

Study on Knowledge and Practice to Reduce Hospital Acquired Infection a Pre and Post Test Analysis

By

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*Dissertation submitted for the partial fulfillment of the
MBA Hospital and Health Management*

Academic year, 2014-2016



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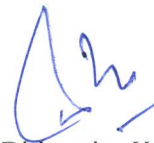
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The Candidate has successfully carried out the study designated to him during internship training and his approach to the study has been sincere, scientific and analytical. This training is in fulfillment of the course requirements.

I wish him all success in all future endeavors.



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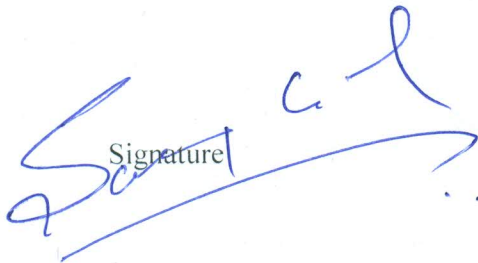
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CERTIFICATE BY SCHOLAR

This is to certify that the dissertation "A Study on Knowledge and Practices to Reduce Hospital Acquired Infection: A Pre and Post Test Analysis" and submitted by Dr. Sarang Goel Enrollment No. 1609 under the supervision of Dr.(Prof) Dhirendra Kumar for award of Postgraduate Diploma in Hospital and Health Management of the University carried out during the period from 1st February 2016 to 30th April 2016 embodies my original work and has not formed the basis for the award of any degree, diploma associate ship, fellowship, titles in this or any other Institute or other similar institution of higher learning.


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Abstract

A Study on Knowledge and Practices to Reduce Hospital Acquired Infection: A Pre and Post Test Analysis

Dr. Sarang Goel

Background: Each year infections associated with healthcare occur in a large number of patients, making healthcare associated infection (HAI) the most common complication affecting patients in hospitals. These infections have a number of adverse effects for both patients and the hospital. An infection control program is essential to the modern hospital because it provides guidelines and standards for the recognition, prevention, and control of infection in patients, personnel and visitors within the hospital community.

Rationale of the study: High rate of Hospital acquired infection is a boon for healthcare industry. For the Patient it increases the risk of life-long disabilities or even death, possible need for stronger and more expensive medications, with the added risk of complications and prolonged hospital stay. For the Hospital it increases the need for more comprehensive quarantine procedures, more work for healthcare staff and prolonged hospital stays, which increase the cost of admission and reduce the beds available for new admissions.

Aim: To reduce health care associated infection in SRS Hospital Faridabad.

Methodology: The study design: This study used a quantitative research methodology. Type of study is pre-test post-test study. The present study was carried out in the General ward and ICU of SRS Hospital Faridabad from 5th to 28th March 2016. Study Population: Total 76 persons (62 nurses, 4 doctors, 2 physiotherapists, 8 General Duty Assistant) have answered a questionnaire in pre-test and post-test for the Knowledge and Practice study among nursing staff (clinical area).

Results: A total of 1144 observations were made in pretest phase for 8 activities out of which in 73 observations alcohol rub was there. In post test phase 1100 observations were made and in 668 alcohol rub was used. There is a 54.35 percent increase in alcohol rub in post test phase. A total of 1144 observations were made in pretest phase for 8 activities out of which in 249 observations hand washing was practiced. In post test phase 1100 observations were made and in 768 hand washing was practiced. There is a 48.05 percent increase in hand washing in post test phase. A total of 295 observations were made in pretest phase for 6 activities out of which in 115 observations gloves was

there. The staff did not use gloves before handling body fluids, before eating and after eating. In post test phase 303 observations were made and in 232 gloves was used. There is a 37.58 percent increase in gloves usage in post test phase.

Conclusion: Hospital infection are a major cause for long hospital stay and financial burden on patient as well as work burden of healthcare providers increases. With better understanding of the causes or risks of hospital infection, the care givers can reduce the rate of infection. This not only decreases the burden of the disease but also decreases the length of stay in hospital and hence decreases the ALOS. The study has depicted a significant change in staff behavior and practices regarding infection control.

Acknowledgement

The success and outcome of this Dissertation program at SRS Hospital, Faridabad required guidance and assistance from a lot of people and I am extremely fortunate to have got this all along the completion of my internship.

I would express my gratitude and respectful regards to Dr. Dhirender Kumar, Professor IIHMR, Jaipur, my guide for the Internship Program. He has been instrumental in helping me shape this study in a desirable way. I thank him for his able guidance and useful suggestions, which helped me in completing the project work. He was the biggest motivational factor behind my work.

I would like to express my gratitude to Mr. Kunal Bansal, Director, SRS Sunflag Hospital, for giving me the opportunity to have this internship experience and undergoing the process of learning at SRS Hospital. I thank him for all the trust and faith that he posed on me and I only hope that I have been able to live up to his expectations. His guidance and support was helpful in enhancing my work.

I would also like to thank my institution and faculty members for enlightening me with all the subjective knowledge so that I can apply it on my project.

Last but not the least I am forever grateful to my mother for her blessings, for having unwavering faith in me and my wife for being an endless source of inspiration and support.

Sarang Goel

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ABBREVIATIONS

BMW	Bio Medical Waste
CNO	Chief Nursing Officer
DMS	Deputy Medical Superintendent
GDA	General Duty Assistant
HAI	Hospital Acquired Infection
HCAI	Health Care Associated Infection
HIC	Hospital Infection Control
HIV	Human Immunodeficiency Virus
ICC	Infection Control Committee
ICN	Infection Control Nurse
ICT	Infection Control Team
ICU	Intensive Care Unit
IEC	Information Education Communication
IPC	Infection Prevention and Control
IPD	In-Patient Department
NABH	National Accreditation Board for Hospitals and Healthcare Providers
OT	Operation Theatre
POST-OP	Post-Operative
VAP	Ventilator Acquired Pneumonia

DISSERTATION REPORT

Background

Nosocomial or hospital acquired infections are a major public health problem in hospitals throughout the world. At least 5% of patients entering hospitals will develop a nosocomial infection. Nosocomial infections represent a leading cause of death. Nosocomial infections, such as bacteria, surgical wound infection, pneumonia and urinary tract infection, are also associated with major morbidity in hospitalized patients. These nosocomial infections add significantly to the expected length of stay for patients. It is estimated that these infections add \$5 billion to \$10 billion to Indian national health costs annually. The Study on the Efficacy of Nosocomial Infection Control project, conducted by The Centers for Disease Control, found that up to one third of nosocomial infections can be prevented by an effective infection control program. National Accreditation board for hospitals and healthcare providers (NABH) is a constituent board of quality council of India, set up to establish and operate accreditation programs for healthcare organization. NABH is an institutional member of the International Society for Quality in Healthcare (ISQua).

The board while being supported by all stakeholders including industry, consumer's government, has full functional autonomy in its operation. Patients are the biggest beneficiaries. Accreditation results in high quality of care and patient safety. The patient gets services by credential medical staff. Rights of patients are respected and protected. Patient satisfaction is regularly evaluated. Hospitals get stimulated for continuous improvement. It enables hospital in demonstrating commitment to quality care. It raises community confidence in the services provided by the hospital. It also provides opportunity to healthcare unit to benchmark with the staff.

Staff in an accredited hospital is satisfied lot as it provides for continuous learning, good working environment, leadership and above all ownership of clinical processes. It improves overall professional development of clinicians and paramedical staff and provides leadership for quality improvement within medicine and nursing.

NABH Standard

Standard is a statement that defines the structures and processes that must be substantially in place in an organization to enhance the quality of care. It has an objective element. It is a measurable component of a standard. Acceptable compliance with objective elements determines the overall compliance with a standard. To develop standards one needs to organize around important functions

- Focus on patient and staff safety
- Set standards that all organizations must pass
- To be revised periodically and raise the bar
- Achieve international recognition

The standards provide a framework for quality assurance and quality improvement for hospitals.

