

## ORIGINAL ARTICLE

# Knowledge and Attitude of paramedical staff and hospital support staff regarding Hospital infection control

Sunita R Bhandari<sup>1</sup>, Sanjeev Vinayak Rairikar<sup>2</sup>

1. Professor and HOD, Dept of Microbiology, SMBT Institute of Medical Sciences and Research Center. Igatpuri, Nasik Maharashtra.
2. Associate Professor, Dept of Microbiology, SMBT Institute of Medical Sciences and Research Center. Igatpuri, Nasik Maharashtra.

## Abstract

**Background:** The implementation of infection prevention and control guidelines is important for the improvement of quality care in hospitals. This study aimed to identify gaps in the knowledge and attitudes of paramedical staff and other hospital support staff about infection control and to determine if their infection control practices are in line with current policies and guidelines.

**Methods** The study was done on a group of paramedical staff and hospital support staff of different hospitals. Total 120 participants each of the paramedical staff and hospital support staff were included in the study. Each of the participants were given specially prepared questionnaires and asked to fill them in time of half an hour. Responses from the participants were collected and tabulated. Each correct answer were given score 1 and wrong answer were given score zero. Accordingly depends on the questions in each group the scores were summed up and tabulated. Statistical analysis was done with the help of IBM SPSS statistics 20 using student's t test. **Results:** Statistical significant difference was present between the paramedical staff ( $11.97 \pm 1.84$ ) and hospital support staff ( $10.20 \pm 2.05$ ) of the knowledge and attitude regarding the hospital infection control. **Conclusion:** This study shows that the knowledge and practice of infection of hospital support staff and paramedical staff is not optimal with regard to complying with infection control guidelines. It was, however, noted that attitudes towards infection control were good. Based on the fact that the attitudes were good, knowledge and practice can be improved with provision of appropriate supplies and strengthening training and supervision.

**Key words:** Hospital infection control, Paramedical staff, Hospital support staff

**Address for correspondence:** Dr. Sunita R Bhandari Professor and HOD, Dept of Microbiology, SMBT Institute of Medical Sciences & Research Center Igatpuri, Dist. Nashik, Maharashtra State, India. **Email:** [srbhandari\\_balajihospitals@hotmail.com](mailto:srbhandari_balajihospitals@hotmail.com)

Received on : 12/12/2015 Revised : 19/12/2016 Accepted : 14/01/2016

## Introduction

Infection control is very important in any hospital to avoid the chances of cross-infection or transmission of infections to other patients. Cross-infection can be defined as the transmission of infectious agents between patients and staff within a clinical environment.<sup>1</sup> Hospital staff are at high risk of exposure to cross-infection with blood-borne pathogens, such as hepatitis B virus (HBV), hepatitis C virus, and human immunodeficiency virus

(HIV), and Mycobacterium tuberculosis, streptococci, and other viruses and bacteria that colonize the oral cavity and the upper respiratory tract.<sup>2,3</sup> This risk can be enhanced by accidental injuries caused by various instruments used during patient treatment. Such infections can be prevented using safety precautions and implementing infection control guidelines. Many patients may appear clinically healthy according to physical examination and medical history. Hence, risk management strategies or standard precautions should not be applied based on the patient's appearance.<sup>4</sup>

A breach in infection control practices facilitates transmission of infection from patients to health care workers, other patients and hospital support staff. It is therefore important for all health care workers, patients, their family members, friends and close contacts to adhere to the infection control guidelines strictly. It is also imperative for health care administrators to ensure implementation of the infection control program in health care facilities.<sup>5</sup> Hand hygiene prevents cross infection in hospitals, but adherence to guidelines is commonly poor.<sup>6</sup> While the techniques involved in hand hygiene are simple, the complex interdependence of factors that determine hand hygiene behavior makes the study of hand hygiene complex.<sup>7</sup> Surgical site infection is a common complication of surgical operation, affecting up to 5% of all the surgical operations carried out in developed countries, and significantly higher in developing countries.<sup>8,9</sup> It is a significant cause of morbidity, emotional stress and financial cost to affected patients and health care institutions.<sup>10</sup> Therefore it is very important to strictly follow the infection control guidelines. This study was planned to study the knowledge and attitude of paramedical and hospital support staff regarding infection control.

## Materials and Methods

The study was carried out including paramedical personnel's and hospital support staff to check the knowledge and attitude regarding hospital infection control. The study was included of 120 patients each of paramedical staff and hospital support staff of different hospitals. The study was carried out with the help of specially prepared questionnaires which were validated by doing pilot study. Informed consent was taken from all the participants and ethical committee approval was taken before start of the study.

