



بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

University of Shendi

Faculty of Graduate Studies & Scientific Research



*Research about*

**The Effect of A designed Proposed Program For  
Nurses About Patient Safety.**

**Kosti and Rabak Teaching Hospitals 2013-2017**

**A thesis Submitted in the Fulfillment of the Requirements for the Degree of  
Doctor of Philosophy in Medical Surgical Nursing**

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2013

# الآية



قال تعالى :

قَالُوا سُبْحَانَكَ لَا عِلْمَ لَنَا إِلَّا مَا عَلَّمْتَنَا إِنَّكَ أَنْتَ الْعَلِيمُ الْحَكِيمُ }

صدق الله العظيم

البقرة الاية (32)

# **Dedications**

*To my parents ...*

*To my partner ... ..*

*To my brothers and sisters ...*

*To my son ...*

*To my colleagues and friends ...*

# **Acknowledgement**

*I would specially like to thank **Dr.Hayat Fadllalah Mukhtar** for critical supervision and valuable direction throughout this thesis.*

*I am grateful to **Dr.AltayebAbdulazeem.Dr.Mohamed Gabraddar** for their valuable criticism and also my thank extend to all shandi university nursing staff.*

*I am wishes to thanks: my head manager of nursing department / al amal complex for mental health – Riyadh KSA: Us Abdullah al yami and Abdullah al maliki , sami al enazi , and naife al sheibani and Us Omer abu sail ,for supporting me and assisting in the analysis of data .*

*I am grateful to the nursing staff of (**Kosti and Rabak teaching Hospitals** )for helping me in data collection.*

*I am grateful to the study participants in the study setting to their cooperation and active participations during the training program and the steps of data collection*

# Abstract

**Background:**

The profession of Nursing has been at the forefront of patient safety taking special attention to the training and education of its workforce. Internationally, the International Council of Nurses (ICN) has been tackling this issue with force since it established that patient safety is fundamental to quality health and nursing care

**Aim:** To study the impact of a designed proposed program for nurses about patient safety and evaluate the impact of it on nurses knowledge and performance.

**Methodology:**

This was quasi experimental study ,(108) nurses were included as all the entire population meeting the inclusion criteria taken as a sample , using census to achieve a desirable level of precision , The data was collected in four phases using a self-administered questionnaire and observational checklist , phase one include an orientation about the training program. Phase two (pretest data), in which the questionnaire was distributed for nurses and each one was allowed sufficient time to fill it. Then each nurse was observed by checklists for their skills. After collection of pretest data the nurses were received the training program, the training was continued for 8 weeks.Phase three: A posttest was obtained from the participants at the end of the program, the same self-administrative questionnaire and the observational checklist formats were used. Follow up phase include the same process in phase three after one , two and three months to make sure of the consistency. The data was analyzed by (SPSS) program with ( P. value , mean , standard deviation , T. test and chi square test).

**Results:** The present study revealed that the nurse's knowledge and practice were improved affected by the proposed training program. The mean of nurse's knowledge regarding maintain patient safety was improved ,in pre

intervention ( 3.77 +/- Std 1.24 ) to be ( 4.44 +/- Std 0.60 ) in posttest I which get better to ( 4.93 +/- Std 0.283 ) in posttest II , and it was ( 4.13 +/- Std 0.613 ) in posttest III, there was highly statistically significant association between the nurses knowledge and application of training program (p=0.000).

Nurse's skills improved after intervention of the program from not done and poor to be in proper skills and technique concerning safe patient monitoring ,infection control ,safe medication administration ,safety communication and safe environment.

**Recommendations:**

Great emphasis should be directed towards the educational aspects on patient safety by providing educational posters , guidelines , pamphlets , manual and modern educational facilities, collaboration should be encourage between institutions and federal ministry of health to formalize a protocol of patient safety.

# الخلاصة

## المقدمة :

مهنة التمريض وضعت سلامة المرضى في طبيعة اهتماماتها مع ايلاء اهتمام خاص بالتدريب والتعليم القوة العاملة لديها عن سلامة المرضى . عالميا كان المجلس الدولي للتمريض أثبت أن سلامة المرضى أمر أساسي لجودة الرعاية الصحية والتمريض

الهدف : هدفت هذه الدراسة إلى معرفة تأثير تصميم برنامج للمرضى عن سلامة المرضى وتقييم تأثيره على معرفتهم وأداءهم

## المنهجية :

هذه الدراسة شبة التجريبية تضمنت مائه وثمانية من المرضى حيث تم استخدام استبيان وقائمة تحقق لجمع البيانات في أربعة مراحل : المرحلة الأولى : تم فيها شرح عن البرنامج ، المرحلة الثانية : تم جمع البيانات الأولية باستخدام الاستبيان ثم تم ملاحظة كل ممرض بواسطة قائمة تحقق أثناء أدائه، المرحلة الثالثة : تم تدريب المرضى عن سلامة المرضى لمدة ثمانية أسابيع وفي المرحلة الرابعة تم جمع البيانات للمرة ، الثانية من المشاركين باستخدام الأدوات المذكورة مسبقا . ثم شملت مرحلة المتابعة بعد شهر، شهرين وثلاث أشهر من تنفيذ البرنامج . تحليل البيانات باستخدام برنامج التحليل الحزمي للبيانات الحيوية بالحاسوب

## النتائج :

أثبتت الدراسة بان مستوى المعرفة و الممارسة لدي المرضى قد تحسن بفضل البرنامج التدريبي , حيث أن متوسط المعرفة فيما يتعلق بالحفاظ علي سلامة المرضى قد تحسن تدريجيا في المرحلة الأولى كانت بمتوسط وانحراف معياري قبل تدريب المرضى (1.2 Std +/- 3.77 ) وكان في الاختبار البعدي الأول ( 4.44 +/- Std 0.60 ) , كان في الاختبار البعدي الثاني (4.93 +/- Std 0.283)، و كان في الاختبار البعدي الثالث (4.13 +/- Std 0.613). هنالك علاقة ذات دلالة إحصائية عالية بين مستوى معرفه المرضى وتطبيق البرنامج التدريبي ( p=0.000)

أما فيما يختص بالجوانب المهارية لعمل المرضى فقد تم اختبارها علي خمسة محاور أساسية حيث تحسن مهاراتهم بعد البرنامج التدريبي بصورة واضحة فيما يخص مراقبة المريض ، مكافحة العدوى ، إعطاء الدواء الأمن ، الاتصال والتواصل العلاجي و توفير البيئة الأمانة للمريض

## التوصيات:

ينبغي التركيز بشكل كبير على الجوانب التعليمية على سلامة المرضى من خلال توفير الملصقات التعليمية والمبادئ التوجيهية والكتيبات . أيضا يجب عن يكون هنالك تعاون بين المؤسسات الصحية ووزارة الصحة الاتحادية على بروتوكول سلامة المرضى .

## List of abbreviations

Abbreviations	Meaning
ADE	adverse drug event
AE	Adverse event
CDC	Centers for Disease Control
CRM	Crisis Resource Management
CUSP	Comprehensive Unit-based Safety Program
ECG	Electro cardio gram
EPA	Environmental Protection Agency
ESI	Emergency Severity Index
HCAI	Health care -associated infection
HIV	Human immunodeficiency viruses
IBP	invasive blood pressure
ICN	International Council of Nurses
ICUs	Intensive care units
ID	Identification
IHI	Institute for Healthcare Improvement
IOM	Institute of medicine
ISMP	Institute for Safe Medication Practices
IV	Intra venous
L&D	labor and delivery
NIBP	Noninvasive blood pressure
OSHA	Occupational Safety and Health Administration
PEP	post exposure prophylaxis
PPE	Personal protective equipment
RRS	Rapid Response Systems
SARS	severe acute respiratory syndrome
SIPC	Safe Injection Practices Coalition
SSD	sterile services department
WHO	World health organization



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# Chapter One

- ❖ **Background**
- ❖ **Justification**
- ❖ **Objectives**
- ❖ **Research hypothesis**

# Background

Patient safety is the foundation of good patient care. The unnerving fact that healthcare can harm us as well as heal us is the reason for suggesting that patient safety is the heart of healthcare quality. Effectiveness, access to care, timeliness and the other dimensions of quality are all important. But when a member of family goes into hospital or receives other healthcare then above all family member want them to be safe. There is something horrifying about being harmed, or indeed causing harm, in an environment of care and trust. Both for patients and staff, safety is the emotional heart of healthcare. It's also believe in terms of understanding, improvement and day-to-day running of health care that safety is a touch's one and guide to the care that is given to the patients; the clinician nurses or the organization that keeps safety to the fore in the midst of the many other often competing priorities achieves something remarkable and provides the care that we would all want to receive. <sup>(1)</sup>

Now a days, patient safety is one of the Nations' most health care challenges, there is increasing number of patients who die in hospitals each year as the result of lapses in patient safety practice. Improving patient safety, remains a health care organizational challenge, compared to other industries with highly reliable processes, health care baseline process reliability is low and patient safety solutions continue to be a high demand. <sup>(2)</sup>

Patient Safety has been an issue of paramount importance for the Nursing profession since the early work by Florence Nightingale, which included setting care and hygiene standards in hospitals to combat deadly healthcare associated infections and avoidable complications thus championing the safety of patients. Particularly, in 1854 during the Crimean War Florence Nightingale collected data on mortality rates of soldiers which she divided into three categories: deaths caused by preventable contagious diseases, deaths due to infections of patient's wounds, and deaths from all other. It soon became obvious to Nightingale that soldiers were dying as patients in field hospitals from avoidable complications and infections at a faster rate than those dying on the battlefield. Consequently, she implemented actions to improve standards of care resulting in the death rate falling drastically and planting the seeds of the patient safety movement for the decades to come. <sup>(3)</sup>

The profession of Nursing has been at the forefront of patient safety taking special attention to the training and education of its workforce. Internationally, the International Council of Nurses (ICN) has been tackling this issue with force since it established that Patient safety is fundamental to quality health and nursing care. ICN believes that the enhancement of patient safety involves a wide range of actions in the recruitment, training and retention of health care professionals,



performance improvement, environmental safety and risk management, including infection control, safe use of medicines, equipment safety, safe clinical practice, safe environment of care, and accumulating an integrated body of scientific knowledge focused on patient safety and the infrastructure to support its development. <sup>(11)</sup>

The study on the state of the art on Patient Safety in Europe including literature on high reliability organizations, medication errors, and hospital acquired infections . This work was subsequently used to inform discussions in the European Commission and Parliament regarding the proposed Council Recommendation on Patient Safety and Healthcare Associated Infections. Finally, the Position Statements describe general requirements for Patient Safety with particular reference to the need for education on Patient Safety .<sup>(13)</sup>

the integration of Patient Safety Core Curriculum guidelines for the development of Patient Safety modules in nursing education systems is welcomed . <sup>(4)</sup>.

Communication is central to human interaction. Without it, people cannot relate to those around them, make their needs and concerns known or make sense of what is happening to them. One of the most basic goals for nursing staff is that their patients and clients and those who care for them

experience effective communication<sup>(14)</sup> Nurses and nursing staff are at the heart of the communication process: they assess, record and report on treatment and care, handle information sensitively and confidentially, deal with complaints effectively, and are conscientious in reporting the things they are concerned about. Information that is accessible, acceptable and accurate, and that meets patients' and clients' needs, shared actively and consistently. nursing Staff communicate effectively with each. <sup>(15)</sup>

other to ensure continuity, safety and quality of health care for all, Documentation, communication during handover, information sharing, managing complaints, and reporting incidents and concerns are the more formal aspects of communication (12).

### **Justification:-**

In the past, they have often viewed nurses responsibility in patient safety in narrow aspects of patient care, for example, avoiding medication errors and preventing patient falls. While these dimensions of safety remain important within the nursing purview, the breadth and depth of patient safety improvement are far greater. So ,nurses are at the front lines of health care delivery. In fact, they constitute the largest group of health care professionals providing direct care to patients. The most critical contribution of nursing to patient safety, in any setting, is the ability to coordinate and integrate the multiple aspects of quality within the care directly provided by nursing, and across the care delivered by others in the setting.<sup>(16)</sup>

Nurses and other health care professionals are under increased security to provide safe, effective care. Likewise, nursing education programs are faced with increased pressure to be more adapted about practice of patient safety .Moreover ,nurses are in a unique position to improve patient safety because of their inherent proximity to patients. This position gives nurses the needed insight to identify problems in healthcare systems and to be part of patient safety solutions. However, to do this, nurses must be supported and encouraged without fear of retribution, as well as have an understanding of how organizational culture change can be accomplished(6)

The fundamental role of the nurse is to provide quality patient care and support for those suffering from health problems, yet these functions have often been disregarded by health care organizations. Nurses have not been treated as professional caregivers even though their presence at the bedside can literally mean life or death for their patients ( 5)

There is no enough research dealing with the patient safety In Sudan just regarding with infection control , with the importability of the maintaining of patient safety worldwide.

this study aim to implement educational program for nurses about patient safety involves a wide range of actions in the recruitment, training and retention of health care professionals, performance improvement, environmental safety and risk management, including infection control, safe use of medicines, equipment safety, safe clinical practice and safe environment to avoided harm of our patients .

## **Objectives**

### **General objective:-**

To study the effect of a designed proposed program for nurses about patient safety and evaluate the effect of it.

### **Specific objectives:-**

- 1) To identify basic knowledge of nurses about safety communication , patient monitoring ,safety medication administration ,safety environment and infection control .
- 2) To asses patient safety during nursing practice .
- 3) To design and Implement training program for nurses about patient safety.
- 4) To assess the effectiveness of the designed program for nurses knowledge and practice regarding patient safety.

### **Research hypothesis :-**

To fulfill the aim of the study the following research hypothesis were formulated:-

1. there is mean differences on nurses knowledge pre and post program ( $H_0$ )
2. . there is no differences on nurses performance pre and post program ( $H_1$ ).
3. there is an improvement in nurses knowledge and performance post interventional program ( $H_2$ ).

# Chapter Two

❖ **Literature review**

## **introduction about the patient safety :**

Patients can be harmed from health care, resulting in permanent injury, increased lengths of stay in hospital and even death. Over the past 15 years, we have learned that adverse events occur not because people intentionally hurt patients, but rather due to the complexity of health-care systems, where treatment and care depend on many factors, in addition to the competence of health-care providers. When so many and varied types of health-care providers, such as dentists, dieticians, doctors, midwives, nurses, surgeons, pharmacists, social workers, and others are involved, it can be difficult to ensure safe care, unless the system is designed to facilitate the delivery of quality and safe services.

Patient Safety: the reduction of risk of unnecessary harm associated with health care to an acceptable minimum. <sup>(23)</sup>

### **Patient Safety Culture**

Patient safety culture has been defined as “the values shared among organization members about what is important, their beliefs about how things operate in the organization, and the interaction of these with work unit and organizational structures and systems, which together produce behavioral norms in the organization that promote safety.” <sup>(23)</sup>

three main components of a safety culture: learning culture, just culture, and reporting culture. A just culture is a culture of trust, a culture in which what is acceptable and not acceptable is defined, and fairness and accountability are critical components. A reporting culture encourages and facilitates the reporting of errors and safety issues, and commits to fixing what is broken. A learning culture is one that learns from errors, near misses, and other identified safety issues. The three components are intertwined – without a just culture, you have minimal reporting; without reporting, you have no opportunities to learn and improve. Sammer, Lykens, Singh, Mains, and Lackan (2010) conducted a re - view of the literature on the culture of safety and identified seven subcultures of patient safety culture: leadership, teamwork, evidence-based care, communication, learning, just, and patient centered , Improving patient safety begins at the highest level of the

organization with a transformational leadership style, which leads to the creation of a culture of safety, the adoption of patient safety initiatives, and ultimately, to improved patient safety outcomes. Few patient safety culture/climate studies were found in the specialty of nephrology. <sup>(23)</sup>

The Institute for Healthcare Improvement (IHI), a group noted for its promotion of and strategies for patient safety and quality patient care, has noted “in a culture of safety, people are not merely encouraged to work toward change; they take action when it is needed. Inaction in the face of safety problems is taboo, and eventually, the pressure comes from all directions — from peers as well as leaders. <sup>(23)</sup>

### **The Relationship Between Patient Safety Culture and Patient Safety :**

Patient safety culture has been shown to be related to healthcare clinician behaviors, such as reporting adverse incidents to patient outcomes such as fewer adverse events in hospitals and patient mortality in intensive care units and to positive assessments of care by patients .