For ensuring NABH, a standard should be implemented and integrated in the hospital functioning, patient safety is one of the issues. The following sections discuss about the need of assessing infection control practices among the nursing staff and housekeeping staff in SRS Hospital Faridabad

According to NABH standard 5th chapter that covers Hospital infection control (HIC)(1)

Some of the measurable elements of the standard which have been included in this project:

- The hospital infection control program is documented which aims at preventing and reducing risk of Nosocomial infections.
- The hospital has a multi-disciplinary infection control committee.
- The hospital has an infection control team
- The hospital has designated and qualified infection control nurse(s) for this activity.

- Hand washing facilities in all patient care areas are accessible to healthcare providers.
- Compliance with proper hand washing is monitored regularly.
- Isolation/barrier nursing facilities are available.
- Adequate gloves, masks, soaps and disinfectants are available and use correctly.
- The hospital is authorized by prescribed authority for the management and handling of Bio-Medical waste.
- Proper segregation and collection of Bio-Medical Waste from all patient care areas of the hospital is implemented and monitored.
- Appropriate personal protective measures are used by all categories of staff handling Bio-Medical Waste.
- It also conducts regular “in-Service” training sessions for all concerned categories of staff at least once in a year.

According to Patient Safety: Multimodal Hand Hygiene Improvement Strategy WHO 2009, Health care associated infection (HCAI): An infection occurring in a patient during the process of care in a hospital or not present or other health-care facility which was incubating at the time of admission. This includes infections acquired in the hospital but appearing after discharge, and also occupational infections among staff of the facility.(2)

Hand Cleansing: Action of performing hand hygiene for the purpose of physically or mechanically removing dirt, organic material or microorganisms.

Hand Hygiene: A general term referring to any action of hand cleansing.

Hand Rubbing: Applying an antiseptic hand rub to reduce or inhibit the growth of microorganisms without the need for an exogenous source of water and requiring no rinsing or drying with towels or other devices.

Hand Washing: Washing hands with plain or antimicrobial soap and water.

Alcohol-based hand rub: An alcohol-containing preparation (liquid, gel or foam) Designed for application to the hands to reduce the growth of microorganisms. Such preparations may contain one or more types of alcohol with excipients, other active ingredients and humectants.

For this project the term infection prevention and control is used instead of hygiene, According to literature, hygiene is a collective term for all the ways that will keep people and animals healthy by keeping away pathogenic microorganisms. Infection prevention and control is a part of hygiene. Infection prevention and control is an essential, though often under recognized and under supported part of the infrastructure of healthcare.

The following aspects of infection prevention and control will be included in this project:

1. Hand Hygiene/hand washing
2. Personal Protective equipment.
3. Cleaning
4. Disposable Waste
5. Training and education of nursing and housekeeping staff.

Literature Review

A prospective study was performed over a period of 15 months in two ICU's of Jawaharlal Institute of Postgraduate Medical Education and Research (JIPMER), Pondicherry, India. Surveillance samples were collected from the Health Care Workers and the ICU environment results shows that ICU environment was observed to be the potential reservoir for VAP Pathogens; therefore strict adherence to environmental infection control measures is essential to prevent health-care associated infections(3).

A cross sectional interventional study was conducted including a random sample of (120) nurses in medical and surgical wards. Data was collected through a predesigned questionnaire and check list. The number and types of bacteria on the hands of nurses, before and after disinfection with alternative agents and after drying were evaluated by the standard microbiological methods. The results revealed that, the compliance of nurses with hand washing between patients contact is quite poor (1.7%) which referred mainly to work overload (94.9%) and lack of resources (39.8%). The majority of nurses have transient bacterial flora (97.5%). The frequency of *Staphylococcal Aureus*, *E.coli*, *Klebsiella* and *Streptococcal faecalis* hand infections were (47.5%), (30%), (5%) and (4.2%) respectively. The betadine and alcohol disinfectants have the highest efficacy (95.5%) and (90%) in medical ward and (90.9%) and (82.9%) in surgical ward,

respectively. The efficacy of alternative hand disinfectants generally improved after hand drying with paper towel. For plain soap and tap water the efficacy after drying become nearly similar to betadine and alcohol. In conclusion, scientific evidence and easy use support the use of plain soap and tap water with drying with paper towel for routine hand hygiene(4).

However, at least half of HAIs are preventable and the ability of a healthcare facility to significantly reduce the rate of these adverse effects, for both patients and the hospital, has been repeatedly demonstrated. Just as there is no single cause of hospital associated infections, there is no single solution to the problem posed by them. In addition, infectious agents evolve and constantly present new challenges in healthcare environments. A major current concern is preventing the transmission of antimicrobial resistant bacteria such as *Methicillin-resistant staphylococcus aureus* (MRSA) and *vancomycin-resistant enterococci* (VRE) in healthcare facilities. Successful infection control requires a range of strategies at different levels of the hospital and a collaborative approach among the corresponding areas of hospital management. Healthcare-associated infections are a significant public health problem around the world. Although estimates of the global burden of healthcare associated infections are hampered by the limited availability of reliable data, it is estimated that in developed countries, between 5% and 10% of patients admitted to acute care hospitals acquire one or more infections. In developed countries on the other hand the risk of infection is 2-20 times higher and the proportion of patients infected can exceed 25%.

The World Health Organisation (WHO) is stimulating the prevention of infections. In 2005 WHO started a campaign called "Clean hands are Safer Hands". In this campaign Dr. D. Pittet claims that "Clean Care is safer Care is not a choice, but patient's right for quality care". He also states that clean hands prevent suffering and saves life.(5)

Infection Prevention and Control, based on World Health Organisation (WHO) guidelines, provides valuable training and ongoing education on standard precautions for staff operating in a range of healthcare settings. The study will focus in four key content areas: Infection Prevention and Control; Hand Hygiene; Waste Management & Decontamination Issues; and Personal Protection.(6)

Rationale of the study:

Each year infections associated with healthcare occur in a large number of patients, making healthcare associated infection (HAI) the most common complication affecting patients in hospitals. These infections have a number of adverse effects for both patients and the hospital.

For the Patient

- The Risk of life-long disabilities or even death
- The Possible need for stronger and more expensive medications, with the added risk of complications
- Prolonged hospital stay

For the Hospital

- Significant resource costs
- The need for more comprehensive quarantine/isolation procedures
- More work for healthcare staff (such as the use of laboratory tests and other tools to diagnose the infection)
- Prolonged hospital stays, which increase the cost of admission and reduce the beds available for new admissions.

SRS Sunflag Hospital's annual report quotes 10.6% cases developed Hospital Infection in year 2015.

Introduction:

An infection control program is essential to the modern hospital because it provides guidelines and standards for the recognition, prevention, and control of infection in patients, personnel and visitors within the hospital community. The Infection Control Program is dedicated to minimizing infection risks in order to prevent infections in patients, personnel and visitors. The Infection Control Team and the Infection Control Committee are responsible for coordinating the Infection Control Program for the prevention and control of infection in patients and personnel. The individual is responsible for compliance with hospital-wide and departmental infection control policies and procedures.

Standard Precautions provide a consistent approach to managing contact with body substances from all patients and is essential to prevent transmission of potentially infectious agents, from patient to patient, from one body site to another within the same patient, from patient to health care worker, and from health care worker to patient.

The individual is responsible for compliance with infection control and safety policies and procedures to include:

- Standard Precautions
- Prevention of Needle stick Injuries Policy
- Biomedical Waste Management Policy
- Other administrative or departmental policies and procedures

Hospital Acquired infections may be:

- Endemic, associated or not with the use of devices or procedures during health care
- Epidemic, originating within the population of the health-care facility: a consequence of the transmission of community-acquired infections to patients in the health-care facilities that provide care, generating the amplification of epidemics of community-acquired infections.
- To prepare health-care facilities for the early detection and management of epidemics and to organize a prompt and effective response; to contribute to a

coordinated response to control community-acquired infectious diseases, endemic or epidemic, that may be “amplified” via health care.

