KNOWLEDGE REGARDING PREVENTION OF NOSOCOMIAL INFECTION AMONG NURSES IN A GOVERNMENT HOSPITAL, CHITWAN

By

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RESEARCH APPROVAL SHEET

Research on "Knowledge Regarding Prevention Of Nosocomial Infection Among Nurses In A Government Hospital, Chitwan" my bonafide work is being submitted for approval to Tribhuvan University, Institute of Medicine, Nursing Campus, Birgunj to fulfill the requirement of Bachelor in Nursing programme (Hospital).

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ABSTRACT

Title: "Knowledge Regarding Prevention of Nosocomial Infection Among Nurses In A Government Hospital, Chitwan."

Objective: To find out the knowledge regarding Prevention of Nosocomial Infection among Nurses.

Background: Nosocomial infection is an infection developed in favour of hospital environment. It may develop in a hospitalized patient without having been present or incubating at the time of admission or it may be acquired in hospital but only appear after discharge. 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. The mode of transmission and the most frequent types of nosocomial infections are associated with the respiratory tract, blood stream, surgical wounds and urinary tract. For the last 30 years, there has been great interest in understanding the causes and impact of hospital acquired infections. Many experimental studies and randomized trials have examined various methods to prevent nosocomial infections.

Research Methodology: Descriptive cross-sectional research design was used. Study was conducted in Bharatpur Government Hospital at Bharatpur, Chitwan. Total of 50 nurses working in the study area were selected as a sample using non- probability, purposive sampling method was used. Self administered structured questionnaire was developed for data collection

Result: Results of the study shows that more than three-fourth of the respondents were age of 24-25 years. Most of the respondents respond for hand washing with antiseptic as the important factors of infection prevention. Likewise, most of them respond to know about the responsible organism for nosocomial infection. More than half of the respondents respond hospital acquired pneumonia is the type of most dangerous/deadly nosocomial infection. Cent percent of the respondents viewed on nosocomial infection can be prevented. Likewise, almost all viewed on hand washing can prevent nosocomial infection. Most of them respond incineration as the recommended wastage disposal for preventing infection

Conclusion: Majority of respondents had not received infection prevention. Most of respondents respond hand washing with antiseptic is the important factors of preventing infection. Cent percent of respondents viewed nosocomial infection can be prevented. Most of respondents respond improper hand washing and prolonged hospitalization are two wide spread causes of nosocomial infection. Most of the respondents respond the needle and sharp instruments are disposed in puncture proof container .most of respondents said syringe are not recapped after its used.

Key Words: Nosocomial infection, Knowledge.

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CHAPTER I

INTRODUCTION

1.1 Background of the Study

Nosocomial infection is an infection whose development is favored by a hospital environment. It may develop in a hospitalized patient without having been present or incubating at the time of admission or it may be acquired in hospital but only appear after discharge. Such infections include fungal and opportunist bacterial infections. They are aggravated by factors favoring the spread of organisms (cross-contaminated) and by reduced resistance of individual patients, as well as by antibiotic resistant strains of bacteria (Oxford Medical Dictionary, 2007).

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. Reported cases of nosocomial infection assumed such terrifying proportions in 2002 that world health organization member states approved a world health assembly resolution on patient safety. Developing countries were reported to have up to 20 times the risk of contracting a nosocomial infection compared with developed countries (Bello, et.al., 2011).

The mode of transmission and the most frequent types of nosocomial infections are associated with the respiratory tract, blood stream, surgical wounds and urinary tract (World Health Organization [WHO], 2008).

One-third of nosocomial infections are preventable. In Europe, the category of Gram-negative infections is estimated to account for two-thirds of the 25, 000 deaths each year. Nosocomial infections can cause severe pneumonia and infections of the urinary tract, bloodstream and other parts of the body. Many types are difficult to attack with antibiotics, and antibiotic resistance is spreading to Gram-negative bacteria that can

infect people outside the hospital. In France in 2006, the most common infection sites were urinary tract infections (30.3 %), neuropathy (14.7 %), infections of surgery site (14.2 %), infections of the skin and mucous membrane (10.2 %), other respiratory infections (6.8%) and bacterial infections / blood poisoning (6.4 %). The rates among adult patients in intensive care were 13.5% in 2004, 14.6% in 2005, 14.1% in 2006 and 14.4% (Center Disease Control [CDC], 2007).

For the last 30 years, there has been great interest in understanding the causes and impact of hospital acquired infections. Many experimental studies and randomized trials have examined various methods to prevent nosocomial infections. Uncertainty remains, however, about the proportion of nosocomial infections that could potentially be prevented by infection control measures applied under working conditions (Harbarth, Sax and Gastmeier, 2003).

An upward trend in the incidence in nosocomial infections and increased economic impact of these infections in the state of Massachusetts in 2005(stone, 2008)and a more recent CDC report, using consumer price index for in-patient hospital services in us hospitals, estimated annual medical cost of nosocomial infections to be between $28 and $45 billion (Scot II, 2009).

It has also been estimated that nosocomial infections make patients stay in the hospital 4-5 additional days. Around 2004-2005, about 9, 000 people died each year with a nosocomial infection, of which about 4, 200 would have survived without this infection (Wikipedia, 2006).

In India, 30 to 35 percent of persons admitted to hospitals develop Hospital Acquired Infection (HAIs). Among hospital-acquired infections 30to40% are urinary tract infections, 15 to 20% surgical wound infections, 15 to 20% lower respiratory tract infections and 5 to 15% blood stream infections. The incidence of HAI in Karnataka has been recorded 6.5% (Baruah, 2008).

There are numerous preventive measures ranging from the obvious to high-tech. The goals are to avoid transmission by hand, by air, and by blood. Hand washing by medical staff is the single greatest improvement, but sadly this hygiene action is often lacking in many staff. Other measures include avoiding hand contact, especially to the

conjunctiva or nasal areas. Various sterilization measures are helpful ranging from simple acts like sterilizing ventilators to full scale air filtering systems in the hospital. In some cases it may be appropriate to vaccinate certain patients against particular pathogens. There are numerous measures possible to avoid transmission of Nosocomial infections, and the above is a brief and incomplete discussion (Prakash, 2004).

In the hospital there are many potential sources of infection, including patients, personnel, visitors, equipment, and linen. The patient may become infected with organisms from either the external environment or as is often seen in the severely immune compromised host from their own internal organisms. Most of the causative organisms are present in the external environment of the patient and are introduced into the body through direct contact or by contact with contaminated materials. In many instances nosocomial infections could be prevented by practicing strict aseptic technique when giving care to the patents. Predominantly, it is on the hand of hospital staff as good hand hygiene could help reduce the economic burden and present distress caused by HAI, but there is evidence that it is infrequently and poorly performed by nurses. Nosocomial infection is continue to be a problem in most healthcare centers throughout the world since; infections control is misperceived and needs to be challenged, nurses need to be continually educated and made aware of the reasons for instituting infection control practice for the patients as well as for themselves.