The relationship between patient safety culture and patient safety indicator data from 91 hospitals in 37 states. Their findings indicated that higher levels of patient safety culture were associated with higher safety performance and that hospitals in which employees reported more problems with fear of shame and blame had a significantly higher risk of safety problems. They also found that a better patient safety culture was associated with a lower risk of patient safety issues when the patient safety culture was measured as perceptions of frontline personnel but not when measured by the perceptions of patient safety culture by senior management . <sup>(23)</sup>

***Adverse events*** : include missed and delayed diagnoses , mistake during treatment , medication mistakes , delayed reporting of results , miss communications during transfers and transitions in patient identity and others . <sup>(20)</sup>

### ***How to improve patient safety :-***

#### **1. Comprehensive Unit-based Safety Program (CUSP)**

The Comprehensive Unit-based Safety Program (CUSP) toolkit includes training tools to make care safer by improving the foundation of how your physicians,

nurses, and other clinical team members work together. It builds the capacity to address safety issues by combining clinical best practices and the science of safety. <sup>(26)</sup>

## **2.Crisis Management Simulation Course Receives Positive Reviews, Enhances Communication and Teamwork Among Labor and Delivery Practitioners During Crises**

This featured profile is available on the Agency for Healthcare Research and Quality's Health Care Innovations Exchange Web site. Crisis Resource Management (CRM) is a 7-hour course for labor and delivery (L&D) practitioners <sup>(20)</sup> It uses various strategies of crew resource management, a safety program developed by the aviation industry, to create realistic simulations designed to facilitate improvement of teamwork and communication skills in a real L&D crisis. <sup>(23)</sup>

According to post implementation surveys, the course is highly regarded by the vast majority of participants. Surveys conducted 1 or more years after the course suggest that it produces lasting benefits, including improvements in communication, team leadership, and team performance during crises. <sup>(27)</sup>

## **3.Emergency Severity Index (ESI)**

The 2012 edition of the *Emergency Severity Index Implementation Handbook* provides the necessary background and information for establishing ESI—a five-level emergency department triage algorithm that provides clinically relevant stratification of patients into five groups from least to most urgent based on patient acuity and resource needs. <sup>(28)</sup>

## **4. Patient Safety Primer: Teamwork Training**

Providing safe health care depends on highly trained individuals with disparate roles and responsibilities acting together in the best interests of the patient. <sup>(29)</sup>

## **5. Team STEPPS® Rapid Response Systems (RRS) Training Module**

This evidence-based module will provide insight into the core concepts of teamwork as they are applied to the rapid response system (RRS). The module

contains the Instructor Guide in electronic form plus training slides that include a high-quality video vignette of teamwork as it relates to RRS. <sup>(30)</sup>

## **6. Central Line Insertion Checklist**

This checklist is used to document activities that are considered standard practice in a critical care unit before, during, and after a central line procedure. It helps to ensure that all processes related to central line placement are executed for each line placement, thereby leading to a reliable process. <sup>(31)</sup>

## **7. Color-coded Wristband Standardization Implementation Toolkit**

This toolkit can help hospitals implement a standardized color-coded wristband system, using Arizona's model. In 2006, Arizona hospitals began a Statewide initiative to use color-coded wristbands to help hospital workers identify at-risk patients, including those who have do-not-resuscitate orders, allergies, or who are at risk for falls. Since many health care workers practice at more than one hospital, standardized wristband colors help them avoid confusion and possible medical error. <sup>(32)</sup>

## **8. Hand Hygiene in Healthcare Settings**

The Centers for Disease Control and Prevention's Hand Hygiene in Healthcare Settings provides health care workers and patients with a variety of resources, including guidelines for providers, patient empowerment materials, the latest technological advances in hand hygiene adherence measurement, frequently asked questions, and links to promotional and educational tools published by the World Health Organization, universities, and health departments. <sup>(33)</sup>

## **9. Healthcare Provider Toolkit**

This toolkit will assist individuals and organizations with educating healthcare providers and patients about safe injection practices. Any healthcare provider that gives injections (in the form of medication, vaccinations, or other medical procedures) should be aware of safe injection practices. Partners of the Safe Injection Practices Coalition (SIPC) helped to create the materials in this toolkit and distribute these materials throughout their individual organizations. <sup>(34)</sup>

## **10. Patient Safety Primer:**

Most errors in health care are defined as slips rather than mistakes, and checklists can help prevent them, according to a patient safety primer available on the Agency for Healthcare Research and Quality’s Patient Safety Network. The primer explains how participants in a project in Michigan successfully reduced central line–associated bloodstream infections by employing checklists along with extensive preparatory work in safety culture and teamwork. While checklists can be used effectively to reduce the risk of errors where standardizing behavior is the goal, the primer notes that they are not appropriate for every problem. Diagnostic errors, for example, require different approaches. <sup>(35)</sup>

## **11. Patient Safety Primer: Safety Culture**

The concept of safety culture originated outside health care in studies of high reliability organizations. These organizations consistently minimize adverse events despite carrying out intrinsically complex and hazardous work. High-reliability organizations maintain a commitment to safety at all levels, from frontline providers to managers and executives. This commitment establishes a “culture of safety.” <sup>(36)</sup>

## **12. Patient Safety Workshop – Learning From Error**

The workshop explores how multiple weaknesses present within the hospital system can lead to error. It aims to provide all health care workers and managers with insight into the underlying causes of such events. Workshop participants should be introduced to an understanding of why errors occur; begin to understand which actions can be taken to improve patient safety; be able to describe why there should be greater emphasis on patient safety in hospitals; and identify local policies and procedures to improve the safety of care to patients. <sup>(37)</sup>

Developed by the World Health Organization, this patient safety workshop is designed to be suitable for health-care workers (e.g., nurses, doctors, midwives, pharmacists), health care workers in training (e.g., nursing students, medical students, residents), health care managers or administrators, patient safety officers, and any other groups involved in delivering health care. <sup>(37)</sup>



### **13. Patient Safety Primer: Voluntary Patient Safety Event Reporting (Incident Reporting)**

This primer provides background information on voluntary patient safety event reporting (incident reporting), including key components of an effective event reporting system, limitations of event reporting, and how event reports can be used to improve safety. <sup>(38)</sup>

### **14. Voluntary System to Report and Analyze Nursing Errors Leads to Patient Safety Improvements**

This featured profile is available on the Agency for Healthcare Research and Quality's Health Care Innovations Exchange Web site. The Healthcare Alliance Safety Partnership is a 3-year quality improvement pilot project involving a board of nursing and three hospital systems. They are developing a voluntary, non-punitive system for reporting, investigating, and analyzing nursing errors. During the 3 years of reporting, nurses reported incidents to the partnership. Then, nurse analysts performed an extensive investigation and worked with a multidisciplinary committee to make prescriptive recommendations to the nurse and the institution. These recommendations covered organizational, individual, and technical improvements that could be made to reduce the chance of recurrence. Although the number of participating nurses was limited, the changes the hospital systems made helped to address a wide variety of safety problems that were directly under the control of these organizations and led to the adoption of many quality improvements. <sup>(39)</sup>

### **15. Nurse-Led, Unit-Based Quality Improvement Increases Amount of Time Spent With Patients, Reduces Falls and Nurse Turnover**

Seton Northwest Hospital continuously designs and tests nurse-led quality improvement projects at the patient's bedside, allowing nurses to be more efficient and spend more time with patients, reducing falls and nurse turnover, accelerating patient discharge, and yielding positive feedback from staff and patients. <sup>(40)</sup>

### **Patient's monitor**

repeated or continuous observations or measurements of the patient, his physiological functions, and the function of the life support equipment, for the purpose of guiding management decisions, including when to make therapeutic interventions, and assessment of those interventions. <sup>(21)</sup>

Patients admitted into hospital as a medical emergency are at risk of deterioration in their clinical condition due to their altered physiological state. The majority of acute illnesses develop gradually over many hours and are associated with the early presence of abnormal vital signs in the patient. These abnormalities reflect failing cardiovascular, respiratory and neurological systems which are known precursors to a critical event. If physiological abnormalities are not recognized, corrected quickly or supported sufficiently, the patient's condition may progress further to critical illness or death. However, the nurse is ideally placed to identify patients through nursing observation and assessment in the period preceding critical illness, and to intervene at an early stage preventing further decline. <sup>(22)</sup>

When a patient is admitted to hospital with a medical illness, their safety is a prime concern for healthcare professionals. However, a number of studies published over the last two decades have demonstrated that significant unintentional harm is caused to patients through nurses' failure to recognize the signs of clinical deterioration. <sup>(22)</sup>

Changes in the patient's physical condition result in hemodynamic instability as the critical bodily functions start to fail and may be detected through observation and recording of the patient's physiological vital signs of respiratory rate, heart rate, blood pressure and temperature, which gradually become more abnormal with the progression of deterioration. The effective nursing observation of patients is therefore crucial to patient safety and outcome since this is the first step in identifying signs of clinical concern. Despite significant attention given to the observation of patients and the publication of national guidance to clinical

staff, the issue of unrecognized clinical deterioration of patients in hospital continues to be a significant problem. <sup>(22)</sup>

Patient care begins with data collection and assessment of current patient status. Decision making as to therapeutic goals and diagnostic means follows. At specified intervals, the patient is re- assessed, and objectives are redefined. Multidisciplinary tasks make process more complex. <sup>(21)</sup>

Patient care systems were separately introduced in hospital care and ambulatory setting, due to different needs.

In 1980s, most common systems were supporting nursing care planning and documentation. <sup>(21)</sup>

Over the past decade, standard laboratory tests have been made available as point of care test, in which analyses are performed by bringing a blood sample in contact with a reagent pack.

Results can be displayed on the bedside monitor and stored for comparison with previous results. Link with other (central) laboratory data storage devices allows integration into patient's record etc. <sup>(21)</sup>

### **Current issues in patient monitoring**

- Data quality and data validation.
- Continuous vs. intermittent monitoring
- Data recording: frequency and quantity
- Integration of patient- monitoring devices
- Treatment protocols. <sup>(22)</sup>

### **Monitor of the Patient vital signs :-**

Vital sign assessment is essential in the determination of a patient's health status. Careful measurement techniques and knowledge of the normal range in vital signs for a particular patient will ensure that patients are suitably monitored to enable clinicians to carefully monitor therapy and prevent adverse events. An alteration in a patient's vital signs can provide objective evidence of the body's response to physical and psychological stress or changes in physiological function. Vital sign monitoring is a core function of the Registered Nurse/Midwife. <sup>(24)</sup>

Continuous monitoring is a valuable tool that helps provide additional information to the medical and nursing staff about the physiologic condition of the patient. Using this information, the clinical staff can better evaluate a patient's condition and make appropriate treatment decisions and is used to treat a wide range of patient conditions. <sup>(24)</sup>

It is too important to use ECG monitor for close monitor the patient Depending on their configuration, central monitors include modules to measure various parameters, including ECG, respiratory rate, NIBP and IBP, body temperature, SpO<sub>2</sub>, SvO<sub>2</sub>, cardiac output, ETCO<sub>2</sub>, intracranial pressure, and airway gas concentrations. <sup>(25)</sup>

### **Monitor of the patient fluids balance :-**

Nurses, midwives and doctors have pivotal role in the early identification of patients at risk of deterioration through early and accurate assessment of all physiological parameters.

Each adult patient on admission to the CMFT should be assessed by a registered nurse band 5 or above using flowchart 1 and risk factors identified. Any identified risk factors should be reported to the primary nurse responder and relevant member of the medical team.

All adults inpatients should be assessed for the need to have a fluid balance chart utilizing flow chart to assess for risk factors

Once a fluid balance chart is commenced using flow chart on a daily basis, for IV fluids the actual amount infused each hour should be documented. If a pump is not used for example when giving a fluid bolus, then the amount infused is recorded at the end of the infusion.

The patient is on the end of life care pathway-the fluid balance chart should be discontinued once the pathway is commenced.

Patients with long term urinary catheters on diet and fluids can have fluid balance discontinued at the discretion of the ST1 or above or shift leader caring for the patient. <sup>(56)</sup>

## **Monitor of the patient feeding**

Healthcare professionals should consider feeding in patients who are malnourished or at risk of malnutrition. Screening for malnutrition should be carried out as per the Trust 'Food & Nutrition Policy'.

Health care professionals should aim to provide adequate nutrition to every patient unless prolongation of life is not in the patient's best interests.

Artificial nutrition support is needed when oral intake is absent or likely to be absent for a period of > 5-7 days. Earlier instigation may be needed in malnourished patients. Support may also be needed in patients with inadequate oral intakes over longer periods.

Monitor of the patient feeding is the health care ( nurses ) responsibilities to maintain safety nutritional state of the patient

Enteral tube feeding is used to provide nutrition to patients who cannot attain an adequate oral intake from food and/or oral nutritional supplements, or who cannot eat or drink safely. The aim is to optimize nutritional intake to improve or maintain nutritional status. The gastrointestinal tract must be accessible and functioning sufficiently to absorb the feed administered.

Placement and initiation of enteral tube feeding should be delayed if there are insufficient experienced medical or nursing personnel to either place the enteral tube or dietetic personnel to prescribe enteral nutrition safely.<sup>(57)</sup>

## **Safety communication :-**

### **Effective communication skills in nursing practice**

Communication can be defined as a process during which information is shared through the exchange of verbal and non-verbal messages and where people create a relationship by interacting with each other. Communication is integral to the nurse-patient relationship and is one of the six fundamental values of nursing identified in the government's strategy to deliver high-quality, compassionate care for patients.<sup>(41)</sup>

In collaborative care environments, it is essential that all members of the team communicate effectively to provide safe and optimal care. Effective communication is essential to ensure safe and coordinated care as the size of the team expands to meet patient needs. It is the responsibility of all team members to ensure that the patient is receiving timely, clear and consistent messaging.

Physicians can take a leadership role in modeling effective communications throughout the team. In particular, there is an opportunity to enhance the consultation and referral process, in order to provide clear and concise instructions to colleagues and optimize care. Sufficient resources, including dedicated time and support, must be available to the team to maximize these communication requirements.<sup>(45)</sup>

The policy document *Compassion in Practice* states that 'communication is central to successful caring relationships and to effective team working'. The Nursing and Midwifery Council highlights the importance of communication in its code of conduct, stating that nurses must meet people's language and communication needs and 'share with people, in a way they can understand, the information they want or need to know about their health'. Effective communication helps vulnerable patients to cope with and make better decisions about their care and treatment. However, maintaining effective communication in busy healthcare environments where patients are vulnerable and staff are frequently stressed

requires advanced interpersonal skills, as well as an awareness of self and others.  
(41)

It is essential that nurses have skills that keep the focus of communication on the patient, that demonstrate active listening and assist with information giving . It is important that these skills are developed in pre-registration training and further developed during preceptor ship, clinical supervision and mentorship throughout a nursing career to promote confidence and competence in this area.<sup>(41)</sup>

Skills that assist in keeping the focus on the patient and/or career:

Looking and listening for cues, Asking open questions. For example: ‘How are you?’, Asking open directive questions. For example: ‘How are you since I last saw you?’ Asking open questions about feelings. , Exploring cues. For example: ‘You said you are not with it, can you tell me more about that?’, Using pauses and silence., Using minimal prompts., Screening. For example: asking the question ‘Is there something else?’ before continuing with the discussion., Clarifying. For example: asking the question ‘You said you are not with it, from what you say, it sounds like it is hard to concentrate?’ .<sup>(41)</sup>

**Skills that demonstrate listening:**

Reflecting , Acknowledging , Summarizing, Empathizing , Making educated guesses , Paraphrasing and Checking. .<sup>(41)</sup>

**Skills that assist with information giving:**

Checking what information the person knows already , Giving small amounts of information at a time, using clear terms and avoiding jargon. , Avoiding detail unless it is requested – do not assume people want to know, Checking understanding using an open question. For example: ‘I’ve gone through some difficult information, what sense have you made of it?’, Pausing and waiting for a response to what you have said before moving on and checking, with sensitivity, the effect of the information you have given on the patient or career. <sup>(41)</sup>

## **Opportunities for Patient and Family Involvement:**

Provide information to patients about their medical conditions and treatment care plan in a way that is understandable to them , Make patients aware of their prescribed medications, doses, and required time between medications, Inform patients who the responsible provider of care is during each shift and who to contact if they have a concern about the safety or quality of care, Provide patients with the opportunity to read their own medical record as a patient safety strategy, Create opportunities for patients and family members to address any medical care questions or concerns with their health-care providers, Inform patients and family members of the next steps in their care, so they can if necessary communicate this to the care provider on the next shift, or so they are prepared to be transferred from one setting to the next, or to their home and involve patients and family members in decisions about their care at the level of involvement that they choose. <sup>(42)</sup>

### **Barriers to effective communication:-**

the barriers to effective communication and developing a common language and understanding of communication skills

- Environment – noise, lack of privacy, no control over who is present or not present (staff or relatives).
- Fear and anxiety – related to being judged, being weak, or breaking down and crying.
- Other barriers – difficulty explaining feelings (no emotional language to explain feelings), being strong for someone else, or communication cues being blocked by healthcare professionals.

### **Healthcare professional barriers:**

- Environment – high workload, lack of time, lack of support, staff conflict, lack of privacy or lack of referral pathway.
- Fear and anxiety – related to making the patient more distressed by talking and/or asking difficult questions.



- Other barriers – not having the skills or strategies to cope with difficult reactions, questions and/or emotions. Thinking ‘it is not my role’, and ‘the patient is bound to be upset.’<sup>(41)</sup>

### **Safety patient environment :-**

The patient environment of care plays a vital role in the discipline of patient safety for every hospital. Demonstrating that the hospital is a safe place for patients and for those that work there should be of the utmost importance for all health care personnel.<sup>(59)</sup>

The patient care environment throughout the facility will be maintained in a state of cleanliness that meets professional standards in order to protect patients and healthcare personnel from potentially infectious microorganisms. Environmental cleaning is a team effort. Personnel responsible for cleaning the environment and equipment will receive education and training on proper environmental cleaning and disinfection methods, agent use and selection, and safety precautions. (43)

The relationship between nursing and cleaning professionals is central to the management of the patient environment. This environment is the interface between the patient and the organization and it provides both a practical and safe area in which to provide patient care.

The setting should facilitate a patient’s privacy, dignity and recovery. As such, any factors that have a negative impact on the patient environment risk affecting its functions and the patient’s subsequent confidence in the organization providing care.<sup>(58)</sup>

One of the most longstanding concerns associated with the patient environment is its potential role in the transmission of infection.

The association between contaminated surfaces/ equipment and the transfer of disease-causing micro-organisms is well established and with an ever increasing focus on its role with specific infections caused by *C. difficile*, Norovirus and multi-resistant organisms. The decontamination of patient environments is central to the provision of safe care due to the contact between contaminated hands or equipment and vulnerable patients. The

relationship therefore between the two main groups of hospital staff, nursing and cleaning staff, who work in close association with patient environments is crucial. Many different perceptions exist with regard to this relationship, often based on the history or current status of cleaning service provision. <sup>(58)</sup>

Current service provision falls into two areas, in house cleaning services (employed by and managed by each organization) or contracted cleaning services provided by a third party. Historically, it has been perceived that in house cleaning services provide a superior standard of cleanliness; however, there is no evidence to support this. Such perceptions may have developed based on assumptions that cost, as a major factor in the provision of cleaning services, has led to the deterioration in standards as cleaning posts are reduced with a focus on efficiency rather than quality. <sup>(58)</sup>

### **Cleaning professionals responsibilities :**

Eliminate silo working , Clarity of responsibility, Do what the nurses ask you to!, Get other people out of trouble, Teamwork, Seamless support  
One team, not two Integrated as part of team ,Level playing field – everyone able to participate Try to maintain stability of staff ,Group meetings , Set and spread examples of good practice, Consider job descriptions and contracts, Training, Infection prevention and control team engagement and Director-level input. <sup>(58)</sup>

### **Safe medication administration:-**

Medicines have proven to be very beneficial for treating illness and preventing disease. This success has resulted in a dramatic increase in medication use in recent times. <sup>(46)</sup>

Doctors, pharmacists, nurses and others involved in the administration of medicines should work together to ensure accurate and safe drug administration. Each has a role in improving the quality of drug administration and in monitoring the quality of other groups' contributions to the medication use process. <sup>(47)</sup>

**Medication errors** occur in all health care settings. Findings from several studies of large numbers of hospitalized patients indicated that each year many patients

are harmed, injured or experienced adverse drug events as a result of medication errors.

medication error : any preventable event that may cause or lead to inappropriate medication use or patient harm while the medication is in the control of health professional, patient or consumer. Medication errors may be related to professional practice, products, procedures, environment or systems. They may involve prescribing and ordering; dispensing and distribution; preparation and administration; labeling, packaging and nomenclature; communications and education; or use and monitoring of treatment. Serious errors harm patients and expose health professionals to civil liability and possible criminal prosecution. <sup>(47)</sup>

**adverse drug event** is defined as an injury resulting from drug-related interventions. It can include prescribing errors, dispensing errors and medication administration errors. Adverse drug events are costly and result in significant additional health care resource consumption. <sup>(47)</sup> **Steps to reduce errors**

A number of practices have been shown to reduce errors in medication use process. These include:

### **Simplify**

Eliminate transcription of orders, limit choices of available drugs in pharmacy, limit dosage strengths and concentrations for each drug, mix IVs in the pharmacy and automate dispensing on patient care unit. <sup>(47)</sup>

### **Standardize**

Standardize prescribing conventions: no error-prone abbreviations, use generic names, use protocols for complex medication administration (heparin, insulin, chemotherapy), standardize times of drug administration, store medications in the same place in every medication room and use standard equipment, e.g. one kind of pump or syringe. <sup>(47)</sup>

### **Improve Access to Information**

Lack of information is a common cause of errors.