### Inclusion criteria:

1. Paramedical and hospital support staff working in the general hospitals.
2. Paramedical and hospital support staff working in the specialty hospitals.
3. Willing to participate in the study.

**Exclusion criteria:** Medical doctors of the hospitals.

Each of the participants were given specially prepared questionnaires and asked to fill them in

time of half an hour. Responses from the participants were collected and tabulated. Each correct answer were given score 1 and wrong answer were given score zero. Accordingly depends on the questions in each group the scores were summed up and tabulated.

## Results

It is important for any hospital to set up its own measures to prevent the spread of infectious and transmissible diseases. For this purpose, it is important that health care professionals be aware of the risks and seriousness of infections. This survey was conducted to assess the level of knowledge, attitudes, and practices of infection control procedures among paramedical staff and other hospital support staff.

**Table 1:** Comparison of the mean scores of the correct answers of knowledge and attitude of paramedical and hospital support staff.

Participants	(n)	Correct answers (Mean±SD)	t Value	P value
Paramedical staff	120	11.97±1.84	7.025	<0.00
Hospital support staff	120	10.20±2.05	2	1

SD= Standard Deviation P<0.001= highly statistically significant difference.

All the 120 participants' were given their responses. The mean scores of the correct answers given by the paramedical staff were  $11.97 \pm 1.84$  and that of hospital support staff was  $10.20 \pm 2.05$ . On statistical analysis by students t test, statistically significant different was present between the mean scores of the paramedical staff and hospital support staff responses. (Student's t test,  $p < 0.001$ )

### Annexure I: Questionnaires regarding Knowledge and attitude towards hospital standard infections control procedures.

1. All health providers are at risk of occupational infections. (True)
2. All patients are sources of infections regardless of their diagnoses. (True)
3. All the body fluids except sweat should be viewed as source of infections. (True)

4. The environment (air, water, inert surfaces) is the major source of bacteria responsible for nosocomial infection. (True)
5. Invasive procedures increase the risk of nosocomial infections. (True)
6. Hand washing is recommended before and after a contact with a patient. (True)
7. Hand washing indicated between tasks and procedures on the same patient. (True)
8. Standard hand washing includes washing of both hands and wrists. (True)
9. Use of gloves replaces the need for hand washing. (True)
10. Alcohol-based hand rub is indicated instead of a hand washing/ antiseptic hand washing. (True)
11. Use of PPE (Personal protective equipment) eliminates risk of acquiring occupational infections. (True)
12. PPE should be used only whenever there is contact with the blood. (False)
13. Gloves and masks can be reused after proper cleaning. (True)
14. Masks made up of cotton or gauze is most protective. (True)
15. Gloves should be changed between different procedures on the same patient. (True)

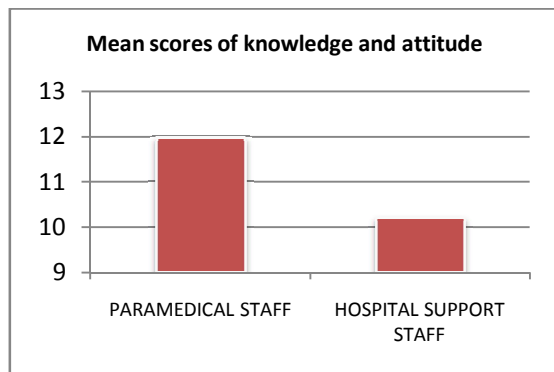
But despite a Joint Commission requirement that Centers for Disease Control and Prevention hand hygiene guidelines be implemented in hospitals, compliance among health care workers remains low.<sup>12</sup> Nosocomial infections are infections which result from treatment in a hospital or a healthcare service unit, but secondary to the patient's original condition. Infections are considered nosocomial if they first appear 48 hours or more after hospital admission or after discharge. This also includes occupational infections among staff of the facility.<sup>13</sup> Nosocomial infections are also commonly known by the terms health care-associated and hospital-acquired infections. The most common type of nosocomial infections are surgical wound infections, respiratory infections, genitourinary infections, as well as gastrointestinal infections.<sup>12,13</sup>

Epidemiological studies report that nosocomial infections are caused by ubiquitous pathogens such as bacteria, viruses and fungi present in air, surfaces or equipment. The pathogens are not present or incubating prior to the patient's admission into healthcare facility and are most likely transmitted by direct person-to-person contact during invasive medical procedures. Some of the pathogens are highly resistant to antimicrobial agents, and this necessitates the prescription of more potent and costly antimicrobial agents.<sup>14</sup>

