

Original Research Article

## **Knowledge, Attitude and Practice Regarding Nosocomial Infections among General Health Practitioners and Medical College Students**

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**Abstract:** Nosocomial infection is an infection if it becomes positive 48 hours or more after admission to the hospital or within 30 days of discharge. Health care workers can be a major source of vectors for pathogens. Therefore it is necessary that the health care work should have awareness about the nosocomial infection. This study aims to study the knowledge, attitude and practice regarding nosocomial infection among general medical practitioners and medical college students. The study was completed with the help of specially prepared questionnaires which were validated by doing pilot study. Total 25 questions were formulated including the knowledge, attitude and practice regarding nosocomial infection. The study was done including of 48 general medical practitioners in nearby hospitals and 108 medical college students. Only the participants willing to participate were included in the study. When we compared the knowledge, attitude and practice scores of the general medical practitioners and medical college students, it was found that both these groups having similar knowledge, attitude and practice scores and the difference were not found to be statistically significant (Student's t test,  $p > 0.05$ ). Improvement in the knowledge, attitude and practice towards nosocomial infection need to be done. For this purpose continuing education programs, seminars, symposiums or workshops should be arranged on regular basis.

**Keywords:** Nosocomial infections, Hospital acquired infections, Medical practitioners, and Medical students

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### **INTRODUCTION**

Health is the level of functional or metabolic efficiency of a living being. Health is both responsibility as well as right. It is the responsibility of those with power and right of those without power. The promotion of health is social, and political as well as individual responsibility. Health does not mean the only physical well-being of the individual but also include social, emotional, spiritual and cultural well-being. This is a whole of life view and includes the cyclical concept of life-death-life [1, 2].

Hospital-associated infections or nosocomial infections are those infections acquired during the patient's stay in hospital. They form a major worldwide public health problem despite advances in our understanding and control of these infections [3]. The best clinical care in the world can be worthless if patients pick up other infections while they are in the hospital. Hospital-associated infections also include

occupational infections which occur in health care workers due to occupational hazard [4].

An infection is considered nosocomial if it becomes evident 48 hours or more after hospital admission or within 30 days of discharge following inpatient care [5].

Nosocomial infections increase patients' morbidity, mortality, length of hospital stay and treatment cost [6]. Therefore, knowledge about the frequency and distribution of nosocomial infections is important to improve infection control measures as well as to develop effective preventive and curative strategies which, in turn, will help us in decreasing incidence, morbidity and mortality [7]. Nosocomial infection refers to as a hospital acquired infections or simply hospital infections are infections occurring during staying 48 hours or longer, which resulted in the

use of the 48 hour criterion in several epidemiological surveillance systems [8].

Hospitals provide a favorable transmission path-way for the spread of nosocomial infections, owing partly to poor infection control practices among health workers on one hand and overcrowding of patients in most clinical settings on the other. The importance of hospital-acquired infections goes beyond its impact on morbidity and mortality figures in any country, and has profound economic implications. Prevention of health care-associated infections is the duty of all health care workers. Infection control professionals require evidence-based educational content that facilitates reduction in nosocomial infections. Clinical and support staff in health care institutions are inundated with required training facilitated by accrediting bodies and institutional mandates. Standard precautions are designed to reduce the risk of acquiring occupational infection from both known and unexpected sources in the healthcare setting. Strict adherence by healthcare workers to standard infection control precautions may prevent a percentage of these risks. For that healthcare workers should have adequate knowledge and practice about standard infection control precautions [9].

**MATERIALS AND METHODS**

The study was completed with the help of specially prepared questionnaires which were validated by doing pilot study. Total 25 questions were formulated including the knowledge, attitude and practice regarding nosocomial infection. The

questionnaires were of yes/ no type questions and each correct answer was given score 1, while wrong answer was given as score zero. Approval of the local ethical committee was taken before start of the study and informed consent was taken from each of the participant before participating in the study. The study was done including of 48 general medical practitioners in nearby hospitals and 108 medical college students. Only the participants willing to participate were included in the study.

All the 48 medical practitioners and 108 medical college students were submitted their responses. All the responses were collected and analyzed statistically using IBM SPSS Statistics version 20.