Have a pharmacist available on nursing units and at rounds, use computerized order entry systems, use computerized laboratory data to alert abnormal laboratory

values, place laboratory reports and medication records at bedside, place protocols and ordering information on patients' charts and in medication room where they are easily accessible, color-code wristbands for patients with allergies, provide patient with list of his/her medications, dosage, and frequency and Track errors or near misses and feedback to staff on a regular basis. <sup>(47)</sup>

### **Reduce Handoffs**

The complexity in the medication system is a result of the number of people involved and the handoffs between them. many errors occur during transfer of materials, information, people, instructions, or supplies. Provide ready-to-administer products, reduce transcription of medication orders, use unit-dose systems, have pharmacist participate in rounds, use automated drug dispensing / filling systems and use computerized prescriber order entry. <sup>(47)</sup>

### **Differentiate : Eliminate Look-A likes and Sound-A likes**

Store similar-looking medications in separate places, a repackage or re-label look-alikes to differentiate them, alert staff and post information on medications with similar names (including sound-alike), avoid stocking look-alike packages and use striking caution stickers on stock containers to alert staff to look-alikes. <sup>(47)</sup>

### **Basic principles of administering medication safely**

Before administration :

Check that you are taking the correct medication chart for the correct patient, interpret the order carefully before preparing drug for administration, check that the pharmacist has reviewed a new drug order before administering, check for any drug allergy or ambiguous order, do not hesitate to contact the prescriber for any illegible or ambiguous order, accept verbal order only in emergency by writing down and repeating back the order, spelling the drug name and doses, check that you are preparing the correct drug for the correct patient, always get a double-check for correct drug, dose, route and time of administration before administering the drug, make sure to counter-check the drug prepared against the order before administering, label all infusion sets and lines and be familiar with all the different administration sets and devices available in the inventory. <sup>(47)</sup>

During administration :

Check that you are administering the correct drug to the correct patient , advise patients on the possible adverse drug reactions that they may experience during and after administration and encourage patient to express any discomfort or problems experienced during drug administration. <sup>(47)</sup>

After administration :

Document promptly on the medication chart the time that the drug is administered

### **Basic principles of monitoring medication use**

Be familiar with the drug use protocols , be familiar with the possible adverse drug reactions following drug administration ,be vigilant when monitoring patient by adhering strictly to established protocols , document patient's response on the medication chart in a timely manner , do not use dangerous abbreviations when documenting administration details ,keep up-to-date references easily accessible for quick checks

The Institute for Safe Medication Practices identified the following areas as common causes of medication errors during the medication use process:

- Failed communication: handwriting and oral communications, especially over the telephone, drugs with similar names, missing or misplaced zeros and decimal points, confusion between metric and apothecary systems of measure, use of non-standard abbreviations ,ambiguous or incomplete orders
- Poor drug distribution practices
- Complex or poorly designed technology
- Workplace environmental problems that lead to increased job stress
- Dose miscalculations
- Lack of patient information
- Lack of patients' understanding of their therapy .<sup>(47)</sup>

### **Improving medication use process :-**

Medication use is a complex process involving a variety of practitioners and many different steps, all with the potential for serious error and patient harm. The Institute for Safe Medication Practices (ISMP) has listed down ten key elements

that most often affect the medication use process. The inter-relationships among these key elements form the structure within which medications are used safely.

(47)

### **1. Patient information**

Having essential patient information at the time of medication prescribing, dispensing and administration will result in a significant decrease in preventable adverse drug events (ADEs).<sup>(47)</sup>

### **2. Drug information**

Providing accurate and usable drug information to all health professionals involved in the medication use process reduces preventable adverse drug events. Not only should drug information be readily accessible to the staff, it is imperative that this information is accurate and up to date.<sup>(47)</sup>

### **3. Communication of drug information**

Miscommunication between physicians, pharmacists and nurses is a common cause of medication errors. To minimize medication errors caused by miscommunication, it is always important to verify drug information and eliminate communication barriers.<sup>(47)</sup>

### **4. Drug labeling, packaging and nomenclature**

Look-alike, sound-alike drug names, confusing drug labels and non-distinct drug packaging contribute significantly to medication errors. The incidence of medication errors can be reduced with the use of proper labeling and the use of unit-dose systems within hospitals.<sup>(47)</sup>

### **5. Drug storage, stock and standardization**

Standardizing drug administration times and drug concentrations or limiting the concentrations available in patient care areas will reduce the risk of administration errors.<sup>(47)</sup>

### **6. Drug device acquisition, use and monitoring**

Appropriate safety assessment of drug delivery devices should be made prior to their purchase and during their use. Also, a system of independent double-checks

should be used within the institution to prevent device related errors such as, selecting the wrong drug or drug concentration, setting the rate improperly, or mixing-up the infusion line with another. <sup>(47)</sup>

## **7. Environmental factors**

Having a well-designed system offers the best chance of preventing errors. However, sometimes the environment in which we work contributes to medication errors. Environmental factors that often contribute to medication errors include poor lighting, noise, interruptions and an excessive workload. <sup>(47)</sup>

## **8. Competency and staff education**

Staff education should focus on priority topics, such as: new medications being used in the hospital, high-alert medications, medication errors that have occurred both internally and externally, protocols, policies and procedures related to medication use. Staff education can be an important error prevention strategy when combined with the other key elements for medication safety. <sup>(47)</sup>

## **9. Patient education about medication use**

Patients must receive on-going education from physicians, pharmacists and the nursing staff about the brand and generic names of medications they are receiving, their indications, and doses, expected and possible adverse effects, drug or food interactions, and how to protect themselves from errors. Patients can play a vital role in preventing medication errors when they have been encouraged to ask questions and seek answers about their medications. <sup>(47)</sup>

Patients can play a vital role in preventing medication errors when they have been educated about their medications and encouraged to ask questions and seek satisfactory answers. Because patients are the final link in the process, health care providers should teach them how to protect themselves from medication errors and seek their input in related quality improvement and safety initiatives. <sup>(47)</sup>

## **10. Quality processes and risk management**

The best way to prevent errors is to redesign the systems and processes that lead to errors rather than focus on correcting the individuals who make errors. Effective

strategies for reducing errors include, making it difficult for staff to make an error and promoting the detection and correction of errors before they reach a patient and cause harm.<sup>(47)</sup>

### **Ten Rights of Medication Administration :-**

1. Right patient : Always check patient's identification bracelet. Ask patient to state their name and birth date. Compare medication order to identification bracelet and patient's stated name and birth date. Verify patient's allergies with chart and with patient.<sup>(48)</sup>
2. Right medication: Perform a triple check of the medication's label When retrieving the medication. When preparing the medication. Before administering medication to patient. Always check the medication label with the physician's orders. Never administer medication prepared by another person Never administer medication that is not labeled.<sup>(48)</sup>
3. Right dose : Check label for medication concentration. Compare prepared dose with medication order. Triple all medication calculations. Check all medication calculations with another nurse. Verify that dosage is within appropriate dose range for patient an medication.<sup>(48)</sup>
4. Right time : Verify schedule of medication with order: Date, Time, Specified period of time , Check last dose of medication given to patient and administer medication within 30 minutes of schedule.<sup>(48)</sup>
5. Right route : Verify medication route with medication order before administering. Medication may only be administered via route specified in order.<sup>(48)</sup>
6. Right education : Inform patient of medication being administered. Inform patient of desired effects of medication. Inform patient of side effects of medication. Ask patient if they have any known allergies to medication.<sup>(48)</sup>
7. Right to refuse : The legally responsible party (patient, parent, family member, guardian, etc.) for patient's care has the right to refuse any medication. Inform responsible party of consequences of refusing



medication. Verify that responsible party understands all of these consequences. Notify physician that ordered medication and document notification. Document refusal of medication and that responsible party understands consequences. <sup>(48)</sup>

8. Right assessment : Properly assess patient and tests to determine if medication is safe and appropriate. If deemed unsafe or inappropriate, notify ordering physician and document notification. Document that medication was not administered and the reason that dose was skipped. <sup>(48)</sup>
9. Right evaluation : After medication has been administered : Assess patient for any adverse side effects. Assess patient for effectiveness of medication. Compare patient's prior status with post medication status. Document patient's response to medication. <sup>(48)</sup>
10. Right documentation : Never document before medication is administered. <sup>(48)</sup>

### **Patient's role in medication safety**

Patients should be encouraged to serve as their own safety advocate and become an active member of the health care team. This is because a vast majority of drug administration takes place at home and patients are responsible for taking their own medicines. Patients should be encouraged to speak up, to pay attention to the care they are receiving, to educate themselves about their diagnosis and treatments, to find out more about medications they are taking, and to participate in all decisions that affect their treatment. Patients should be educated in the hospital, at discharge, and in ambulatory settings about their medications They should know what they are taking, why they are taking it, and how to use it safely. Pharmacists have vital roles to play in improving patients' knowledge about their medicines. <sup>(47)</sup>

### **Infection Prevention and Control**

Healthcare-associated infections (HCAI) are infections that are acquired in healthcare facilities or as a result of healthcare interventions and are a major problem for patient safety.

HCAI's can lead to serious illness, prolonged hospital stays, long term disability and patient deaths. Public confidence relies on the general practice being seen as a safe place for patients to be treated. We need to reassure our patients to following best practice in order to minimize the risk of HCAI general practice .<sup>(48)</sup>

The spread of infection can occur by direct and indirect contact

**Direct contact:**

Direct spread of infection occurs when one person infects the next; by person-to-person contact e.g., chicken pox, tuberculosis, sexually transmitted infections etc.

(49)

### **Indirect:**

Indirect spread of infection is said to occur when an intermediate carrier is involved in the spread of pathogens e.g., the hands of a healthcare worker can become contaminated with infectious organisms from contact with a contaminated item of equipment; these may then be spread to a patient .<sup>(49)</sup>

### **Preventing Transmission of Infection in the General Practice Setting**

These six elements are composed of:

1. **Infectious agent** e.g., bacteria, virus: This can be **endogenous** (self-infection), which occurs when organisms which are harmless in one site, cause infection when transferred to another e.g., *E.coli* **exogenous** (cross infection), which occurs when organisms are transferred from another source e.g. doctor, nurse, other patient or the environment.
2. **Reservoir:** A reservoir is a place where an infectious agent lives and grows (e.g., large intestine, blood, mouth).
3. **Portal of exit:** A portal of exit is anybody opening that allows the infectious agent to leave (e.g. mouth, nose, rectum, and breaks in the skin).
4. **Means of transmission:** The means of transmission is how the infectious agent travels from the infected person to another person e.g., air, contact (*direct* e.g., hands of healthcare worker and *indirect* e.g., equipment).
5. **Portal of entry:** The portal of entry is anybody opening that allows the infectious agent to enter (e.g. nose, mouth, eyes, a break in the skin)
6. **A susceptible host:** A susceptible host is a non infected person who could get infected. Potential modes of transmission of infection in the general practice setting .<sup>(49)</sup>

### **The general principles of infection prevention and control (standard precautions):-**

Standard precautions (formerly known as universal

precautions) underpin routine safe practice, protecting both staff and clients from infection. By applying standard precautions at all times and to all patients, best practice becomes second nature and the risks of infection are minimized. They include:

1. achieving optimum hand hygiene
2. using personal protective equipment
3. safe handling and disposal of sharps
4. safe handling and disposal of clinical waste
5. managing blood and bodily fluids
6. decontaminating equipment
7. achieving and maintaining a clean clinical environment
8. appropriate use of indwelling devices
9. managing accidents
10. good communication – with other health care workers, patients and visitors
11. training/education.<sup>(49)</sup>

## **1. Hand hygiene**

Hand hygiene is widely acknowledged to be the single most important activity for reducing the spread of disease, yet evidence suggests that many health care professionals do not decontaminate their hands as often as they need to or use the correct technique which means that areas of the hands can be missed. ( N F E C T I O N C O N T R O L

Hands should be decontaminated before direct contact with patients and after any activity or contact that contaminates the hands, including following the removal of gloves. While alcohol hand gels and rubs are a practical alternative to soap and water, alcohol is not a cleaning agent. <sup>(51)</sup>

Hands that are visibly dirty or potentially grossly contaminated must be washed with soap and water and dried thoroughly .Hand preparation increases the effectiveness of decontamination. You should:

\_ keep nails short, clean and polish free

- \_ avoid wearing wrist watches and jewellery, especially rings with ridges or stones
- \_ artificial nails must not be worn
- \_ any cuts and abrasions should be covered with a waterproof dressing. <sup>(51)</sup>

## **2. Using personal protective equipment**

Personal protective equipment (PPE) is used to protect both yourself and your patient from the risks of cross-infection. It may also be required for contact with hazardous chemicals and some pharmaceuticals. PPE includes items like gloves, aprons, masks, goggles or visors. In certain situations such as theatre, it may also include hats and footwear. <sup>(51)</sup>

Personal protective equipment (PPE) must be worn according to the Occupational Safety and Health Administration (OSHA) Blood borne Pathogen Standard when disposing of waste that could result in exposure to blood borne or other potentially infectious microorganisms and hazardous material. <sup>(44)</sup>

### **Disposable gloves :-**

Gloves should be worn whenever there might be contact with blood and body fluids, mucous membranes or non intact skin. They are not a substitute for hand washing. They should be put on immediately before the task to be performed, then removed and discarded as soon as the procedure is completed. Hands must always be washed following their removal. <sup>(51)</sup>

The choice of glove should be made following a suitable and sufficient risk assessment of the task, the risk to the patient and risk to the health care worker. Nitrile or latex gloves should be worn when handling blood, blood-stained fluids, cytotoxic drugs or other high risk substances.

Polythene gloves are not suitable for use when dealing with blood and/or blood and body fluids, ie. in a clinical setting. Neoprene and nitrile gloves are good alternatives for those who are sensitive to natural rubber latex. These synthetic gloves have been shown to have comparable in-use barrier performance to natural rubber latex gloves in laboratory and clinical studies. Vinyl gloves can be used to perform many tasks in the health care environment, but are not appropriate when

handling blood, blood-stained fluids, cytotoxic drugs or other high risk substances.

(51)

### **Disposable plastics aprons :-**

These should be worn whenever there is a risk of contaminating clothing with blood and body fluids and when a patient has a known infection, for example, direct patient care, bed making or when decontaminating equipment. You should discard them as soon as the intended task is completed and then wash your hands. They must be stored safely so that they don't accumulate dust which can act as a reservoir for infection. Impervious gowns should be used when there is a risk of extensive contamination of blood or body fluids. <sup>(51)</sup>

### **Masks, visors and eye protection**

These should be worn when a procedure is likely to cause blood and body fluids or substances to splash into the eyes, face or mouth. Masks may also be necessary if infection is spread by an airborne route – for example, multi drug resistant tuberculosis or severe acute respiratory syndrome (SARS). <sup>(51)</sup>

### **3. Safe handling and disposal of sharps**

Sharps include needles, scalpels, stitch cutters, glass ampoules and any sharp instrument. The main hazards of a sharps injury are hepatitis B, hepatitis C and HIV. Second only to back injuries as a cause of occupational injuries amongst health care workers, between July 1997 and June 2002, there were 1,550 reports of blood-borne virus exposures in health care workers – of which 42 per cent were nurses or midwives.

To reduce the risk of injury and exposure to blood borne viruses, it is vital that sharps are used safely and disposed of carefully, following your workplace's agreed policies on safe working procedures. Your employer should provide targeted education and awareness training for all health care workers.

Some procedures have a higher than average risk of causing injury. These include intra-vascular cannulation, vane puncture and injection. Devices involved in these high-risk procedures are:

IV cannula, winged steel , butterfly , needles, needles and syringes and phlebotomy needles.

You should ensure that:

sharps are not passed directly from hand to hand, handling is kept to a minimum, needles are not broken or bent before use or disposal, syringes or needles are not dismantled by hand and are disposed of as a single unit ,needles are never re-sheathed, staff take personal responsibility for any sharps they use and dispose of them in a designated container at the point of use, sharps containers are not filled by more than two thirds and are stored in an area away from the public, sharps trays with integral sharps bins are in use, sharps are disposed of at the point of use, sharps boxes are signed on assembly and disposal, sharps are stored safely away from the public and out of reach of children and staff are aware of inoculation injury policy. <sup>(52)</sup>

#### **4. Safe handling and disposal of chemical waste**

Your workplace should have a written policy on waste disposal, which provides guidance on all aspects, including special waste, like pharmaceuticals and cytotoxic waste, segregation of waste and an audit trail. This should include color coding of bags used for waste, for example: yellow bags for clinical waste, black bags for household waste, special bins for glass and aerosols and colour coded bins for pharmaceutical or cytotoxic waste. <sup>(52)</sup> All health care and support staff should be instructed in the safe handling of waste, including disposal and dealing with spillages. Trusts should consider systems for segregating waste that can be recycled. <sup>(52)</sup>

#### **5. Managing blood and bodily fluids Spillages**

These should be dealt with quickly, following your workplace's written policy for dealing with spillages.

The policy should include details of the chemicals staff should use to ensure that any spillage is disinfected properly, taking into account the surface where the incident happened – for example, a carpet in a patient's home or hard surface in a hospital. <sup>(52)</sup>

Collecting, handling and labeling specimens A written policy should be in place for the collection and transportation of laboratory specimens. You should: be trained to handle specimens safely, collect samples (wearing protective clothing) in an appropriate sterile and properly sealed container, complete form using patient labels (where available) and check that all relevant information is included, take care not to contaminate the outside of the container and the request forms, ensure that specimens are transported in accordance with the Safe Transport of Dangerous, make sure specimens are sent to the laboratory as soon as possible. Under no circumstances should specimens be left on window sills or placed in staff pockets and once results are available check and enter into the patient's records. Any results outside normal limits should be highlighted to the patient's clinician. Act on any infection control issues immediately.<sup>(52)</sup> If you feel you need further training in any of the above, speak to your infection control team who will be able to provide you with advice and training.<sup>(52)</sup>

## **6. Decontaminating equipment**

As inadequate decontamination has frequently been associated with outbreaks of infection in hospitals, it is vital that re-usable equipment is scrupulously decontaminated between each patient. To ensure that control of infection is maintained at a high level, all health care staff must be aware of the implications of safe decontamination and their responsibilities to their patients, themselves and their colleagues.<sup>(52)</sup>

Decontamination is the combination of processes – cleaning, disinfection and sterilization – used to ensure a re-usable medical device is safe for further use. Single use equipment (where the item can only be used once) should not be reprocessed or re-used.

Devices designated for single patient use (where the item can be repeatedly used for the same patient) will be clearly marked by a symbol. Such devices include nebulizers, disposable pulse oximeter probes and certain specified intermittent catheters.<sup>(52)</sup>

## **Cleaning**



This uses water and detergent (enzymatic cleaner) to remove visible contamination but does not necessarily destroy micro-organisms, although it should reduce their numbers. Effective cleaning is an essential prerequisite to both disinfection and sterilization.