- To contribute to preventing the emergence of antimicrobial resistance and/or dissemination of resistant strains of microorganisms.
 - To minimize the environmental impact of these infections or their management.
- The proposed components identified as essential or “core” elements of IPC programme are limited to those considered by the participants to be of the utmost importance, being basic, indispensable and necessary for any IPC programme to meet its objectives.

Infection Control Committee

The Infection Control Committee is a medical staff committee. Membership includes representation from the Medical Staff, Administration, Department of Nursing, and the Infection Control Department.

Representation from supporting services is used on a consultative basis. The committee members are:

- Chief Nursing Officer
- Infection Control Nurse
- Microbiologist
- Deputy Medical Superintendent
- Anesthetist

Of course the aim of the infection control committee is to reduce the number of HAIs as much as possible.

The purposes of IPC in healthcare are:

- To prevent the occurrence of HAI in patients, health-care workers, visitors and other persons associated with health-care facilities.

The goals of the ICT are:

- To provide epidemiologic activity consisting of surveillance, risk assessment, communicable disease exposure follow-up, outbreak investigation, and data management, analysis and presentation.

- To provide direct interventions at the patient, location, and service level where they are needed.
- To provide education to personnel, patients and visitors with an emphasis on the importance of their role in infection control.
- To develop thresholds of infection rates for surgical procedures above which departmental action, investigation and/or intervention is indicated.

Healthcare workers educational training and motivational programs at SRS Hospital

In hand hygiene promotion programs for health-care workers, focus specifically on factors currently found to significantly influence behaviour and not solely on the type of hand hygiene products. The strategy must be multifaceted and multimodal and include education and senior executive support for implementation.

- Educate health-care workers about the type of patient-care activities that can result in hand contamination and about the advantages and disadvantages of various methods used to clean hands.
- Monitor health care workers adherence to recommended hand hygiene practices and provide them with performance feedback.
- Encourage partnership between patients, their families and health care workers to promote hand hygiene and health care

Infection control practices

Microorganisms are commonly transmitted by healthcare workers; from one patient to another or from the environment to the patient. For that reason healthcare workers can play a big role in preventing and reducing the prevalence of cross contamination of microbes. The prevention of cross contamination requires that healthcare workers assume that the blood and body substances of all patients are potential source of infection, regardless of the diagnosis or the presumed infection status. According to the WHO (2004) the application of infection control precautions is very important: “they must be applied to all patients at all times”. Regardless of diagnosis or infectious status and additional (transmission based) precautions which are specific to modes of transmission (airborne, droplet and contact).”(4)

When to decontaminate hands

Current national and international guidance suggests that in deciding when it is necessary to decontaminate hands prior to patient contact, four key factors needed to be considered

- The level of the anticipated contact with patients.
- The extent of the contamination that may occur with that contact
- The patient care activities being performed
- The susceptibility of the patient.

Standard Precautions

According to the WHO's guideline (WHO, 2004) standard precautions include the following:

- Hand washing and antisepsis (hand hygiene)
- The use of no touch technique, avoiding direct contact of the hand with equipment wherever possible.
- Use of personal protective equipment (e.g. gown , mask, eye protection) when contamination with blood, body substance, excretions and secretions with clothes or face is anticipated, (OSHA, CDC Guidance for the Selection and Use of Personal Protective Equipment (PPE) in healthcare settings, 2004)
- Appropriate handling of patient care equipment's
- Appropriate handling of soiled linen; discard, disinfect or sterilize between each patients use
- Prevention of needle stick/sharp injuries
- Environmental cleaning and spills management
- Appropriate handling of waste

The Complete guidelines which are used for the project can be found. They are taken from WHO "Practical guidelines for infection control" (2004) and from Pratt and Pellowe .(7)

"Epic 2: National Evidence-Based Guidelines for preventing Healthcare-

associated Infections in NHS Hospitals in England” (2007) , and integrated in one part. These two documents are chosen because they are written by worldwide accepted organisation in Healthcare. Also many other (small) organisations copied the WHO’s guidelines in their document.

Research Methodology

Aim: To reduce Hospital Acquired Infection in SRS Sunflag Hospital, Faridabad.

Objectives:

1. To develop and administer a Knowledge and Practices survey on Infection Prevention and Control among the staff of SRS Sunflag Hospital, Faridabad.
2. To Measure the adherence of infection, prevention and control standards and protocols in the IPD and ICU.
3. To motivate the staff in IPD and ICU to follow infection prevention and control protocols and standards.

Research Questions:

Whether the intervention has increased the knowledge of 76 persons (62 nurses, 4 doctors, 2 physiotherapists, 8 GDA) about Hospital Acquired Infection?

Whether the intervention has improved the practices of 76 persons (62 nurses, 4 doctors, 2 physiotherapists, 8 GDA) regarding the adherence of infection, prevention and control standards and protocols in the ICU and IPD ?

Research Design

The study design: This study used a quantitative research methodology. Type of study is pre-test post-test study. The present study was carried out in the IPD and ICU of SRS Sunflag Hospital Faridabad from 5th to 28th March 2016.

Study Population: Total 76 persons (62 nurses, 4 doctors, 2 physiotherapists, 8 GDA) have answered a questionnaire in pre-test and post-test for the Knowledge and Practice study.

Selection Criteria:

Inclusion criteria for sampling

- Staff involved in direct patient care (ICU & IPD)

Exclusion criteria for sampling

- Nurses who are not present at the time of my study. (2 nurses were on leave for one month)
- Nurses who are in supervisory category or recently joined to the hospital.
- Visitors (relatives, consultants)

Tools used:

1. Objective 1: Semi-Structured Questionnaire for both Pre Test and Post Test.
2. Objective 2:
 - Pre observation Check List- Observation of infection control strategies.
 - Post observation Checklist- Observation of infection control strategies
3. Objective 3:
 - Presentations, videos from the internet have been used for the training and education purpose.

Tools Preparation

Objective 1:

Data was collected with the help of questionnaire; which was prepared from the infection control manual of SRS Hospital with the help of microbiologist and Infection Control Nurse(Annexure A)

Objective 2:

The observational list has been prepared by using the literature study. This includes international guidelines and standard specific to SRS Hospital standards and protocols on infection prevention and control. (Annexure B)

Objective 3:

To motivate the staff in the ICU and IPD to follow infection prevention and control protocols and standards

- Videos from the internet on hand hygiene, hand washing, personal protective equipment, disposal and cleaning have been downloaded.
- Presentation on topic “Infection Prevention and Control” which has been prepared from the SRS Infection control Manual.

Data Collection:

1. Primary data was collected for all the objectives. Data was collected for the Knowledge and Practice study among the staff for 20 days as it is difficult to take for all the staff at the same time.
 - Conduction of test (pre and post) had been divided into two shifts morning and evening.
 - In the morning time (8:00 am) the night staff has been given the pre-test after signing off the duty hours. Immediately after completing the pre-test the intervention of training has been given.
 - Post-test has been conducted on for the same staff on the very next day.
 - For morning shift same instructions had been followed at 2:00 pm after signing off the duty. The nurses who come to join evening shift, for them pre- test and training had been conducted before the joining of the duty.
2. Observation or measurement was taken for 8 hours(10am -6pm) for morning and Evening shift.

Data analysis:

- Questionnaire (Pre-test and Post-test) has been analyzed in MS Office excel sheet.
- Observation List has been analyzed in MS Office excel sheet.

Results & interpretations:

1. KNOWLEDGE

Figure 1: Do you know about hospital acquired infection?

