"Assessment of Nurse's Knowledge About NosocomialInfections in Najran Hospitals, at Najran City- Saudi Arabia, 2020"

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Abstract:

Background: Nosocomial infections (NIs) is infections that are caught during a hospital and are potentially caused by organisms that are immune to antibiotics. Methicillin-resistantStaphylococcus aureus (MRSA) may be a sort of staph bacteria that's immune to certain antibiotics and should be acquired during hospitalization.

Aim: This study aimed to assess nurses' knowledge regarding Nosocomial infections (NIs)in Najran Hospitals at Najran City, Saudi Arabia.

Methodology: This study was a descriptive, cross-sectional study (224) nurses from different departments in Najran hospitals were participated in the study. The convenient sampling methodand self-administered questionnaire was used in the study**.**

Results: The study revealed that Knowledge regarding nosocomial infections were good (44.1%), while (28.6%) had moderate knowledge and (27.3%) had poor knowledge. The majority of study participants were male (52.2%) belonged to age group (20 to 29years) (43.3%). Therefore, (50.0%) of nurses were single. The bachelor degree was the most available qualification (55.3%), (31.7%) had 4-6 years 'experience as nurses and the most of participants were trained (69.6%).

Conclusion: The study concluded that adequate of knowledge among nurses regarding to nosocomial infections.

Key Words: Assessment, Nurses, Knowledge, Nosocomial infections (NIs)**.**

CHAPTER ONE

INTRODUCTION

1.1 Background

Nosocomial infections, otherwise referred to as hospital-acquired infections are those infections acquired in hospital or healthcare service unit that first appear 48 hours or more after hospital admission or within 30 days after discharge following in patient care **(Revelas & Idomeneos, 2012).**

Therefore, knowledge about the frequency and distribution of NI is vital to enhance infection control measures also on develop effective preventive and curative strategies which, in turn, will help us in decreasing incidence, morbidity and mortality **(Park K, 2008)**.

Nosocomial infections may range from mild to severe with an incidence of 5-10 %

(Horan & Gaynes, 2008).

They are unrelated to the original disease that carries patients to the clinic and neitherpresent nor incubating as at the period of admission **(Chiu et al, 2014).**

A WHO prevalence study puts Hospital infection control programs can prevent 33% of nosocomial infections **(Taylor & Shekerdemian, 2016).**

To control hospital infections, some measures should be taken in order to offer propersanitary and therapeutic services through developing policies, controlling and evaluating conducted operations and permanent and continuous surveys.

1.2Problem statement

Nosocomial infection continues to be burden to the world health care system through increased risk to patient and employees. These infections have tremendous health and financial costs with an estimate incidence of 2,000,000 infection per year, 20.000 death per year and added costs of billion dollars per year **(Vincent et al,2009).**

NI a crucial ill health throughout the planet and affects both developed and developing countries, it leads to high morbidity and mortality, greater use of antibiotics, prolongedstays within the hospital and consequently increases hospital costs. an efficient knowledge about infection prevention can reduce the speed of NI and its consequence

(Motamed et al,2006).

1.3 Justification of this study

There are some causes why nosocomial infections are even extra alarming in the 21st century. These exclude hospitals housing great number of individuals who are sick and whose immune system are often in a weakened state, increased use of outpatient treatment meaning that individual who are in hospital are sicker on median, many medical processes that bypass the body's normal defensive barriers, medical staff transfer from patient to patient thus providing a method for pathogens to spread, inadequate sanitation protocols regarding uniforms ,equipment sterilization, washing and other protective measures that may either be unheeded by hospital personnel or too lax to adequately separate patients from infectious agents and finally the usual use of anti- microbial agents in hospitals makes choice pressure for the appearance of the resistantstrains of microorganisms **(Ducel et al,2018).**

Nosocomial infections (NI) increase patients' morbidity, mortality, lengthof hospital remain
and treatment budget **(Coffin & Zaoutis, 2008).**

Program are essential to preventing and controlling Nosocomial infection **(Taheri &Jokar, 2008).**

1.4 Objectives of the Study

1.4.1 General objective

The general objective of this study to assess of nurses' knowledge aboutnosocomial infections
in Najran Hospitals at Najran City, Saudi Arabia.

1.42 Specific objectives

1.   To identify the nurse's level of knowledge about the transmition of nosocomial infections.

2.   To determine the nurse's level of knowledge about the etiology of nosocomial infections.

3.   To explore if there is statistically significant relationship between the demographical characteristics of participate and level of the nurses' knowledge toward nosocomial infections.

1.5   Hypothesis

H1: Adequate nurse's level of knowledge about nosocomial infections.

H2: There is relationship between the demographical characteristics of participating such as (level education, years' experience, and Educational courses) and level of the nurses' knowledge toward nosocomial infections.

CHAPTER TWO

REVIEW OF THE LITERATURE

2.1   Introduction

Nosocomial" term is used for any disease acquired by patient under medical care

(Krishna, 2014).

It is an infection acquired by patient during hospital stay. Recently, a new term, "healthcare associated infections" is used for the type of infections caused by prolonged hospital stay and it accounts for a major risk factor for serious health issues leading to death**(Brusaferro et al,2015).**

About 75% of the burden of these infections is present in developing countries

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(Obiero et al, 2015).

Asymptomatic patients may be considered infected if these pathogens are found in the body fluids or at a sterile body site, such as blood or cerebrospinal fluid **(Murray et al,2005).**

. Infections that are acquired by hospital staff, visitors or other healthcare personnel may also be considered as nosocomial **(Lolekha et al,1981).**

The situations in which infections are not believed as nosocomial are: The infections that were present at the time of admission and become complicated, nevertheless pathogens or symptoms change resulting to a new infection; The infections that are acquired trans- placentally due to some diseases like toxoplasmosis, rubella, syphilis or cytomegalovirus and appear 48 h after birth **(Festary et al, 2015).**

Hospital-acquired infections appeared before the origination of hospitals and became a health problem during the miraculous antibiotic era. Due to these infections, not only the costs but also the use of antibiotics increased with an extended hospitalization. This resulted in elevated morbidity and mortality. Studies conducted in different parts of the world show that in North America and Europe 5%–10% of all hospitalizations result in nosocomial.

infections, while Latin America, Sub-Saharan Africa and Asia show more than 40% hospitalizations with nosocomial infections **(Pratt et al,2001).**

Nosocomial infections can be caused by any organisms but few organisms are particularly responsible for hospital-acquired infections. In this review article, a brief overview on different aspects of nosocomial infections, particularly sites of infections, common nosocomial bacterial agents, selected antibiotic resistant pathogens along with their modes of transmission and control measures will be discussed.

2.2   Transmission

Nosocomial infection is an infection that is acquired in a hospital or other health care facility. Such an infection can be acquired in hospital, nursing home, rehabilitation facility, outpatient clinic, or other clinical settings. **(Mythri & Kashinath, 2014)**

Infection is spread to the susceptible patient in the clinical setting by various means. Health care staff can spread infection, in addition to contaminated equipment, bed linens, or air droplets. The infection can originate from the outside environment, another infected patient, staff that may be infected, or in some cases, the source of the infection cannot be determined. **(Bogan et al, 2014)**

In some cases, the microorganism originates from the patient's own skin microbiota, becoming opportunistic after surgery or other procedures that compromise the protective skin barrier. **(Apostolopoulou & Veldekis,2005)**

The most common pathogens are staphylococci, pseudomonas, E-coli, Klebsiella, mycobacterium tuberculi, candida, aspergillus, fusarium, trichosporon and malassezia all of these pathogens lead to increased risk of morbidity and mortality. It can be due to contaminated food items, water or other equipment's or may be vector borne due to flies, mosquito or rats. **(Dai et al,2006)**

2.3   Prevention and control of nosocomial infections

2.3.1   Hand hygiene

Requires an integrated monitored program which includes the following key components:

Hands of practice staff are the most important vehicles of cross-infection. Furthermore hands of patients can also carry microbes to other body sites, equipment and staff. Hand hygiene is one of the most effective means of preventing nosocomial infections **(Khan et al, 2015)**

There is now absolute indication that strict adherence to hand hygiene decreases the risk of cross-transmission of infection **(Lemass et al., 2013).**

In settings with insufficient financial and human resources, lack of time is an important observed and self-reported barrier to hand hygiene **(Mathur, 2011).**

The five moments of hand hygiene according to WHO

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٢	Before touching a patient
٢	Before clean/ Aseptic procedure
٢	After body fluid exposure risk
٢	After touching a patient
٢	After touching a patient surrounding

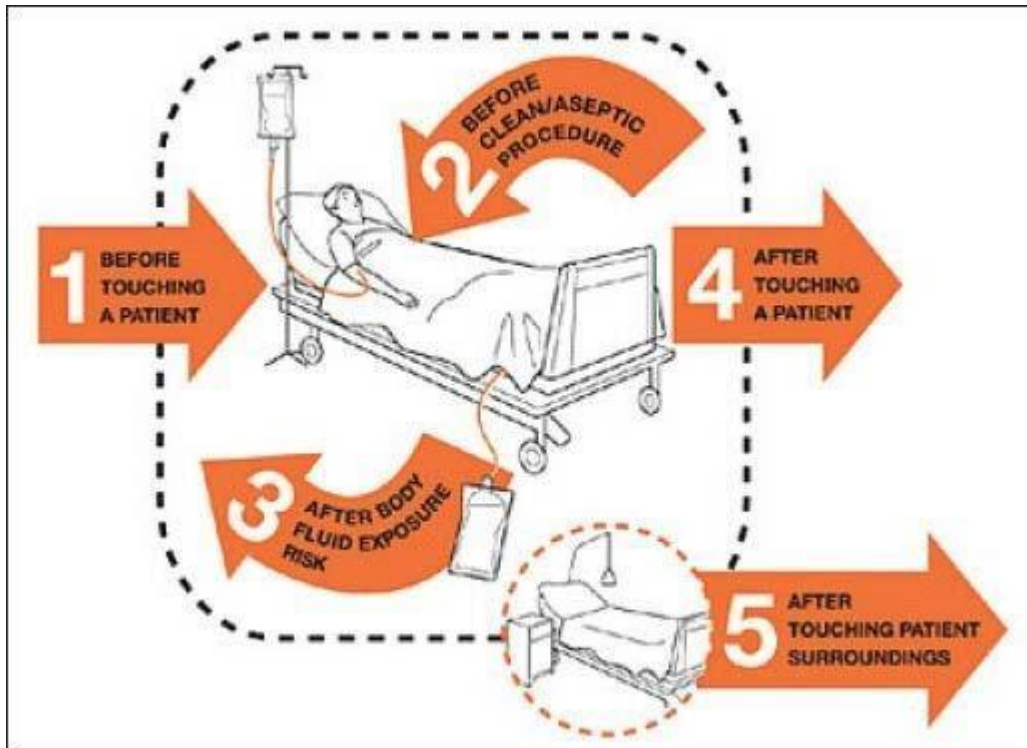**Figure 2.1: The five moments of hand hygiene according to WHO**

Figure 2.2: How to wash your hands

HOW TO WASH YOUR HANDS CORRECTLY

1. WET YOUR HANDS AND APPLY SOAP.
2. RUB PALM TO PALM.
3. RUB THE BACK OF YOUR HANDS.
4. CLEAN YOUR THUMBS.
5. SCRUB BETWEEN YOUR FINGERS.
6. SCRUB YOUR WRISTS.
7. RUB NAILS AND FINGERTIPS.
8. RINSE YOUR HANDS AND DRY WITH SINGLE USE TOWEL. NOW YOUR HANDS ARE CLEAN.

2.3.2 Personal hygiene

All staff must maintain good personal hygiene. Nails must be clean and kept short.

False nails should not be worn. Hair must be worn short or pinned up. Beard and moustaches must be kept trimmed short and clean **(WaterAid, 2016).**

2 .3.3 Clothing

Staff can normally wear a personal uniform or street clothes covered by a white coat. In special areas such as burn or intensive care units, and The working outfit must be made of amaterial easy to wash and decontaminate. If possible, a clean outfit should be worn each day. An outfit must be changed after exposure to blood or if it becomes wet through excessive sweating or other fluid exposure **(Pratt et al, 2001).**

2.3.4 Personal protective equipment

That various types of equipment that can be used to protect the eyes from flying particles such as metal, liquid of chemicals, acids or caustic liquid chemical gases or vapors that can potentially provide radiation in to eyes of healthcare worker, thereby needed to use glasses or goggles. In addition, much other equipment among other cap, shoes or footwear, gloves, gowns or aprons and masker that using to protection other bodies of part such as head, foot or legs, hands, body and ears. All of things can probable to avoid types of hazards in the workplace especially those directly exposed to infectious disease **(OSHA, 2003).**
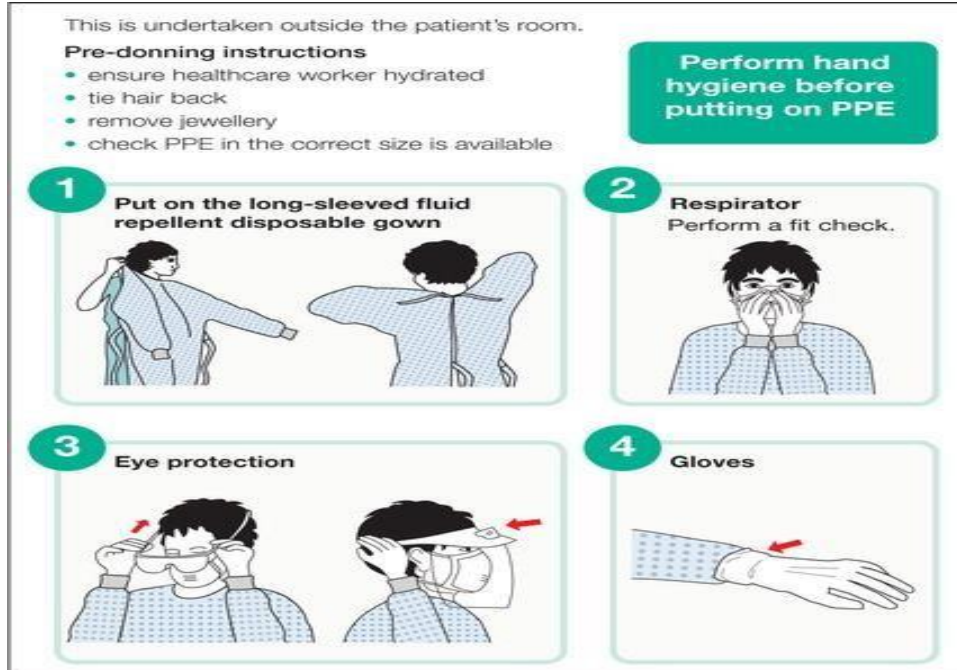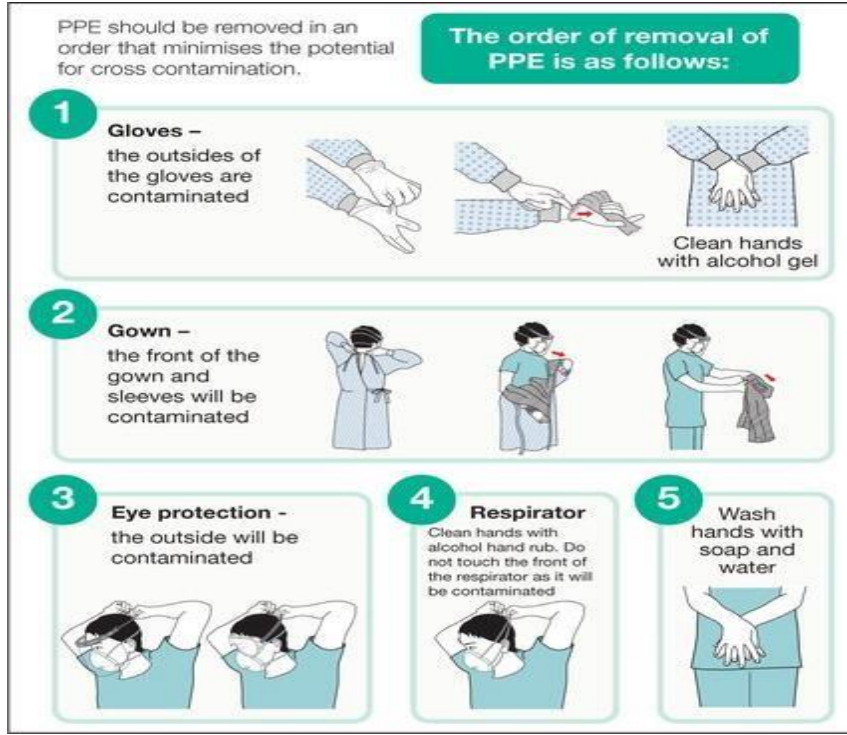
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Figure 2.3: How to wear PPE