1.2 Statement of the Problem

Nosocomial infections occur worldwide, both in the developed and developing world. They are a significant burden to patients and public health. They are a major cause of death and increased morbidity in hospitalized patients. They may cause increased functional disability and emotional stress and may lead to conditions that reduce quality of life. Not only do they affect the general health of patients, but they cause a huge burden financially. Nosocomial infections are most frequent occurring infections of the urinary tract, surgical wounds, and the lower respiratory tract. These infections most commonly occur in intensive care units and in acute surgical and orthopedic ward. Infection rates are also higher in patients with increased susceptibility due to old age, underlying, or chemotherapy (Thomas, 2012).

The nurses lacked broad knowledge about procedures regarding disinfection and sterilization of surgical instruments, and the precautions necessary to reduce nosocomial infections. The effective educational programs that target increasing the awareness of transmission of nosocomial infections by the healthcare workers could play a significant role in lowering the occurrence of these infections.

Nurses are the frontline defense for applying daily infection control practices to prevent infections and transmission of organisms to other patients. Although training in preventing blood borne pathogen exposures is required annually by the Occupational Safety and Health Administration, clinical nurses (registered nurses, licensed practical nurses, and certified nursing assistants) and other health care staff should receive additional infection control training and periodic evaluations of aseptic care as a planned patient safety activity. Nurses have the unique opportunity to directly reduce health care–associated infections through recognizing and applying evidence-based procedures to prevent HAIs among patients and protecting the health of the staff. Clinical care nurses directly prevent infections by performing, monitoring, and assuring compliance with aseptic work practices; providing knowledgeable collaborative oversight on environmental decontamination to prevent transmission of microorganisms from patient to patient; and serve as the primary resource to identify and refer ill visitors or staff.

1.3 Rational of the Study

An average of 8.7% of hospital patients had nosocomial infections. At any time, over 1.4 million people worldwide suffer from infectious complications acquired in hospital. The highest frequencies of nosocomial infections were reported from hospitals in the Eastern Mediterranean and South-East Asia Regions (11.8 and 10.0% respectively), with a prevalence of 7.7 and 9.0% respectively in the European and Western Pacific Regions (World Health Organization [WHO], 2007).

Approximately 10 out of Nosocomial infection is cross infection of one patient by another or by doctors, nurses and other hospital staff, while in hospital. Even in developed countries, the extent of cross infection in hospitals is estimated to be about 7-12%, which in terms of total hospital admission run into several thousand (Park, 2009).

It is important for nurses to be knowledgeable about nosocomial infections, chain of infection, the types of infections, mode of transmission, infection control and sterile technique practices required to control and reduce further transmission and the current guidelines of infection control (Malan, 2009).

Patient are in care of nurses for twenty four hour so, it is important to have adequate knowledge regarding prevention of nosocomial infections, they will apply preventive measures that will help to prevent from different infective condition. So, this topic has been chosen to find out Knowledge Regarding Prevention of Nosocomial Infections among Nurses.

1.4 Objectives of the Study

General Objective

To find out the knowledge regarding Prevention of Nosocomial Infection among Nurses.

Specific Objectives

To identify the knowledge regarding hand washing for prevention of nosocomial infection.

To identify the knowledge regarding universal precaution for prevention of nosocomial infection (Recapping and High Level Dis-infectants).

To identify the knowledge regarding disposal of wastage for prevention of nosocomial infection.

1.5 Significance of the Study

The finding of this study might be helpful to nurses, concerned authorities for development and implementation of In-Service education package on Prevention of Nosocomial Infection for nurses working in the hospital setting.

This study will provide information About Knowledge Regarding Prevention of Nosocomial Infections and exposure of infection to the hospital and the need for adequate funding of health institution.

This study will help to create awareness on the type, causes, and preventive measures of common nosocomial infections, the result of the study will draw the attention of hospital management on the infection prevention in order to reduce nosocomial infections.

1.6 Conceptual Framework

The given framework clearly shows that training, qualification, Information Education Communication (IEC) materials, working experience, hospital policy influences the nurses knowledge regarding prevention of nosocomial infection.

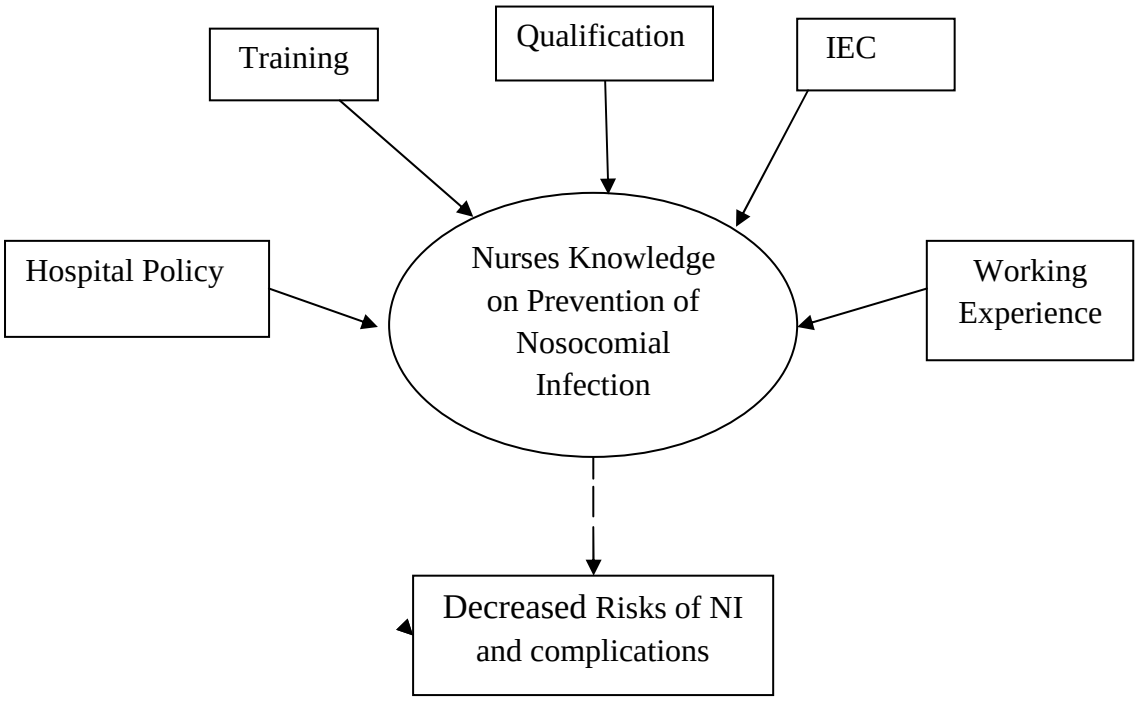

Figure 1: Conceptual Framework on Knowledge Regarding Prevention of Nosocomial Infection Among Nurses.