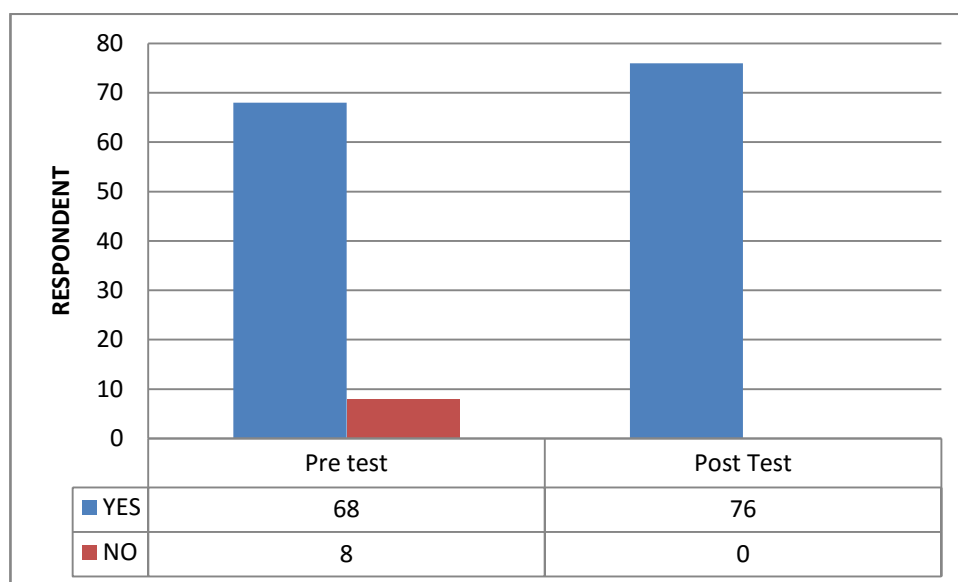


Figure 1 depicts the distribution of responses in pre-test and post- test phase about the knowledge on hospital acquired infections. Out of 76 respondents 68 i.e. around 90 percent knew about HAI. In post-test phase the percentage increased to 100 percent.

Figure 2: Knowledge on Name of members of (Hospital Infection Control) HIC Committee

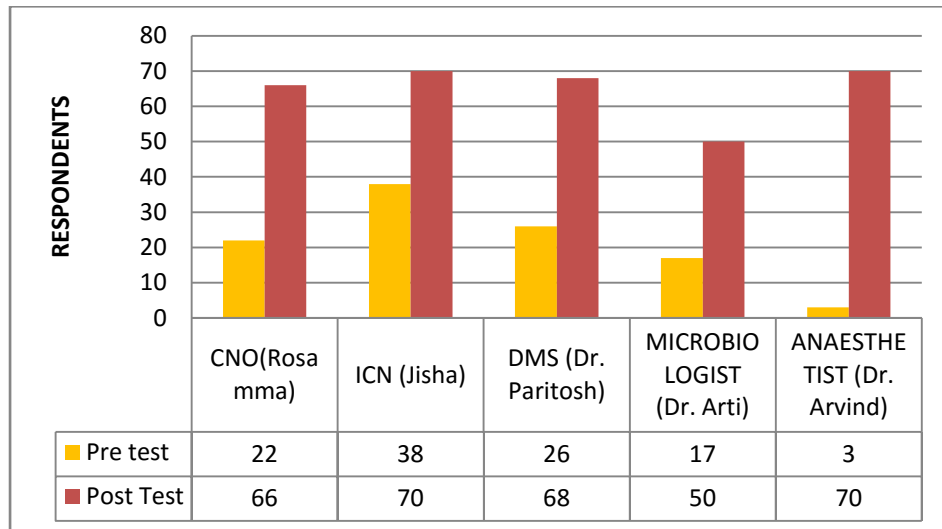


Figure 2 depicts the knowledge of respondents on the name of members of HIC. Committee. In pretest phase only 22 knew about the chief nursing officer, who is the head of HIC committee, whereas the response rate tripled in post-test phase.

Respondents had least knowledge i.e. about (n=3) the presence of anesthetist in HIC committee which showed a significant increase to 70 in post test phase.

Figure 3: Knowledge on Risk Factors of Hospital Acquires Infection (HAI)

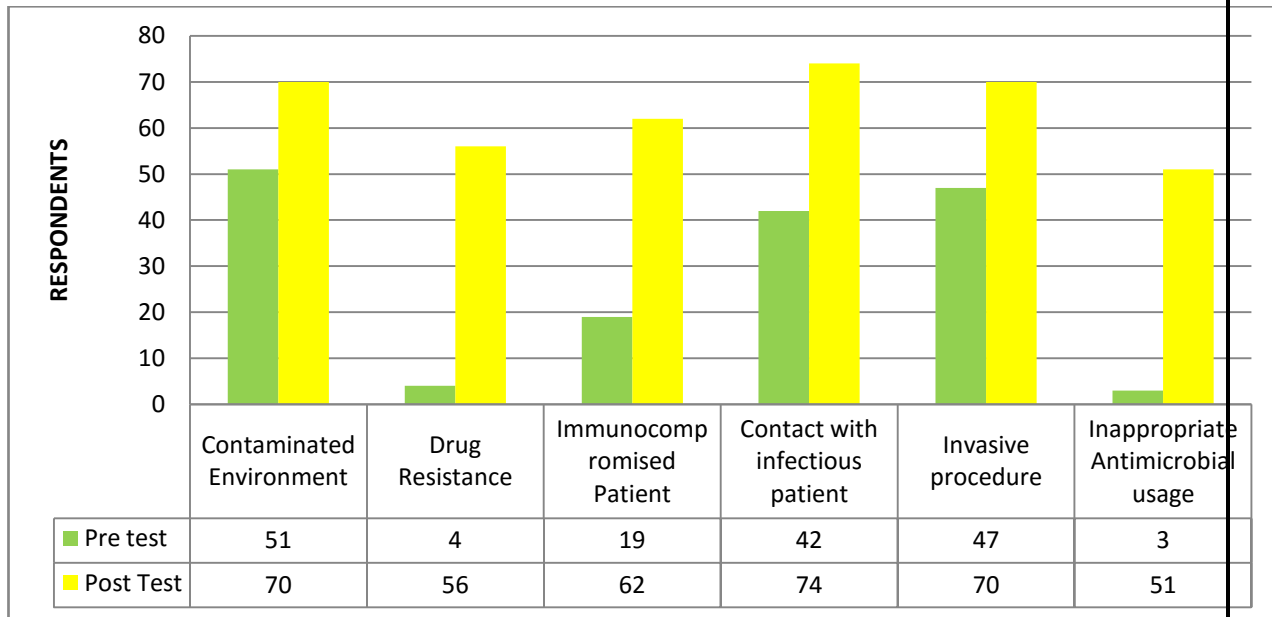


Figure 3 depicts the knowledge of respondents on the Risk factors of Hospital Acquired Infection (HAI). In pretest phase, majority of respondents knew about contaminated environment (n=51), contact with infectious patients (n=42) and invasive procedure (n=47) as the major risk factors for HAI. Hardly 4 percent to 5 percent knew that inappropriate antimicrobial usage and drug resistance are risk factors for HAI. In post test phase the numbers increased significantly for all the responses, there was a marked increase in response for drug resistance, immune compromised patient and inappropriate antimicrobial usage.