This is undertaken outside the patient's room.

Pre-donning instructions
- ensure healthcare worker hydrated
- tie hair back
- remove jewellery
- check PPE in the correct size is available

Perform hand hygiene before putting on PPE

1 Put on the long-sleeved fluid repellent disposable gown

2 Respirator
Perform a fit check.

3 Eye protection

4 Gloves

Figure 2.4: How to remove PPE

PPE should be removed in an order that minimises the potential for cross contamination.

The order of removal of PPE is as follows:

1 Gloves – the outsides of the gloves are contaminated
Clean hands with alcohol gel

2 Gown – the front of the gown and sleeves will be contaminated

3 Eye protection - the outside will be contaminated

4 Respirator
Clean hands with alcohol hand rub. Do not touch the front of the respirator as it will be contaminated

5 Wash hands with soap and water

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2.3.5 Clinical environment

The contaminated surface environment in hospitals plays an important role in the transmission of pathogens like Methicillin-Resistance Staphylococcus Aureus (MRSA) and Clostridium Difficile, further indicates that admission to a room previously occupied by a patient with MRSA and C. difficile increases the risk for the subsequent patient admitted to the room to acquire the pathogen. Therefore, improved surface cleaning and disinfection of room surfaces decreases the risk of health-care associated infections **(Weber et al., 2013).**

2.3.6 Isolation guidelines

Standard precautions should be followed when caring for all patients with burn injury.

The effectiveness of simple protective barrier precautions reduces nosocomial colonization and infection. It is recommended that patients with larger burn injuries be isolated in private rooms or other enclosed bed spaces to ensure physical separation from other patients on the unit. Such isolation has been associated with a decrease in cross transmission of organisms **(Burke & Quinby, 1977).**

Nosocomial infection can be prevented by minimizing the spread of causative agents, isolation for the patient suffering from infectious disease and maintaining well sanitary conditions in hospitals and medical care unit. A medical device or surgical instrument which comes in contact with the patient during treatment or operation procedure has an associated risk of disease transmission which is due to failure of sterilization or disinfection. Nosocomial infection can be prevented by minimizing the spread of causative agents, isolation for the patient suffering from infectious disease and maintaining well sanitary conditions in hospitals and medical care unit **(Raj et al,2016).**

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2.4 Types of nosocomial infections

The most frequent types of infections include central line associated bloodstream infections, catheter-associated urinary tract infections, surgical site infections and ventilator-associated pneumonia.

2.4.1 Central line-associated bloodstream infections (CLABSI)

CLABSIs are deadly nosocomial infections with the death incidence rate of $12\% - 25\%$. Catheters are placed in central line to provide fluid and medicines but prolonged use cancause serious bloodstream infections resulting in compromised health and increase in care cost. Although there is a decrease of 46% in CLABSI from 2008 to 2013 in US hospitals yet an estimated 30,100 CLABSI still occur in ICU and acute facilities wards in US each year **(Nguyen et al, 2017).**

2.4.2 Catheter associated urinary tract infections (CAUTI)

CAUTI is the most usual type of nosocomial infection globally. According to acute care hospital stats in 2011, UTIs account for more than 12% of reported infections. CAUTIs are caused by endogenous native micro flora of the patients. Catheters placed inside serves asa conduit for entry of bacteria whereas the imperfect drainage from catheter retains some volume of urine in the bladder providing stability to bacterial residence. CAUTI can develop to complications such as, orchitis, epididymitis and prostatitis in males, and pyelonephritis, cystitis and meningitis in all patients **(Tedja et al,2015).**

2.4.3 Surgical site infections (SSI)

SSIs are nosocomial infections be fall in 2%–5% of patients subjected to surgery.

These are the second most common type of nosocomial infections mainly caused by Staphylococcus aureus resulting in prolonged hospitalization and risk of death. The pathogenscausing SSI arise from endogenous micro flora of the patient. The incidence may be as high as20% depending upon procedure and surveillance criteria used **(Owens & Stoessel, 2008).**

Ventilator associated pneumonia (VAP)

VAP is nosocomial pneumonia found in 9–27% of patients on mechanically assistedventilator. It usually occurs within 48 h after tracheal incubation. 86% of nosocomial pneumonia is associated with ventilation. Fever, leucopenia, and bronchial sounds are common symptoms of VAP (**Craven & Hjalmarson, 2010).**

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CHAPTER THREE

METHODOLOGY

3.1 Study design

A descriptive, cross-sectional study was carried out to assess the nurses' knowledge about nosocomial infections.

3.2 Study setting

The study was conducting in Najran Hospitals: King Khalid hospital, Najran general hospital and university hospital at Najran City, Saudi Arabia. This study was conducting during 2020.

3.3 Study Population

All nurses that were available in Najran Hospitals: King Khalid hospital, Najran generalhospital and university hospital from (Burns, Internal Medicine, Cardiology, Nephrology,

Dentistry, Endocrinology, Hematology, ICU, Surgery and Emergency) department during

the data collection period from September to December 2020 were invited to participate in the study.

3.4 Sampling

3.4.1 Sample size

The sample size was 224 nurses who were presented during the study period.into consideration.

3.4.2 Sampling Technique

A non-probability convenience sample method was used to select the sample size for nursesthat working in Najran Hospitals at Najran City.

3.5 Data collection

3.5.1 Data Tool

Tool I: Self- administration structured interview questionnaire (Appendix I):

A self-administered study questionnaire was developing to collect data.

Part I: Socio demographic Characteristics: was covered age, sex, marital status, educationalLevel, experience level, etc...

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Part II: A knowledge questions to assess the nurse's knowledge in relation to NI in deferentdepartments which include (14) questions.

3.5.2 Data Technique

1.   Approval was obtained from ethical committee of Najran University.

2.   An official written permission to conduct the study was obtained by the investigators fromresponsible authorities.

3.   After approval the questionnaire was distributed for the participants for filling it.

4.   The piloted of the questionnaire was performing before data collection. A pilot studywas doing on ten presents from all nurses working in the study setting on items in a
  questionnaire to assess the clarity, feasibility of the study and drawbacks of the questionnaire.

3.5.3 Variables of the study

٢   **Dependent variables:** level of nurse's knowledge regarding Nosocomial Infections.

٢   **Independent variables:** The Social demographical characteristics (level education, years' experience and course training).

3.6 Inclusion and exclusion criteria

1. The inclusion criteria:

٢   All nurses that are available in hospital in all departments during the data collectionPeriod was invited to participate in the study. Those volunteers to participate in this study during the study period will be included.

