Summer Training at
Shekhar Hospital Bhopal
(April 3 to June 2, 2017)

Nosocomial Infection Rate in Surgical Patients of Shekhar Hospital

By
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Under the guidance of
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MBA Hospital & Health Management
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Institute of Health Management Research
The IIHMR University, Jaipur
2017

INSTITUTE OF HEALTH
MANAGEMENT RESEARCH
(WHO Collaborating Centre for District Health System Based on Primary Health Care)

IIHMR UNIVERSITY

CERTIFICATE

This is to certify that **Dr. Ankita Sonraya** has undergone summer training in **Shekhar Surgical Hospital, Bhopal (MP)** from 3rd April to 2nd June 2017.

The candidate herself completed the project assign to her during summer training. Her approach to the project was sincere and proactive. This summer training is in partial fulfillment of the course requirement recommended for the award of MBA in Hospital and Health Management.

I wish her success in all her future endeavors.

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IIHMR UNIVERSITY

Shekhar Hospital Manisha

market Bhopal (surgical)

Cont no.

Fax no

Date :- 1st june 2017

INTERNSHIP COMPLETION CERTIFICATE

This is to certify that miss. Ankita Sonraya Reg.no. IIHMR-U/01/2016/18/0388, a student of The IIHMR University, Jaipur has successfully completed her internship in our organization from 1st April 2017 to 2nd june 2017.

During her tenure as an interns she has worked on the project titled

"To estimate nosocomial infection rate in Shekhar Hospital"

The dedication and passion she has is worth appreciating. We wish her success in her future.

Dr. Shekhar Shrivstav

HOD of surgery department

Shekhar Hospital Manisha

Market Bhopal (m.p.)

SHEKHAR HOSPITAL

ACKNOWLEDGEMENT

The satisfaction that accompanies the successful completion of the project would be incomplete without the mention of the people who made it possible.

Firstly I would like to thank IIHMR, Jaipur and Shekhar Hospital, Manisha market, Bhopal for this opportunity. A special thanks to Dr. S.D. Gupta, Dr.(col) Ashok Kaushik, Mr. Hem K Bhargav and his team for their support. Secondly, I would like to thank and express my gratitude to my corporate mentor, Mr. Anil Dongre (HOD of Quality and patient safety) and my faculty mentor Dr. Saurabh Kumar for their valuable time, guidance, support and constructive feedback.

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Lastly, I would like to thank all those who were directly and indirectly involved in helping, I complete the internship. I hope that I can build upon the experience and knowledge that I have gained and make a valuable contribution toward this industry in coming future.

ABBREVIATIONS

SYMBOLS	Full forms
HAI/NCI	Hospital acquired infection/Nosocomial infection
BOR	Bed occupancy rate
CSSD	Central sterile supply department
NABH	National accreditation board for hospitals and health care providers
OT	Operation theatre
RO	Reverse osmosis
SOP	Standard operating procedure
TLC/WBC	Total leukocyte count/ white blood cells
ER	Emergency room
CBC	Complete blood count
BPL	Bhopal
TMT	Treadmill test
USG	Ultasonography
PATH-LAB	Pathological laboratory

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SHEKHAR HOSPITAL
A-29 SHIVPURA, BHOPAL

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IIHMR UNIVERSITY

INTRODUCTION OF SHEKHAR HOSPITAL

1.1 About the organization:-

Shekhar Hospital manisha market shahpura is a recognized name in patient care. This private hospital was incepted in the year 2004. they are one of the well known private hospital in shahpura Bhopal. Backed with a vision to offer the best in patient care and equipped with technologically advanced health care facilities, they are one of the upcoming name in the healthcare industry. Founder of the hospital is Dr. Shekhar shrivastava {MS. MBBS} specialized in laparoscopic surgery. a team of well trained medical or non medical staff and experienced clinical technician work round the clock offer various services.