Figure 4: Knowledge on High Risk Areas in Hospital

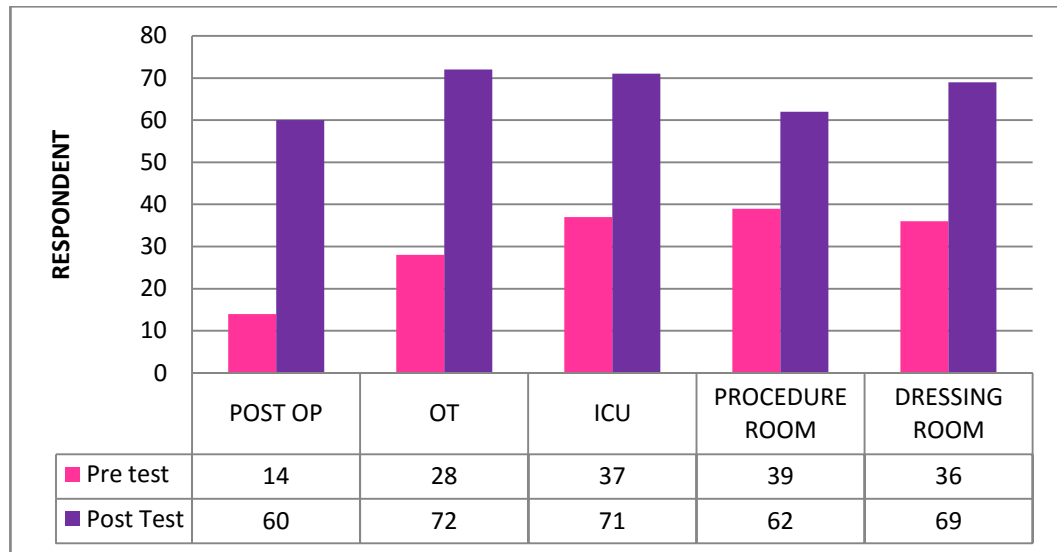


Figure 4 depicts the knowledge on preparation before catheterization. Only 18.4 percent knew that post-operative is a high risk area for HAI. Around 50 percent of the respondents did not know that ICU dressing room and procedure room are high risk areas. In post test phase more than 85 percent of the respondents knew about all high risk areas.

Figure 5: Knowledge on Preparation before Catheterization

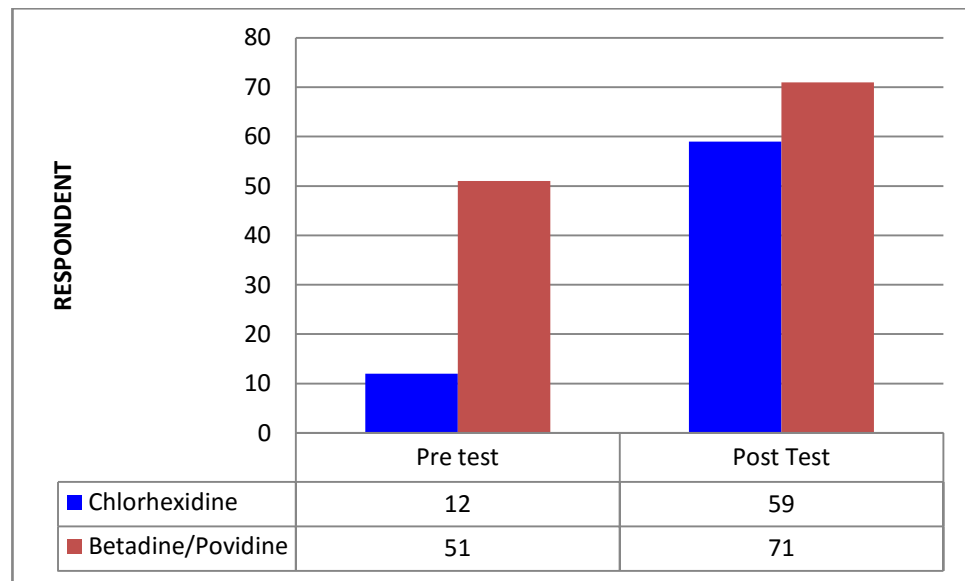


Figure 5 depicts the knowledge on preparation before catheterization very few (n=12) knew that chlorhexidine is used for catheterization. In post test phase around 85 percent knew about use of chlorhexidine and 93.4 percent knew betadine is used in catheterization.

Figure 6: Knowledge on Categories of waste disposal bag

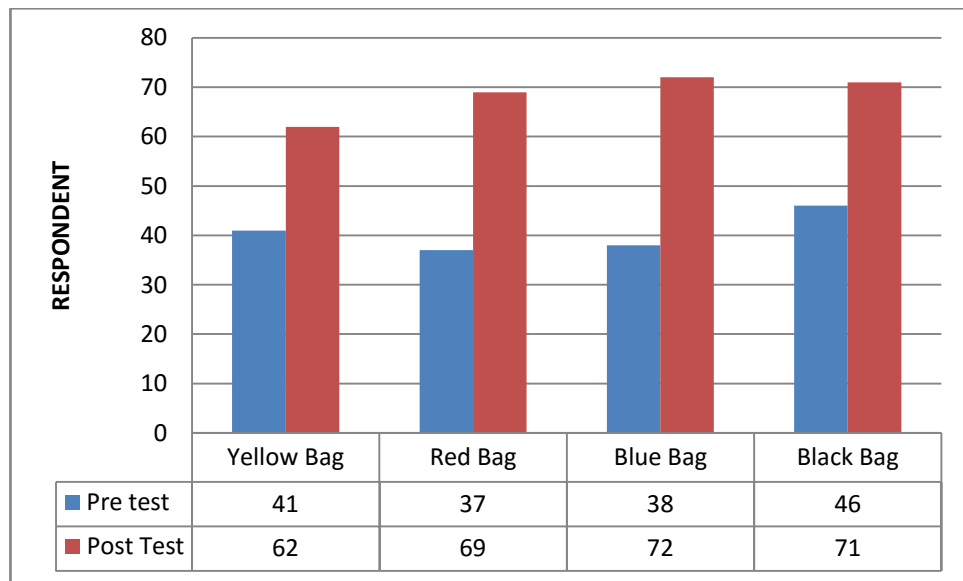


Figure 6 depicts the Knowledge on Categories of waste disposal bag. In pretest phase more than half of the respondents did not know about the correct categories of waste disposal where more than 80 percent of the respondents are in posttest knew about correct categories of waste disposal.

Figure 7: Knowledge on the patient label of HIV/Hepatitis B

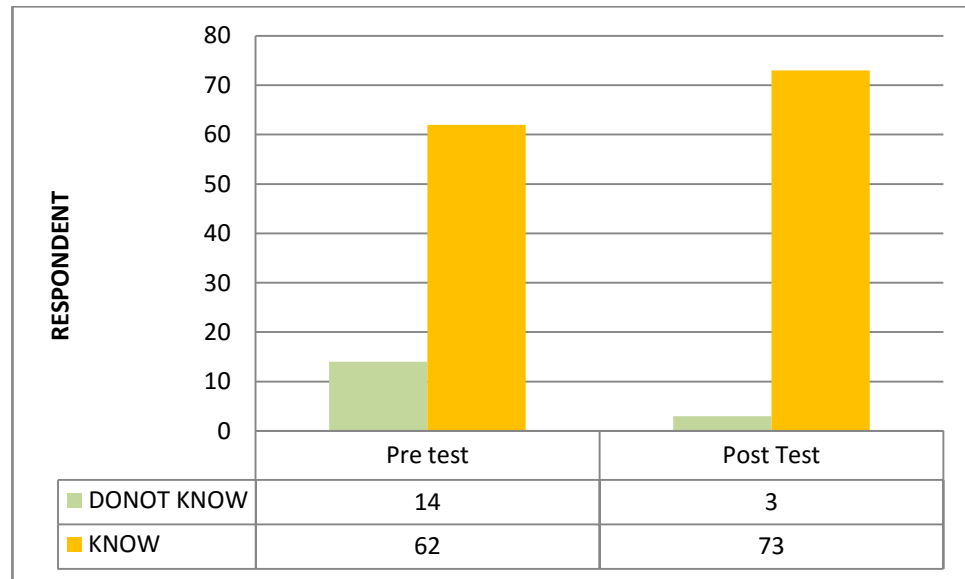


Figure 7 depicts knowledge on the patient label of HIV/Hepatitis B there is a fair comparison in pretest and posttest phase. In pretest phase a majority of respondents (n=62) knew about the colour of label used for HIV/Hepatitis B positive patients.