٢   All nurses whom who had an educational certificate with various nationalities and whom had a duration of working about 1 year and more.

2. The exclusion criteria:

٢   All nurses whom are not fulfilled the inclusion criteria.

3.7 Data Analysis

A packaged computer analysis program, statistical package for the social science

(SPSS 21.0) was used to analyses this data. Descriptive statistics or frequency, percentage andfind out the P-value those will be depending on the natural of data.

3.8 Ethical Considerations

1.   Approval of the study was obtaining prior to carrying out this study from theethical committee of the faculty of Nursing, Najran University, Saudi Arabia.

2.   Approval from the hospital's administration was taken.

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3.   The purpose and benefits of the study was explained to participants.

4.   All participating also had the right to refuse to participate or to withdraw from the study.

5.   The knowledge level and practice assessing after obtaining permission

CHAPTER FOUR

RESULTS

4.1   Demographic Characteristics of nurses

4.1.1   Demographic characteristics according to hospital name

Figure 4.1 shows the demographic characteristics of nurses according to hospital name. The results of the study showed that, the most (44.6%) of nurses were from King Khalid hospital, also about (38.9%) of them were from Najran general hospital King Khalidhospital, and in finally only about (16.5%) of them were from Najran university hospital.
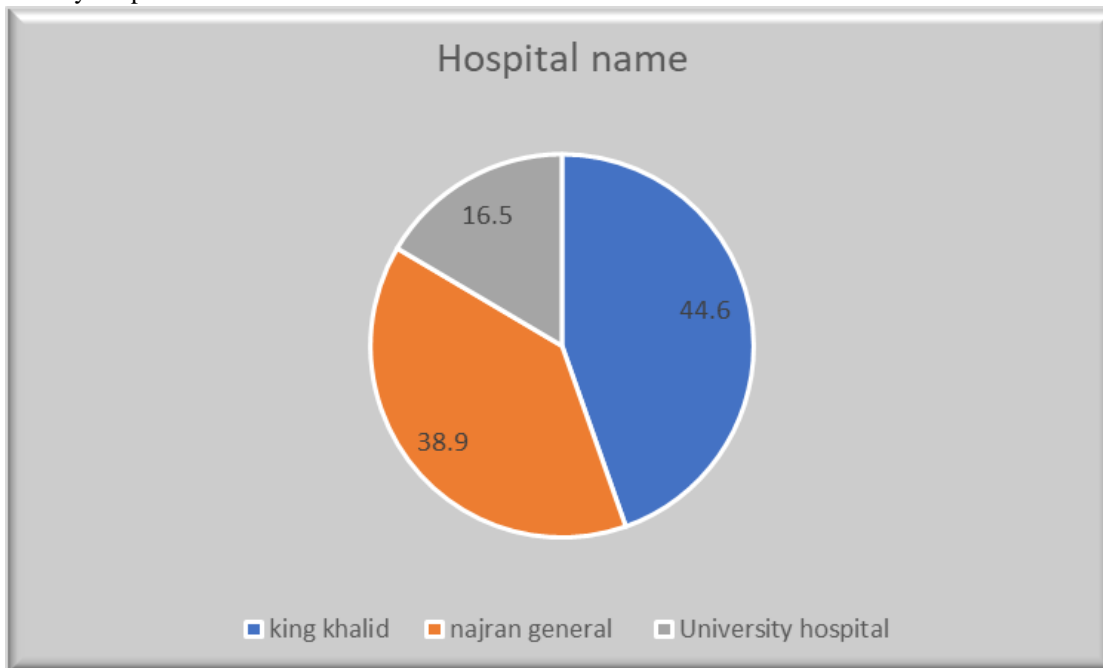
Figure 4.1: Demographic characteristics according to hospital name (N=224)

4.1.2 Demographic characteristics according to department name

Figure 4.2 shows the demographic characteristics of nurses according to department name. The most (31.7%) of nurses were worked in other department (Burns, Internal Medicine, Cardiology, Nephrology, Dentistry, Endocrinology and Hematology), followed by (26.3%) of them were working in emergency surgical department, also about (22.4%) of themwere work in intensive care unit. While in finally (19.6%) of them were work in surgical department.
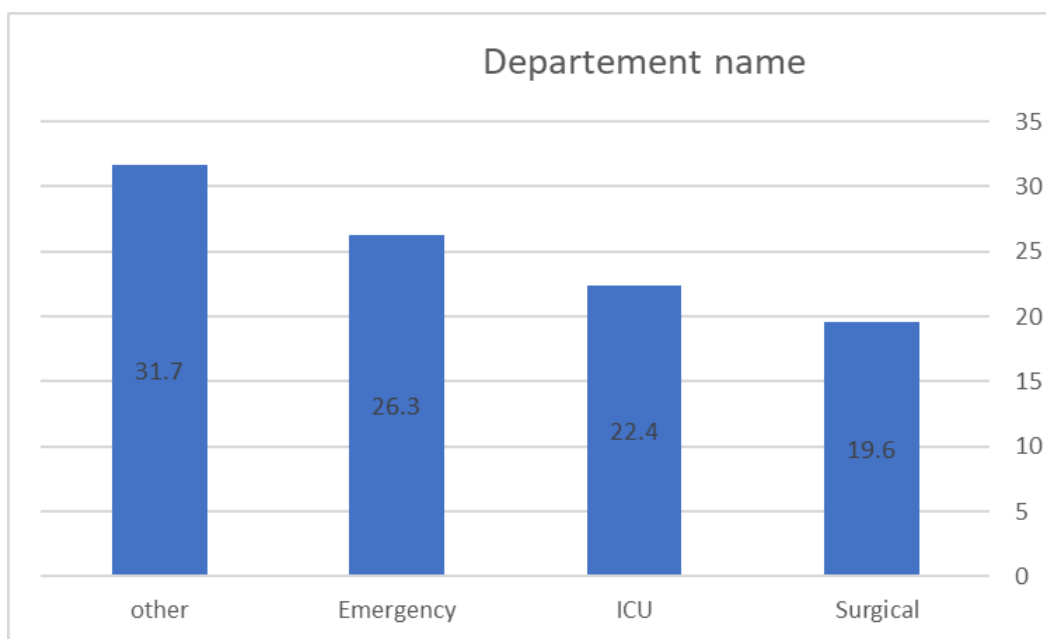
Figure 4.2: Demographic characteristics according to department name (N=224)

4.1.3   Demographic characteristics according to gender

Figure 4.3 shows the demographic characteristics of nurses according to gender types.

