1% had knowledge about duration of Hand hygiene in a study done by Imam Hossein Hospital Iran by Nabavi M *et al* [6].

Hospital Environmental cleaning is a complex, multifaceted process and involves the physical action of cleaning surfaces to remove organic and inorganic material, followed by application of a disinfectant, as well as monitoring strategies to ensure the appropriateness of these practices. Environmental cleaning is important for reducing microbial contamination of surfaces and subsequent risk for HAIs. Hospital Cleaning Knowledge has been increased from 40 % to 60% in present study after completion of training session. In Australian study by Mitchell BG *et al* which showed Hospital Cleaning knowledge about 45.6% [7].

In a present study, knowledge about spill management was found to be 42.5 % before training and 60% after training session. Similarly, a study conducted in 2022 Tamil Nadu showed knowledge about spill management was 40% to 57% [8]. Spills can pose a grave danger to another worker or an outsider who is not aware of the nature of the spill. Spill management in hospitals is vital due to the combination of hazardous substances, busy environment and vulnerable patients, but with the correct training and equipment in place, staff can minimize the risk to themselves, to visitors and to patients.

In a present study, knowledge about risk factor for Hospital Acquired Infection was found to be 87.5% before training session and 90% after training session. In university of Kosovo, a study conducted by Gruda A *et al* found that the Knowledge was 88.8% [9] while Kaushik Nag *et al* found 60.5% staff had knowledge of Hospital acquired infection in Tripura [10]. Proper nursing practices in preventing the spread of HAIs and their management contribute to promoting and creating an appropriate environment which prevents new infections and controls the existing ones.

Anatomical waste disposal knowledge before training was 82.50% and after training 100% in our study. A study in Mangalore, by Rashmi Kundapure *et al* found that anatomical waste disposal knowledge was 96% [12]; in a study population. Another study in South Africa 2021, found anatomical waste disposal knowledge was 52.08% [11].

Hazards of improper management of biomedical waste have increased the concerned throughout the world, considering its deleterious effects on human health and ecosystem. Sharp disposal knowledge increased from 77.5% to 100% in present study after training. Motlatla M *et al* conducted a study in South Africa 2021, found sharp disposal knowledge as 88.89% [11].

In present study, contaminated infectious waste disposal knowledge was 32.5% before training which increased to 85% after training session. A study in Bangladesh by Mohammad Nasir Uddin *et al* found this knowledge was 60% [13].

Adequate knowledge about the health hazard of hospital waste, proper technique and methods of handling the waste, and practice of safety measures can go a long way toward the safe disposal of hazardous hospital waste and protect the community from various adverse effects of the hazardous waste. Biomedical waste management knowledge in present study found 57.5% before training and 95% after training. A study by Ranjan R *et al* observed biomedical waste management knowledge was 58.2% in Odisha, India [14].

Adequate infection control practice is one of the key elements for restricting the spread of healthcare-associated infectious-disease. A numerous guidelines state that handwashing is the most essential procedure to prevent nosocomial infection. Wearing gloves is not a substitute for proper hand washing and sanitizing. Before training in present study 10% staff was found to have this knowledge, which increased to 15% after training session. Similar study by Faujdar SS *et al* in Himachal Pradesh observed this knowledge as 59% [15].

V Conclusion

Our study concluded that knowledge about infection control practices among health care workers was improved after training. It was very important to know the current status about knowledge on infection control practices among health service providers so that we can overcome those deficiencies by conducting more training programs. The training session conducted by Department of microbiology contributed in improving knowledge of Health workers about Infection control in healthcare setting and it will ultimately help in improving their attitude and day to day practices while giving healthcare to patients. Continuous teaching and monitoring of staff regarding infection control practices will encourage them to follow correct practices.

Limitations – Only knowledge of healthcare workers was assessed. Attitude and practice methods were not assessed.

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