Figure 8: Types of Disinfectant

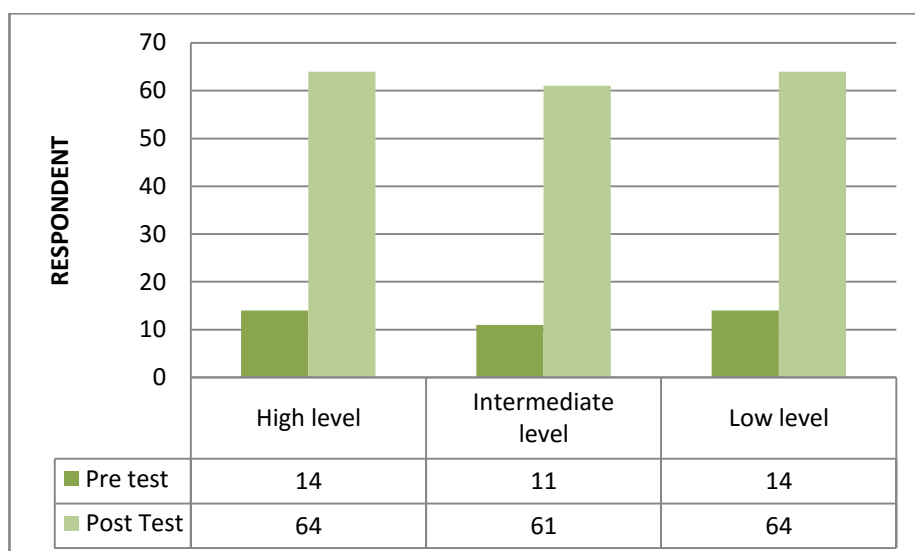


Figure 8 depicts types of disinfectants. In pretest less than one fifth of the respondents did not know the types of disinfectants, whereas in post test phase more than four fifth of the respondent had knowledge about the same.

Figure 9: Knowledge on Categories of Transmission

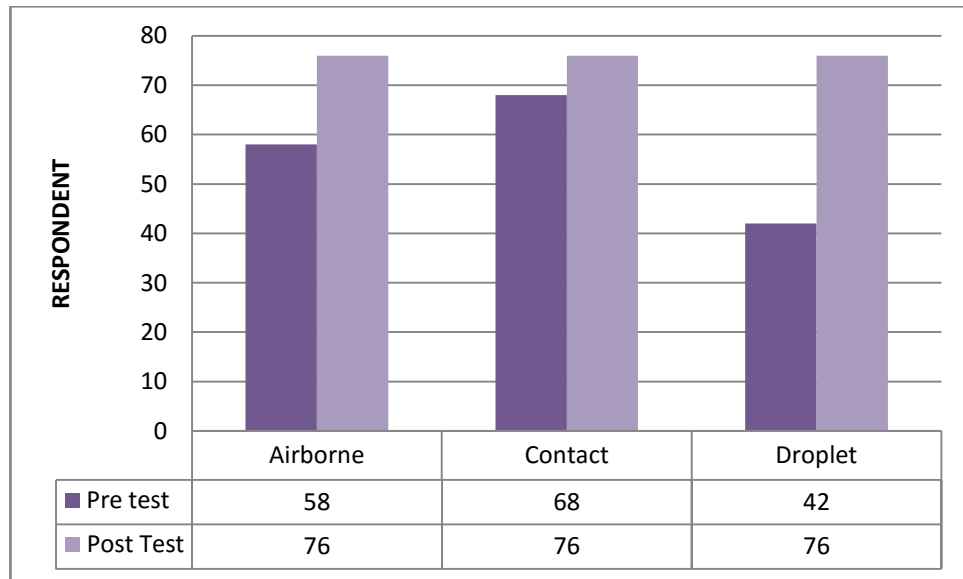


Figure 9 depicts Knowledge on Categories of Transmission majority i.e. (n=58) and (n=68) knew the 2 modes of infection transmission i.e. airborne and contact respectively. 34 respondents out of 76 did not know about droplet as a mode of transmission. In post test phase all the respondents knew about 3 modes of transmission.

Figure 10: Knowledge on steps involved in hand washing

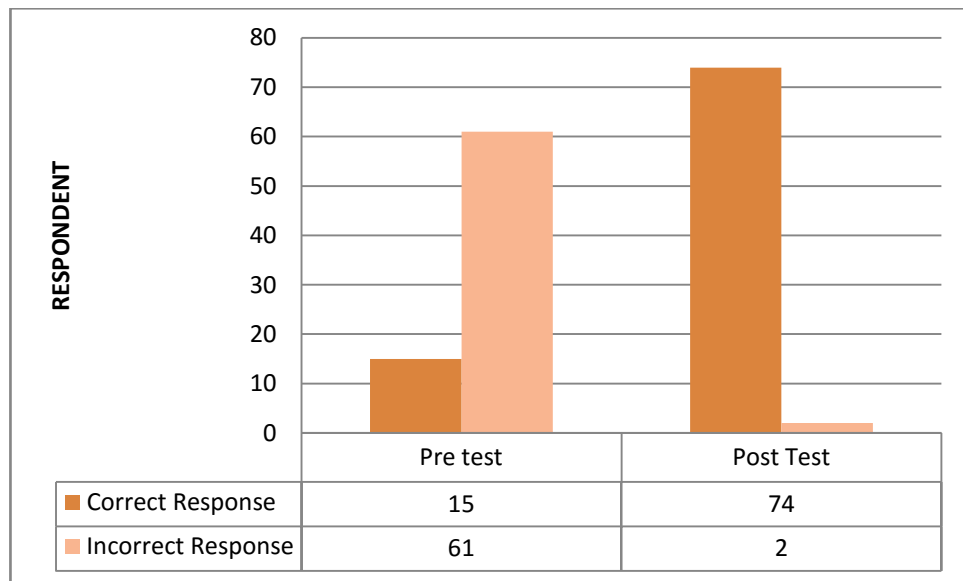


Figure 10 depicts Knowledge on steps involved in hand washing. In pretest phase only 15 out of 76 knew the 11 steps of hand washing where as in post test phase almost all i.e 74 out of 76 knew about the 11 steps of hand washing.

Figure 11: Knowledge on Number of Notifiable Disease known

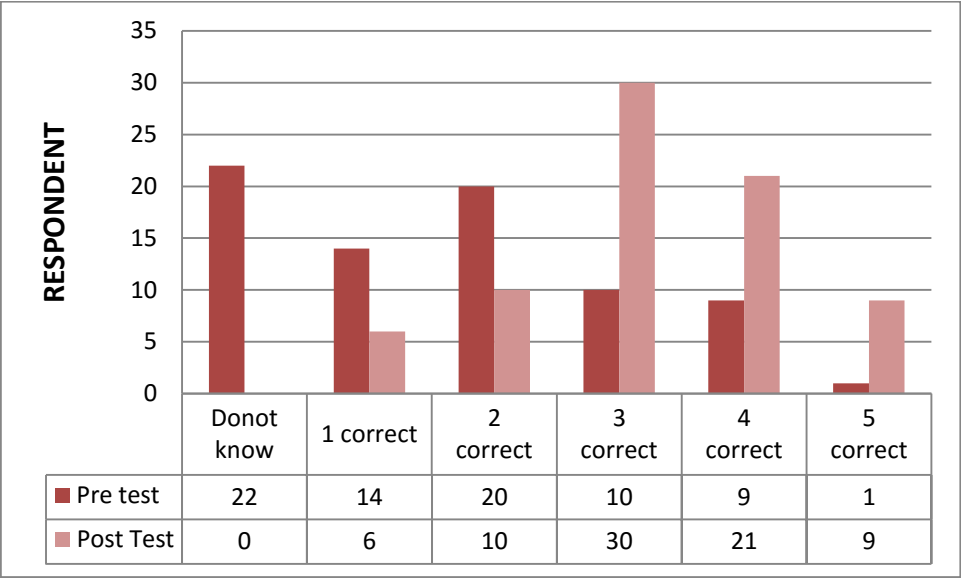


Figure 11 depicts knowledge on Number of Notifiable Disease known. In pretest only1 respondent could answer 5 notifiable diseases and 10 could answer 3 notifiable diseases. In posttest there is a threefold increase in respondents who knew at least 3 notifiable disease (n=30)