1.7 Research Question

What is the knowledge of nurses regarding the prevention of nosocomial infection?

1.8 Operational Definitions

Nurses: Those nurses who have completed at least PCL nursing education, registered in Nepal Nursing council and having at least 6 month working experience.

Knowledge regarding Prevention of Nosocomial Infection: Having information regarding the fact about the meaning of Nosocomial infection, its causes, Types, and Common Risk Factors and its Prevention.

Level of knowledge

80 or >80 % -adequate knowledge

50 - 79 % -moderate knowledge

< 50 % -Inadequate knowledge

Nosocomial infection: common nosocomial infection urinary tract infection, nosocomial pneumonia, surgical site infection occurring during hospitalization.

Training: one day Infection prevention (IP) Training

Information Education Communication (IEC): All the information which give the knowledge about prevention of nosocomial infection. Such as; newspaper, journals, magazines, hospital manual, poster- pamphlets', books, television, and curriculum.

Hospital Policy: Hospital policy regarding aseptic technique, disinfectants, wastage disposal, universal precautions.

1.9 Delimitation

The data collection period was only for 2 weeks.

This study finding may not be utilized to represent the whole country as the sample size is small and chosen purposively for fulfilling academic requirement of bachelor degree course.

This study will be carry out in bharatpur government hospital and it cannot be generalized to other department of hospital.

CHAPTER II

REVIEW OF THE LITERATURE

2.1 Introduction

Various journal, books, research reports, articles, internet and websites were searched for review of related literature with the aim of gaining in depth knowledge into the study problem and support the study also other available literature were reviewed.

2.2 Review of Literature

Registered nurses as independent practioners are the constellation of key activities perceived as essential for the delivery of knowledgeable, competent and legally and ethically based nursing care to a patient (Malan, 2009)

Health care workers (HCW) behavior may vary according to their perception of risk, in spite of similar training. some of the reasons to which HCW's attribute lack of compliance with universal precautions are habit, lack of time, interference with carrying out procedures, discomfort with protective equipment, lack of supplies, carelessness, concern for costs, unexpected body fluid contact, and possibility of causing increased fear in patients. In addition, the perception of the exposure as not significant, inadequate knowledge of the reporting process, and issues related to confidentiality and job discrimination were cited as reasons for underreporting (Kamunge, 2013).

Failure to meet required cleaning standards can seriously increase risks for hospital-acquired infections and reduce patients' confidence in the ability of the hospital to provide safe and effective medical care. In B.C., there is considerable anecdotal evidence that over the past 10 years hospitals have been cutting back cleaning staff, not replacing staff when they are off on sick leave, and therefore compromising the health and well being of patients and residents. This requires further investigation. In

addition, the plans to contract-out housekeeping could further compromise infection control standards and patient health. The concerns related to contracting-out highlighted in this review focus on the following:

Loss of control of specialized training required for the use of effective procedures, equipment and materials

Loss of control of staffing levels

Higher staff turnover, increased sick time and absences from work

Loss in service delivery flexibility and a corresponding lack of ability of cleaning staff to respond to emergencies such as infectious disease outbreaks.

Thus, The research suggests that the focus should be on increased staffing levels and cleaning standards – not on contracting-out (Murphy, 2002).

It is of great concern that only seven (7) of the participants knew the correct manner of disposing sharps from a contaminated case. The sharp containers are usually kept inside the operating room and only replaced with a new container when it is full. Therefore twenty-seven (77%) of the participants disposed of their sharps from a contaminated case in the sharp container that remained in the operating room where other surgical procedures were still to be performed, which could also contribute to the transmission of infection. The researcher recommended that registered nurses dispose sharps from a contaminated case in the following manner: the sharps from the case are first autoclaved and then disposed into the sharps bin in the operating room in order to prevent contamination (Malan, 2009).

Hospitalized patients are commonly exposed to potentially large onocula of bacteria from a number of sources. In one study, 38 % of all nososmial infections occurring in critical care were attributed to cross contamination. Hand washing is important to cross contamination and is consistently seen to be most effective in preventing nosocomial pneumonia. Nurses traditionally show high compliance with infection contol policy, including hand washing, and respond positively to education. In contrast to hand washing, the routine culturing of patients, equipment and devices

used for respiratory therapy is not necessary, particularly if the results are not used to improve infection control (Kamunge, 2013).

A total of 60 % of nurses and 46 % of physician acknowledge that over 75 % of health care - associated infections can be prevented by hygiene. The findings reveal that 98 % of the respondents have heard about nosocomial infections while 2 % have not. About 78 % respondents practice prevention of hospital acquired infections while 22 % do not. About 94 % of respondents express that they have hindrances to the practice of prevention of nosocomial infection. the hindrances include poor working environment among 26 %, poor knowledge about prevention of nosocomial infection was 10 %, and lack of water for hand washing and other material recourses 58% (Thomas, 2003).

A surgical site infection in 486 patients who underwent abdominal surgery in a Peruvian hospital, over a five month period. The patients were observed for 30 days after surgery.125 patients developed surgical-site infections with the majority of infections occurring to those who underwent emergency surgery. The study revealed that the mean time for the development of surgical site infections was approximately 6 days, and a higher rate of infections was found in patients who had in-dwelling drains, in place, for longer than 9 days (Kamunge, 2013).

These rates most likely do not reflect the current situation because at that time the Human immune deficiency virus/acquired immune deficiency syndrome (HIV/AIDS). Pandemic was just beginning. Moreover, the survey did not include any countries in Africa where nosocomial infection rates are much higher. They do, however, provide some guidance as to which types of nosocomial infections occur most frequently in developing countries. Surgical site infections, urinary tract infections and lower respiratory (pneumonia) infections were the leading types reported. This sequence differs somewhat from what is reported in the US, for example, where urinary and respiratory tract infections are the most common followed by surgical site infections (Emori & Gaynes, 1993).

