

**Deanship of Graduate Studies
Al-Quds University**



**Assessment of Pediatric Nurses' Competencies
Regarding Patient Safety of Hospitalized Children at
Pediatric Departments in Gaza Strip, Palestine**

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M. Sc. Thesis

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**Assessment of Pediatric Nurses' Competencies
Regarding Patient Safety of Hospitalized Children at
Pediatric Departments in Gaza Strip, Palestine**

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Thesis Approval

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of Hospitalized Children at Pediatric Departments in Gaza Strip,
Palestine**

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Jerusalem- Palestine

1444 / 2022

Dedication

I dedicate this project to Almighty God, who has protected and guided me throughout my academic life.

It is with genuine gratitude and warm regard that I dedicate this work to my academic adviser "**Dr. Hamza M. Abdeljawad**" who guided me with a lot of patients in this process and the committee who kept me on track.

I dedicate this thesis to my university teacher "Dr. Ali Al Khatib" who inspired my pursuit to continue my master's degree, and "Dr. Ramadan Hassan" for helping me to master the leader dots.

A special feeling of gratitude to my loving family. First and foremost, my mother "Salwa," whose words of encouragement and push for tenacity still ring in my ears, my father "Waleed" who inspired me to pursue my dreams and complete my thesis, my sisters "Nour and Sara" and my brothers "Mohamed, Mahmoud, and Ahmed" who have never left my side and are very special. "Abd Al-Rahman" My sister's husband with daughters "Sidra and Sandy". Thank you for being understanding of my hectic life.

I dedicate all of my work to the long shadow of my story "Abd Allah M. Hussein" who never hesitated to assist me in fulfilling my desire of completing my education.

This thesis is also dedicated to my friends who have supported me during the process. I shall be eternally grateful to them for everything they have done, especially "Abd Allah Al deefi" for assisting me in developing my technological abilities and "Mohammed Abdeljawad" for the countless hours of persistence required to complete the thesis. Furthermore, I dedicate this work and express my heartfelt gratitude to my closest friend, "Eman Ajour," for being there for me during the master's program. She has been my most enthusiastic supporter.

Last but not least, I dedicate my thesis to my homeland Palestine.

Esraa Waleed Mahmoud Elsayed

Declaration

I certify that this thesis submitted for the degree of Master is the result of my own research, except where otherwise acknowledged, and that this thesis (or any of its parts) has not been submitted for higher degree to any other university or institution.

Signed:

A handwritten signature in blue ink, appearing to read 'Esraa', with a stylized flourish extending from the end.

Esraa Waleed Mahmoud Elsayed

Date: 29/11/2022

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Abstract

Children may be exposed to a variety of life-threatening issues, which are linked to higher mortality and morbidity. Patient Safety (PS) is a global health concern, particularly in children. The study aimed to assess the competencies of pediatric nurses regarding patient safety for hospitalized children at pediatric departments in the governmental hospitals of Gaza Strip (GS). The study design was quantitative, descriptive cross sectional, the study was conducted at all the pediatric departments affiliated to the governmental hospitals "AL-Rantisy /Al-Naser Hospital, Al-Dora Hospital, Al-Shifa Complex Hospital, Al-Aqsa Hospital, Nasser Hospital, and European Gaza Hospital". The study population was 554 and a convenient sample was used (270). The researcher used a self-administered questionnaire to collect data from study participants. The study participants were 270 with response rate of (94.1%). The mean percentages for knowledge and practice were categorized as moderate (63.22% and 76.60%), respectively. There was a positive significant correlation between nurse's knowledge and practices. There were significant differences in the nurses' knowledge and practices between their different places of work, in favor to those who are working in Al Dora Hospital. There were significant differences in the participants' practice between their different position, in favor to those who are practical nurse/associate degree nurse, the name of department in favor to those who are working in pediatric medical department, between who received training courses about international patient safety goals (IPSGs) or policy and procedure in IPSGs and who didn't receive, also the department address application of policy and procedures or not ($P < 0.05$). There were no statistical differences in knowledge and practices related to other factors: age, gender, marital status, residency, monthly income, number of years from first & last nursing qualification, years of experience, the position, numbers of work hour, qualification, policy and procedures, information and special training courses regarding IPSGs ($P\text{-value} > 0.05$). The study recommended that for the managers, develop an effective orientation program with specific training and workshops on IPSGs in general and specifically on ensuring the right site, procedure, and patient operation. Also, about how to manage High-Alert Medications (HAMs) and the implications for PS. Follow up with pediatric nurses on updates to PS guidelines. Identify pediatric patients at risk for falls and prevent falls in nursing practice.