It is 30 bedded small 2ndry care hospital. Basically it is a surgical hospital but other senior consultant also serves for it, like orthopedic, obstetrician, gynecologist, radiologist, laparoscopic surgeries

1.2 Brand and logo

The Shekhar brand with its distinctive logo is a synthesis of services, value of trust, ethics and quality of health care. The circle represent round a clock services which they provide. It project clinical excellence, distinctive patient care, transparency in actions & high level of integrity and excellence is all that they do.

1.3 vision:-

"Saving and betterment of life"

1.4 mission:-

"To be a respected healthcare organization known for clinical excellence and distinctive patient care"

1.5 care values:-

- **Patient centricity**
  Commit to best outcomes and experience for our patient
  Our patient need will come first
  Treat patient and their caregivers

- **Integrity**
  Be principled, fame or model our live values
  Speak up the truth and do the right things.

- **Team work**
  Proactively support each other and operate as one team. First we took patient needs than organizations need than department/self interest. We respect and value all the people at all levels with different opinions, there background and experience.

- **Ownership**
  Be responsible and take pride of our actions. Take initiative and go beyond the call of duty assigned. Deliver commitment and agreement made.

- **Innovation**
  Continuously improve and innovate to exceed expectation.
  We have adaptive and can do attitude

1.6 Scope and services:-

General medicine
Obstetrics
Gynecology
Radiology
Orthopedic surgery
Laparoscopic surgery
General surgery
Surgical gastroenterology
Hepato pancreato billary surgery

- **CLINICAL SUPPORT SURVICES:-**

Blood bank- transfusion services
Dietetics
Psychology
Rehabilitation
Path-lab
Occupational therapy

- **Diagnostic services:-**

USG

SPIROMETRY

STRESS TEST/TMT

HOLTER MONITORING

ELECTROMAYOGHAPHY

X RAY

MAMOGRAPHY

BONE DENSITOMETRY

- **Laboratory services:-**

Clinical bio chemistry
Clinical microbiology and serology
Clinical pathology
Hematology
Cytopathology
Toxicology
Histopathology

1.7 OBSEVATIONAL LEARNING: -

Emergency room:-

- In Shekhar hospital the ER is on ground floor backside, so that the ambulance can reach close to the ER directly
- There is one ambulance for hospital with ACLS (advanced cardiac life support). once in a day inventories of the ambulance are checked even if the ambulance is used or not
- ER door and registration counter is very close. A bell is placed over the counter to call the staff for emergency ward, after triage the patient is shifted to ER if needed.
- In ER 3 kind of stickers are used over the bed side of patient and stickers will change by the staff as per the condition of the patient. During night one Doctor and one nurse are available. Red- for critical condition of patient
  Yellow- moderate condition but need attention
  Green- now patient is stable / can be shifted

  A store room is closely attached with ER, where emergency medicine is kept in red box. In medico-legal case they work as per the law.

CSSD (Central sterile service department):-

After surgery the OT staff will collect all the instrument & segregate in to 3 different trays macro, micro & sharp

Here it will wash from distilled water, after that the instrument are transferred to sterilizing area, here instrument are kept in autoclave machine at 125℃ for 15 to 20 min. here 2 type of sterile process used to check the sterility

- Bowie-dick-test
- Chemical indicator

Instrument made up of rubber, plastic and silicon are sterilized by using ethylene oxide gas at 35 to 38℃. For thin instruments like catheter, washed with high pressure tap water & than packed in medical grid pouch, than treated with ethylene oxide gas.

Process:-

Collection

Segregation

Pack & sterlize

Store

Dispatch

Radiology Department:-

1 radiologist & 1 assistant

Types of technique :- projection / plain radiology/ x-rays

Ultrasound

Here PCPNDT act is followed. At various place posters are adherent aginst female foeticide . Appropiate shielding shell is here to maintain dark room.

Blood bank and transfusion :-

The hospital has its own 24 hr running blolod bank they follow 1996 act of supreamcourt. Here mostly 3 contents are maintained redcell,plasma cell & platelets.