The knowledge deficit concerning Nosocomial Pneumonia (NP) among critical care nurses in eastern Rajasthan States. The study revealed that, several important deficits

in nosocomial pneumonia knowledge were identified indicating a need for critical care nurses to have greater exposure to nosocomial pneumonia prevention education, guidelines, and research. Likewise, study on nurses' knowledge and clinical practice regarding care of patients with Indwelling Urinary Catheters (IUCs) in preventing nosocomial infections in four hospitals. It was found that, although the nurses' knowledge in IUC care was relatively good, the nursing care for patients with IUC in the studied hospitals ought to be improved. This can be done by developing evidence-based, culturally congruent guidelines for assurance of quality care. The study have shown that their practice differed because of lack of time to give care and to update themselves. The consequences of under staffing were that junior and temporary staff worked unsupervised. Those interviewed identified feelings of powerlessness in effective preventative measures, and identified not only the role of medical staff in influencing Nosocomial Urinary Tract Infections (NUTIs) but also their inconsistent approach to care. All these forces effectively limited the nurses' ability to prevent NUTIs. The study is concluded with recommendations for changes in practice and future research. A study was conducted to identify nurses' practices and opinions during routine patient care in surgical wards. The study revealed that nurses have a poor level of knowledge concerning quality of hand washing. All nursing actions related to 'clean' and 'dirty' activities were evaluated. The majority of nurses reported that they always wash their hands after contact with contaminated and non-contaminated patients, equipments and environment. It was found that they did need to wash their hands often but that they were not able to do this because of dense working conditions, insufficiency of necessary materials and drying and sore of hands after frequent washing. This study concluded that it is important to improve the hand hygiene technique to prevent cross infection (Baruah, 2008).

The study was carried out on 100 nurses working in very sensitive units in the hospital (obstetric, clinical pathology laboratories, surgery neonate, and hemodialysis units).the study revealed that 85 % of nurses were secondary school graduates with unacceptable level of experience. 70 % of them didn't know the universal precautions of infection control and 52 % didn't know the infection committee role and responsibilities, 35 % of them definition of infection but 73 % didn't know the definition of hospital infection. 57 % of them didn't know the role of hand washing in

infection control and 80 % didn't know the least effective duration for proper hand washing. Also the knowledge of hospital waste management was poor, 43 % of nurses did not know the proper way of needle and syringe disposal, which is very dangerous for the medical team and the community. Also preventive awareness was little where 64 % of them didn`t have hepatitis B vaccine. The study recommends that infection control committee in the hospital must arrange regular courses and evaluation of nurses knowledge and practices (Sheikh, 2003).

A field survey was conducted to assess adherence to standard precautions practices among 133 nurses in a Western Algeria University Hospital. A total of 133 nurses, 81 women and 52 men nurses participated in the survey. Personal and professional data, hand-washing frequency, gloves wearing practices were collected as data. A majority (95%) of nurses reported washing their hands after removing their gloves, and 69% of them reported that they washes hand after touching the patients. Male nurses wear gloves more often than females (respectively 77% and 53%). Sharp instruments were correctly disposed of in a puncture-resistant container more of the time. Recapping needles has been reported by two-thirds of survey respondent (As cited in Baruah, 2008).

2.3 Summary of Reviewed Literature

Decontamination and Cleaning are two of the basic steps that need to be followed in preventing the spread of micro organism. it is important that decontamination and cleaning of instrument are carried out before sterilization. The reason for this is for patient personal and instrument safety. Decontamination is performed to remove blood and any other body fluids from surgical instruments that may contain micro-organism. This can be done by either thermal disinfection such as by soaking the instrument in a suitable disinfectant.

Hand hygiene is widely acknowledged to be the single most important activity for reducing the spread of infection, yet evident suggest that many health care professionals do not decontaminate their hands as often as they need or use the correct technique. Effective hand washing is one of the main contributions to infection control. An effective hand washing technique involves three stages: preparation,

washing, rinsing and drying. preparation requires wetting hands under tepid running water before applying the recommended amount of liquid soap or an anti-microbial preparation. The hand washing solution must come into contact with all surfaces of the hands. The hands must be rubbed together for a minimum of 10-15 seconds paying particular attention to the tips of the finger, the thumbs and the area between the fingers. Hands should be rinsed thoroughly before drying with paper towels.

CHAPTER III

RESEARCH METHODOLOGY

3.1 Research Design

A descriptive cross-sectional research design was used.

3.2 Research Setting and Population

The study was conducted in Bharatpur Government Hospital at Chitwan, Bharatpur 10. Study population was 50. All nurses working in Bharatpur Government Hospital in In-door department (medical, surgical, orthopedic, post-operative, maternity, intensive care unit (ICU), operation theatre (OT), pediatric, cabin, spinal and geriatric ward).

3.3 Sampling

Sample size was 50. Non-probability, purposive sampling technique was used. Nurses who were willing to participate and available during the data collection period. Only indoor nurses who were working in surgery, orthopedic, medical, post operative, intensive care unit (ICU), operation theatre (OT), maternity, pediatric, cabin, spinal, and geriatric ward were included in this study. Only the nurse who had minimum of 6 month working experience was included. The nurses who were in leave during data collection period and who were not interested to participate in the study were excluded.

3.4 Instrumentation

Self administered structured questionnaire was used. The instrument was developed by researcher herself after reviewing the literature and consulting research advisor.

The research instrument consists of two parts:

Part I: Questions related to Socio-demographic information.

Part II: Questions related to the knowledge about prevention of nosocomial infection. Its type, causes, risk factor and prevention of nosocomial infection.

The validity of the instrument was established by seeking the opinion of the subject experts, consulting with research advisor, colleagues and reviewing the related literature. And the reliability of the instrument was maintained by pre-testing the instrument. Pre-testing wad held in 10% of total sample in Narayani Sub-Regional Hospital, Birgunj, Parsa. Feedback was taken and some modification was done as per the requirement.

3.5 Data Collection Procedure

The study was carried out after the approval of the research proposal from the research committee of Nursing Campus Birgunj. A written permission was given from the Nursing Campus Birgunj to concerned hospital (Bharatpur Government Hospital) for data collection. The recommended letter from nursing campus birgunj was submitted in bharatpur hospital and administrative approval was obtained from the bharatpur government hospital. Self-introduction was given then explain the objective of the research to the respondents. Respondents were assure for the purpose of the study. The verbal consent was taken from the respondents without any pressure and explain the propose and procedure to the respondents, if the respondent is not willing to participate they can withdraw any time during data collection. A self administered questionnaire was developed to collect the data. The data were collected after 1 day from the respondents. Anonymity and confidentiality of the respondents was strictly maintained.