Figure 12: Knowledge on Disposal of needles in 1% Hypochlorite Solution

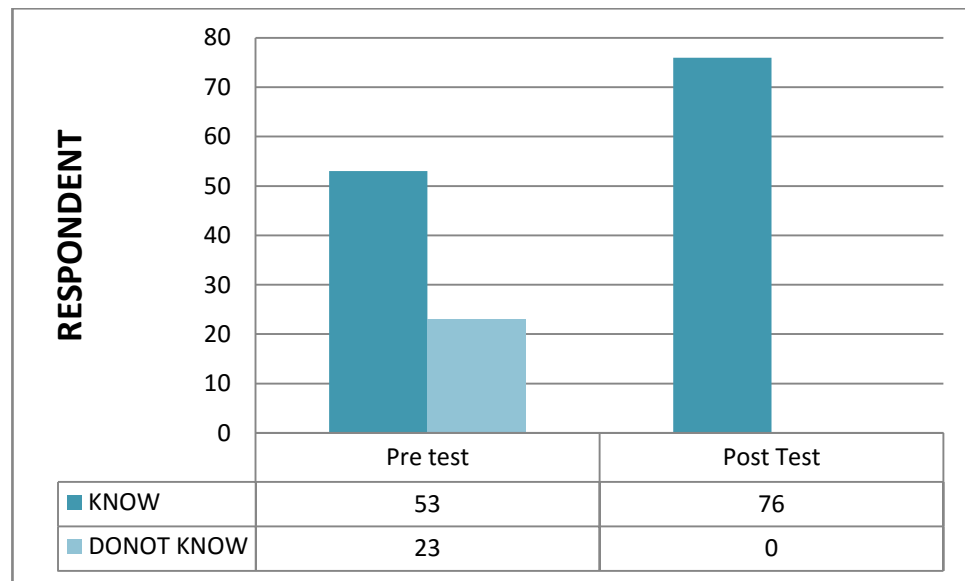


Figure 12 depicts knowledge on Disposal of needles in 1 percent Hypochlorite Solution. In pretest 53 out of 76 i.e. 70 percent respondents knew that needles are disposed in 1 percent hypochlorite solution. In post test phase, all the respondents i.e. 100 percent knew the fact.

Figure 13: knowledge on cleaning of Probes with 70% Isoprphyl Alcohol

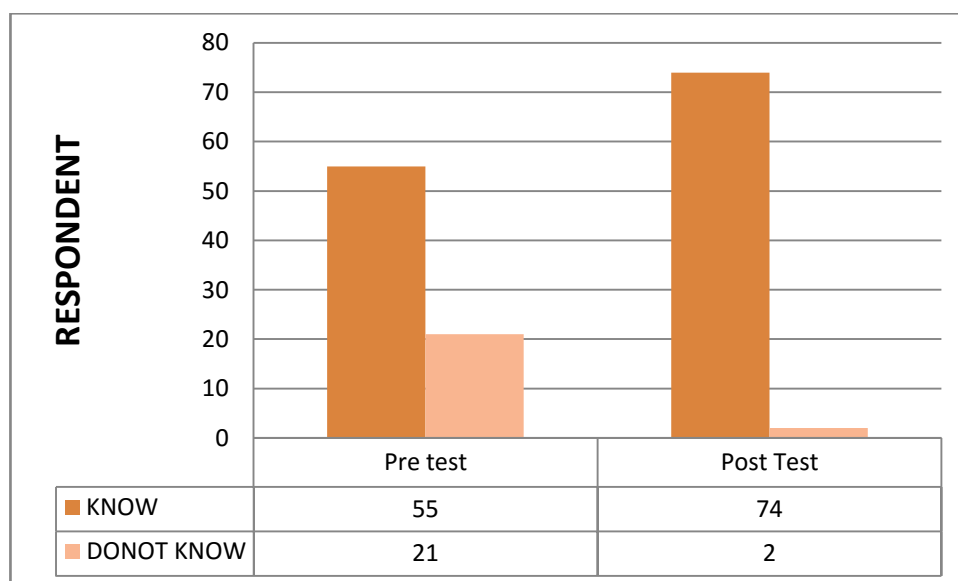


Figure 13 depicts knowledge on cleaning of Probes with 70% Isoprphyl Alcohol. In pretest 55 out of 76 i.e. 70 percent knew that probes are cleaned in 70 percent isopropyl alcohol but in post phase 74 out of 76 knew the same.

Observations

Table 1: Frequency for use of Alcohol Rub

ACTIVITIES	TOTAL OBS.	PRE TEST	TOTAL OBS.	POST TEST	<i>PERCENT INCREASE</i>
Before Touching The Patient	196	17	201	151	66.45
After Touching The Patient	196	12	201	132	59.55
Before Handling Body Fluids	174	0	166	81	48.80
After Handling Body Fluids	174	18	166	110	55.92
After Removing Gloves	62	21	59	49	49.18
Before Eating	117	5	111	41	32.66
After Eating	120	0	103	39	37.86
Giving Food To Patient	105	0	93	65	69.89
TOTAL	1144	73	1100	668	54.35

Table1. Show the frequency distribution for the use of alcohol rub in pre and post test phase 8 critical activities. A total of 1144 observations were made in pretest phase for 8 activities out of which in 73 observations alcohol rub was there. The staff did not use alcohol rub before handling body fluids, before eating and after eating in post test phase 1100 observations were made and in 668 alcohol rub was used. There is a 54.35 percent increase in alcohol rub in post test phase. The least increase has been observed in activities like before and after eating.

Table 2: Frequency for use of Hand Washing

ACTIVITIES	TOTAL OBS.	PRE TEST	TOTAL OBS.	POST TEST	PERCENT INCREASE
Before Touching The Patient	196	9	201	111	50.63
After Touching The Patient	196	22	201	128	52.46
Before Handling Body Fluids	174	3	166	70	40.44
After Handling Body Fluids	174	34	166	153	72.63
After Removing Gloves	62	31	59	51	36.44
Before Eating	117	69	111	102	32.92
After Eating	120	81	103	106	35.41
Giving Food To Patient	105	0	93	47	50.54
TOTAL	1144	249	1100	768	48.05

Table 2. Show the frequency distribution for the use of hand washing. In pre and post test phase 8 critical activities. A total of 1144 observations were made in pretest phase for 8 activities out of which in 249 observations hand washing was there. The staff did not follow hand washing before handling body fluids, before eating and after eating in post test phase 1100 observations were made and in 768 hand washing was practiced. There is a 48.05 percent increase in hand washing in post test phase. The least increase has been observed in activities like before and after eating.