Here the staff is MLT(medical laboratory technology)trained and having minimum 6 months experience. They maintain temprature, refrigrated centrifuge , Heamotocrit centrifuge, blood container (disposable pvc bags), air pressure by regulator , blood agitator.

Each bag contain license number , serial number , date, expirey date , name and address of blood bank, and most imporatant blood group with Rh positivity or negativity

Operation Theator :-

As shekhar hospital is a surgical hospital so that the maximum revenue came from the Surgeries. Maximum optimization with patient safety is the ultemate goal they have.here 4 zones are made in the form of small rooms (protactive, clean,aseptic,disposal zones)

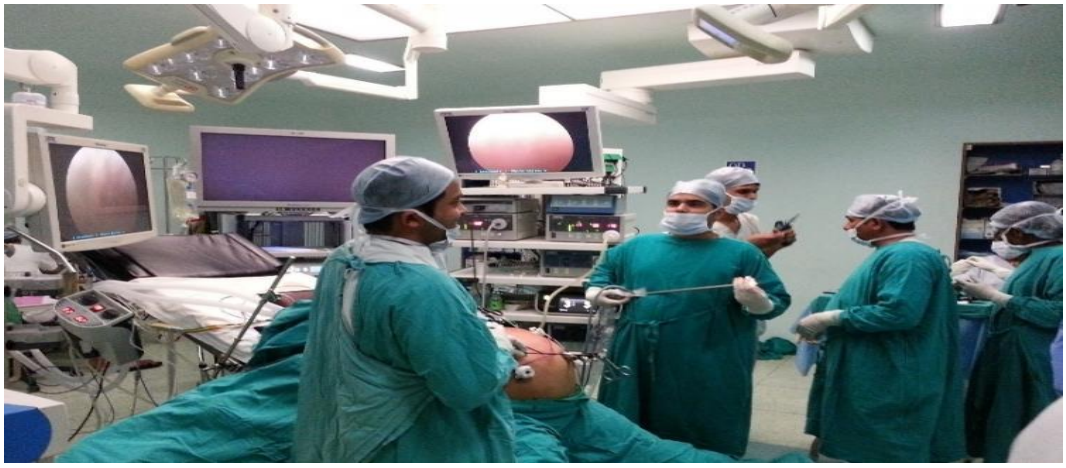
Types of surgeries here performed

- Laproscopic
- Day surgery
- Orthopedic
- Gynecological

- The shekhar hospital have one OT with good capacity of sterile supply. The OT is near to the cssd at ground floor .
- size of OT aporximately 18*18 feet 40 sq. meater , having adequate space for anaesthetic trolleys and cerculation corridor.
- MIXED ventilation is here
- Temprature is maintained between 18 to 23
- About 9 to 12 air exchange in 1 hr
- The cctv camwras are there with microphones
- The corner of wall of the ot are also rounded & melanin coated with the height of 3 to 3.25 meater , so the dust can not set over it .

- The vinyl conductive flooring is here to maintain the hygine.
- After every surgery there was cleaning performed & after that u v light lamps placed in ot for 1 hr to disinfect the OT

➢ Only these persons are allowed to enter in the OT by wearing special gowns
Cheaf surgeon
OT assistant
Anaesthetist
Scrub nurse
OT nurse
Patient



Material management department :-

It is included along with purchase department under supply chain management. The main store folllows the standard operating procedures(sop).
Almost 30% of patient bills is material cost here.
The main store is having 2 sub station 1- long term store
2- short term store
When the material came following criterias are checked
Quantity ordered
Brand
Batch no
Expirey date
Conditions for storage