Manual cleaning should be performed with extreme care and only if no other method or device is available. <sup>(52)</sup>

At the beginning of each day or prior to the first procedure, horizontal surfaces, OR/procedure room lights, OR/procedure room furniture will be damp-dusted using a clean lint free cloth dampened with a facility approved, Environmental Protection Agency (EPA)-registered disinfectant. <sup>(43)</sup>

Cleaning of OR/procedure room between procedures must be done with a facility-approved, EPA-registered disinfectant.

Prepare disinfectant solution according to manufacturer's instructions., Clean hands and put on gloves , Collect and remove waste , Collect and remove all soiled linen , Remove gloves and clean hands and use a cloth dampened in disinfectant solution to clean and disinfect horizontal surfaces that have come in contact with a patient or body fluids, including blood pressure cuffs, tourniquets and leads , Clean suction canisters , Clean and disinfect bed and Damp mop floor in a 3 to 4 feet perimeter around the bed (larger area if contamination present); use a separate mop head per case. <sup>(43)</sup> Allow to air dry , Insert new waste liner bags and when cleaning is complete, remove gloves and clean hands

Terminal cleaning of each operating and procedure room will be completed daily when the scheduled procedures are completed for the day. <sup>(43)</sup> Unused rooms should be cleaned once during each 24-hour period during the regularly scheduled work week because personnel entering unused rooms and moving equipment and supplies in and out of the room can increase the risk of environmental contamination. <sup>(43)</sup> Mechanical friction and a facility approved EPA-registered agent will be used to clean the operating and procedure rooms, clean hands and put on gloves , collect and remove waste , collect and remove all soiled linen , Clean hands and change gloves ,clean and disinfect lights and ceiling tracks clean

and disinfect all door handles, push plates, light switches and controls, clean and disinfect telephones and computer keyboards , Spot wash all walls clean and disinfect all exterior surfaces of machines and equipment (e.g., anesthesia carts) , clean and disinfect all furniture including wheels/casters , clean and disinfect exterior of cabinets and doors, especially around handles ,clean and disinfect all horizontal surfaces , clean suction canisters , clean and disinfect bed ,clean floor making sure the bed is moved and the floor is washed underneath; move all furniture to the centre of the room and continue cleaning the floor:

Replace all furniture and equipment to its proper location , Damp wipe waste receptacles, dry thoroughly and re-line ,Place a cautionary ‘Wet Floor’ sign at the entrance to the room, Remove gloves and clean hands, Clean and store cleaning equipment and Report any needed repairs . <sup>(44)</sup>

Other patient care areas and environmental surfaces that come in direct contact with patients will be cleaned with a facility-approved, EPA registered disinfectant. <sup>(44)</sup>

Assemble supplies :ensure an adequate supply of clean cloths is available , prepare fresh disinfectant solution according to manufacturer’s instructions , clean hands and put on gloves , remove dirty linen, then remove gloves and clean hands . Apply clean gloves and clean room, working from clean to dirty and high to low areas of the room using fresh cloth(s) for cleaning each patient bed space and completing the cleaning of each bed space before moving to the next , if a bucket is used, do not ‘double-dip’ cloth(s) ,do not shake out cloth(s) ,change the cleaning cloth when it is no longer saturated with disinfectant and after cleaning heavily soiled areas , start by cleaning doors, door handles, push plate and touched areas of frame ,check walls for visible soiling and clean if required , clean light switches and thermostats ,clean wall mounted items such as alcohol-based hand rub dispenser and glove box holder ,check privacy curtains for visible soiling and replace if required , Clean all furnishings and horizontal surfaces in the room including chairs, window sill, television, telephone, computer keypads, tables or desks. Lift items to clean the tables. Pay particular attention to high-touch surfaces

, wipe equipment on walls such as top of suction bottle, intercom and blood pressure manometer as well as IV pole , clean the bed ,clean top and sides of mattress, turn over and clean underside ,clean exposed frame , clean headboard, foot board, bed rails, call bell and bed controls; pay particular attention to areas that are visibly soiled and surfaces frequently touched by staff ,clean all lower parts of bed frame, including casters, allow mattress to dry , clean floors ,place soiled cloths in designated container for laundering or dispose ,check sharps container and change when  $\frac{3}{4}$  full (do not dust the top of a sharps container) , remove soiled linen if bag is full ,place obvious waste in receptacles ,remove waste .<sup>(44)</sup>

Remove gloves and clean hands; if hands are visibly soiled, wash with soap and water , replenish supplies as required (e.g., gloves, soap, paper towel) and clean hands.<sup>(44)</sup>

Clean bathrooms, working from clean areas to dirty areas.

Remove soiled linen from floor; wipe up any spills; remove waste ,clean door handle and frame, light switch, clean wall attachments ,clean inside and outside of sink, sink faucets and mirror; wipe plumbing under the sink; apply disinfectant to interior of sink; ensure sufficient contact time with disinfectant; rinse sink and dry fixtures ,clean all dispensers and frames ,clean call bell and cord ,clean support railings, ledges/shelves , clean shower/tub faucets, walls and railing, scrubbing as required to remove soil; apply disinfectant to interior surfaces of shower/tub, including soap dish, faucets and shower head; ensure sufficient contact time for disinfectant; rinse and wipe dry, clean bedpan support, entire toilet including handle and underside of flush rim; ensure sufficient contact time with disinfectant ,change all waste bags, clean waste can if dirty, remove gloves and wash hands ,replenish paper towel, toilet paper, waste bag, soap and ABHR as required .<sup>(44)</sup>

Reprocessing and other sterile storage areas are to be cleaned according to the following schedule: clean all counters and floors daily, clean shelves daily in sterilization, preparation, packing and decontamination areas , clean shelves every three months in sterile storage areas, clean case carts after every use , clean walls

every six months ,clean light fixtures, sprinkler heads and other fixtures every six months. <sup>(44)</sup>

Personnel responsible for cleaning must perform hand hygiene:

Before initial patient environment contact (e.g., before coming into the operating/procedure room or patient bed space) , After potential body fluid exposure (e.g., after cleaning bathroom, handling soiled linen, equipment or waste); and after patient environment contact (e.g., after cleaning patient bed space or operating/procedure room; after cleaning equipment such as stretchers; after changing mop heads), Gloves must be removed on leaving each operating/procedure room or patient bed space. Personnel must clean hands after removing gloves as gloves do not provide complete protection against hand contamination .<sup>(44)</sup>

Potential sources of pathogens in general practice include bacteria, viruses, pathogenic fungi, protozoa and worms . Every interaction in general practice should include a risk assessment of the potential for infection transmission. <sup>(48)</sup>

### **Disinfection**

This uses chemical agents or heat to reduce the number of viable organisms. It may not necessarily inactivate all viruses and bacterial spores. Where equipment will tolerate sterilization disinfection should not be used as a substitute. <sup>(52)</sup>

**Washer-disinfectors** should be used only by those with the correct training and in conjunction with a suitable detergent that has been recommended by the manufacturer or trust policy. Following the rinse cycle, items should be checked for cleanliness. <sup>(52)</sup>

**Chemical disinfectants** are classified generically and their biocidal capabilities vary. While most are capable of inactivating bacteria and enveloped viruses, many are not so effective against non enveloped viruses – for example, the hepatitis viruses and also cysts and bacterial spores. Efficacy depends on choosing and using the disinfectant correctly. Chemical disinfection is not as effective as heat

disinfection. For further information on the most appropriate disinfectants to use in a community setting. <sup>(52)</sup>

### **Sterilization**

This ensures that an object is free from viable microorganisms, including bacterial spores. Both acute and primary care trusts should actively work towards achieving central sterilizing of reusable equipment, using local sterile services department (SSD) where available. <sup>(52)</sup>

### **7. Achieving and maintaining a clean clinical environment**

A dirty clinical environment is one of the factors that may contribute towards infection rates. Conversely, high standards of cleanliness will help to reduce the risk of cross-infection. Good design in buildings, fixtures and fittings is also important to allow efficient cleaning. According to guidance – an agency of the Department of Health – health care facilities should be patient friendly and offer a safe environment for care. <sup>(52)</sup>

Cleaning removes contaminants, including dust and soil, large numbers of microorganisms and the organic matter that may shield them, for example, faces, blood and other bodily fluids. <sup>(52)</sup>

### **8. Appropriate use of indwelling devices**

Make sure you use the correct technique when using indwelling devices as it is vital to reduce the risk of patients acquiring infection. 80 per cent of urinary infections can be traced back to indwelling urinary catheters. These infections arise because catheters traumatize the urethra as well as providing a pathway for bacteria and other organisms to enter the bladder.

The longer such catheters are in place, the higher the risk of infection.

Similarly, over 60% of blood infections are introduced by intravenous feeding lines, catheters or similar devices. This is because micro organisms on the patient's skin (either those naturally present or those acquired whilst in hospital) can gain entry to deeper tissues or the bloodstream when a cannula or catheter is inserted into a vein. <sup>(52)</sup>

### **9. Managing accidental exposure to blood-borne virus**

Accidental exposure to blood and body fluids can occur by:

percutaneous injury – for example, from needles, instruments, bone fragments or significant bites that break the skin\_ exposure of broken skin – for example, abrasions, cuts or eczema and exposure of mucous membranes, including the eyes and the mouth. <sup>(52)</sup>

## **10. Good communication**

Anxiety about HCAs, is often based on ignorance about the risks of infection and the precautions to prevent transmission. Nurses can do a great deal to allay fears by communicating effectively,

without breaking confidentiality. For example, nurses should:

- provide information leaflets for patients, visitors and staff
- provide notices which describe the precautions needed
- talk to patients about how they can help themselves
- include support staff in team meetings during outbreaks
- tell the patient how their care might be affected by a HCAI and how long precautions will be needed
- ensure that other staff understand the actions they need to take – for example, if the community nurse needs to continue care at home.
- inform general practitioners on discharge or transfer if their patient has acquired a HCAI. <sup>(52)</sup>

## **11. Training**

All health care professionals who have a clinical responsibility for patients must include infection prevention and control as part of their every day practice. The all health care staff should receive mandatory infection control training as part of their induction and on an ongoing annual basis. It is particularly important that knowledge and skills are continually updated. <sup>(52)</sup>

The training should cover all the general principles of infection prevention and control to emphasize the key role that health care professionals play in minimizing the spread of infection; to highlight what can happen as a result of bad practice and underline the importance of good communication. <sup>(52)</sup>

**Training should include:**

- practical hand washing sessions/use of alcohol hand sanitizer
- aseptic technique
- the importance of environmental/equipment cleaning and whose responsibility
- who to go to for advice/ more information
- trust infection and prevention policies. <sup>(52)</sup>

# Chapter Three

## ❖ **Materials & Methods**



### **3. materials and Methods**

#### **3.1. materials**

##### **3.1.1. Research design :**

A quasi-experimental research design , study pre and post one group .

Pre test – post test design , a pre test was conducted , followed by the 1, 2 and 3 months post test evaluation to assess the nurses knowledge and performance about the study .

##### **3.1. 2. Study area/ setting**

This study was conducted in the Sudan in White Nile state mainly in Kosti and Rabak cities ( the most cities containing governmental ministries in the state) in their teaching hospital , White Nile state is one of the states of Sudan. It has an area of 30,411 km<sup>2</sup> and an estimated population of approximately 1,188,707 (2006). Since 1994 Rabak is the capital of the state; other important cities include Kosti and Ed Dueim. <sup>(18)</sup>

The state lies between longitudes 33.5 to 35 °E and latitudes 17 to 19 °N. It is surrounded by Kartoume State in the north-east, in the north-west by the Gazerandsinaar States , in the south by the south Sudan country and in the west by North Kurdufan(20)

Kusti is one of the major cities (population as of 1993 was 173,599) in Sudan that lies south of Khartoum, the capital of Sudan, and stands on the western bank of the White Nile river opposite Rabak(the capital of the White Nile state)where there is a bridge.(19)

Kosti teaching hospital is the governmental hospitals largest hospital in White Nile state it was initiated in 1942 which becoming teaching hospital in 1993 after initiate the faculty of medicine and health sciences / university of El imam Al mahadi , Kosti teaching hospital have about (427 beds ) in (15) departments and there are three others deparements was separated and became ahospitale.g obstetric and gynacological hospital , ophthalmological hospital and renal hospital , my study was done in Emergency department , intensive care unit ,

dialysis unit, pediatric wards , medical wards (male/ female ) , surgical wards (male/ female ) , complex theater , obstetric ward and gynecology ward ( most common graduated nurses area). It is total graduated nurse employed is (66).

Rabak teaching hospital also is a governmental hospitals located in the capital of White Nile state (Rabak) it was initiated in 1986 which becoming teaching hospital in 2012 for training the student of the faculty of medicine and health sciences / university of El Imam Al Mahadi , Rabak teaching hospital have about (11) departments , my study was done in Emergency department , pediatric wards , medical wards (male/ female ) , surgical wards (male/ female ) , complex theater and obstetric ward and gynecology ward ( most common graduated nurses area) it have about (314 beds) . It is total graduated nurse employed is (42).

### **3.1.3. Study population :-**

Qualified nursing staff employed whose university diploma , Bsc, Msc& PhD holders in nursing, working in all hospitals department at the mentioned study settings during the study period were included in this study.

#### **3.1.3.1. inclusion criteria :**

- Three years university diploma in nursing and more.
- Who have a job
- Who enrolling in all educational program about the patient safety

#### **3.1.3.2. exclusion criteria :**

- Academic health science nurse ( ministry of health educational institute ).
- Traditional nurse ( 2years or 6 months nurses graduation certificates ).
- Part timer nurse .
- national services nurses.
- Who did not agree to participate in the study.
- Who not fully attend the educational program .

#### **3.1.4. sampling technique :**

All nurses were enrolled in the study , all available employed nurses , who meet inclusion criteria in the previous mentioned study area .

### **3.1.5. sample**

Sample size (n= 108) , (66 nurse ) work in the kosti teaching hospital departments and (42 nurses ) work in the Rabak teaching hospital.

### **3.1.6. Variables under Study:**

#### **3.1.6.1. Nurse's knowledge regarding:**

- General concepts about patient safety.
- Importance of patient safety
- Common problems related to improper patient safety
- safety communication.
- Barriers of effective communication
- Disposal of Infectious management
- The nursing role about the safety department (cleaned ).

#### **6.1.6.2.Nurses' Practice regarding:**

- Safety patient's environment
- about patient monitoring
- Safety medication administration
- The principles of infection control.
- How to deal with the infectious patient secretions
- hospital acquired infection

### **3.1.7. data collection tools**

The tools from the literature review were collected and then the appropriate questions were selected and adapted to form a rough draft of these tools , the tools used for the present study were developed by researcher , the tools was divided in to two tools ( appendix ).

**Tools 1:** structured questionnaire which consist of six parts every question with the four options .

**Part one** : consist of five questions seeking the demographic data of the study population , the demographic data consist information about age , educational level , work area , yours of experiences and the number of training course about patient safety.

**Part two** : the General concepts about patient safety consist of three questions .

**Part three** : about safety communication consist of five questions .

**Part four** : about patient monitoring consist of four questions.

**Part five** : about safety medications administration consist of five questions.

**Part six**: infection control measures consist of six questions.

Self – administered questionnaire was answered on an individual basis in the present of the researcher or researcher assistant . the time needed to answer the questionnaire range from fifteen to twenty minutes .

**Tools 2** : observational checklist

This tool was developed in order to assess nurse's performance during the clinical practice consist of 20 items (General concepts about patient safety , safety communication, patient monitoring , safety medications administration and infection control measures) .

**3.1.8. Scoring system :**

**3.1.8. 1. Scoring of knowledge :**

The scoring of knowledge using five point Likert scale : from 1-5 point ( very good : if answer four true questions give (5degrees) , good : if answer three true questions give (4degrees) , intermittent: if answer two true questions give (3degrees) , weak : if answer one true question give (2degrees) , very weak : if answer wrong all questions give (1degree) .

**3.1.8. 2. Scoring of performance :-**

Scoring of performance using four point Likert scale : from 1-4 point ( proper : if apply the procedure with full steps give (3 marks) , Faire : if apply the procedure with missing one step give (2 marks) , Poor: if apply the procedure with missing more than one step give (1 marks) and Not done: if not do the procedure give (0 mark) .

## **3.2. method :**

### **3.2.1. Operational Design**

Operational design includes preparatory stag , pilot study and field work.

#### **3.2.1. 1. preparatory stag**

- After extensive review of literature , the investigator was acquainted with an actual dimension and magnitude of the problem , it was a guide for development tools of data collection and technical materials used in the study were prepared .
- The actual nursing care performed in different shift was observed by the researcher and researcher assistant .
- The developed educational program about patient's safety was reviewed by experts in the field of study.

#### **3.2.1. 2. Validity and reliability :**

The tools was reviewed by experts in the field of study to test the validity (four associated professor in the faculty of medicine and health sciences/ university of El imam Al mahadi ( two surgeon and two medical specialists ).

A pilot study was carried on 10 nurses working in al madina and al eiman specialized hospitals before embarking on the actual study (data collection). Determination of reliability of the questionnaire was based on the test-retest method, to test feasibility, objectivity, and applicability of the data collection tools. Test retest was repeated after one week according to the knowledge and skill test tool. Reliability of the instrument determined through the use of Pearson correlation coefficient was ( $r = 0.61$ ) for nurses level of knowledge and ( $r = 0.87$ ) for nurses' practices. The level of the P value was ( $P = 0.04$ ) which indicates statistical acceptable for the format.

The results of pilot were as the follows:

The nurses understand the method used to fulfill each tool. They indicated that some items needed to be modified.

Based on pilot results the modification was done and further the researcher refining each tool, each item in the same part, parts to each other and tools to each other, were done.

Finally, making assurance that each tool as a whole will achieved the aim of the study.

The time required to fill the questionnaire was about 10-15 minutes

### **3.2.1. 3. field work:**

Once the necessary approvals were granted, the proposed study proceeded. The subjects who meet sampling criteria and agreed to participate in the study were interviewed by the researcher to collect the necessary data.

#### **3.2.1. 3. 1. data collection technique:**

The data was collected in three phases before implementation of training program phase one (pretest data), pretest for the existing knowledge for nurses was carried out prior to the intervention using self-administrative questionnaire format; time offered was 15-20 minutes for each participant, which was considered enough time for the participant to answer the questions.

Then each of responders was observed by checklists for their skills. Close supervision to the participants while applying the safety patients care during the study period. Provided time was three hours for each participant by total of 324 hours. (carried out by the researcher and researcher assistant).

After collection of pretest data the responders were received the training program, the training was continued for eight weeks (for details see an annex).

The researcher train four nurses (for two days) to assist in data collection and clinical training of the participant, all of them are teaching assistants in nursing collage / university of El imam Al mahadi with at least two years experience in his/her job

#### **3.2.1. 2. 1.Educational Program( phase two):**

An orientation about the educational program was given first, to give the participants the full idea about the phases of the application of the program in order to facilitate for their contribution.