3.6 Data Analysis Procedure

After completion of data collection, the data were checked for its completeness, and accuracy. The data were kept in order for entry according to coding. Findings were analyzed in frequency, distribution, percentage and standard deviation using SPSS (Statistical Package for Social Sciences) version 20. The findings were presented on the academic tables.

CHAPTER IV

FINDINGS OF THE STUDY

This chapter deals with the analysis and interpretation of data regarding Knowledge Regardinng Prevention of Nosocomial Infection among Nurses in Bharatpur Government Hospital, Chitwan. All the data obtained was analyzed and interpreted on the basis of research objectives and are presented in different tables.

TABLE 1

Socio-demographic Information

n=50

Variables	Frequency	Percent
Age (years)		
20-24	39	78.0
< 20	4	8.0
> 29	4	8.0
25-29	3	6.0
Mean ± SD = 23.26 ± 4.767		
Ethnicity		
Brahmin	29	58.0
Chhetri	7	14.0
Tamang	3	6.0
Magar	3	6.0
Dalit	3	6.0
Newar	2	4.0
Gurung	2	4.0
Tharu	1	2.0
Religion		
Hindu	45	90.0
Buddhism	5	10.0
Present working ward		
Surgical	10	20.0
Paediatric	8	16.0
ICU	8	16.0
Medical	7	14.0
Other (Post-Op, Cabin, Spinal and Geriatric Ward)	6	12.0
Maternity	5	10.0
Ortho	3	6.0
OT	3	6.0
Received training on infection prevention		
No	35	70.0
Yes	15	30.0

Table 1 shows that majority (78%) of the respondents were age of 24-25 years. Regarding ethnicity, 58% were Brahmin and 2% Tharu. Regarding religion, most (90%) of the respondents were Hindu and 10% were Buddhist.Likewise, 20% of the respondents were working in surgical ward. Least 6% were working in Ortho and OT respectively. Regarding training on infection prevention 70% of the respondents respond they had not received the training.

TABLE 2

Knowledge regarding Infection prevention, Its Important Factors and Meaning of Nosocomial Infection

n=50

Variables	Frequency	Percent
Infection Prevention is		
The discipline concerned with preventing nosocomial or health care associated infection*	30	60.0
The prevention of the clinical application of micro biology in practice	16	32.0
The process of preventing the infection present in community setting	3	6.0
Basic approaches that prevent only high level of infection	1	2.0
Important factors of infection prevention**		
Hand washing with antiseptic*	46	92.0
Using of gown, masks and gloves*	33	66.0
Proper cleaning disinfection and sterilization of patient care equipment*	25	50.0
Building good rapport with client	8	16.0
Meaning of nosocomial infection		
An infection that acquired in hospital setting*	45	90.0
An infection that acquired in community setting	4	8.0
An infection that acquired in any setting	1	2.0
Nosocomial infection is occurs		
48 hour after hospital admission*	26	52.0
24 hour after hospital admission	20	40.0
2 hour after hospital admission	3	6.0
1 hour after hospital admission	1	2.0

*** Multiple responses* ** Correct answer*

Table 3 shows that 60% of the respondents respond infection prevention is the discipline concerned with preventing nosocomial or health care associated infection. Regarding important factors of preventing infection, 92% of the respondents respond hand washing with antiseptic. Regarding meaning of nosocomial infection, Most of the respondents (90%) of the respondents respond an infection that acquired in hospital setting. Regarding nosocomial infection, 52% of the respondents respond it appears after 48 hours of hospital admission, 2% respond it appears 1 hour after hospital admission.

TABLE 3

Knowledge regarding Organism, Types and Severity of Nosocomial Infection

Variables	Frequency	Percent
Know responsible organism for nosocomial infection (n=50)		
Yes	43	86.0
No	7	14.0
If yes (n=43)**		
Staphylococcus aureus*	39	90.7
Pseudomonas aeruginose*	29	67.4
Entercoccus*	16	37.2
Actinomycette	3	7.0
Know the most common type of nosocomial infection (n=50)		
Yes	49	98.0
No	1	2.0
If yes (n=49)**		
Urinary tract infection*	37	75.5
Respiratory infection*	35	71.4
Surgical wound and other soft tissue infection*	27	55.1
Appendicitis	1	2.0
Type of most dangerous/deadly nosocomial infection (n=50)		
Hospital acquired pneumonia*	27	54.0
Hospital acquired tuberculosis	13	26.0
Hospital acquired meningitis	6	12.0
Hospital acquired UTI	4	8.0

*** Multiple responses* * *Correct answer*

Table 4 shows that, most (86%) of the respondents respond they know about the responsible organism for nosocomial infection. Among them most of them (90%) respond staphylococcus aureus as the responsible organism for nosocomial infection. Regarding most common type of nosocomial infection, almost all 98% of the respondents respond to have known about it.

TABLE 4

Knowledge regarding Causes, Risk Factors and Common Clinical Features of Nosocomial Infection

n=50

Variables	Frequency	Percent
Top widespread causes of nosocomial infection**		
Improper hand washing*	45	90.0
Prolonged hospitalization*	43	86.0
Unlimited visitor exposure	20	40.0
Lack of hospital policies and protocol	18	36.0
Risk factors of nosocomial infections**		
Prolonged hospitalization*	44	88.0
Presence of an indwelling catheter*	41	82.0
Prolonged ventilation*	21	42.0
Personal hygiene	14	28.0
Common clinical features of nosocomial infection**		
Fever*	49	98.0
Inflammation*	31	62.0
Pain*	22	44.0
Diarrhea	17	34.0

*** Multiple responses* ** Correct answer*

Table 5 shows that among 50, most (90%) of the of the respondents respond improper hand washing as the top widespread cause of nosocomial infection, and (86%) respond prolonged hospitalization. Regarding common clinical features of nosocomial infection, most (98%) of the respondents respond fever, as the common clinical features.

TABLE 5

Knowledge regarding Prevention and Time of Hand Washing to Prevent Nosocomial Infection

n=50

Variables	Frequency	Percent
Hand washing can prevent nosocomial infection		
Yes*	49	98.0
No	1	2.0
Time of hand washing**		
Before and after doing each procedure*	47	94.0
Before putting on gloves*	35	70.0
After touching the patient*	35	70.0
After taking handover of the patient	15	30.0
Correct time for medical and surgical hand washing respectively		
10 -20 seconds and 3-5 minutes*	27	54.0
10-30 seconds and 3-5 minutes	20	40.0
5-20 seconds and 5-10 minutes	3	6.0

*** Multiple responses* ** Correct answer*

Table 10 shows that, cent percent (100%) of the respondents viewed on nosocomial infection can be prevented. Likewise, almost all (98%) viewed on hand washing can prevent nosocomial infection. Regarding the time of hand washing, most of them (94%) respond on before and after doing each procedure, and 30% respond after taking handover of the patient.