The majority (52.2%) of nurses were male nurses. While only about (47.8 %) of them werefemale nurses.
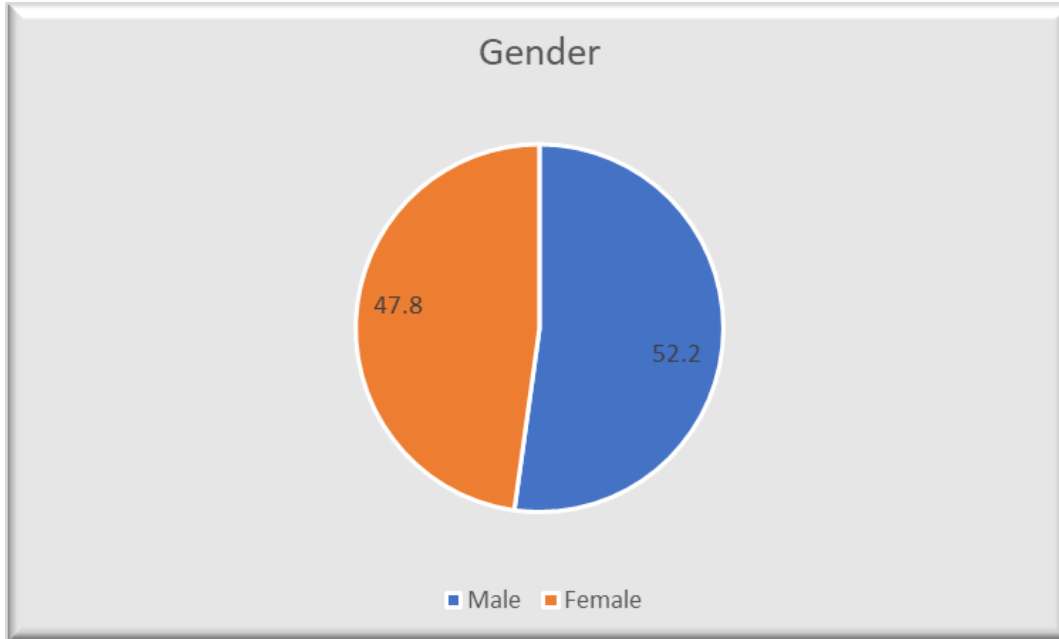
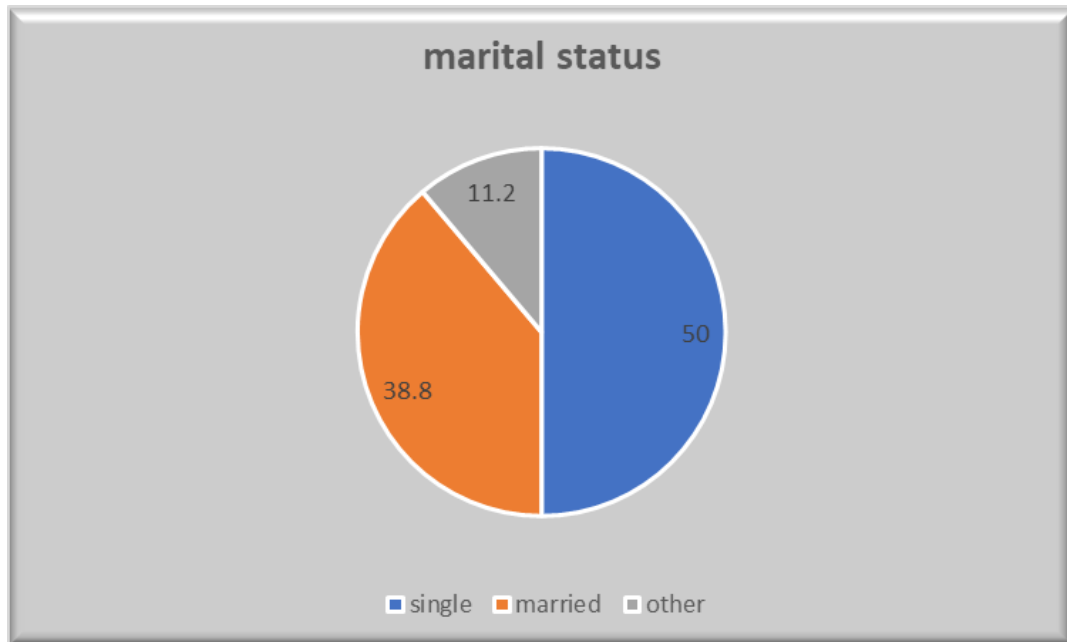**Figure 4.3: Demographic characteristics according to gender (N= 224)**

4.1.4 Demographic characteristics according to age

Figure 4.4 shows the demographic characteristics of nurses according to age in years. The most (43.3%) of nurses were in age group from 20 to 29 years, followed by (28.6%) of them were in age group from 30 to 39 years, also about (19.6%) of them were had old age from 40 to 49 years. While in only (8.5%) of them had more than 50 years old.
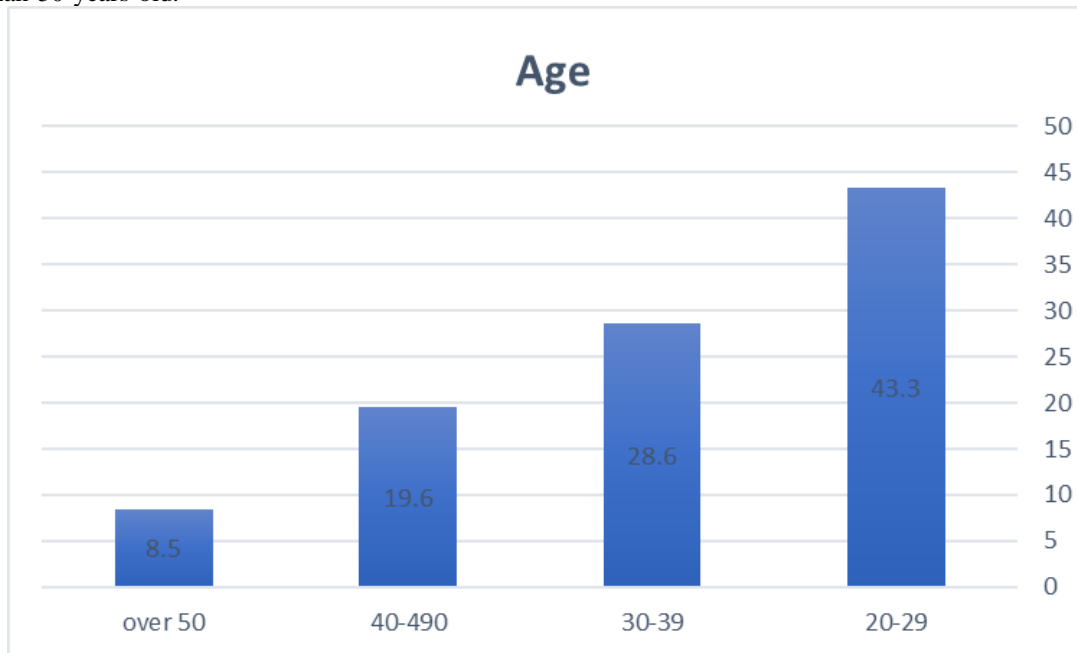
Figure 4.4: Demographic characteristics according to age (N= 224)

4.1.5   Demographic charateristics according to marital status

Figure 4.5 shows the demographic characteristics of nurses according to maritalstatus. The half (50.0%) of nurses were single , followed by (38.8%) of them were married.
While only (11.2%) of them were widow and divorced.

Figure 4.5: Demographic characteristics according to marital status(N=224)

4.1.6　　　Demographic characteristics according to nationality

Figure 4.6 shows the demographic characteristics of nurses according to nationality.The majority (57.6%) of nurses were Saudi national. While other (42.4%) of them were hadnot Saudi nationality.
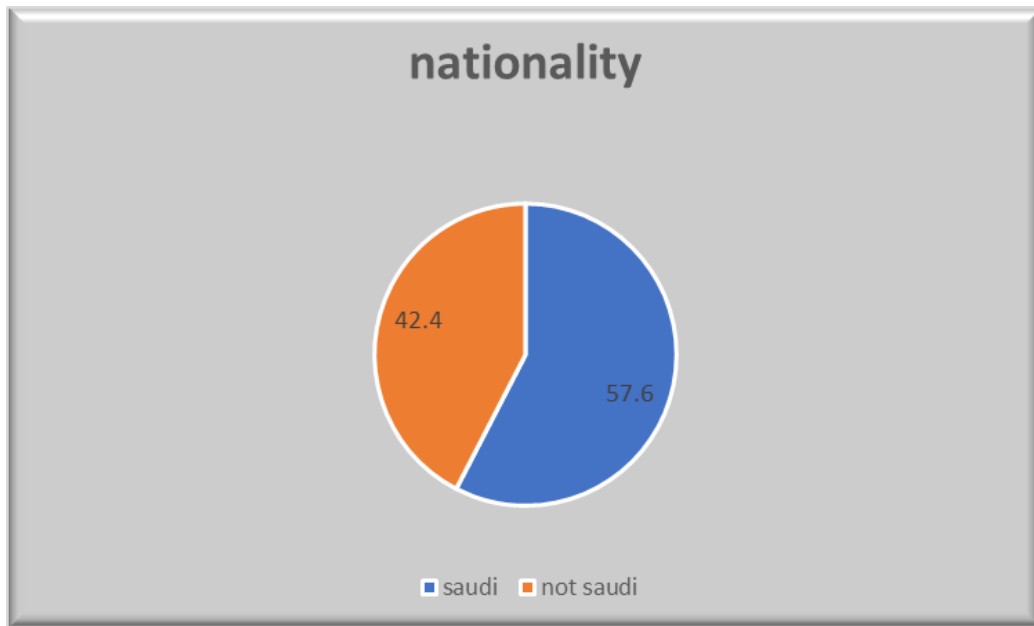
Figure 4.6: Demographic characteristics according to nationality (N= 224)