- Orientation to the educational program format, including: the lecture's time, and the educational materials.
- Each lecture time was one and half hour, and there was about half hour time offered for discussion after each lecture for further clarification about what is missing or not understood by the participants.
- An intense educational program had been designed by the researcher based on actual nursing services to maintain patient's safety in the light of the available researches and literature.
- The intervention had been developed in English language to cover the relevant theoretical and practical aspects of patient's safety .
  - Different teaching methods as discussion, demonstration and supervised practice have been used.
  - The intervention had been implemented to nurses in four groups ( two groups in Kosti teaching hospital and two group in Rabak teaching hospital ) group1 in kosti teaching hospital contain 32 nurses and group2 contain 30 nurses ( were divided into small group during demonstration and re-demonstration )whereas group1 in Rabak teaching hospital contain 25 nurse and group2 contain 17 nurses.
  - The program had been implemented in two sessions per day ( four days per week for each group ) for eight weeks for theoretical and practical sites . each session had take about two hours ( one hour theory and one hour practical ) and at the end of each session each nurse has been assessed for his/her understanding of the instructions. The impact of the program had based on the improvement of the nurses quality provide nursing care about patient's safety.
- The theoretical part of the program was applied for all nurses as one unit in Kosti and Rabak teaching hospital hole .

- The clinical part was applied for all nurses in four groups in the study areas after demonstration in manikins in kosti and Rabak training department , each group spend about four weeks: (two weeks in training department and other two weeks in the study areas) the total time required for theoretical and clinical training was 8 weeks.
- Phase three ,evaluation of the educational program through post tests , post test(1) was carried out one month after the implemented the educational program , post test (2) after two months from the post test one ( three months after the implemented of the educational program) and the last test ( post test 3) after the three month of post test two( six months after the implemented the educational program).
- After analysis of data the researcher was explanation of incorrect items , this was the final contact with researcher , and the subject were thanked for participating in the study .

### **3.3.The data analysis:**

After the data was collected, it coded and transferred into a specially designed formats so as to be suitable for computer feeding by using the soft ware Statistical Package for Social Science (SPSS) version 20, following data entry, checking and verification process were carried out to avoid any errors during data entry. Frequency analysis, cross tabulation, and manual revision were all used to detect any errors.

Descriptive measures include: count, percentage, and arithmetic mean. Statistical test include : chi square test and T test was used for quantitative variables , 96% confidence interval of the difference was used to measure the statistical significant of each variables pre and post interventions . Mean and Std. Deviation also were used to compare between nurse's knowledge . Graphical presentation include par graph. The level of significance selected for this study will be P value equal to or less than 0.04.

### **3.4. Ethical consideration:**

- letter from University was obtained to the study areas.

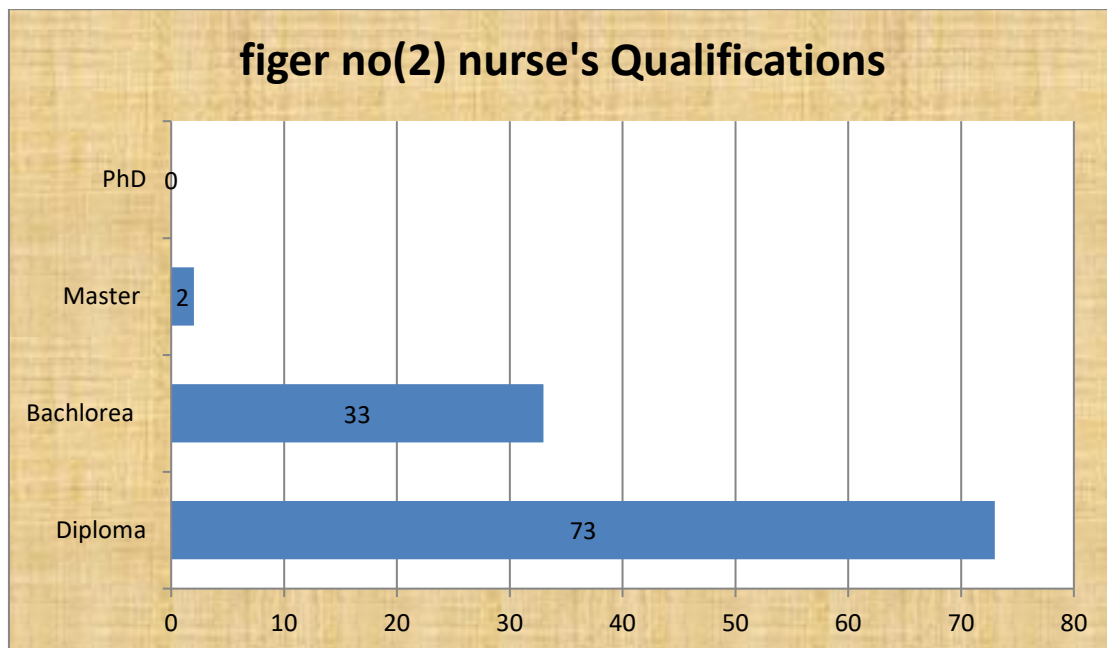
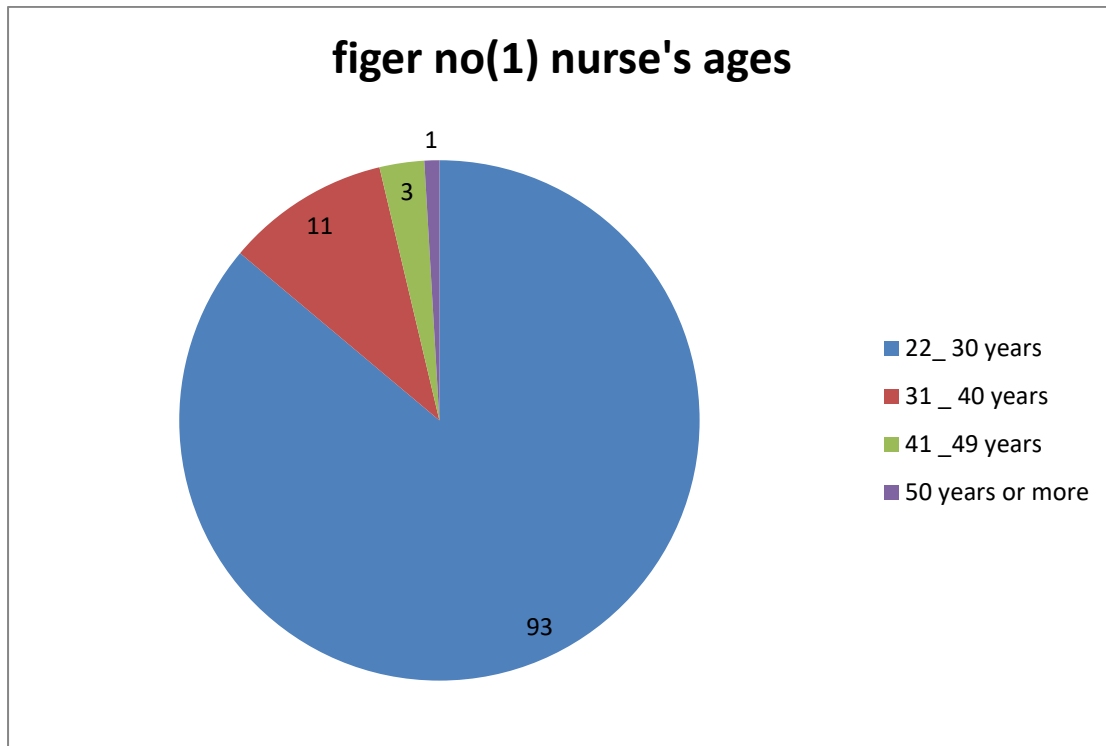


- Approval from the ministry of health in White Nile State was obtained.
- Approval from administrative authorities of the study areas was obtained.
- The privacy and dignity of both nurse and patient were protected.
- The study was explained to the participants in clean simple words.
- The participants were notified by the aims , methods , expected outcome , benefits and result of the study.
- The participants in this study were assured confidentiality through identification coding and reports of data.
- Participants were participated voluntary and voluntary verbal consent was taken.
- Any participants had a right to ask, to discontinue, and to refuse to answer any question of the study.

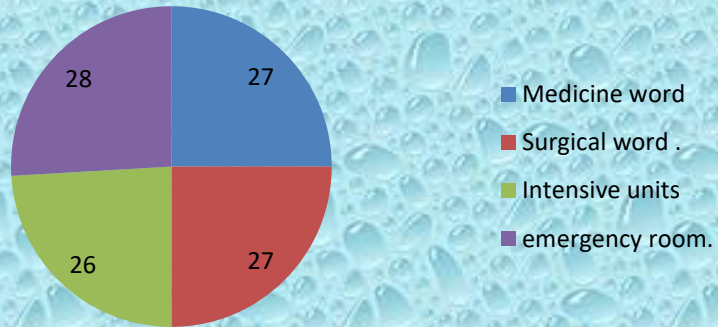
# Chapter Four

## ❖ Results

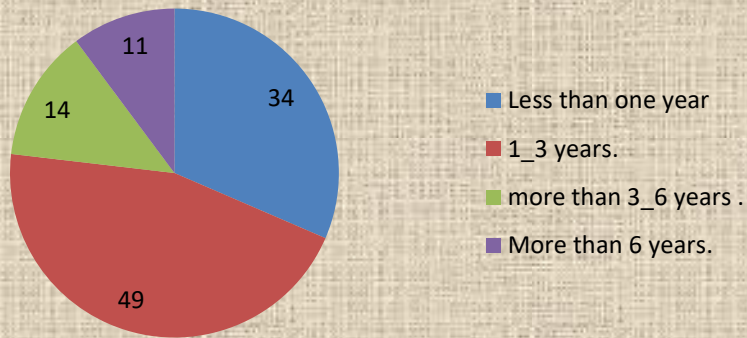
### Section (A) nurse's demographic data



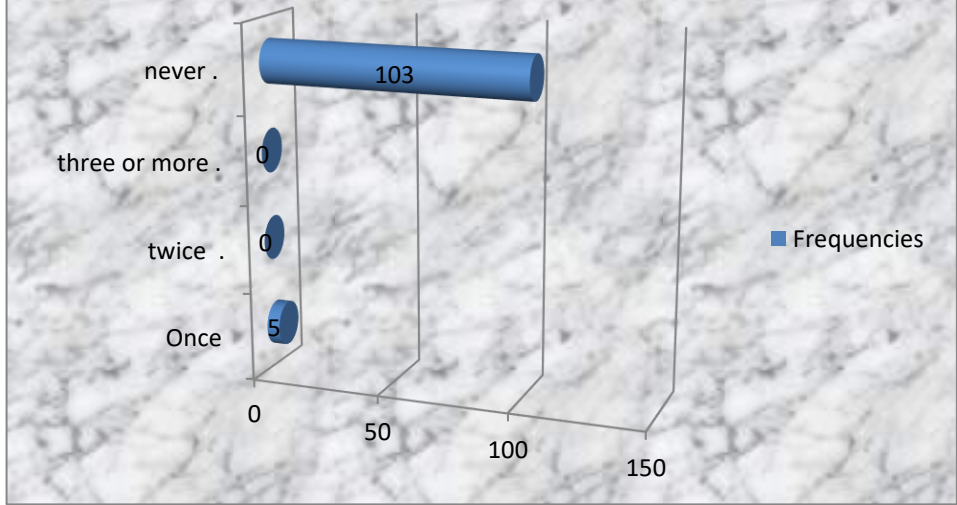
**figer no(3) nurse's Work areas**



**figer no(4) nurse's Years of experience**



**figer no(5) nurse's Training course about patient safety**



## Section (B) nurse's knowledge about patient's safety

<b>table (1) General concepts about patient safety</b>																				
	<b>Pre test</b>					<b>Posttest I</b>					<b>Posttest II</b>					<b>Posttest IV</b>				
	V .weak	weak	Intermed	Good	V. good	V. weak	weak	Intermed	Good	V. good	V. weak	weak	Intermed	Good	V. good	V. weak	weak	Intermed	Good	V. good
<b>Frequ</b>	4	13	15	44	32	0	1	3	11	93	0	1	5	11	91	0	0	9	12	87
<b>Perce</b>	4	12	14	41	30	0	1	3	10	86	0	1	5	10	84	0	0	8	11	81
<b>nt</b>	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%

<b>Table (2) about safety communication</b>																				
	<b>Pre test</b>					<b>Posttest I</b>					<b>Posttest II</b>					<b>Posttest IV</b>				
	weak .V	weak	Intermed	Good	V. good	V. weak	weak	Intermed	Good	V. good	V. weak	weak	Intermed	Good	V. good	V. weak	weak	Intermed	Good	V. good
<b>Frequ</b>	2	13	20	40	33	0	2	2	32	72	0	1	2	15	90	0	0	8	10	90
<b>Perce</b>	2	12	19	37	31	0	2	2	30	67	0	1	2	14	83	0	0	7	9	83
<b>nt</b>	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%

Table (3) about patient monitoring

	Pre test					Posttest I					Posttest II					Posttest IV				
	weak . V	weak	Intermed	Good	V. good	V. weak	weak	Intermed	Good	V. good	V. weak	weak	Intermed	Good	V. good	V. weak	weak	Intermed	Good	V. good
Freque ncy	3	10	6	21	68	0	2	1	29	76	1	0	1	7	99	0	0	4	21	83
Percent	3 %	9 %	6 %	19 %	63 %	0 %	2 %	1 %	27 %	70 %	1 %	0 %	1 %	6 %	92 %	0 %	0 %	4 %	19 %	77 %

Table (4) about safety medications administration

	Pre test					Posttest I					Posttest II					Posttest IV				
	weak . V	weak	Intermed	Good	V. good	V. weak	weak	Intermed	Good	V. good	V. weak	weak	Intermed	Good	V. good	V. weak	weak	Intermed	Good	V. good
Frequen cy	6	9	12	43	38	1	0	2	29	76	1	0	2	1	104	0	0	8	16	84
Percent	6 %	9 %	12 %	43 %	38 %	1 %	0 %	2 %	27 %	70 %	1 %	0 %	2 %	1 %	96 %	0 %	0 %	7 %	15 %	78 %

Table (5) infection control measures

	Pre test					Posttest I					Posttest II					PosttestIV				
	weak . V	weak	Intermed	Good	V. good	V. weak	weak	Intermed	Good	V. good	V. weak	weak	Intermed	Good	V. good	V. weak	weak	Intermed	Good	V. good
Frequen cy	10	13	8	31	46	1	0	2	4	102	1	0	1	4	102	0	0	5	8	95
Percent	10 %	13 %	8 %	31 %	46 %	1 %	0 %	2 %	4 %	94 %	1 %	0 %	1 %	4 %	94 %	0 %	0 %	5 %	7 %	88 %

Table (6) distribute the knowledge of nurses between pre ,post test (I), post (II) and post (III)

	Pre test			Post test I			Post test II			Post testIII		
	Mean	Std. Deviation	df	Mean	Std. Deviation	df	Mean	Std. Deviation	df	Mean	Std. Deviation	df
General concepts about patient safety	3.8	1.11	107	4.81	.514	107	4.78	.569	107	32.46	.609	107
about safety communication	3.8	1.06	107	4.61	.624	107	4.80	.507	107	36.81	.624	107
about patient monitoring	4.3	1.11	107	4.66	.598	107	4.88	.488	107	40.06	.570	107
about safety medications administration	3.9	1.14	107	4.66	.614	107	4.92	.476	107	41.84	.630	107
infection control measures	3.8	1.34	107	4.42	.643	107	4.91	.464	107	42.69	.860	107

Table (7) represent comparison of the nurse's knowledge between pre and post test (I)

Pre test			Post testI			df	t	Sig. (2-tailed)
Mean	Std. Deviation	Std. Error Mean	Mean	Std. Deviation	Std. Error Mean			
3.77	1.124	.108	4.44	.600	.058	107	5.119	.000

Table (8) represent comparison of the nurse's knowledge between post test (I) and post test (II)

Post test I			Post test II			df	t	Sig. (2-tailed)
Mean	Std. Deviation	Std. Error Mean	Mean	Std. Deviation	Std. Error Mean			
4.44	.600	.058	4.935	.283	.027	107	10.34	.000



Table (9) represent comparison of the nurse's knowledge between post test (II) and post (III)

Post test II			Post test III			df	t	Sig. (2-tailed)
Mean	Std. Deviation	Std. Error Mean	Mean	Std. Deviation	Std. Error Mean			
4.935	.283	.283	4.130	.613	.059	107	12	.000

Table (10) represent comparison of the nurse's knowledge between pre test and post (IV)

Pre test			Post test IV			df	t	Sig. (2-tailed)
Mean	Std. Deviation	Std. Error Mean	Mean	Std. Deviation	Std. Error Mean			
3.76	1.124	0.108	4.129	.613	.059	107	2.96	.000

**Section (C) nurse's performances about patient's safety**

Table (11) represent nurse's performance Crosstab regarding Temperature between pre , post test (I) , post test (II) and post (III)

<b>Crosstab Temperature</b>								
		Pre	Post-1	Post-2	Post-3	Chi-Square	df	P-Value
Not done	Count	72	0	0	0	339.864	9	0.000**
	% within Pt	67%	0%	0%	0%			
Poor	Count	19	2	0	0			
	% within Pt	18%	2%	0%	0%			
Faire	Count	8	17	13	16			
	% within Pt	7%	16%	12%	15%			
Proper	Count	9	89	95	92			
	% within Pt	8%	82%	88%	85%			
Total	Count	108	108	108	108			
	% within Pt	100%	100%	100%	100%			

\*significance

\*\* highly significance

Table (12) represent nurse's performance Crosstab regarding Pulses between pre , post test (I) , post test (II) and post (III)

		<b>Crosstab Pulses</b>						
		Pre	Post-1	Post-2	Post-3	Chi-Square	df	P-Value
Not done	Count	63	0	0	0	286.762	9	0.000**
	% within Pt	58%	0%	0%	0%			
Poor	Count	15	3	3	0			
	% within Pt	14%	3%	3%	0%			
Faire	Count	7	24	21	17			
	% within Pt	6%	22%	19%	16%			
Proper	Count	23	81	84	91			
	% within Pt	21%	75%	78%	84%			
Total	Count	108	108	108	108			
	% within Pt	100%	100%	100%	100%			

\*significance

\*\* highly significance

Table (13) represent nurse's performance Crosstab regarding blood pressure between pre , post test (I) , post test (II) and post (III)

<b>Crosstab Blood.pressure</b>								
		Pre	Post-1	Post-2	Post-3	Chi-Square	df	P-Value
Not done	Count	81	0	0	0	338.544	9	0.000**
	% within Pt	75%	0%	0%	0%			
Poor	Count	10	1	0	1			
	% within Pt	9%	1%	0%	1%			
Faire	Count	7	16	15	9			
	% within Pt	6%	15%	14%	8%			
Proper	Count	10	91	93	98			
	% within Pt	9%	84%	86%	91%			
Total	Count	108	108	108	108			
	% within Pt	100%	100%	100%	100%			