Good hand washing technique, ensuring that all surfaces of the hands receive contact with the decontaminating agent, has been accepted for many years and is acknowledged in current guidelines. Alcohol-based rubbing reduces the mean bacterial counts on hands more effectively than hand washing with antimicrobial soaps.<sup>7</sup>

Inadequate compliance with hand washing, a critical component of infection control, has been reported. Duse et al<sup>11</sup> points out that hand washing is an evidence-supported intervention for preventing infection transmission. However, most healthcare workers, who work in high risk areas, fail to wash their hands after contact with each patient and compliance with hand washing is only about 40%. The reasons of lack of compliance to hand washing include: lack of appropriate equipment, low staff to patient ratios, allergies to hand washing products, insufficient knowledge among staff about risks

**Graph 1:** Comparison of the mean scores of the correct answers of knowledge and attitude of paramedical and hospital support staff.



## Discussion

Most nosocomial infections are thought to be transmitted by the hands of health care workers. It has long been known that hand hygiene among health care workers plays a central role in preventing the transmission of infectious agents. Hand-washing is the most effective way of preventing the spread of infectious diseases.<sup>11</sup>

and procedures, the time required and casual attitudes among staff towards biosafety.<sup>7</sup>

Complex interplay of cognitive, socioeconomic and technical factors may determine hand washing practice among hospital based health workers, regardless of the location of the country or hospital they work in.<sup>7</sup> Today's rapidly changing health care environment makes it difficult to protect patients and health care workers from the transmission of pathogens.<sup>16</sup>

This may lead to nosocomial infections, for which the hospital can be held responsible. Harris et al<sup>17</sup> support the view that hospital acquired infections pose a threat to hospital workers, patients and the community and represent a major cause of morbidity and mortality in hospitalized patients.

Transient microbiota is microorganisms present, under certain conditions, in any of the locations where resident microbiota are found. Some of these microorganisms colonize the superficial layers of the skin. They are more amenable to removal by routine hand hygiene and such microorganisms are often acquired by healthcare workers during direct contact with patients or contaminated environmental surfaces, within the patient's surroundings. The most common types of transient bacteria are the *Staphylococcus aureus*, *Escherichia coli*, beta-hemolytic *Streptococci*, *Serratia mercenscens*, *Klebsiella pneumoniae*, *Pseudomonas aeruginosa*, *Enterobacter* species, *Candida albicans* and *Clostridium difficile*. These are the organisms frequently implicated in nosocomial infections.<sup>14</sup> Present study had found that the knowledge and attitude among the paramedical and hospital support staff was sufficient but it was higher in the paramedical staff than other staff. Elaziz KMA et al<sup>7</sup> studied the practice of hand-washing among the health care workers and found that the doctors have more compliance regarding hand washing than the nurses.

Bayiousef AM et al<sup>18</sup> studied attitudes, knowledge, and sources of information among nursing staff toward standard precautions and infection control and found that the knowledge was sufficient but there is scope of improvement in the knowledge.

Surgical site infection is usually acquired in the course of the surgical operation, either from the exogenous microbes in the air, medical

equipment, surgeons and theater staff; or from the flora on the skin or in the operative site of the patient, and rarely from the blood used in surgery. The infecting microorganisms are variable, and depend on the type and location of the surgery, and the type of antimicrobials received by the patient. The main risk factor of the infection is the extent of contamination of the surgical site during the surgery, which is to a large part dependent on the length of the operation, the general condition of the patient, quality of surgical technique, the presence of foreign bodies including drains, the virulence of the microorganisms, concomitant infection at other sites, the use of preoperative shaving, and the experience of the surgical team.<sup>10</sup>

Therefore the infection control by the hospital staff is of utmost important to avoid the transmission of infection from patient to another patient, from patient to hospital staff or vice versa. The present study added more light on the knowledge and attitude of the hospital staff regarding the infection control. We recommend that such type of should be conducted on regular basis every 6 monthly or on yearly basis, so the staff can get the updated information of infection control as well as the new joining staff can also get the knowledge. For the hospital staff having poor knowledge seminars or workshops can be organized.

## Conclusion

Further studies are essential in the evaluation of the situation of infection control in different areas in hospitals. Additional concern should be given to the availability of clear guidelines which must be introduced to all healthcare personnel. More intensive and regular training programs to all health care workers must be included in the plans of quality control in all hospital and additional concern should be given to the availability and quality of personal protective equipment's.

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**Conflict of Interest:** *None declared*

**Source of Support:** *Nil*

**Ethical Permission:** *Obtained*

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