4.1.7 Demographic characteristics according to education level

Figure 4.7 shows the demographic characteristics of nurses according to education level. The most (55.3%) of nurses were had bachelor degree, than about (29.5%) of them werehad diploma degree. also about (10.7%) of them were had master degree, While finally only (4.5%) of them were had doctorate.
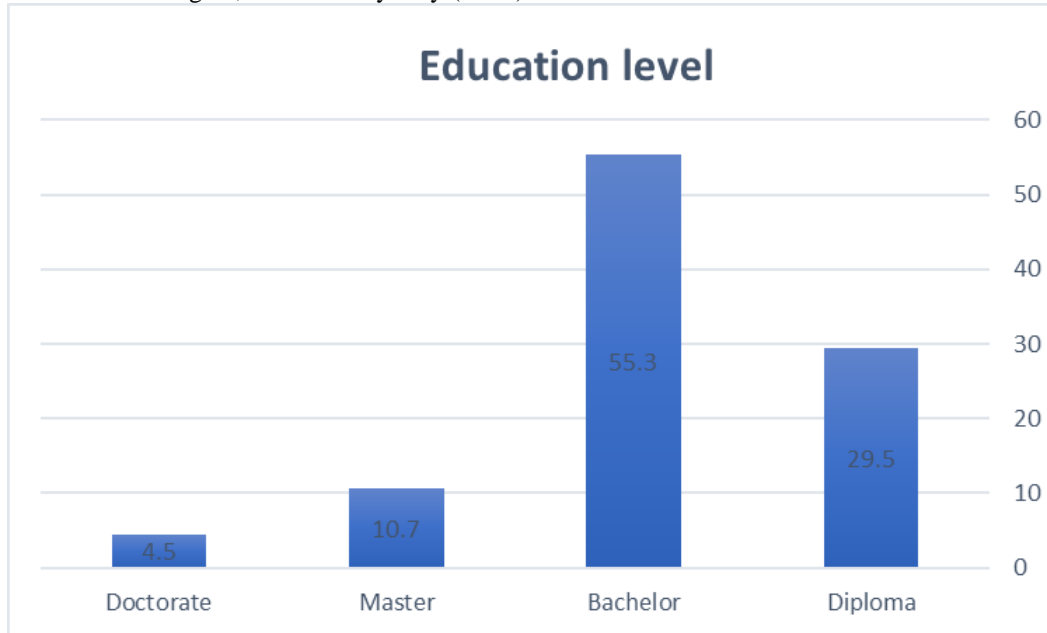

Figure 4.7: Demographic characteristics according to education level(N=224)

4.1.8   Demographic characteristics according to years' experience

Figure 4.8 shows the demographic characteristics of nurses according to years' experience. The first the most (31.7 %) of nurses were had years' experience from 4 to 6 years. While finally only (15.6%) of them were had years' experience more than 10 years.
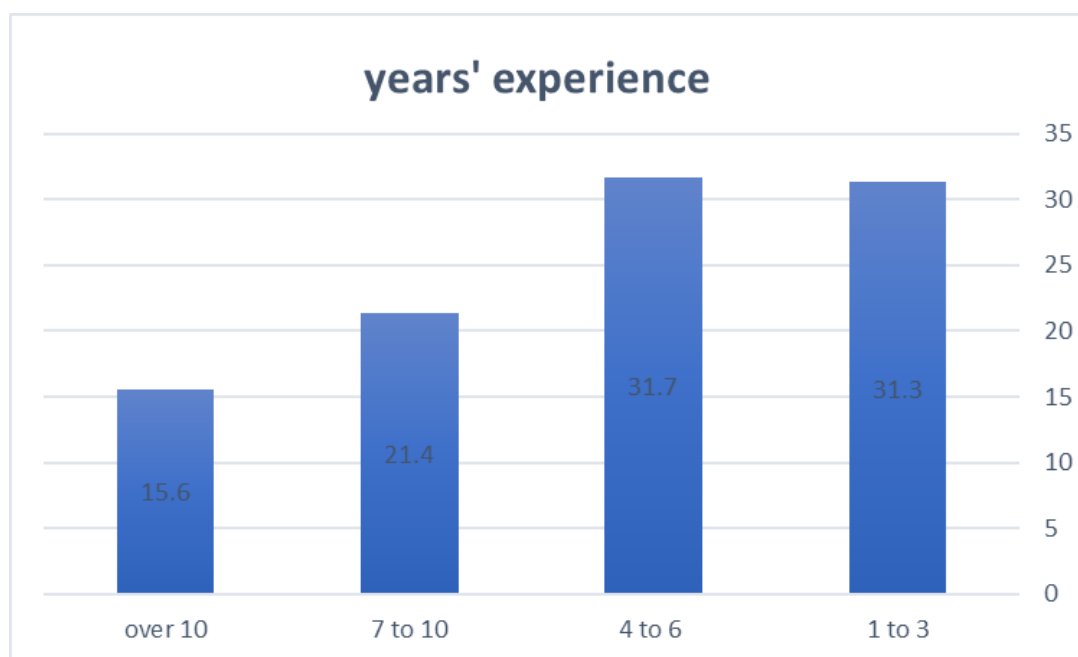

Figure 4.8: Demographic characteristics according to years' experience (N= 224)

4.2   Characteristics of Nurses According to courses and training

4.2.1   Distribution of results according to course training

Figure 4.9 shows the demographic characteristics of nurses according to trainingcourse. The results showed more than half (69.6%) of nurses were had courses training in blood transfusion. While other (30.4%) of them were had no courses in blood transfusion.
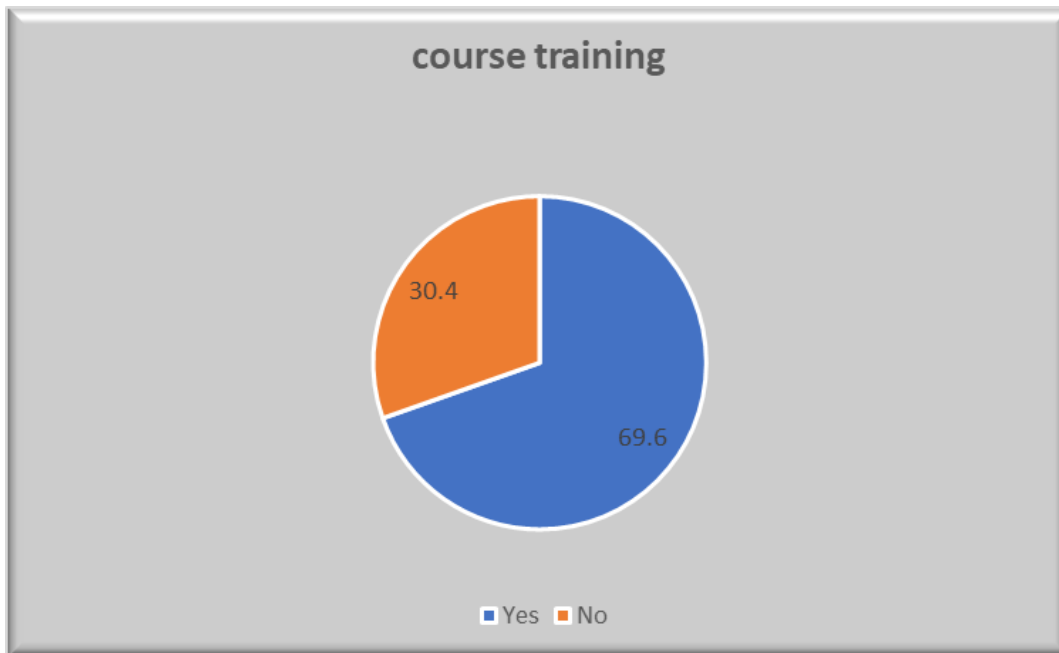