\*significance

\*\* highly significance

Table (14) represent nurse's performance Crosstab regarding Respiration between pre , post test (I) , post test (II) and post (III)

<b>Crosstab Respiration</b>								
		Pre	Post-1	Post-2	Post-3	Chi-Square	df	P-Value
Not done	Count	66	0	0	0	286.298	9	0.000**
	% within Pt	61%	0%	0%	0%			
Poor	Count	14	1	3	1			
	% within Pt	13%	1%	3%	1%			
Faire	Count	6	29	26	16			
	% within Pt	6%	27%	24%	15%			
Proper	Count	22	78	79	91			
	% within Pt	20%	72%	73%	84%			
Total	Count	108	108	108	108			
	% within Pt	100%	100%	100%	100%			

\*significance

\*\* highly significance

Table (15) represent nurse's performance Crosstab regarding body hygien between pre , post test (I) , post test (II) and post (III)

<b>Crosstab Body hygiene</b>								
\		Pre	Post-1	Post-2	Post-3	Chi-Square	df	P-Value
Not done	Count	73	0	0	0	<b>397.877</b>	<b>9</b>	<b>0.000**</b>
	% within Pt	68%	0%	0%	0%			
Poor	Count	27	1	2	0			
	% within Pt	25%	1%	2%	0%			
Faire	Count	7	26	22	11			
	% within Pt	6%	24%	20%	10%			
Proper	Count	1	81	84	97			
	% within Pt	1%	75%	78%	90%			
Total	Count	108	108	108	108			
	% within Pt	100%	100%	100%	100%			

\*significance

\*\* highly significance

Table (16) represent nurse's performance Crosstab regarding safety patient's environment between pre , post test (I) , post test (II) and post (III)

Crosstab Safety patient's environment								
		Pre	Post-1	Post-2	Post-3	Chi-Square	df	P-Value
Not done	Count	55	0	0	0	348.715	9	0.000**
	% within Pt	51%	0%	0%	0%			
Poor	Count	35	0	1	0			
	% within Pt	32%	0%	1%	0%			
Faire	Count	10	32	30	20			
	% within Pt	9%	30%	28%	19%			
Proper	Count	8	76	77	88			
	% within Pt	7%	70%	71%	81%			
Total	Count	108	108	108	108			
	% within Pt	100%	100%	100%	100%			

\*significance

\*\* highly significance

Table (17) represent nurse's performance Crosstab regarding feeding of the patient between pre , post test (I) , post test (II) and post (III)

<b>Crosstab Feeding of the patients</b>								
		Pre	Post-1	Post-2	Post-3	Chi-Square	df	P-Value
Not done	Count	82	0	0	0	<b>386.211</b>	<b>9</b>	<b>0.000**</b>
	% within Pt	76%	0%	0%	0%			
Poor	Count	16	0	0	0			
	% within Pt	15%	0%	0%	0%			
Faire	Count	6	30	27	19			
	% within Pt	6%	28%	25%	18%			
Proper	Count	4	78	81	89			
	% within Pt	4%	72%	75%	82%			
Total	Count	108	108	108	108			
	% within Pt	100%	100%	100%	100%			

\*significance

\*\* highly significance



Table (18) represent nurse's performance Crosstab regarding elimination between pre , post test (I) , post test (II) and post (III)

<b>Crosstab Elimination</b>								
		Pre	Post-1	Post-1	Post-3	Chi-Square	df	P-Value
Not done	Count	40	0	0	0	192.861	9	0.000**
	% within Pt	37%	0%	0%	0%			
Poor	Count	35	0	0	1			
	% within Pt	32%	0%	0%	1%			
Faire	Count	32	39	36	26			
	% within Pt	30%	36%	33%	24%			
Proper	Count	1	69	72	81			
	% within Pt	1%	64%	67%	75%			
Total	Count	108	108	108	108			
	% within Pt	100%	100%	100%	100%			

\*significance

\*\* highly significance

Table (19) represent nurse's performance Crosstab regarding ambulation/ exercises between pre , post test (I) , post test (II) and post (III)

Crosstab Ambulation/exercises								
		Pre	Post-1	Post-2	Post-3	Chi-Square	df	P-Value
Not done	Count	61	0	0	0	390.512	9	0.000**
	% within Pt	56%	0%	0%	0%			
Poor	Count	38	0	0	0			
	% within Pt	35%	0%	0%	0%			
Faire	Count	7	42	40	29			
	% within Pt	6%	39%	37%	27%			
Proper	Count	2	66	68	79			
	% within Pt	2%	61%	63%	73%			
Total	Count	108	108	108	108			
	% within Pt	100%	100%	100%	100%			

\*significance

\*\* highly significance

Table (20) represent nurse's performance Crosstab regarding positioning between pre , post test (I) , post test (II) and post (III)

Crosstab Positioning								
		Pre	Post-1	Post-2	Post-3	Chi-Square	df	P-Value
Not done	Count	27	0	0	0	234.609	9	0.000**
	% within Pt	25%	0%	0%	0%			
Poor	Count	38	0	0	0			
	% within Pt	35%	0%	0%	0%			
Faire	Count	19	25	22	20			
	% within Pt	18%	23%	20%	19%			
Proper	Count	24	83	86	88			
	% within Pt	22%	77%	80%	81%			
Total	Count	108	108	108	108			
	% within Pt	100%	100%	100%	100%			

\*significance

\*\* highly significance

Table (21) represent nurse's performance Crosstab regarding hand washing between pre , post test (I) , post test (II) and post (III)

<b>Crosstab Hand washing</b>								
		Pre	Post-1	Post-2	Post-3	Chi-Square	df	P-Value
Not done	Count	30	0	0	0	206.662	9	0.001*
	% within Pt	28%	0%	0%	0%			
Poor	Count	27	0	0	0			
	% within Pt	25%	0%	0%	0%			
Faire	Count	22	27	24	17			
	% within Pt	20%	25%	22%	16%			
Proper	Count	29	81	84	91			
	% within Pt	27%	75%	78%	84%			
Total	Count	108	108	108	108			
	% within Pt	100%	100%	100%	100%			

\*significance

\*\* highly significance

Table (22) represent nurse's performance Crosstab regarding wear gloves , mask, gpwn and goggles between pre , post test (I) , post test (II) and post (III)

<b>Crosstab Wear,gloves,mask,gown and goggles</b>								
		Pre	Post-1	Post-2	Post-3	Chi-Square	df	P-Value
Not done	Count	40	0	0	0	214.326	9	0.003*
	% within Pt	37%	0%	0%	0%			
Poor	Count	20	0	0	0			
	% within Pt	19%	0%	0%	0%			
Faire	Count	21	32	30	23			
	% within Pt	19%	30%	28%	21%			
Proper	Count	27	76	78	85			
	% within Pt	25%	70%	72%	79%			
Total	Count	108	108	108	108			
	% within Pt	100%	100%	100%	100%			

\*significance

\*\* highly significance

Table (23) represent nurse's performance Crosstab regarding use sharp containers between pre , post test (I) , post test (II) and post (III)

<b>Crosstab Use sharp containers</b>								
		Pre	Post-1	Post-2	Post-3	Chi-Square	df	P-Value
Not done	Count	48	0	0	0	<b>331.63</b>	<b>9</b>	<b>0.002*</b>
	% within Pt	44%	0%	0%	0%			
Poor	Count	40	2	0	1			
	% within Pt	37%	2%	0%	1%			
Faire	Count	9	39	38	26			
	% within Pt	8%	36%	35%	24%			
Proper	Count	11	67	70	81			
	% within Pt	10%	62%	65%	75%			
Total	Count	108	108	108	108			
	% within Pt	100%	100%	100%	100%			

\*significance

\*\* highly significance

Table (24) represent nurse's performance Crosstab regarding safety bogs between pre , post test (I) , post test (II) and post (III)

Crosstab Safety bogs								
		Pre	Post-1	Post-2	Post-3	Chi-Square	df	P-Value
Not done	Count	26	0	0	0	195.802	9	0.002*
	% within Pt	24%	0%	0%	0%			
Poor	Count	27	0	0	0			
	% within Pt	25%	0%	0%	0%			
Faire	Count	25	27	24	15			
	% within Pt	23%	25%	22%	14%			
Proper	Count	30	81	84	93			
	% within Pt	28%	75%	78%	86%			
Total	Count	108	108	108	108			
	% within Pt	100%	100%	100%	100%			

\*significance

\*\* highly significance

Table (25) represent nurse's performance Crosstab regarding sterile gloving/ removing between pre , post test (I) , post test (II) and post (III)

<b>Crosstab Sterile gloving/removing</b>								
		Pre	Post-1	Post-2	Post-3	Chi-Square	df	P-Value
Not done	Count	78	0	0	0	343.708	9	0.002*
	% within Pt	72%	0%	0%	0%			
Poor	Count	14	1	1	1			
	% within Pt	13%	1%	1%	1%			
Faire	Count	3	45	43	29			
	% within Pt	3%	42%	40%	27%			
Proper	Count	13	62	64	78			
	% within Pt	12%	57%	59%	72%			
Total	Count	108	108	108	108			
	% within Pt	100%	100%	100%	100%			

\*significance

\*\* highly significance



Table (26) represent nurse's performance Crosstab regarding sterile equipments between pre , post test (I) , post test (II) and post (III)

<b>Crosstab Sterile equipments</b>								
		Pre	Post-1	Post-2	Post-3	Chi-Square	df	P-Value
Not done	Count	77	0	0	0	336.888	9	0.004*
	% within Pt	71%	0%	0%	0%			
Poor	Count	12	1	0	1			
	% within Pt	11%	1%	0%	1%			
Faire	Count	6	60	57	40			
	% within Pt	6%	55%	53%	37%			
Proper	Count	13	49	51	67			
	% within Pt	12%	45%	47%	62%			
Total	Count	108	110	108	108			
	% within Pt	100%	100%	100%	100%			

\*significance

\*\* highly significance

Table (27) represent nurse's performance Crosstab regarding therapeutic communications between pre , post test (I) , post test (II) and post (III)

<b>Crosstab Therapeutic communications</b>								
		Pre	Post-1	Post-2	Post-3	Chi-Square	df	P-Value
Not done	Count	40	0	0	0	267.484	9	0.000**
	% within Pt	37%	0%	0%	0%			
Poor	Count	28	2	0	0			
	% within Pt	26%	2%	0%	0%			
Faire	Count	28	24	22	12			
	% within Pt	26%	22%	20%	11%			
Proper	Count	12	82	86	96			
	% within Pt	11%	76%	80%	89%			
Total	Count	108	108	108	108			
	% within Pt	100%	100%	100%	100%			

\*significance

\*\* highly significance

Table (28) represent nurse's performance Crosstab regarding medications administration between pre , post test (I) , post test (II) and post (III)

<b>Crosstab Medications administration</b>								
		Pre	Post-1	Post-2	Post-3	Chi-Square	df	P-Value
Not done	Count	25	0	0	0	140.823	9	0.000**
	% within Pt	23%	0%	0%	0%			
Poor	Count	10	0	0	0			
	% within Pt	9%	0%	0%	0%			
Faire	Count	29	19	16	8			
	% within Pt	27%	18%	15%	7%			
Proper	Count	44	89	92	100			
	% within Pt	41%	82%	85%	93%			
Total	Count	108	108	108	108			
	% within Pt	100%	100%	100%	100%			

\*significance

\*\* highly significance

Table (29) represent nurse's performance Crosstab regarding Disposable waste management between pre , post test (I) , post test (II) and post (III)

<b>Crosstab Disposable waste management</b>								
		Pre	Post-1	Post-2	Post-3	Chi-Square	df	P-Value
Not done	Count	54	0	0	0	332.205	9	0.000**
	% within Pt	50%	0%	0%	0%			
Poor	Count	35	1	0	0			
	% within Pt	32%	1%	0%	0%			
Faire	Count	10	51	48	42			
	% within Pt	9%	47%	44%	39%			
Proper	Count	9	56	60	66			
	% within Pt	8%	52%	56%	61%			
Total	Count	108	108	108	108			
	% within Pt	100%	100%	100%	100%			

\*significance

\*\* highly significance

Table (30) represent nurse's performance Crosstab regarding documentation and reporting between pre , post test (I) , post test (II) and post (III)

<b>Crosstab Documentation and reporting</b>								
		Pre	Post-1	Post-2	Post-3	Chi-Square	df	P-Value
Not done	Count	42	0	0	0	<b>199.88</b>	<b>9</b>	<b>0.002*</b>
	% within Pt	39%	0%	0%	0%			
Poor	Count	22	13	0	0			
	% within Pt	20%	12%	0%	0%			
Faire	Count	14	25	36	28			
	% within Pt	13%	23%	33%	26%			
Proper	Count	30	70	72	80			
	% within Pt	28%	65%	67%	74%			
Total	Count	108	108	108	108			
	% within Pt	100%	100%	100%	100%			

\*significance

\*\* highly significance

# Chapter Five

- ❖ **Discussion**
- ❖ **Conclusion**
- ❖ **Recommendation**

## **Discussion**

The study reveal that (103 nurses ) most of them are younger , (93) their age range between (22-30) years , (11) in age ( 31-40) , (3) age (41-49) and most of them having nursing diploma (73) , (33) having baccalaureate and (2) having master degree , also most of them less experiences in their work area, (34) have experience less than one year , (49) (1-3 years ) , (14) (3-6 years ) and only (11) have an experience more than (6years ) , (103) they not received any training course about patient safety , only (5) nurses from the total (108 nurses ) have once training course. These findings indicated that study group were younger , have good level of knowledge but they were not expertise at their work site or have and training course which reflect on their care and present patient to risk.

Moreover ,only less than one third of the nurse have very good level of knowledge concerning the general concept of patient safety ,safety communication ,safety medication administration, (30%) ‘ (31%) ‘(38%) respectively, pre application of the program but their knowledge was increase after implementation of the program post test one (86%) ,(67%),(70%) ,post test two(84%),(83%),(96%) and post test three(81%) ,( 83%),(78%).in addition to that, also less than half of them have very good level of knowledge pre program phase concerning infection control measures was (46%), this result was improved to the best level in test one (94%),post test two(94%%)and post test three(88%) .these finding indicated that nurses were not perform or follow infection control guidelines which present both of themselves and patients to harm.

The study results support other research findings indicating that, Minimizing infection through improved infection Control as the study done to compromised the infection control in the developing countries with united states and the results conclude that :

According to the poor knowledge of the nurses working hospital between 5% and 10% of patient submitted to modern hospitals in the developed world acquire one or more infections.

- The risk of health care-associated infection in developing countries is from 2 to 20 times higher than in developed countries. In some developing countries, the proportion of patients affected by a health care-acquired infection can exceed 25%.
- In the United States, 1 out of every 136 hospital patients becomes seriously ill as a result of acquiring an infection in hospital; this is equivalent to two million cases and about 80 000 deaths a year<sup>(62)</sup>

Furthermore, it was clarified that nurses were promote patient monitoring and observation in a good manner pre program because less than two third of them (63%), this result was improved after the application of the program; in post test one (70%), post test two(92%%)and post test three(77%) .also the study justify that , there was highly statistical significant relationship between pre test and post test one , post test one and post test two , post test two and post test three ( p = 0.000), theses finding indicated the efficiency of the program in change the level of knowledge, if applied in proper way and it reflect on nurses quality of care and patient out come.

The nursing skills was studied in five domains which were , safe patient monitoring ,infection control ,safe medication administration ,safety communication ,safe environment. All of the mentioned domains showed markedly an improvement in score from pre intervention to post intervention as the following:

Regarding the safe patient monitoring the performance of the study group was considered to be either poor or not done pre program, because in assessing patient vital signs; more than two third of them were not assess body temperature ( 67%),pulses ( 58%),blood pressure (75%), or respiration (61%), theses result was improved during post tests to include all of them. Also nurses were have poor performance pre program concerning body hygiene because (68%) were not perform hygienic care and (25%) perform it in poor technique, but their skills was improved during post test to in proper way because most of them (75%), (78%), and (90%) done it during post test one , two , and three



respectively. In addition to that , nurses level of performance was poor or they were not perform safe environment pre program because (32%) were poor , and not done (51%), where these findings was improved after application of the program and during follow-up to be in proper skills.

Concerning the application of infection control measures during patient care to maintain safe patient environment nurses were not perform hand washing , using of personal protective equipment , using sharp containers , using safety bogs, using sterile equipments for sterile procedure, or dispose the waste product (28%) , (37%),(44%),(24%),(71%) , (50%\_ pre program and (24%),(19%),(37%),(25%),(11%),(32%) done it in poor skills, these behavior was improved in proper was during post test and follow up phase, respectively. Also they were poor in position the patient and provide safe therapeutic communication skills. In spied of this poor skills among the study group but there was proper performance was done by nurses when giving safe medication , or perform documentation and reporting pre program.

The study results support other research findings indicating that, positive practice environment enhance patient safety out come. As study done to explore the relationship between ward environment in which nurses practice and specific patient safety outcomes, the outcome were nurse reported patient safety level in ward in which they work, a quantitative cross sectional study was carried out ,(108)general medical surgical nurse in 30 hospitals throughout Ireland , the result conclude that, the importance of ward level nurse factors such as educational level and work environment should be recognized and manipulated as important influence on patient safety<sup>(60)</sup>.

Another study was done to design training intervention and then test its effect on nurse leaders perception of patient safety, three hundred and fifty six nurses in clinical leadership roles in two Canadian multi site teaching hospitals ( study and control ) , the result conclude that, Sensitively delivered training initiatives for nurse leaders can help to foster a safety culture. Organizational leadership support for improvement is, however, also critical for fostering a culture of safety. Together, training interventions and leadership support may have the most significant impact on patient safety culture<sup>(61)</sup>.

# Conclusion

The study conclude the following

- 1- The mean of nurse's knowledge regarding maintain patient safety was improved, in pre intervention ( 3.77 +/- Std 1.24 )to be( 4.44 +/- Std 0.60 ) in post test I which get better to( 4.93 +/- Std 0.283 ) in post test II , and it was ( 4.13 +/- Std 0.613 ) in post test III
- 2- There was statistically higly significant association between the nurses knowledge and application of training program .
- 3- Nurse's skills was improved after intervention of the program from not done and poor to be in proper skills and technique concerning safe patient monitoring ,infection control ,safe medication administration ,safety communication ,safe environment. All of the mentioned domains showed markedly an improvement in score from pre intervention to post intervention :
- 4- Lack of training was stand as problem or barrier that preventing providing of good patient safety guide lines among nurses.

# Recommendations

**Based on the finding of the present study, the following is recommended**

- 1- Continuous training courses about the patient's safety should be implemented for nurses
- 2- Application the patient's safety course in the nursing student curriculum .
- 3- Enhance the health care workers to perform the Essential Safety Requirement (ESR ) in their working area .
- 4- Collaboration between institutions and federal ministry of health to Perform annual patient's safety conference and workshop and formalize a protocol with chick list as a tool that help ensure consistent application of key elements of evidence – based practice in patient safety.