Table 3: Frequency for use of Gloves

ACTIVITIES	TOTAL OBS.	PRE TEST	TOTAL OBS.	POST TEST	PERCENT INCREASE
Blood Sample Drawing	92	12	87	54	49.03
Contact with Other Patient	55	3	62	34	49.38
Touching Body Fluids	37	27	36	35	24.25
Cleaning the Patient	44	28	40	39	33.86
Cleaning the Room	25	6	27	19	46.37
For a Procedure/Dressing	42	39	51	51	7.14
TOTAL	295	115	303	232	37.58

Table3 show the frequency distribution for the use of gloves. In pre and post test phase 8 critical activities a total of 295 observations were made in pretest phase for 6 activities out of which 115 observations gloves was there. The staff did not use gloves before handling body fluids, before eating and after eating in post test phase 303 observations were made and in 232 gloves was used. There is a 37.58 percent increase in gloves usage in post test phase. The least increase has been observed in activities like before and after eating.

Table 4: Frequency for cleaning by GDA

ACTIVITIES IN 24 HRS	PRE TEST	POST TEST	PERCENT INCREASE
Sweeping of floors	2	3	33.33
Cleaning of Toilets on floors	2	4	50
Cleaning of Ward Furniture	1	1	0

Table4. Depicts the frequency of cleaning by GDA. Before the training the GDA used to clean the floors and toilets twice a day whereas post training the sweeping of floors was done thrice a day and toilets were cleaned four times a day. There was no change in frequency of cleaning ward furniture.

Discussion:

Seventy six persons were observed for hospital infection control activities they perform over nine days span. The activities that were closely observed were use of alcohol rub in different tasks, practice of hand washing, use of gloves and cleaning by GDA. A total of 1144 observations were made based on eight activities out which only seventy three times the use of alcohol rub was there which was around 6.3 percent . Simultaneously practice of handwashing was observed. It was seen that only 249 out of 1144 times, persons washed their hands with a soap base. Surprisingly none of the person used alcohol rub before handling body fluids, after eating food and giving food to patients, whereas in case of handwashing, none had done it before giving the food to patient. This could be a great risk factor for Hospital Acquired Gastrointestinal Infections.

It was observed that while coming in contact with 2 patients, one after the other, hardly any person wore gloves. This can be a threat for cross infection rate in hospitals.

Despite of it being mentioned in the instruction booklet, the floors were swept only two times a day instead of four times and toilets were cleaned only twice a day by the GDA.

After making these observations for about nine days, a questionnaire was prepared using the common points from HIC manual and a brief discussion with the HIC committee thirteen questions were asked to seventy six employees of Sunflag Hospital (sixty two nurses, four doctors, two physiotherapist and eight GDA)who are directly involved in patient care. Nine questions were based on general knowledge about Hospital Acquired Infections, risk factors, waste disposal and transmission. Four questions were based on technical knowledge about disinfectants. The questionnaire was given to these seventy six persons after their duty. It took them around ten to fifteen minutes to fill the questionnaire. GDA's were assisted while filling up the questionnaire as they had a low understanding of the knowledge.

Similarly, persons were trained on that same day and following two days in order to achieve 100 percent coverage. Motivational videos were played, a PowerPoint presentation was made, steps of handwashing and importance of alcohol rub was explained. Not only was the risk of HAI for patient but also HAI risk of themselves explained to them. It was made sure that they also make important contribution in the training session, hence they were also called to speak about any two practices they follow or will follow to reduce HAI rate. Post training they were again observed for another eight days for use of alcohol rub, handwashing and gloves. The results showed a tremendous increase. Out of 1100 observation, 668 times they used alcohol rub which is 54.35 percent higher than in pre-test phase. Similarly in post-test phase 768 out of 1100 times they practiced handwashing which is 48.05 percent more than pre-test phase.

In case of gloves use, it increased by 37.58 percent in post-test phase as compared to pre-test. Cleaning of floors by GDA increased by 33.3 percent and toilet by 50 percent but it still lacks the guidelines. There was no change in frequency of cleaning ward furniture of cleaning ward furniture.

After making the observations for few days the, the questionnaire was given to the respondents for evaluating the change in knowledge. There was significant change in the knowledge about risk factors, risk areas, waste disposal categories, modes of infection transmission. The maximum increase in knowledge was found for types of disinfectants and steps involved in handwashing. The post training results were positives in all dimensions. Though the study had some limitations like:

Observer Bias and the presence of observer in post training phase, made the healthcare workers more conscious but observations in due course of time could eliminate such factors.

A repeat training session is recommended to reduce the gap.

Recommendations:

- Knowledge regarding infection control (e.g. risk factor for HAI, defining outbreak, types of disinfectant use, types of hand washing), were very low, regular training of nurses regarding infection control should be done at least once in a week.
- Display of motivational videos at nursing station. (Hand Washing technique, use of Personnel Protective Equipment)
- Equipping of elbow close tap or sensor tap should be placed instead of hand closed faucet.
- Placing of alcohol rub solution should be placed at side of every bed in the ICU.
- As there was one team leader for nursing staff on each floor (2 wings, 6 team leaders were there, 1 team leader in ICU), they should become the role model for everyone to perform all infection control practices and can supervise them as they come.
- Wearing of gloves/ beliefs that glove use obviates the need for hand hygiene. This should be encouraged by team leaders.
- Lack of nursing staff because of that the nursing staff was often too busy/ insufficient time to perform hand hygiene practices. Ratio of nurse to patient should be increased in ICU.
- Observation study should be conducted by the ICN every month to measure the compliance on infection control practices.

Conclusion:

Hospital infection (Nosocomial Infection) is a major cause for long hospital stay and financial burden on patient as well as work burden of healthcare providers increases. With better understanding of the causes or risks of hospital infection, the care givers can reduce the rate of infection. This not only decreases the burden of the disease but also decreases the length of stay in hospital and hence decreases the ALOS. The study has depicted a significant change in staff behavior and practices regarding infection control. Due to limitation of time and other resources only the effects of training have been analyzed. A small analysis on the change in ALOS and hospital infection rate is recommended in order to know the outcome of the intervention.

Annexure

ANNEXURE A:

Questionnaire on Knowledge of staff about Hospital Infection Control

1. Have you heard about hospital acquired infection?

YES.....

NO.....

2. Name the members of (Hospital Infection Control) HIC Committee in Hospital?

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3. Name some Risk Factors of Hospital Acquired Infection (HAI)?

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4. Name some High Risk Areas in Hospital?

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5. Name the chemicals used for Preparation before Catheterization?

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6. Name the four Categories of waste disposal bag?

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7. What is the colour of the label of HIV/Hepatitis B patients?

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8. Name 3 Types of Disinfectant?

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9. Name 3 modes of Infection Transmission?

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10. How many steps are involved in hand washing?

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11. Name few Notifiable Diseases?

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12. Disposal of needles is done in.....% Hypochlorite Solution.

13. Cleaning of Probes is done with

ANNEXURE B

Observation list of Activities in both Pre Test and Post Test Phase

1. Frequency for use of Alcohol Rub

ACTIVITIES	TOTAL OBS.	PRE TEST	TOTAL OBS.	POST TEST
Before Touching The Patient				
After Touching The Patient				
Before Handling Body Fluids				
After Handling Body Fluids				
After Removing Gloves				
Before Eating				
After Eating				
Giving Food To Patient				
TOTAL				

2. Frequency for Hand Washing

ACTIVITIES	TOTAL OBS.	PRE TEST	TOTAL OBS.	POST TEST
Before Touching The Patient				
After Touching The Patient				
Before Handling Body Fluids				
After Handling Body Fluids				
After Removing Gloves				
Before Eating				
After Eating				
Giving Food To Patient				
TOTAL				

3. Frequency for use of Gloves

	TOTAL OBS.	PRE TEST	TOTAL OBS.	POST TEST
Blood Sample Drawing				
Contact with Other Patient				
Touching Body Fluids				
Cleaning the Patient				
Cleaning the Room				
For a Procedure/Dressing				
TOTAL				

4. Frequency of Cleaning by GDA

ACTIVITIES IN 24 HRS	PRE TEST	POST TEST
Sweeping of floors		
Cleaning of Toilets on floors		
Cleaning of Ward Furniture		

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