Figure 4.9: Demographic characteristics according to courses training (N= 224)

4.2.2 Distribution of results according to the knowledge of the hospitalinfection control program

Figure 4.10 shows the demographics of the infection control program nurses' knowledge. The results showed that the majority (84.8%) of the nurses had knowledge of theinfection control program. Only (15.2%) of them had no knowledge of the infection monitoring program
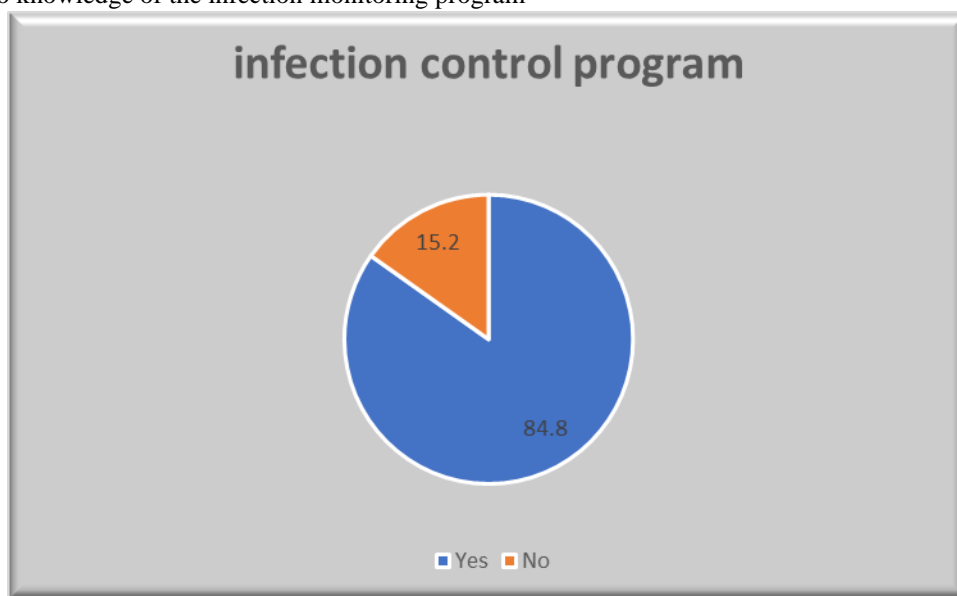

Figure 4.10 shows the demographics of the infection control program nurses' knowledge (N= 224) Knowledge of nurses about nosocomial infection.

Table 4.1: Knowledge of nurses about nosocomial infection (N= 224)

Items	Agree	Neutral	Disagree	Total
Nosocomial infections is an infection that thepatient mes with from home?	n=99 .2%	n=49 .9%	n=76 .9%	N=224 0%
I know the World Health Organization's '5 oments of hand hygiene?	N=143 .8%	N=63 .2%	N=18 %	N=224 0%
Some instruments can be stored in an antiseptic solution for up to 36 hours?	N=98 43.7%	N=92 41.1%	N=34 15.2%	N=224 0%
if there is limited beds available, patients with communicable disease may be admitted in thesame ard with other patients?	N=85 .9%	N=59 .4%	N=80 .7%	N=224 0%
Micro-organisms are destroyed by using cleanwater?	N=95 .4%	N=99 .2%	N=30 .4%	N=224 0%

Bathing every day is a universal precaution?	N=131 .8%	N=73 .6%	N=20 9%	N=224 0%
Standard precautions apply to all patients gardless of their diagnosis?	N=101 .1%	N=74 %	N=49 .9%	N=224 0%
I am familiar with hospital acquired infection idelines?	N=137 .2%	N=65 %	N=22 8%	N=224 0%
All staff and patient should be considered tentially infectious?	N=93 .5%	N=81 .2%	N=50 .3%	N=224 0%
You can handle body fluids with bare hands ifgloves not available?	N=78 .8%	N=52 .2%	N=94 %	N=224 0%
I know how to prevent and control hospital quired infections?	N=116 .7%	N=81 .2%	N=27 .1%	N=224 0%
I always wash hands before and after direct contactwith e patient?	N=127 .7%	N=64 .6%	N=33 .7%	N=224 0%

4.3   Knowledge level of nurses toward nosocomial infections.

Concerning to the total knowledge of nurses figure 4.11 show that, the most of nurseshad good knowledge (44.1%), followed by (28.6%) of them had moderate knowledge, Whilefinally only(27.3%) of them had poor knowledge regarding nosocomial infection.
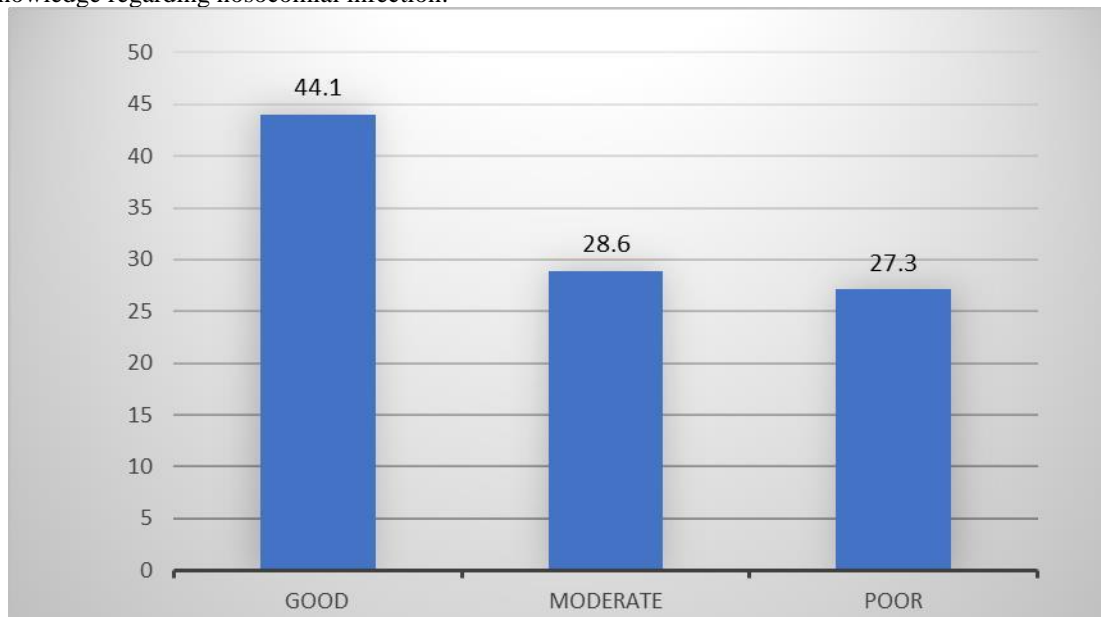

Figure 4.11: Distribution of nurse's knowledge level of nosocomial infections.