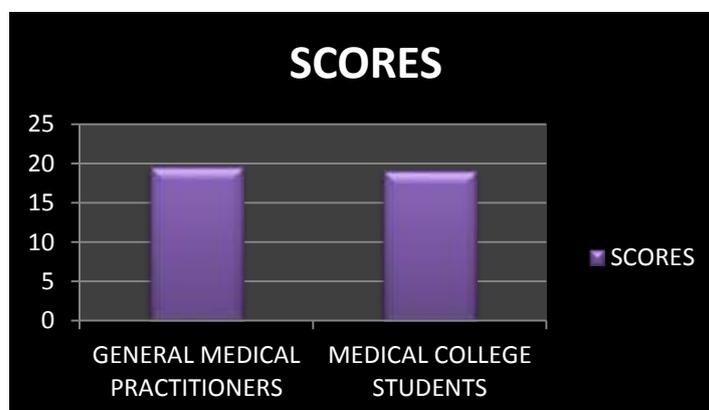
**RESULTS**

All the participants of the study had given their responses. It was found that though the general medical practitioners and medical college students had sufficient knowledge and attitude towards nosocomial infections, their knowledge was lacking at certain areas. Also both these groups practice approach towards nosocomial infection was not sufficient and it needs improvement. When we compared the knowledge, attitude and practice scores of the general medical practitioners and medical college students, it was found that both these groups having similar knowledge, attitude and practice scores and the difference were not found to be statistically significant (Student’s t test,  $p > 0.05$ ) (Table 1, Fig-1).

**Table 1: Responses of the participants to the knowledge, attitude and practice scores**

Group	Score Mean ± SD	Number of participants	T value	P value
General medical practitioners	19.60 ± 1.90	48	0.6266	0.5388*
Medical college students	19.10 ± 1.66	108		

- $P > 0.05$  = statistically not significant.
- SD = Standard deviation



**Fig-1: graph showing Responses of the participants to the knowledge, attitude and practice scores**

## DISCUSSION

Health care-associated infections have long been recognized as crucial factors undermining the quality and outcomes of health care delivery. Developing countries were reported to have up to 20 times the risk of contracting a nosocomial infection compared with developed countries. Thus, spread of infection serves as a major source of worry for managers in health care practice, particularly in developing countries where the health care system is already overstretched [4].

Nosocomial Infection or Hospital acquired infection are those acquired during a patient's hospitalization and not present or incubating at admission. Measure employed to increase the survival rate in small babies have added greatly to risks of nosocomial infections such as IV drip, assisted respiration, use of broad spectrum antibiotics, Parental Nutrition and extensive surgical maneuvers on babies with congenital malformations [1, 10].

Nosocomial infection continues to be burden to the world health care system through increased risk to patient and employees. These infections have tremendous health and financial costs with an estimate incidence of 2,000,000 infection per year, 20,000 death per year and added costs of billion dollars per year. Effective infection control program are essential to controlling and preventing Nosocomial infection [8].

Over the last decades, radiological services have undergone many changes and with the introduction of interventional radiology and other special imaging modalities, the tendency for accidental blood and infectious pathogens exposure is on the increase. Standard precautions are implemented to reduce the potentiality of acquiring occupational infections from both unexpected and well-known sources during the healthcare system. Stern conformation to standard precautions can reduce a percentage of these risks [9].

There are several studies which reveal the importance of infection control practice in other professions. Nurses and physicians knowledge of standard and isolation precautions have been reported to be insufficient. Few studies have reported on medical student's knowledge of standard isolation precautions or sharp injuries [11-13] and noted a lack of adequate knowledge of standard precautions [13]. In one survey, 27% of participating health care students reported insufficient emphasis on teaching about infection control in their training program, whilst 50% expressed a desire for more emphasis on isolation procedures during their training [14]. Several other targeted studies [15, 16] have detected poor adherence to universal precautions among multiple health care providers,

including gastroenterologists and their staff, emergency room physicians and hemodialysis practitioners [9].

Although infection is most prevalent in patients upon admission, health care workers also act as potential vectors for pathogenic agents. Hospitals provide a favorable transmission pathway for the spread of nosocomial infections, owing partly to poor infection control practices among health workers on one hand and overcrowding of patients in most clinical settings on the other. The importance of hospital-acquired infections goes beyond its impact on morbidity and mortality figures in any country, and has profound economic implications [4].

The study by Jayasinghe RD *et al* [9] indicates that more than half (73.24%) of the participants identified that the environment is the major source responsible for nosocomial infections.