# Appendix

- ❖ **References**
- ❖ **Tools**
- ❖ **Teaching program**
- ❖ **Approval**

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## Research tools :

Questioner

University of Shendi  
Post graduate collage

### **The effect** of a designed proposed program for nurses about patient safety

A thesis Submitted in requirements to fulfill Ph-D in Medical Surgical Nursing

Submitted By

**MOHAMMED IBRAHIM OSMAN AHMED**

B.Sc Nursing – M.Sc Medical Surgical Nursing

**Supervised by:-Dr : HAYAT FADLALLAH MUKHTAR**

This questionnaire was formulated to assess the nurses knowledge about patient safety .

## Consent form

Dear colleague , in this questionnaire we aim to study nurses knowledge about patient's safety.

I will be thankful if you answer this questionnaire , the information will be confidential and not using it except for the research purpose. however you are free to refuse participation with no negative consequences .

Your answers and submission of this questionnaire consider to be a consent to use these data in research purposes .

In case you need more information or clarification about the study , you could communicate with me( mohammed Ibrahim osman ) on ([wadow75@gmail.com](mailto:wadow75@gmail.com)).

### **Benefits of the study :-**

It focused heavily on achieving clear guidance , and improving quality of care related to patient safety

**THANK YOU**

**RESEARCHER**

**Prescriptions :-**

- Please answer all questions by true sign (√)on your true answer and false (X) in your false answer

**Part onedemographic data :-**

**1. Age :-**

- ( ) 22\_\_30 years
- ( ) 31\_\_40 years
- ( ) 41\_\_\_\_49 years
- ( ) 50 years or more

**2. Educational level :-**

- ( ) Diploma
- ( ) Bachlorea
- ( ) Master
- ( ) PhD



**3. Area of work :-**

- a. ( ) Medicine word
- b. ( ) Surgical word .
- c. ( ) Intensive units
- d. ( ) emergency room.

**4. Your experiences :-**

- a. ( ) Less than one year .
- b. ( ) 1\_3 years.
- c. ( ) more than 3\_6 years .
- d. ( ) More than 6 years.

**5. Training course about patient safety :-**

- a. ( ) Once
- b. ( ) twice .
- c. ( ) three or more .
- d. ( ) never .

**Part two : General concepts about patient safety :-**

1- The term of patient safety refer to :-

- a. ( ) Prevent the patient from harmless and adverse event .
- b. ( ) Introduce care without causing harm.
- c. ( ) good patient care .
- d. ( ) is the heart of healthcare quality .

2- Importance of patient safety :-

- a. ( ) Prevent the harmless and adverse events to the patient.
- b. ( ) Maintain safety health system .
- c. ( ) Reduce the spending time of patient on hospital.
- d. ( ) Maintaining the financial resources.

3- Common problems related to improper patient safety include :

- a. ( ) may lead to serious complications .
- b. ( ) social problems
- c. ( ) financial problems .
- d. ( ) increase the morbidity and mortality rates .

**Part three : about safety communication :-**

1- Important of effective communication help to :-

- a. ( ) Establish therapeutic helping relationship .
- b. ( ) Enable nurses to determined patient care needed .
- c. ( ) Promote trust and confidence .
- d. ( ) Facilitate teamwork .

2- The types of communication include :-

- a. ( ) audio visual communication
- b. ( ) formal/ informal communication
- c. ( ) verbal communication.
- d. ( ) written communication .

3- To provide effective communication with the patient you have to :-

- a. ( ) Get patient attention .
- b. ( ) .Express concern .
- c. ( ) take Proper action .
- d. ( ) Reach decision .

4- Factors that affecting communication with the patient include :-

- a. ( ) Physical.
- b. ( ) Psychological .
- c. ( ) Social .
- d. ( ) Environmental .

5- Barriers of effective communication are :-

- a. ( ) Failure to establish or explaining the purposes.
- b. ( ) Failure to listening.
- c. ( ) Lack of trust .
- d. ( ) Lack of privacy.

**Part four : about patient monitoring :-**

1- The report to the charge nurse include :-

- a. ( ) any abnormal finding in vital sign
- b. ( ) the mistake occur by the nurses
- c. ( ) any changing in patient condition .
- d. ( ) changing in the patient's feeding .

2- The Nursing role regarding Patient monitor include :-

- a. ( )Feeding .
- b. ( )Vital signs .
- c. ( ) Intake and output chart .
- d. ( ) Patient environment.

3- nursing documentation include :-

- a. ( )Intake and output finding
- b. ( ) Paratral and oral medications
- c. ( )Vital signs finding .
- d. ( )Patient condition .

4- Patient environment include :-

- a. ( )Proper light .
- b. ( ) Proper cleaning
- c. ( )Good ventilation
- d. ( ) suitable beds and chairs .

**Part five : about safety medications administration :-**

1- To use safely medicines you should do :-

- a. ( )label medicines
- b. ( ) proper calculation of the dose
- c. ( ) Record and pass along correct information about a patient's medicines.
- d. ( ) Make sure the patient knows which medicines to take when they are at home.

2- The nursing report about medication administration include :-

- a. ( ) Miss dose
- b. ( ) Double dose
- c. ( ) Sub or over dose
- d. ( ) Allergic reaction occur

3- For Identify patients correctly before give medication :

- a. ( ) Check the patient's hand label
- b. ( ) Compare the patient label with asking the patient name
- c. ( ) Compare the patient label with his/ her labeled medicine
- d. ( ) Duple check the patient ID by the other nurse.

4- In case of un clear doctor prescriptions of medicine you should :

- a. ( ) Repot it to the charge nurse
- b. ( ) Call the doctor to correct the prescription
- c. ( ) Release incident report.

- d. ( ) Document it on the patient's record .
- 5- Your role as a nurse regarding insulin injection :
  - a. ( ) Labeled and storage it in the refrigerator
  - b. ( ) Abdomen is most appropriate site of injection .
  - c. ( ) Monitor the action and the side effect of insulin .
  - d. ( ) Train the patient about self injection emphasize that only Single-use of syringe .

**Part six : infection control measures:-**

- 1- The principles of infection control include :-
  - a. ( ) Use of Sharp box for sharp instrument .
  - b. ( ) Wear a uniform and available gloves .
  - c. ( ) Do hand washing and hand scrubbing.
  - d. ( ) dispose of waste products .
- 2- during applying nursing services to patient you should do :-
  - a. ( ) Change gloves between patients
  - b. ( ) Change gloves before using phone, computers, writing notes .
  - c. ( ) Wash your hands whenever you change your gloves
  - d. ( ) use alcohol rub ( ezy clean ) .
- 3- To avoid hospital acquired infection :
  - a. ( ) Maintain aseptic technique in the nursing procedures
  - b. ( ) Isolate the infectious patient and their secretions
  - c. ( ) Maintain personal protective devices .
  - d. ( ) Accurate monitor patient's treatment to reduce the spending time.
- 4- Disposal of Infectious Waste managed as
  - a. ( ) the contaminated needles put in yellow Sharps Containers .
  - b. ( ) contaminated gauze and gloves put in yellow bogs .
  - c. ( ) Human body tissues and parts waste (Placenta, Retained product) put in red bogs .
  - d. ( ) medical waste (Empty pen, papers, kitchen products) put in black bogs .
- 5- The nursing role about the safety department (cleaned ).
  - a. ( ) Proper disposal of the patient's secretions .
  - b. ( ) Instruct and Monitor the cleaner about proper cleaning and material uses .
  - c. ( ) Advice the cleaner to wear protected equipment to avoid injury .
  - d. ( ) Instruct the cleaner to use the suitable antiseptic solutions .
- 6- How to deal with the infectious patient secretions :-
  - a. ( ) Disposable gloves and personal protective equipment must be worn.
  - b. ( ) Hand washing before and after touch the secretion .
  - c. ( ) Wards or rooms should be cleaned every 8 hours with suitable antiseptic.
  - d. ( ) Contaminated linens must be discarded in locked container and transfer to laundry.

## Observational checklist

University of Shendi  
Postgraduate collage

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A thesis Submitted in requirements to fulfill Ph-Din Medical Surgical Nursing

**Submitted By**

**MOHAMMED IBRAHIM OSMAN AHMED**

B.Sc Nursing – M.Sc Medical Surgical Nursing

**Supervised by:-Dr : HAYAT FADLALLAH MUKHTAR**

This observational checklist was formulated to assess the nurses skills during practice regarding patient safety on the clinical practicing .

No	Patient Safety measures	Proper (3)	Fair(2)	Poor(1)	Not done (0)
1	Temperature				
2	Pulses				
3	Blood Pressure				
4	Respiration				
5	Body Hygiene				
6	Safety Patient environment				
7	Feeding of the patient				
8	Elimination				
9	Ambulation/ exercises				
10	Positioning				
11	Hand washing				
12	Wear gloves ,mask, gown and goggles				
13	Use sharp containers				
14	Safety bogs				
15	Sterile gloving/removing				
16	Sterile equipment				
17	Therapeutic Communication				
18	Medications administration				
19	Disposable waste management				
20	Documentation and reporting .				

**Teaching program :**  
**PATIENT SAFETY PROGRAM IN KOSTI AND RABAK TEACHING HOSPITALS**

**Introduction:**

A highly effective strategy in reducing healthcare-associated harm and error in hospitals is through the proper implementation and practice of policies and procedures on patient safety by healthcare providers committed to this vital patient safety effort, patient safety policies and procedures, when consistently applied and integrated into all systems and processes will yield the desired outcome. i.e. reduced harm, error and infection rates.

**Aim of program;**

The primary aim of patient safety program is to prevent harmnes of the patient , occurrence of error during procedure and the spread of infection in health care facilities and settings; thereby assisting health care workers in the provision of quality health care

**Educational objectives:**

*By the end of this program the nurses should be able to:*

1. Define the patient safety and know importance and principles of patient safety .
2. Know the effective communication and it is barriers .
3. Demonstrate proper patient monitor .
4. Application of medications administration technique .
5. Discuss the infection control procedures for prevention of infection.
6. Know the disposable waste management
7. Maintain safety environment .

**FIRST WEEK OF THE FIRST GROUP IN KOSTI TEACHING HOSPITAL FROM 10AM TO 12MD (8H)**

**Day one : session (1) (2hours theory ) from 10am to 12MD .**

<i>Learning topic</i>	<i>Content</i>	<i>Instructional method</i>	<i>Instructional aids</i>	<i>Evaluation</i>
patient safety	<ul style="list-style-type: none"> <li>- Definition of patient safety</li> <li>- Importance and Principles of safety measures</li> <li>- Common problems of patient safety</li> </ul>	Modified lecture / group work	Poster/ Hand out / case presentation	

**Day two : session(1) (1h) theory from 10 am to 11am**

<i>Learning topic</i>	<i>Content</i>	<i>Instructional method</i>	<i>Instructional aids</i>	<i>Evaluation</i>
Safety communication	<ul style="list-style-type: none"> <li>- Definition of communication</li> <li>- Types of communication</li> <li>- Importance of effective communication</li> </ul>	Modified lectures	Poster ,Role play and hand out	

**Day two : session(2) (1h) the practical from 11am to 12MD.**

<i>Learning topic</i>	<i>Content</i>	<i>Instructional method</i>	<i>Instructional aids</i>	<i>Evaluation</i>
Safety communication	<ul style="list-style-type: none"> <li>- Patient to patient communication</li> <li>- Patient to health care providers communication</li> <li>- Barriers of effective communication</li> </ul>	Group work	Role play	

**Day three : session(1) (1h) theory from 10 am to 11am**

<i>Learning topic</i>	<i>Content</i>	<i>Instructional method</i>	<i>Instructional aids</i>	<i>Evaluation</i>
Safety communication	<ul style="list-style-type: none"> <li>- Importance of therapeutic communication</li> <li>- Factors affecting communication</li> </ul>	Modified lectures	Poster and hand out	

**Day three : session(2) (1h) the practical from 11am to 12MD.**

<i>Learning topic</i>	<i>Content</i>	<i>Instructional method</i>	<i>Instructional aids</i>	<i>Evaluation</i>
Safety communication	<ul style="list-style-type: none"> <li>- Fouls communication</li> <li>- In complete message of communication</li> </ul>		Group discussion	

**Day four : session(1) (1h) theory from 10 am to 11am**

<i>Learning topic</i>	<i>Content</i>	<i>Instructional method</i>	<i>Instructional aids</i>	<i>Evaluation</i>
patient's monitor	<ul style="list-style-type: none"> <li>- Vital sign :-</li> <li>- ( temperature and respiration )</li> <li>- patient's feeding.</li> </ul>	Modified lecture	videos and hand out	

**Day four : session(2) (1h) the practical from 11am to 12MD.**

<i>Learning topic</i>	<i>Content</i>	<i>Instructional method</i>	<i>Instructional aids</i>	<i>Evaluation</i>
patient's monitor	<ul style="list-style-type: none"> <li>- V/S( temperature and respiration ) equipments</li> <li>- Steps of temperature and respiration procedure</li> <li>- Documentation of V/S finding</li> </ul>	Group work	practical application	

**SECOND WEEK OF THE FIRST GROUP IN KOSTI TEACHING HOSPITAL**  
**FROM 10AM TO 12MD (8H)**

**Day one : session(1) (1h) theory from 10 am to 11am**

<i>Learning topic</i>	<i>Content</i>	<i>Instructional method</i>	<i>Instructional aids</i>	<i>Evaluation</i>
patient's monitor	<ul style="list-style-type: none"> <li>- vital signs :- blood pressure -pulse rate</li> <li>- intake and output chart</li> </ul>	Modified lecture	Poster , videos, and hand out	

**Day one : session(2) (1h) the practical from 11am to 12MD.**

<i>Learning topic</i>	<i>Content</i>	<i>Instructional method</i>	<i>Instructional aids</i>	<i>Evaluation</i>
patient's monitor	<ul style="list-style-type: none"> <li>- V/S(blood pressure and pulse rate) equipments</li> <li>- Steps of blood pressure and pulse rate procedure</li> <li>- Documentation of V/S finding</li> </ul>	Group work	practical application	

**Day two : session (1) (2hours theory ) from 10am to 12MD .**

<i>Learning topic</i>	<i>Content</i>	<i>Instructional method</i>	<i>Instructional aids</i>	<i>Evaluation</i>
patient's monitor	<ul style="list-style-type: none"> <li>- patient's environment .</li> <li>- nursing report and nursing documentation</li> <li>- patient's exercises</li> </ul>	Modified lecture	Poster , videos and hand out	

**Day three : session(1) (1h) theory from 10 am to 11am**

<i>Learning topic</i>	<i>Content</i>	<i>Instructional method</i>	<i>Instructional aids</i>	<i>Evaluation</i>
safety medication administration	<ul style="list-style-type: none"> <li>- Definition of safety medication administration</li> <li>- Patient identification before medication administration</li> <li>- 10<sup>th</sup> right of medication administration</li> </ul>	Modified lecture / group work	Posters, Hand out	

**Day three : session(2) (1h) the practical from 11am to 12MD.**

<i>Learning topic</i>	<i>Content</i>	<i>Instructional method</i>	<i>Instructional aids</i>	<i>Evaluation</i>
safety medication administration	<ul style="list-style-type: none"> <li>- 10<sup>th</sup> right of medication administration</li> <li>- Routs of medication administration</li> <li>- Checkup of</li> </ul>	group work	video and case presentation	

	Correct doctor's prescriptions			
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**Day four : session(1) (1h) theory from 10 am to 11am**

<i>Learning topic</i>	<i>Content</i>	<i>Instructional method</i>	<i>Instructional aids</i>	<i>Evaluation</i>
safety medication administration	<ul style="list-style-type: none"> <li>- Nursing role about insulin injection :-</li> <li>- Preparation of insulin , storage of insulin , site of injection , complications of insulin</li> </ul>	Modified lectures	Posters , videos and hand out	

**Day four : session(2) (1h) the practical from 11am to 12MD.**

<i>Learning topic</i>	<i>Content</i>	<i>Instructional method</i>	<i>Instructional aids</i>	<i>Evaluation</i>
safety medication administration	<ul style="list-style-type: none"> <li>- Withdrawal of insulin injection</li> <li>- Administration of insulin injection</li> <li>- Common site of insulin injection</li> </ul>	Group work	demonstration	

**THIRD WEEK OF THE FIRST GROUP IN KOSTI TEACHING HOSPITAL FROM 10AM TO 12MD (8H)**

**Day one : session(1) (1h) theory from 10 am to 11am**

<i>Learning topic</i>	<i>Content</i>	<i>Instructional method</i>	<i>Instructional aids</i>	<i>Evaluation</i>
safety medication administration	<ul style="list-style-type: none"> <li>- Nursing role in case of unclear doctor prescriptions of medicine .</li> <li>- Nursing role in medication error</li> <li>- Nursing report and documentation about medication administration</li> </ul>	Modified lectures	videos and hand out	

**Day one : session(2) (1h) the practical from 11am to 12MD.**

<i>Learning topic</i>	<i>Content</i>	<i>Instructional method</i>	<i>Instructional aids</i>	<i>Evaluation</i>
safety medication administration	<ul style="list-style-type: none"> <li>- Nursing role in medication error</li> <li>- Nursing report and documentation about medication administration</li> </ul>	Group work Discussion	Brain storming	



**Day two : session(1) (1h) theory from 10 am to 11am**

<i>Learning topic</i>	<i>Content</i>	<i>Instructional method</i>	<i>Instructional aids</i>	<i>Evaluation</i>
Infection control measures	<ul style="list-style-type: none"> <li>- Definition and principle of infection control measures</li> <li>- Hand washing and hand scrubbing</li> </ul>	Modified lectures	Posters , videos and hand out	

**Day two : session(2) (1h) the practical from 11am to 12MD.**

<i>Learning topic</i>	<i>Content</i>	<i>Instructional method</i>	<i>Instructional aids</i>	<i>Evaluation</i>
Infection control measures	<ul style="list-style-type: none"> <li>- Steps of Hand washing and hand scrubbing</li> <li>- Steps of wearing gloves</li> </ul>	Group work	demonstration	

**Day three : session(1) (1h) theory from 10 am to 11am**

<i>Learning topic</i>	<i>Content</i>	<i>Instructional method</i>	<i>Instructional aids</i>	<i>Evaluation</i>
Infection control measures	<ul style="list-style-type: none"> <li>- Nursing role about safety department :- Cleaning ,Disinfection and Sterilization of the equipments .</li> </ul>	Modified lectures	Videos and hand out	

**Day three : session(2) (1h) the practical from 11am to 12MD.**

<i>Learning topic</i>	<i>Content</i>	<i>Instructional method</i>	<i>Instructional aids</i>	<i>Evaluation</i>
Infection control measures	<ul style="list-style-type: none"> <li>- Types of Disinfection solutions</li> <li>- Methods of Sterilization of the equipments .</li> </ul>		Demonstration	

**Day four : session(1) (2h) theory from 10 am to 12MD**

<i>Learning topic</i>	<i>Content</i>	<i>Instructional method</i>	<i>Instructional aids</i>	<i>Evaluation</i>
Infection control measures	<ul style="list-style-type: none"> <li>- Management of infectious waste product</li> <li>- Medical waste</li> </ul>	Modified lectures , group work	Posters , videos and hand out	