TABLE 6

Knowledge regarding High level Disinfectant

n=50

Variable	Frequency	Percent
Right chemical and time for destroying HIV, HBV and HCV**		
0.5% chlorine solution for 10 minutes*	40	80.0
Cidex 2% for 20 minutes*	33	66.0
Formaldehyde 8% for 20 minutes	17	34.0
Appropriate method to sterilize sharp instrument		
Chemical solution for 12 hours*	27	54.0
Autoclave at 121° C for 20 minutes	13	26.0
Boiling for 20 minutes	6	12.0
Dry heat at 170° C for 20 minutes	4	8.0

*** Multiple responses* ** Correct answer*

Table 7 shows that among 50, most of them (80%) of the respondents respond 0.5% chlorine solution for 10 minutes for the right chemical and 34% respond formaldehyde 8% for 20 minutes. Regarding appropriate method to sterilize sharp instrument, 54% respond chemical solution for 12 hours, 8% respond dry heat at 170° C for 20 minutes.

TABLE 7

Knowledge regarding Disposing Place, Recapping Syringe, Method of Sterilizing Gloves, and Wastage Disposal

n=50

Variables	Frequency	Percent
Place for disposing needle and other sharp objects		
Disposed in puncture proof container*	43	86.0
Disposed in dustbin	6	12.0
Disposed in polythene bag	1	2.0
Recapping syringe after use		
No*	40	80.0
Yes	10	20.0
Appropriate method to sterilize gloves and rubber goods		
Autoclave at 121° C for 20 minutes*	34	68.0
Chemical solution for 20 minutes	10	20.0
Boiling for 20 minutes	3	6.0
Dry heat at 170° C for 20 minutes	3	6.0
Recommended wastage disposal for preventing infection**		
Incineration*	44	88.0
Dumping	27	54.0
Burning*	25	50.0
Autoclaving*	17	34.0
Composting	12	24.0
Place for disposing materials contaminated with blood and solid waste		
Red bucket*	48	96.0
Blue bucket	2	4.0
Place for disposing plastic materials		
Blue bucket*	46	92.0
Green bucket	3	6.0
Red bucket	1	2.0
Place for disposing chemical waste, cytotoxic drugs and incinerated ash		
Black bucket*	33	66.0
Blue bucket	8	16.0
Green bucket	8	16.0
Red bucket	1	2.0

*** Multiple responses* * *Correct answer*

Table 8 shows that Most of them (86%) of the respondents respond for disposing in puncture proof container for disposing needle and other sharp object and 2% disposed in polythene bag. Regarding recapping syringe after use, most of them (80%) respond, they did not recapped the syringe after used. Regarding the appropriate method to sterilize gloves and rubber goods, 68% of the respondents respond for autoclave at

121° C for 20 minutes and 6% of each respond for boiling for 20 minutes and dry heat at 170° C for 20 minutes. Regarding recommended wastage disposal for preventing infection, Most of them (88%) of the respondents respond incineration, 34% respond autoclaving and 24% of the respondents respond composting. Regarding the place for disposing materials contaminated with blood and solid waste, almost all (96%) of the respondents respond for red bucket and only a few (4%) respond for blue bucket. Regarding the place for disposing plastic materials, Most of them (92%) of the respondents respond for blue bucket. Regarding the place for disposing chemical waste, cytotoxic drugs and incinerated ash, 66% of the respondents respond for black bucket.

TABLE 8

Knowledge regarding Infection Prevention through Isolation, Good Rapport and Appropriate Insertion and Maintenance of Catheter

n=50

Variables	Frequency	Percent
Isolation of infected patient on the hospital can prevent nosocomial infection		
Yes*	43	86.0
No	7	14.0
Good rapport with the patient can prevent nosocomial infection		
No*	35	70.0
Yes	15	30.0
Appropriate insertion and maintenance of catheter can prevent nosocomial infection		
Yes	32	64.0
No*	18	36.0

** Correct answer*

Table 9 shows that among 50, Most of them (86%) of the respondents respond yes for isolating infected patient on the hospital can prevent nosocomial infection and 14% respond no. Regarding good rapport with the patient can prevent nosocomial infection, 70% of the respondents respond no and 30% respond yes. Regarding appropriate insertion and maintenance of catheter can prevent nosocomial infection, 64% of the respondents respond yes and 36% respond no.

TABLE 9

Level of Knowledge regarding Nosocomial Infection

n=50

Level of Knowledge	Frequency	Percent
Moderate	40	80.0
Adequate	6	12.0
Inadequate	4	8.0

Table 10 shows that most of them (80%) had moderate knowledge, 12% had adequate knowledge and 8% had inadequate knowledge regarding nosocomial infection.

CHAPTER V

DISCUSSION, CONCLUSION AND RECOMMENDATION

5.1 Discussion

This study was conducted to find out the nurses' knowledge regarding prevention of nosocomial infection in Bharatpur Government Hospital, Chitwan. The information on different variables were collected, analyzed & interpreted according to the research objectives. Results of the study show that more than three-fourth (78%) of the respondents were age of 24-25 years. Result shows that majority (58%) of the respondents were Brahmin and most (90%) of the respondents were Hindu.

Regarding received training on preventing infection, 35 (70%) of the respondents respond no. It is found that majority (60%) of the respondents respond infection prevention is the discipline concerned with preventing nosocomial or health care associated infection. Most (92%) of the respondents respond hand washing with antiseptic is the important factor of preventing infection. More than half (52%) of the respondents respond it evident 48 hour after hospital admission. It is also found that most (86%) of the respondents respond to know about the responsible organism for nosocomial infection. Likewise, most (90.7%) of them respond staphylococcus aureus is a causative organism for nosocomial infection.

Almost all (98%) of the respondents knew about the most common type of nosocomial infection. Among them, more than three-fourth (75.5%) respond urinary tract infection, 71.4% respond respiratory infection, 55.1% respond surgical wound and other soft tissue infection and 2% respond appendicitis. A similar study conducted in India by Baruah (2008) shows that, 30 to 35 percent of persons admitted to hospitals develop HAIs. Among hospital-acquired infections 30 to 40% are urinary tract infections, 15 to 20% surgical wound infections, 15 to 20% lower respiratory

tract infections and 5 to 15% blood stream infections. The incidence of HAI in Karnataka has been recorded 6.5%

Result shows that almost all (98%) of the respondents respond to have known about the most common type of nosocomial infection, more than three-fourth (75.5%) respond urinary tract infection, 71.4% respond respiratory infection, 55.1% respond surgical wound and other soft tissue infection and 2% respond appendicitis. A similar study done by Baruah (2008) in India revealed that 30 to 35 percent of persons admitted to hospitals develop HAIs. Among hospital-acquired infections 30to40% are urinary tract infections, 15 to 20% surgical wound infections, 15 to 20% lower respiratory tract infections and 5 to 15% blood stream infections.[3] The incidence of HAI in Karnataka has been recorded 6.5%

Regarding the type of most dangerous/deadly nosocomial infection, more than half (54%) of the respondents respond hospital acquired pneumonia. Most (90%) of the respondents respond improper hand washing as the top widespread cause of nosocomial infection.