CHAPTER :- 2

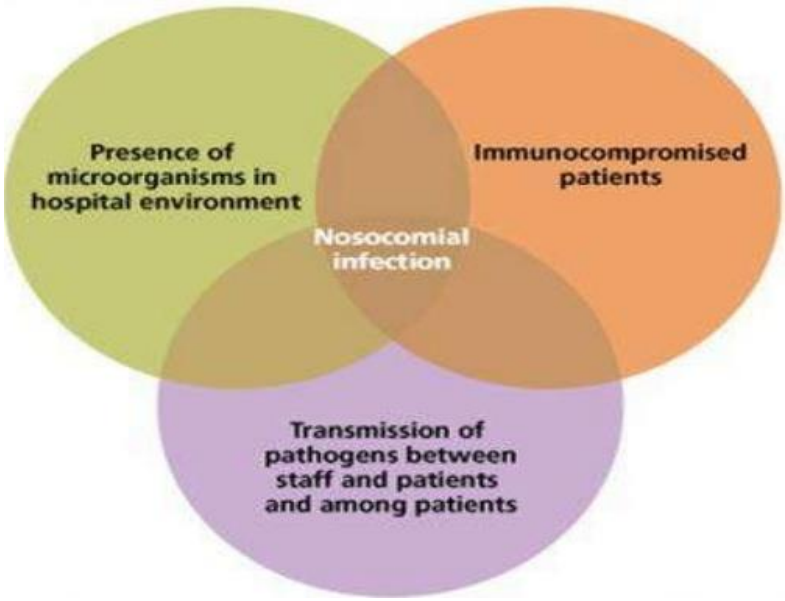
PROJECT:- ESTIMATION OF NOSOCOMIAL INFECTION RATE IN SHEKHAR HOSPITAL

2.1 A brief introduction about hospital aquired infections

The nosocomial infection/hospital aquired infection is one that first appears up to 48 hours after hospital admission and up to 3 days after discharge. In a healthcare facility when someone was admitted for reasons other than the infection

As per WHO ' guidelines to decrease the nosocomial infection'2008, The surgical site infection are "Any purulent discharge, abscess, or cellulitis at the surgical site during the month after the operation". **Nosocomial infection is of two types endogenous (caused by organism that are present as part of normal flora of patient) & exogenous (caused by –air, dust, Iv fluid, catheter, wash bawls, bed pans, endoscopes, wounds). It is caused by virus, bacteria, fungi & parasites.**

The main ways of transmition of nosocomial infection are droplet infection, contact transmition, common vehicle, and vector born transmition. In India nosocomial infections after surgery is the most common cause of longer period of disability.



2.2 RATIONALE:-

Nosocomial infection is one of the major causes of increasing the morbidity period for patient, Because of it the use and consumption of antibiotic is much higher and resistance is also takes place. Hospital-acquired infections result in up to 4.5 billion dollar in additional healthcare expenses annually. Higher NCI also build bad image of hospital organization, Thus shekhar hospital wants to estimate there current nosocomial infection rate among there surgical patient.

2.3LITERATURE REVIEW:-

- As per the data of NCBI 2010, every year nearly 2 million post surgical patient died due to hospital acquired Infection.
- Research article 'A descriptive study of nosocomial infections in adult ICU in fiji2011-2012'. The developing countries have higher rate of HAI, when compared with Uk & USA.
- As per "ELSEVIER, the Journal of hospital infection" The HAI is one of the major cause of increased global burden of disease and multi-drug resistance .
- As per the data of cdc.gov of U.S.out of toatal hospital acquired infection (721800) the surgical site infection are 157500

2.4Research question:-

How many percent of post operative patients got hospital acquired infection?

2.5Objective

To assess the magnitude of HAI after surgical procedure and hospitals precautionary measures against HAI.

2.6Method

2.6.1 Method of study & study population:-

Quantitative study

Primary data

Sample population is 80, so N=80

Cluster sampling and convenience sampling

Longitudinal study of 1 month duration

2.6.2 Study area and period:-

Operated patients in shekhar hospital b/w the time period 15 April 2017 to 15 may 2017.

Prospective study design

2.6.3 Sample size :-

as per the formula for small sample

$$s = X^2 NP(1 – P) \div d^2 (N -1) + X^2 P(1 – P)$$

s = required sample size.
*X*2 = the table value of chi-square for 1 degree of freedom at the desired confidence level (3.841).
N = the population size.
P = the population proportion (assumed to be .50 since this would provide the maximum Sample size).
d = the degree of accuracy expressed as a proportion (.05).