**FOURTH WEEK OF THE FIRST GROUP IN KOSTI TEACHING HOSPITAL  
FROM 10AM TO 12MD (6H)**

**Day one : session(1) (1h) theory from 10 AM to 11AM**

<i>Learning topic</i>	<i>Content</i>	<i>Instructional method</i>	<i>Instructional aids</i>	<i>Evaluation</i>
Infection control measures	<ul style="list-style-type: none"> <li>- Application of nursing care following infection control measures</li> <li>- Avoidance of hospital acquired infection</li> </ul>	Modified lectures group work	videos and hand out	

**Day one : session(2) (1h) the practical from 11am to 12MD.**

<i>Learning topic</i>	<i>Content</i>	<i>Instructional method</i>	<i>Instructional aids</i>	<i>Evaluation</i>
Infection control measures	<ul style="list-style-type: none"> <li>- Component of PPE</li> <li>- Application of PPE</li> </ul>	group work	demonstration	

**Day two : session(1) (2h) theory from 10 AM to 12MD**

<i>Learning topic</i>	<i>Content</i>	<i>Instructional method</i>	<i>Instructional aids</i>	<i>Evaluation</i>
Infection control measures	<ul style="list-style-type: none"> <li>- Patient's secretions</li> <li>- Nursing role about infectious patient secretions</li> </ul>	Modified lectures	videos and hand out	

**Day three : session(1) (2h) theory from 10 AM to 12MD**

<i>Learning topic</i>	<i>Content</i>	<i>Instructional method</i>	<i>Instructional aids</i>	<i>Evaluation</i>
Infection control measures	<ul style="list-style-type: none"> <li>- Nursing care for sharp instrument</li> </ul>	Modified lectures	videos and hand out	
Patient's safety	Revision and group discussion	Groups discussion		

**FIRST WEEK OF SECOND GROUP IN KOSTI TEACHING HOSPITAL FROM  
10AM TO 12MD (8H)**

**Day one : session (1) (2hours theory ) from 10am to 12MD .**

<i>Learning topic</i>	<i>Content</i>	<i>Instructional method</i>	<i>Instructional aids</i>	<i>Evaluation</i>
patient safety	<ul style="list-style-type: none"> <li>- Definition of patient safety</li> <li>- Importance and Principles of safety measures</li> <li>- Common problems of patient safety</li> </ul>	Modified lecture / group work	Poster/ Hand out / case presentation	

**Day two : session(1) (1h) theory from 10 am to 11am**

<i>Learning topic</i>	<i>Content</i>	<i>Instructional method</i>	<i>Instructional aids</i>	<i>Evaluation</i>
Safety communication	<ul style="list-style-type: none"> <li>- Definition of communication</li> <li>- Types of communication</li> <li>- Importance of effective communication</li> </ul>	Modified lectures	Poster ,Role play and hand out	

**Day two : session(2) (1h) the practical from 11am to 12MD.**

<i>Learning topic</i>	<i>Content</i>	<i>Instructional method</i>	<i>Instructional aids</i>	<i>Evaluation</i>
Safety communication	<ul style="list-style-type: none"> <li>- Patient to patient communication</li> <li>- Patient to health care providers communication</li> <li>- Barriers of effective communication</li> </ul>	Group work	Role play	

**Day three : session(1) (1h) theory from 10 am to 11am**

<i>Learning topic</i>	<i>Content</i>	<i>Instructional method</i>	<i>Instructional aids</i>	<i>Evaluation</i>
Safety communication	<ul style="list-style-type: none"> <li>- Importance of therapeutic communication</li> <li>- Factors affecting communication</li> </ul>	Modified lectures	Poster and hand out	

**Day three : session(2) (1h) the practical from 11am to 12MD.**

<i>Learning topic</i>	<i>Content</i>	<i>Instructional method</i>	<i>Instructional aids</i>	<i>Evaluation</i>
Safety communication	<ul style="list-style-type: none"> <li>- Fools communication</li> <li>- In complete message of communication</li> </ul>		Group discussion	

**Day four : session(1) (1h) theory from 10 am to 11am**

<i>Learning topic</i>	<i>Content</i>	<i>Instructional method</i>	<i>Instructional aids</i>	<i>Evaluation</i>
patient's monitor	<ul style="list-style-type: none"> <li>- Vital sign :-</li> <li>- ( temperature and respiration )</li> <li>- patient's feeding.</li> </ul>	Modified lecture	videos and hand out	

**Day four : session(2) (1h) the practical from 11am to 12MD.**

<i>Learning topic</i>	<i>Content</i>	<i>Instructional method</i>	<i>Instructional aids</i>	<i>Evaluation</i>
patient's monitor	<ul style="list-style-type: none"> <li>- V/S( temperature and respiration ) equipments</li> <li>- Steps of temperature and respiration procedure</li> <li>- Documentation of V/S finding</li> </ul>	Group work	practical application	

**SECOND WEEK OF THE SECOND GROUP IN KOSTI TEACHING HOSPITAL  
FROM 10AM TO 12MD (8H)**

**Day one : session(1) (1h) theory from 10 am to 11am**

<i>Learning topic</i>	<i>Content</i>	<i>Instructional method</i>	<i>Instructional aids</i>	<i>Evaluation</i>
patient's monitor	<ul style="list-style-type: none"> <li>- vital signs :- blood pressure -pulse rate</li> <li>- intake and output chart</li> </ul>	Modified lecture	Poster , videos, and hand out	

**Day one : session(2) (1h) the practical from 11am to 12MD.**

<i>Learning topic</i>	<i>Content</i>	<i>Instructional method</i>	<i>Instructional aids</i>	<i>Evaluation</i>
patient's monitor	<ul style="list-style-type: none"> <li>- V/S(blood pressure and pulse rate) equipments</li> <li>- Steps of blood pressure and pulse rate procedure</li> <li>- Documentation of V/S finding</li> </ul>	Group work	practical application	

**Day two : session (1) (2hours theory ) from 10am to 12MD .**

<i>Learning topic</i>	<i>Content</i>	<i>Instructional method</i>	<i>Instructional aids</i>	<i>Evaluation</i>
patient's monitor	<ul style="list-style-type: none"> <li>- patient's environment .</li> <li>- nursing report and nursing documentation</li> <li>- patient's exercises</li> </ul>	Modified lecture	Poster , videos and hand out	

**Day three : session(1) (1h) theory from 10 am to 11am**

<i>Learning topic</i>	<i>Content</i>	<i>Instructional method</i>	<i>Instructional aids</i>	<i>Evaluation</i>
safety medication administration	<ul style="list-style-type: none"> <li>- Definition of safety medication administration</li> <li>- Patient identification before medication administration</li> <li>- 10<sup>th</sup> right of medication administration</li> </ul>	Modified lecture / group work	Posters, Hand out	

**Day three : session(2) (1h) the practical from 11am to 12MD.**

<i>Learning topic</i>	<i>Content</i>	<i>Instructional method</i>	<i>Instructional aids</i>	<i>Evaluation</i>
safety medication administration	<ul style="list-style-type: none"> <li>- 10<sup>th</sup> right of medication administration</li> <li>- Routs of medication administration</li> <li>- Checkup of Correct doctor's prescriptions</li> </ul>	group work	video and case presentation	

**Day four : session(1) (1h) theory from 10 am to 11am**

<i>Learning topic</i>	<i>Content</i>	<i>Instructional method</i>	<i>Instructional aids</i>	<i>Evaluation</i>
safety medication administration	<ul style="list-style-type: none"> <li>- Nursing role about insulin injection :-</li> <li>- Preparation of insulin , storage of insulin , site of injection , complications of insulin</li> </ul>	Modified lectures	Posters , videos and hand out	

**Day four : session(2) (1h) the practical from 11am to 12MD.**

<i>Learning topic</i>	<i>Content</i>	<i>Instructional method</i>	<i>Instructional aids</i>	<i>Evaluation</i>
safety medication administration	<ul style="list-style-type: none"> <li>- Withdrawal of insulin injection</li> <li>- Administration of insulin injection</li> <li>- Common site of insulin injection</li> </ul>	Group work	demonstration	

**THIRD WEEK OF THE SECOND GROUP IN KOSTI TEACHING HOSPITAL FROM 10AM TO 12MD (8H)**

**Day one : session(1) (1h) theory from 10 am to 11am**

<i>Learning topic</i>	<i>Content</i>	<i>Instructional method</i>	<i>Instructional aids</i>	<i>Evaluation</i>
safety medication administration	<ul style="list-style-type: none"> <li>- Nursing role in case of unclear doctor prescriptions of medicine .</li> <li>- Nursing role in medication error</li> <li>- Nursing report and documentation about medication administration</li> </ul>	Modified lectures	videos and hand out	

**Day one : session(2) (1h) the practical from 11am to 12MD.**

<i>Learning topic</i>	<i>Content</i>	<i>Instructional method</i>	<i>Instructional aids</i>	<i>Evaluation</i>
safety medication administration	- Nursing role in medication error	Group work	Brain storming	

**Day two : session(1) (1h) theory from 10 am to 11am**

<i>Learning topic</i>	<i>Content</i>	<i>Instructional method</i>	<i>Instructional aids</i>	<i>Evaluation</i>
Infection control measures	- Definition and principle of infection control measures - Hand washing and hand scrubbing	Modified lectures	Posters , videos and hand out	

**Day two : session(2) (1h) the practical from 11am to 12MD.**

<i>Learning topic</i>	<i>Content</i>	<i>Instructional method</i>	<i>Instructional aids</i>	<i>Evaluation</i>
Infection control measures	- Steps of Hand washing and hand scrubbing - Steps of wearing gloves	Group work	demonstration	

**Day three : session(1) (1h) theory from 10 am to 11am**

<i>Learning topic</i>	<i>Content</i>	<i>Instructional method</i>	<i>Instructional aids</i>	<i>Evaluation</i>
Infection control measures	- Nursing role about safety department :- Cleaning ,Disinfection and Sterilization of the equipments .	Modified lectures	Videos and hand out	

**Day three : session(2) (1h) the practical from 11am to 12MD.**

<i>Learning topic</i>	<i>Content</i>	<i>Instructional method</i>	<i>Instructional aids</i>	<i>Evaluation</i>
Infection control measures	- Types of Disinfection solutions - Methods of Sterilization of the equipments .		Demonstration	

**Day four : session(1) (2h) theory from 10 am to 12MD**

<i>Learning topic</i>	<i>Content</i>	<i>Instructional method</i>	<i>Instructional aids</i>	<i>Evaluation</i>
Infection control measures	- Management of infectious waste product - Medical waste	Modified lectures , group work	Posters , videos and hand out	

**FOURTH WEEK OF THE SECOND GROUP IN KOSTI TEACHING HOSPITAL  
FROM 10AM TO 12MD (6H)**

**Day one : session(1) (1h) theory from 10 AM to 11AM**

<i>Learning topic</i>	<i>Content</i>	<i>Instructional method</i>	<i>Instructional aids</i>	<i>Evaluation</i>
Infection control measures	<ul style="list-style-type: none"> <li>- Application of nursing care following infection control measures</li> <li>- Avoidance of hospital acquired infection</li> </ul>	Modified lectures group work	videos and hand out	

**Day one : session(2) (1h) the practical from 11am to 12MD.**

<i>Learning topic</i>	<i>Content</i>	<i>Instructional method</i>	<i>Instructional aids</i>	<i>Evaluation</i>
Infection control measures	<ul style="list-style-type: none"> <li>- Component of PPE</li> <li>- Application of PPE</li> </ul>	group work	demonstration	

**Day two : session(1) (2h) theory from 10 AM to 12MD**

<i>Learning topic</i>	<i>Content</i>	<i>Instructional method</i>	<i>Instructional aids</i>	<i>Evaluation</i>
Infection control measures	<ul style="list-style-type: none"> <li>- Patient's secretions</li> <li>- Nursing role about infectious patient secretions</li> </ul>	Modified lectures	videos and hand out	

**Day three : session(1) (2h) theory from 10 AM to 12MD**

<i>Learning topic</i>	<i>Content</i>	<i>Instructional method</i>	<i>Instructional aids</i>	<i>Evaluation</i>
Infection control measures	<ul style="list-style-type: none"> <li>- Nursing care for sharp instrument</li> </ul>	Modified lectures	videos and hand out	
Patient's safety	Revision and group discussion	Groups discussion		

## Patient's safety program 2016

Patient safety is an issue for all countries that deliver health services, whether they are privately commissioned or funded by the government.

Patient safety is the foundation of good patient care, The unnerving fact that healthcare can harm us as well as heal us is the reason for suggesting that patient safety is the heart of healthcare quality. Effectiveness, access to care, timeliness and the other dimensions of quality are all important.

Patient Safety has been an issue of paramount importance for the Nursing profession since the early work by Florence Nightingale, which included setting care and hygiene standards in Hospitals to combat deadly healthcare associated infections and avoidable complications thus championing the safety of patients



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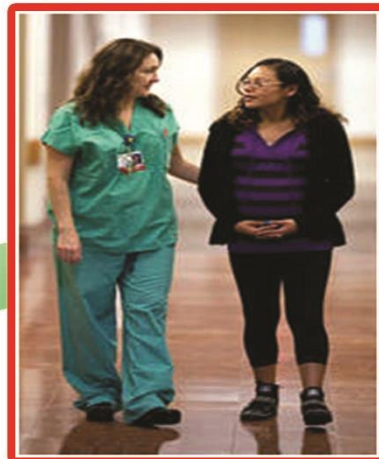


## Patient's safety program 2016

### Safety communication

Communication is central to human interaction. Without it, people cannot relate to those around them, make their needs and concerns known or make sense of what is happening to them. One of the most basic goals for nursing staff is that their patients and clients and those who care for them experience effective communication.

. Nurses and nursing staff are at the heart of the communication process: they assess, record and report on treatment and care, handle information sensitively and confidentially, deal with complaints effectively, and are .conscientious in reporting the things they are concerned about

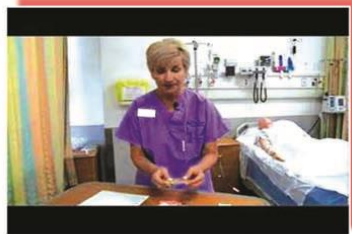


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## Patient's safety program 2016

### Safety medication administration

The nurse should follow the 10 Rights of Drug Administration to avoid medication error



#### 1. Right Drug.

Check and verify if it's the right name and form. Beware of look-alike and sound-alike medication names. Misreading medication names that look similar is a common mistake.

2. Right Patient. Ask the name of the client and check his/her ID band before giving the medication. Even if you know that patient's name, you still need to ask just to verify.

3. Right Dose. Check the medication sheet and the doctor's order before medicating. Be aware of the difference of an adult and a pediatric dose.

4. Right Route. Check the order if it's oral, IV, SQ, IM, etc..

5. Right Time and Frequency. Check the order for when it would be given and when was the last time it was given.

6. Right Documentation. Make sure to right the time and any remarks on the chart correctly.

7. Right History and Assessment. Secure a copy of the client's history to drug interactions and allergies.

8. Drug approach and Right to Refuse. Give the client enough autonomy to refuse to the medication after thoroughly explaining the effects.

9. Right Drug-Drug Interaction and Evaluation. Review any medications previously given or the diet of the patient that can yield a bad interaction to the drug to be given. Check also the expiry date of the medication being given.

10. Right Education and Information. Provide enough knowledge to the patient of what drug he/she would be taking and what are the expected therapeutic and side effects

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## Patient's safety program 2016

### Safety patient monitoring

It is too important to the health care workers to do proper close monitor to the patients to avoid occurrence of complication and early detection of any abnormality may occur to the patient inside the hospital or outside , for example patient condition ,changing in the patient's feeding, Vital . signs ,fluids chart and Patient environment



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# Patient's safety program 2016

## Infection control

Hand washing ( patient safety start from here )

Hand washing is most effective methods for preventing nosocomial infection since a health care workers should maintain clean hand



### Steps of hand washing



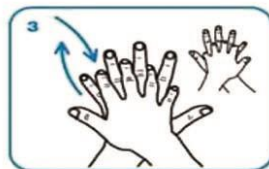
Wet hands with water



apply enough soap to cover all hand surfaces.



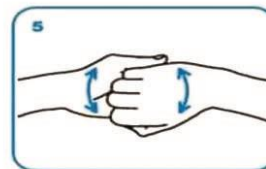
Rub hands palm to palm



right palm over left dorsum with interlaced fingers and vice versa



palm to palm with fingers interlaced



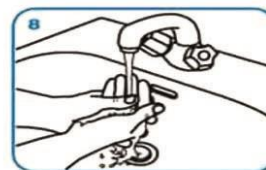
backs of fingers to opposing palms with fingers interlocked



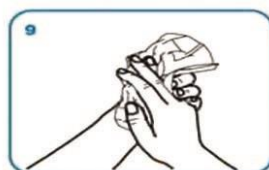
rotational rubbing of left thumb clasped in right palm and vice versa



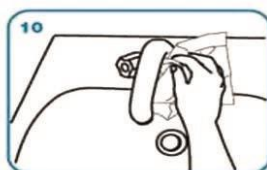
rotational rubbing, backwards and forwards with clasped fingers of right hand in left palm and vice versa.



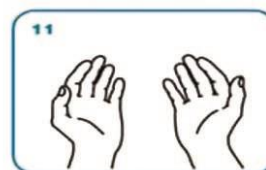
Rinse hands with water



dry thoroughly with a single use towel



use towel to turn off faucet



...and your hands are safe.

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**Figure no (6) White Nile stat map**



بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

جمهورية السودان The Republic of the Sudan

وزارة التعليم العالي والبحث العلمي

Ministry of Higher Education & Scientific Research

جامعة شندى Shendi University

كلية الدراسات العليا والبحث العلمي  
Faculty of Graduate Studies & Scientific Research



2016/8/22م

النمرة: ج ش / ك د ع / ١/١

الأخ / المدير العام لمستشفى كوستي التعليمي

الموقر...

السلام عليكم ورحمة الله وبركاته

**الموضوع: تسهيل إجراءات دراسة دكتوراه**

إشارة للموضوع أعلاه نفيدكم بأن الطالب / محمد إبراهيم عثمان أحمد من ضمن الطلاب المسجلين لنيل درجة الدكتوراه في علوم التمريض (تخصص تمريض باطني جراحي).  
ونأمل في حسن تعاونكم مع كلية الدراسات العليا والبحث العلمي جامعة شندي، نرجو شاكرين تسهيل مهمته بغرض إجراءات البحث .

ولكم فائق شكرنا وتقديرنا،،،

د. هويدا الهادي أحمد الشفيق

مسجل كلية الدراسات العليا والبحث العلمي





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النمرة: ج ش / ك د ع / ١/١

2016/8/22م

الأخ/ المدير العام لمستشفى ربك التعليمي

الموقر...

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ص.ب: ١٤٣/١٤٢ - هاتف: ٠٠٢٤٩١٥٥٦٦٢١٦٧ - فاكس: ٠٠٢٤٩٣٦١٨٧٢٥٠٩  
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