Regarding risk factors of nosocomial infections, most (88%) of the respondents respond prolonged hospitalization, other 82% respond presence of an indwelling catheter, 42% responds prolonged ventilation and 28% respond personal hygiene.

Regarding common clinical features of nosocomial infection, almost all (98%) of the respondents respond fever, other 62% respond inflammation, 44% respond pain and 34% of the respondents respond diarrhea as the common clinical features.

Researcher found that cent percent of the respondents viewed on nosocomial infection can be prevented. Likewise, almost all (98%) viewed on hand washing can prevent nosocomial infection.

Regarding the time of hand washing, almost all (94%) respond on before and after doing each procedure, other 70% from each category respond for before putting on gloves and after touching the patient and 30% respond after taking handover of the patient. The finding was supported by Beghdadli et al. (2008) in which majority

(95%) of nurses reported washing their hands after removing their gloves, and 69% of them reported that they washes hand after touching the patients.

Regarding correct time for medical and surgical hand washing respectively, more than half (54%) of the respondents respond 10-20 seconds. It is also found that most (80%) of the respondents respond 0.5% chlorine solution for 10 minutes for the right chemical and time for destroying HIV, HBV and HCV, 66% respond cidex 2% for 20 minutes and 34% respond formaldehyde 8% for 20 minutes. Regarding appropriate method to sterilize sharp instrument, 54% respond chemical solution for 12 hours.

Regarding the appropriate method to sterilize gloves and rubber goods, 68% respond for autoclave at 121° C for 20 minutes.

Regarding recommended wastage disposal for preventing infection, most (88%) of the respondents respond incineration. Regarding the place for disposing materials contaminated with blood and solid waste, almost all (96%) of the respondents respond for red bucket and only a few (4%) respond for blue bucket. Regarding the place for disposing plastic materials, almost all (92%) respond for blue bucket. Regarding the place for disposing chemical waste, cytotoxic drugs and incinerated ash, majority (66%) of the respondents respond for black bucket, 16% from each category respond for blue and green bucket and rest 2% respond for red bucket. This result was supported by Radha (2012) that is practical aspects of BMW Mgmt(BMW, segregation, colour coding of BMW, disposal of sharps) was better in nurses.

Data shows that most (80%) of the respondents had moderate knowledge on nosocomial infection among nurses, 12% had adequate knowledge and 8% had inadequate knowledge regarding nosocomial infection.

5.2 Conclusion

Based on the findings of the study, it is concluded that most of respondents have moderate knowledge on prevention of nosocomial infection.

Almost all of the respondents know the meaning of nosocomial infection. Likewise most of the respondents know about the responsible organism for nosocomial

infection is staphylococcus aureus. More than half of the respondents respond hospital acquired pneumonia is the most dangerous type of nosocomial infection. Most of respondents respond hand washing with antiseptic is the important factors of preventing infection. Cent percent of respondents viewed nosocomial infection can be prevented. Most of respondents respond improper hand washing and prolonged hospitalization are two wide spread causes of nosocomial infection. Likewise most of respondents respond the isolation of infected patient can prevent nosocomial infection. Most of the respondents respond the needle and sharp instruments are disposed in puncture proof container. Most of respondents said syringe are not recapped after its used. Regarding recommended method of waste disposal in infection prevention in the hospital, one third of the respondents respond autoclaving. Therefore, hospital administrations need to be provided with in-service education on infection prevention training and method of wastage disposal in hospital.

5.3 Limitations

The study was conducted only in the indoor department of bharatpur government hospital and only 50 nurses were participated therefore, the findings will not be generalized in the other setting so it lacks external validity.

5.4 Implications

According to the findings of this study, there is lack of adequate knowledge regarding prevention of nosocomial infection among nurses in bharatpur government hospital may conduct may conduct training regarding prevention of nosocomial infection which might be helpful for nurses to promote knowledge and prevent from infections. This study might be helpful to other researcher as baseline information to conduct further research in the related topic.

5.5 Recommendations for Further Study

Hospital administration can conduct in-service education on prevention of nosocomial infection. Infection Prevention training can be conducted for the motivation of the nurses.

5.6 Plan for Dissemination

This report will be disseminated to research committee, Library of nursing campus Birgunj and Bharatpur Government Hospital.

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APPENDICES

APPENDIX A

KEY SCORING

Knowledge Regarding Prevention of Nosocomial Infection

Each response was score with 1 for correct answers and 0 for incorrect answers/s. Thus the total score of knowledge was calculated. The knowledge was classified into 3 levels. I.e. adequate level, moderate level, inadequate level. The respondents score on knowledge was calculated and categorized according to the percentage. The respondents score 80 or >80% (34 or >34) was categorized as adequate level, those with score 50-79% (21- 33) was categorized as moderate knowledge level and those with score <50 % (21) was categorized as inadequate knowledge level.

APPENDIX B

TRIBHUVAN UNIVERSITY

INSTITUTE OF MEDICINE

NURSING CAMPUS BIRGUNJ

2071

CONSENT FORM

Study Title: Knowledge regarding Prevention of Nosocomial Infection.

Researcher: Grishma Gurung

Namaste I am Grishma Gurung, a student studying in BN 2nd year in Nursing Campus Birgunj. I am going to do a research study for the partial fulfillment on "Knowledge Regarding Prevention of Nosocomial Infection among Nurses in a Government Hospital."

I would like to ask you to participate as a subject in my research. If you agree to participate, I will give you some questionnaire, it will take 10-15 minutes of your time. You will be entirely anonymous and your name won't be linked in any of answer. Your participation will be entirely volunteer. You will not be forced to participate in the study. There will not be any direct benefits to you from this study but it will help to understand nurses towards the prevention of nosocomial infection.

I understand what this research is about. I will participate in your study voluntarily.