Out of total procedures of 80 only 66 patients data is taken out of them. 15 patients of orthopaedic surgery, 16 are of gyne/obs, 16 are of day acre surgeries, 15 are of laparoscopic surgeries.

2.6.4Data collection tools and procedures:-

Data is collected from discharge ticket, prescriptions & there medical reports.

Overt , non participant observation.

Hospital's management was very cooperative they put a note over the reception counter "if you have any kind of infection must report to the side table", and every patient record, reports & prescriptions were passed under my hand. In this way I can check is there any NCI or not. My main focus was over the surgical patients. When I got any kind of doubt than I consult with the on duty doctors. On behalf of that I enter the information in the above format made clusters of 16 and 17 patients

PATIENT NAME	OPD NO.	IPD NO.	TYPE OF SURGICAL PROCEDU-RE	DATE AND TIME OF ADMISSI-ON	DURING HOSPITAL STAY GOT NEW INFECTIO-N	DATE AND TIME OF DISCHAR-GE	TILL 48 HR. OF DICHARGE ANY NEW INFECTIO-N IS	Approx RECOVERY DELAY DUE TO NCI (as per the doctor)
							RE	

2.6.5Ethical consideration:-

As per the hospital instruction all the filled data is submitted to the hospital

2.7 Findings:-

During hospital stay got new infection + with in 48 hr. of discharge got infection= Nci