Health care workers could be at risk of infections with blood-borne pathogens resulting from occupational blood exposure through injuries with sharp instruments and needle sticks if the standard precaution is not strictly adhered to. The study done by Okaro *et al* [17] in Nigeria revealed that radiographers claimed to have awareness or recognition for universal blood and body fluid precautions, with various proportions claiming different sources of awareness, the largest proportion being through clinical seminars or symposia. Hospitals provide a good transmission pathway for the spread of nosocomial infections, due to poor infection control practices among health workers. Hands should be washed after attending to one patient but before attending to the next. It must not be missed when contacted is made with body fluids.<sup>9</sup>

Although infection is most prevalent in patients upon admission, health care workers also act as potential vectors for pathogenic agents. Hospitals provide a favorable transmission pathway for the spread of nosocomial infections, owing partly to poor infection control practices among health workers on one hand and overcrowding of patients in most clinical settings on the other. The importance of hospital-acquired infections goes beyond its impact on morbidity and mortality figures in any country, and has profound economic implications. According to Robert, acquisition of a nosocomial infection can prolong duration of hospitalization, increase the costs of health care, and place a serious economic burden on patients and their families [5].

One of the most recurrent themes with regards to the prevention of nosocomial infections in hospital has been the issue of hand washing among medical personnel. Knowledge and practice of hand washing and Aseptic technique are very important in preventing

the transfer of pathogen micro-organisms by nurses to their patients in the course of rendering care. It is considered as one of the most infection control measures. Nurses may harbor micro-organisms that are harmless to them but potentially harmful to patients if they find a route of entry. It is important that nurses wash their hands and maintain Aseptic technique when carrying out health procedures because they are directly involved in providing a biologically safe environment for the patients. Micro-organism exist everywhere, in water, soil, air, body surface like the skin, intestinal tract, vagina, respiratory tract and urinary tract. Some micro-organisms are normal resident's flora, while others invade the body and cause infection and disease that could either be asymptomatic, subclinical or clinical. These features make them vary in their virulence, pathogenicity and sepsis [18].

Poor compliance is associated with lack of awareness among personnel. The other factors are personal and organizational attitudes towards interventions such as hand washing, cost containment and logistical barriers. The need for appropriate measures required for reducing the incidence of nosocomial infections is well-documented in literature [19].

Aspiration is the primary route of transmission of pathogens into the lungs. Oropharyngeal colonization, gastric fluid, and enteral feeding are three important factors affecting aspiration. Oropharyngeal colonization is present in approximately one in four patients on admission to a critical care unit, and by the 10th to 15th day in critical care, approaches 100% [20].

Inhalation is another route of transmission of pathogens into the lungs; most commonly caused by mechanical ventilation and contaminated aerosols. Respiratory equipment including ventilators, humidifiers, and nebulizers can form potential reservoirs for infection. In ventilator circuitry the highest colonization occurs at parts nearest the patients, likely due to retrograde sputum colonization [20].

In the present study, it was found that though the general medical practitioners and medical college students had sufficient knowledge and attitude towards nosocomial infections, their knowledge was lacking at certain areas. Also both these groups practice approach towards nosocomial infection was not sufficient and it needs improvement. When we compared the knowledge, attitude and practice scores of the general medical practitioners and medical college students, it was found that both these groups having similar knowledge, attitude and practice scores and the difference were not found to be statistically significant [20].

Surgical wound infection following diagnostic & therapeutic procedures, e.g. Urinary tract catheterization or instrumentation, tracheostomy, continuous IV therapy and surgery. These infections are a significant problem in neonatal intensive care unit because of frequent intervention and use of that bypass skin and mucosal barriers, urinary catheters and mechanical ventilation. The nosocomial infections increase duration of stay in the hospital and also the cost of therapy overall mortality attribute to nosocomial infection is about 40%. Hospital-acquired infections are one of the leading causes of preventable morbidity and mortality in neonatal intensive care units. Devices causes infection include catheter-associated blood stream infection (CAISs) and ventilator-associated pneumonia (VAP), are the most common nosocomial infections. Prevention and control measures of nosocomial infection in new born are provision of graded care facilities, including an observation unit, an intensive care unit, isolation, use of prophylactic antibiotics in high risk babies and surveillance programme. Use of gowns, caps, masks and proper hand washing, ward floor, toilet, wash basins, sinks etc., need to be kept clean by frequent washing. Health education session for the parents, attenders and also for the staff nurses [1].

## CONCLUSION

Improvement in the knowledge, attitude and practice towards nosocomial infection need to be done. For this purpose continuing education programs, seminars, symposiums or workshops should be arranged on regular basis.

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