Name of the Researcher	Name of the Respondent
Date: -	Date: -
Signature	Signature

APPENDIX C

TRIBHUVAN UNIVERSITY
INSTITUTE OF MEDICINE
NURSING CAMPUS BIRGUNJ

SELF–ADMINISTERED STRUCTURED QUESTIONNAIRE

Research title: Knowledge Regarding Prevention of Nosocomial Infection among Nurses in Government Hospital, Chitwan.

Researcher is the student of BN 2nd year from nursing campus Birgunj. This study is conducted for the partial fulfillment of post basic nursing curriculum of Tribhuvan University. The purpose of this study is to find out the nurses knowledge regarding prevention of Nosocomial Infection. Researcher will appreciate your help in answering the question. Researcher will like to assure you that your information will be kept confidential and identity will not be disclosed. The confidentiality and anonymity will be maintained .The findings of this study will be used only for this study purpose.

Direction: - Please tick (√) in the correct answer and give your opinion for other question.

Code No. **Date of Data Collection:**

PART I

Demographic information

1. Age ……..
2. Ethnicity ……
3. Religion ……
4. Qualification ……
5. Present working ward …….
6. Have you received any training on infection prevention?

☐ Yes ☐ No

If yes, name the training and how long and when it was? .....

PART II

Knowledge related to prevention of Nosocomial infection

7. What do you mean by infection prevention?
   a. Infection prevention is the prevention of the clinical application of micro biology in practice. ☐
   b. Infection prevention is the discipline concerned with preventing nosocomial or health care associated infection. ☐
   c. Infection prevention is basic approaches that prevent only high level of infection. ☐
   d. Infection prevention is the process of preventing the infection present in community setting. ☐

8. What are the important factors of infection prevention?(**multiple response**)
   a. Hand washing with antiseptic. ☐
   b. Using of gown, masks and gloves. ☐
   c. Building good rapport with client. ☐
   d. Proper cleaning disinfection and sterilization of patient care equipment. ☐

9. What do you mean by nosocomial infection?
   a. An infection that acquired in community setting. ☐
   b. An infection that acquired in hospital setting. ☐
   c. An infection that acquired in any setting. ☐
   d. An infection that acquired in school. ☐

10. An infection is considered nosocomial if ……..
   a. It evident 1 hour after hospital admission. ☐
   b. It evident 2 hour after hospital admission . ☐
   c. It evident 24 hour after hospital admission. ☐
   d. It evident 48 hour after hospital admission. ☐

11. Do you know the organism responsible for nosocomial infection?

a. Yes ☐ b. No ☐

If yes, (multiple response)

a. Staphylococcus aureus ☐
b. Actinomycette ☐
c. Pseudomonas aeruginose ☐
d. Entercoccus ☐

12. Do you know the most common type of nosocomial infection that could occur in hospital setting?

a. Yes ☐ b. No ☐

If yes, **(Multiple response)**

a. Surgical wound and other soft tissue infection ☐
b. Urinary tract infection ☐
c. Respiratory infection ☐
d. Appendicitis ☐

13. Which one of the following is the most dangerous or deadly kind of nosocomial infection?

a. Hospital acquired meningitis ☐
b. Hospital acquired UTI ☐
c. Hospital acquired pneumonia ☐
d. Hospital acquired tuberculosis ☐

14. Which of the following are the top wide spread causes of nosocomial infection? (**Multiple response**)

a. Improper hand washing ☐
b. Prolonged hospitalization ☐
c. Unlimited visitor exposure ☐
d. Lack of hospital policies and protocol ☐

15. Risk factors of nosocomial infections are …… (**Multiple response**)

a. Presence of an indwelling catheter ☐
b. Prolonged hospitalization ☐
c. Prolonged ventilation ☐
d. Personal hygiene. ☐

16. Which of these following are common clinical features of nosocomial infection? (**Multiple response**)

a. Pain ☐
b. Diarrhea ☐
c. Fever ☐
d. Inflammation ☐

17. Can we prevent nosocomial infection?

a. Yes ☐ b. No ☐

18. Do hand washing prevent nosocomial infection?

a. Yes ☐ b. No ☐

19. When do you perform hand washing? (**Multiple response**)

a. Before putting on gloves. ☐
b. Before and after doing each procedure ☐
c. After taking handover of the patient. ☐
d. After touching the patient. ☐

20. Which of the following is the correct time for medical and surgical hand washing respectively?

a. 10 -20secs and 3-5mins ☐
b. 10-30secs and 3-5mins ☐
c. 5-20secs and 5-10mins ☐
d. 20-40secs and 5-15mins ☐

21. In high level disinfection which one of the chemical solution and timing is right for destroying HIV, HBV and HCV? **(Multiple response)**

a. Formaldehyde 8% for 20 minutes ☐
b. Cidex 2% for 20 minutes ☐
c. Lysol 5% for 30 minutes ☐
d. 0.5% chlorine solution for 10 minutes ☐

22. Which method is appropriate to sterilize sharp instrument?

a. Autoclave at 121^0c for 20 minutes ☐
b. Boiling for 20 minutes ☐
c. Chemical solution for 12 hours ☐
d. Dry heat at 170^0c for 20 minutes ☐

23. Where should needle and other sharp objects disposed?

a. Disposed in dustbin ☐
b. Disposed in polythene bag ☐
c. Disposed in puncture proof container ☐
d. Disposed in bucket ☐

24. Do you recap the syringe after use?

a. Yes ☐ b. No ☐

25. Which method is appropriate to sterilize gloves and rubber goods?

a. Autoclave at 121^0c for 20 minutes ☐
b. Boiling for 20 minutes ☐
c. Chemical solution for 20 minutes ☐
d. Dry heat at 170^0c for 20 minutes ☐

26. Which method of wastage disposal is recommended for infection prevention in hospital? (**Multiple response**)

a. Burning ☐
b. Dumping ☐
c. Incineration ☐
d. Composting ☐
e. Autoclaving ☐

27. Where do you dispose materials contaminated with blood and solid waste?

a. Blue bucket ☐
b. Red bucket ☐
c. Black bucket ☐
d. Yellow bucket ☐

28. Where do you dispose plastic materials?

a. Red bucket ☐
b. Black bucket ☐
c. Blue bucket ☐
d. Green bucket ☐

29. Where do you dispose chemical waste, cytotoxic drugs, and incinerated ash?

a. Red bucket ☐
b. Black bucket ☐
c. Blue bucket ☐
d. Green bucket ☐

30. Can isolation of infected patient on the hospital prevent nosocomial infection?

a. Yes ☐ b. No ☐

31. Can good rapport with the patient prevent nosocomial infection?

a. Yes ☐ b. No ☐

32. Can appropriate insertion of the catheter prevent nosocomial infection?

a. Yes ☐ b. No ☐

Thanks for Your Co-operation