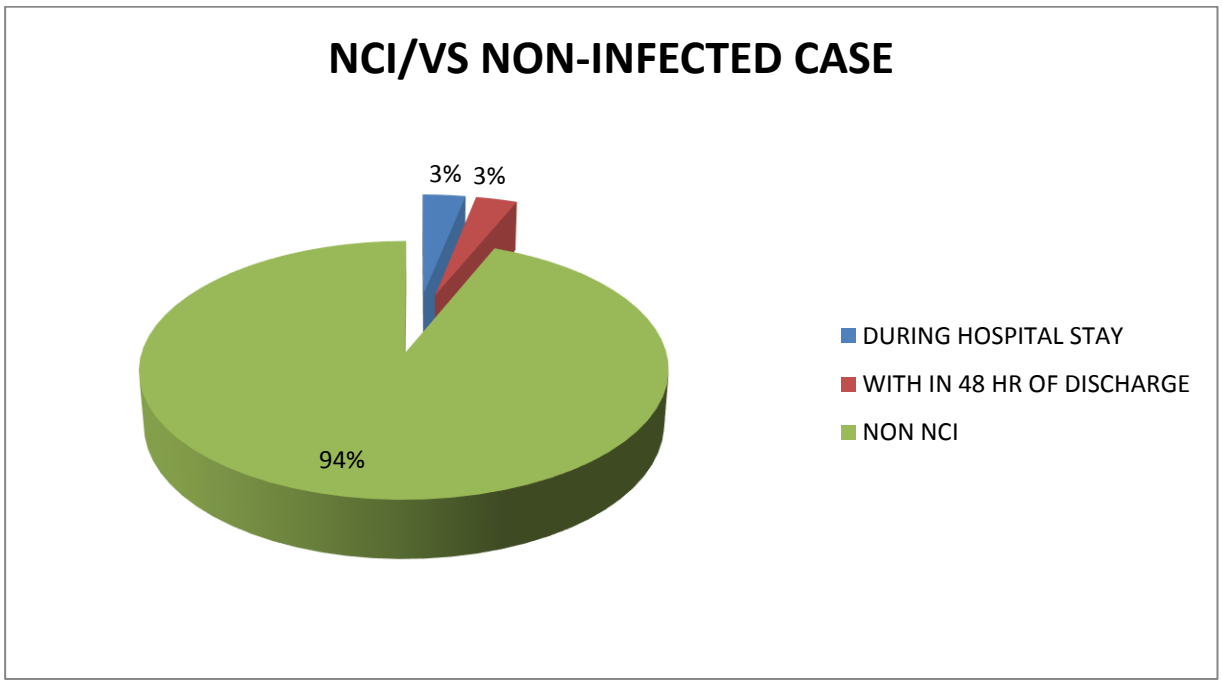


Figure. 1 shows the % of NCI among all kind of surgeries

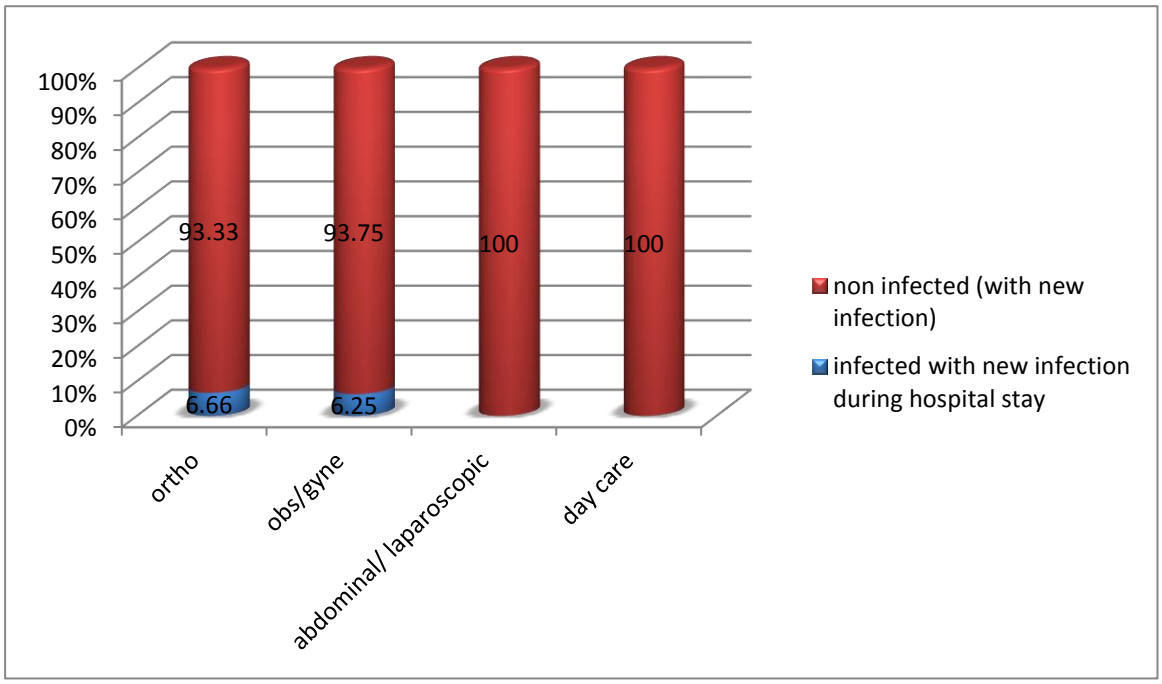


Figure 2:- During hospital stay got new infection graph

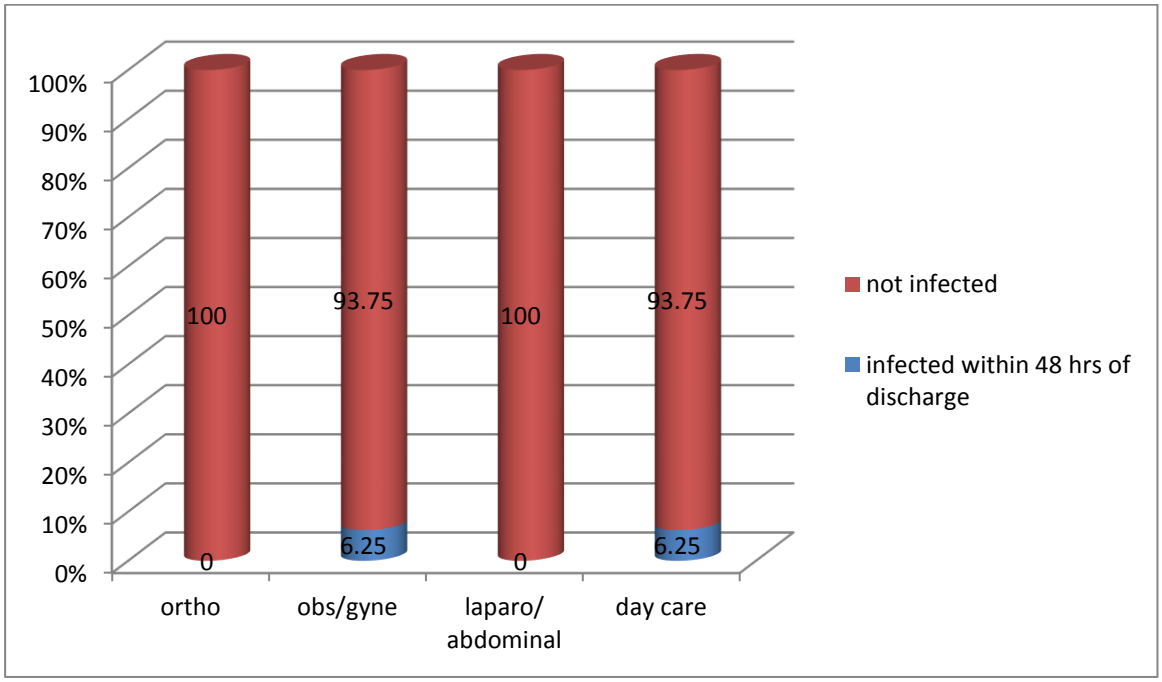


Figure 3:- with In 48 hr of discharge , got infection

All surgical procedures are categorized as - orthopedic surgery

-gyne/ obs

-day care

- Laparoscopic abdominal surgeries including gastroentero & gastropancreato billiary surgeries.