4.5 Association between the level of knowledge and demographic characteristics to nurses toward nosocomial infections.

Demographic characteristics	Knowledge level of nosocomial infections						P-value
	Good Knowledge		Moderate Knowledge		Poor Knowledge		
	F	%	F	%	F	%	
Hospital Name:							
٢ King Khalid	65	29.1	27	12.2	8	3.5	
٢ Najran General	46	20.5	30	13.3	11	4.9	0.449
٢ University Hospital	9	4.1	11	4.9	17	7.5	
Department Name :							
٢ Emergency	25	11.1	15	6.6	19	8.4	
٢ Intensive care unit	33	14.7	11	4.9	6	2.6	0.416
٢ Surgical	17	7.5	13	5.8	14	6.5	
٢ other	42	18.7	12	5.3	17	7.5	
Sex :							
٢ Male	61	27.2	33	14.7	23	10.2	0.109
٢ Female	66	29.4	16	7.1	25	11.1	
Marital status:							
٢ single	44	19.6	17	7.5	33	14.7	
٢ Married	67	29.9	28	12.5	11	4.9	0.648
٢ other	15	6.6	5	2.2	4	1.7	
Age:							
٢ 20-30	34	15.1	40	17.8	23	10.2	
٢ 31-40	36	16.0	18	8.0	10	4.4	0.490
٢ 41-50	23	10.2	16	7.1	5	2.2	
٢ > 50	17	7.5	2	0.8	0	0.0	
Educational level:							
٢ Diploma	20	8.9	19	8.4	27	12.0	
٢ Bachelor	84	37.5	22	9.8	18	8.0	
٢ Master	17	7.5	5	2.2	2	0.8	0.260
٢ Doctorate	8	3.5	2	0.8	0	0.0	
Years of Experience :							
٢ 1-3	25	11.1	16	7.1	29	12.9	
٢ 4-7	46	20.5	14	6.5	11	4.9	0.143
٢ 8–10	32	14.2	9	4.1	7	3.1	
٢ > 10 years	31	13.8	4	1.7	0	0.0	

Nationality:							
Ɣ Saudi	78	34.8	28	12.5	23	10.2	0.730
Ɣ Not Saudi	65	29.0	17	7.5	13	5.8	

Table 4.2 shows that, there is no correlation between demographical characteristic andnurse's knowledge towards nosocomial infections because (p – value >0.05).

Table 4.2: Association between the level of knowledge and demographic characteristicsto nurses toward nosocomial infections

CHAPTER FIVE

DISCUSSION

NIs increase patients' morbidity, mortality, the length of hospital stays, and treatment cost Therefore, infection prevention and control are important to prevent the occurrence of NIs in health and hospital settings. During patients' nursing care, itis thus of utmost importance for nurses to have the good knowledge of infection prevention and control measures. This study aimed to determine the level of nurses' knowledge and practices regarding NIs.

Demographic Characteristics of nurses regarding age distribution revealed that about almost half (43.3%) of nurses were aged 20-29 years and (52.2%) of them were male and (50.0%) half of nurses were married, indicating that the most (31.7%)of the nurses were have experience as nurses between 4-6 years. The bachelor degreewas the majority available qualification (55.3%) nurses; this result agreement with, **Alrubaiee et al. (2018)** which its results of the study showed that the majority of the nurses (61.2%) were males, and they were the age group of 20-29 years and above (71.8%).

The result of this study indicated that (27.3) need training courses This resultagreement with study "Measuring knowledge nosocomial infection : a survey of Yemen nurses **Alrubaiee et al. (2018)** who reported that, only (31%) of them reporting a perceived need for increase knowledge about nosocomial infection.

The result of this study revealed that the majority of nurses (44.1%) had goodlevel of knowledge .These results are incongruent with **Anita (2018),** who mentionedin her study that all nurses have no knowledge regarding of NIs before**.**

Concerning nurses'knowledge about nosocomial infection.

Our study showed that the majority (63.8%) of the participants had a goodlevel of knowledge of Standard precautions. These results are incongruent with **Fashafsheh et al (2015)** in Palestinian the knowledge level about Standard precautions in these study was (37.7%).

Guidelines for sterilization and disinfection of used medical devices and instruments have been developed. Furthermore, guidelines have been developed to prevent infection and non-compliance with directions leading to hospital transportation. The CDC provides a methodology for monitoring hospital infections as well as investigating major disease outbreaks. Guidelines have been established toprevent and control infection. Training of healthcare professionals, especially nurses,is critical for infection control and prevention, and knowledge of hospital-acquired infection guidelines (61.2) these findings were inconsistent with **ETIZ et al, (2020)** the level of knowledge about hospital-acquired infection guidelines (57.7) is insufficient.

In the present study, show there was no statistically significant difference between demographical date of nurses and knowledge score. This result agree withstudy , **Biberaj et al. (2014)** who reported that, there was no statistically significant association between the level of knowledge regarding NI among staff nurses with their socio demographic variables.

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Chapter SI

Conclusion & Recommendation

6.1   Conclusion

The study conclude that

Based on findings of the current study, the level of the nurses' knowledge regardingthe nosocomial infection is good.

The demographic background of the present study showed that, the nurses ware male more than female (52.2%), belonged to age group (20 to 29years) (43.3%). The bachelor degreewas the most available qualification (55.3%), (31.7%) had 4-6 years of experience as nurses.

we can say that the total knowledge regarding nosocomial infection is good about (44.1%)

, while the (28.6%) had moderate level of the knowledge about NIs, finally (27.3%) had is inadequateknowledge, about NIs.

6.2 Recommendations

Based on results of the present study the following cane is recommended:

1.   An education program based on evidence related to nosocomial infection is of utmostimportance for nurses due to the shortage of knowledge.

2.   Ministry of Health and Social Services in conjunction with hospitals shouldIntensify infection control measures in clinical settings.

3.   Infection control measures should be introduced repeatedly by arranging of continuingeducation programs, seminars, symposiums or workshops.

4.   Replication of the study on a larger probability sample acquired from different geographical area in Saudi Arabia and private hospitals to figure out the main aspectsof these problems.

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"تقييم معرفة الممرضين عن عدوى المستشفيات في مستشفيات نجران، بمدينة نجران– المملكة العربية السعودية، 2020"

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الملخص:

الخلفية: عدوى المستشفيات (NIs) هي حالات عدوى يتم اكتشافها أثناء المستشفى ومن المحتمل أن تكون ناجمة عن كائنات ذات مناعة ضد المضادات الحيوية. قد تكون المكورات العنقودية الذهبية المقاومة للميثيسيلين (MRSA) نوعًا من البكتيريا العنقودية المحصنة ضد بعض المضادات الحيوية ويجب الحصول عليها أثناء العلاج في المستشفى.

الهدف: هدفت هذه الدراسة إلى تقييم معرفة الممرضات فيما يتعلق بالعدوى المستشفيات (NIs) في مستشفيات نجران في مدينة نجران، المملكة العربية السعودية.

المنهجية: كانت هذه الدراسة عبارة عن دراسة وصفية مقطعية (224) ممرضة من أقسام مختلفة في مستشفيات نجران شاركوا في الدراسة. تم استخدام أسلوب أخذ العينات المريح والاستبيان الذاتي في الدراسة.

النتائج: أظهرت الدراسة أن المعرفة فيما يتعلق بالتهابات المستشفيات كانت جيدة (44.1%)، في حين أن (28.6%) كانت معرفتهم متوسطة و(27.3%) كانت معرفتهم ضعيفة. غالبية المشاركين في الدراسة كانوا من الذكور (52.2%) ينتمون إلى الفئة العمرية (20 إلى 29 سنة) (43.3%). ولذلك فإن (50.0%) من الممرضات كن عازبات. كانت درجة البكالوريوس هي المؤهل الأكثر توفرًا (55.3%)، و(31.7%) لديهم خبرة تتراوح بين 4–6 سنوات كممرضين، وتم تدريب معظم المشاركين.(69.6%)

الاستنتاجات: خلصت الدراسة إلى وجود معرفة كافية بين الممرضات فيما يتعلق بالتهابات المستشفيات.

الكلمات المفتاحية: التقييم، الممرضات، المعرفة، التهابات المستشفيات.(NIs)