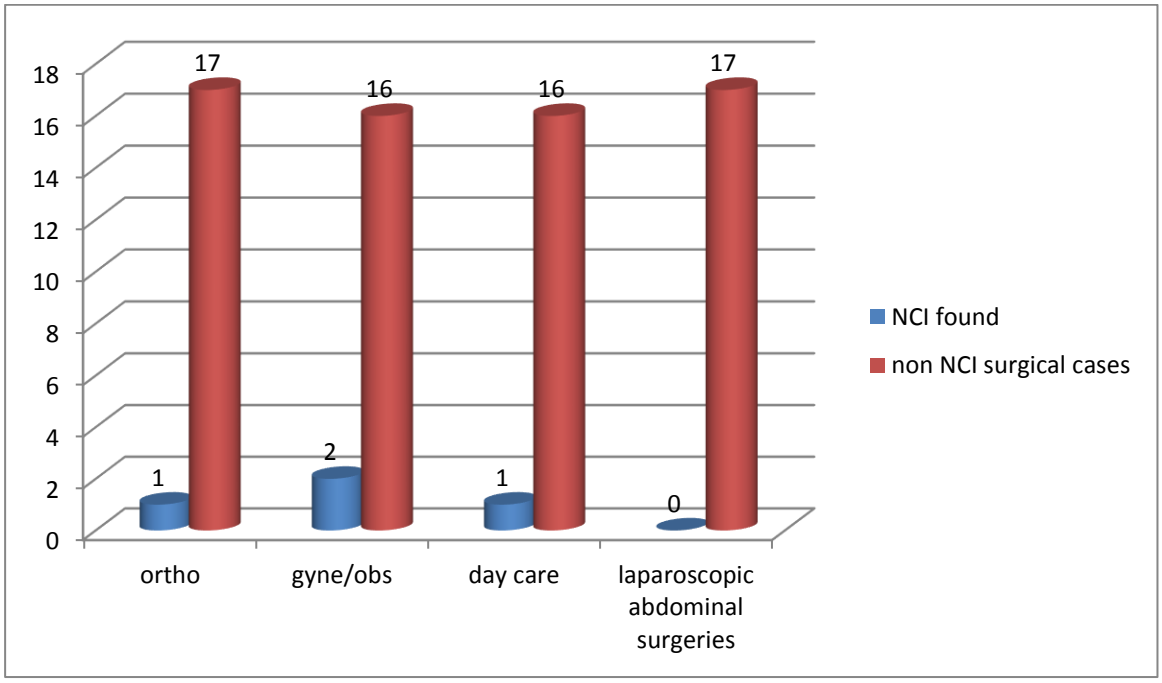


Figure no 4:- NCI among different type of surgeries

CHAPTER -3

DISCUSSION AND CONCLUSION

The study has some limitation as well as strength. it is limited as per the sample size and who develop the infection based on the finding of study , the 6% is nosocomial infection rate is found (including all type of surgeries) in shekhar hospital.

As per NCBI data – 5year analysis on surgical site infection(2010-2015)\

Nosocomia infection rate among different procedure are

Orthopedic surgeries: - 8.0%of all orthopedic surgeries

Abdominal surgeries: - 14.0%

Day care surgeries:-8.4%

Obs/ gyne:- 22%- 19% respectively ; collectively 20.5%

So over all % among all surgeries is 12.72%

As per our collected data of shekhar hospital

Orthopedic surgeries: - 5.8%

Abdominal surgeries: - 5.8%

Day care surgeries:-6.25%

Obs/ gyne:- 12.5% ; collectively

So over all % among all surgeries is 7.58%

Here low nosocomial infection rate in shekhar hospital because of implementation of preventive procedures like

Sterilization

Isolation

Hand washing

Gloves

Surface sanitation

Antimicrobial surface

CHAPTER -4 REFRENCES AND RECOMONDATION:-

- **V. Ramasubramanian,** Epidemiology of healthcare acquired infection report 2014 research - An Indian perspective ...

- **Indian medical times 22 sep 2011 published paper,Hospital-acquired infections high in India: Study 2011 new Delhi www.indiamedicaltimes.com/2011/.../hospital-acquired-infections-high-in-India-study**

- **K.Naidu - Aug 25, 2014,** A Descriptive Study of Nosocomial Infections in an Adult Intensive care journal page (16)

- **CDC's annual *National and State Healthcare-Associated Infections Progress Report* (HAI Progress Report) describes national and state progress in preventing HAIs. Among national acute care hospitals, the (2014th data, published in 2016)** HAI Data and Statistics | HAI | CDC https://www.cdc.gov/hai/surveillance/

- **Health care-associated infections FACT SHEET - World Health organization.2016** health statistics
  Vol 1;(2) ;(3) www.who.int/gpsc/country_work/gpsc_ccisc_fact_sheet_en.pdf

- **JK Schmier - 2016** Estimated hospital costs associated with preventable health care...
  - Published online **2016** May 13. Page(6)

- INICC(international nosocomial infection control consortium www.researchgate.net publication 13 Jan 2017

- **A Descriptive Study of Nosocomial Infections in an Adult Intensive care page 5, 2014 research paper (2);1**

Recommendation:-

- ✓ Identify the need and type of isolation
- ✓ use an alcohol based hand-rub example 0.5% chlorhexidine with 70% w/v ethanol, if hands are not visibly dirty.
- ✓ If the catheter is inserted in lower extremity site, replace to an upper extremity site as soon as possible.
- ✓ Use 2% chlorhexidine wash for patient's sponging.
- ✓ There should be separate medication preparation area and education or training for ICU staff about prevention of nosocomial infections.

Prevention of hospital-acquired infections World Health Organization
apps.who.int/medicinedocs/documents/s16355e/s16355e.pdf

Thank you