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List of Abbreviations

6IPSGs	Six International Patient Safety Goals
ADNs	Associate Degrees Nurses
ANOVA	One-way Analysis of Variance
CDC	Centers for Disease Control and Prevention
ECRI	Emergency Care Research Institute
GS	Gaza Strip
HAMs	High-Alert Medications
HCAIs	Health Care-Associated Infections
HFRM	Hendrich II Fall Risk Model
IBEAS	Iberomeric Study of Adverse Events
IOM	International Organization for Medical Research
JCIA	Joint Commission International Accreditation
KFMC	King Fahad Medical City
LASA	Look Alike Sound Alike
MFS	Morse Fall Risk Scale
MoH	Ministry of Health
NICU	Neonate Intensive Care Unit
PCBS	Palestinian Central Bureau of Statistics
PAHO	Pan American Health Organization
PI	Patient Identification
PICUs	Pediatric Intensive Care Units
PSC	Patient Safety Competency
PW	Patient Wristbands
PSCNES	Patient Safety Competency Nurse Evaluation Scale
PSCSE	Patient Safety Competency Self-Evaluation
SAQ	Safety Attitude Questionnaire
SBAR	Situation, Background, Assessment, Recommendation
SCBU	Special Care Baby Unit
SPSS	Statistical Package of Social Science
SSC	Surgical Safety Checklist
STRATIFY	St. Thomas Risk Assessment Tool in Falling Elderly
WHO	World Health Organization

Chapter One

Introduction

1.1 Research background

Patient safety is defined as the care for patients in order to prevent errors and adverse effects (World Health Organization [WHO], 2021). It is an important component of providing quality health care (Hoffman et al., 2019). As patient care became more complex, pediatric patient safety became a higher priority. Nurses often place a focus on safety concerns and solutions as they began to develop their professional identity (Kowalski & Anthony, 2017). As a consequence, educational institutions or healthcare delivery systems collaborate to ensure patient safety education is delivered effectively to nurses (Jang & Lee, 2017).

In pediatric inpatients, errors are believed to account for 19.1 adverse events per 1000 hospital admissions of children between birth and 18 years of age (Stockwell et al., 2018). The types of adverse events found, including those related to the operative site, medications or drugs, and healthcare-associated infections, etc., collectively amounts to 51.2% that could have been avoided (Schwendimann et al., 2018). According to an analysis of neonate intensive care unit (NICU) errors in the Benha University Hospital, 17.07% of errors occurred during routine daily procedures, 27.28% of errors occurred during invasive procedures, 1.78 % were found during nutrition, 1.64% were found in equipment, 6.8% were found in administration, 17.18% were found in staffing, 2.8% were found in environmental variables, 11.73 % were found in infection control, and 3.14% were found in nosocomial infections (El-Shazly et al., 2017).

Globally, patient harm is the 14th leading cause of disease burden. It is estimated that one out of ten hospitalized patients suffer an injury while receiving care, and a bad outcome caused by unsafe care is likely one of the ten leading causes of death and disability. Hospital infections cause more than 10% of patient deaths and one million people are hospitalized every year due to surgical complications. The effects of patient harm account for about one out of every seven dollars spent on in-hospital care when investments are made to improve patient safety, significant savings can be realized (WHO, 2019). In spite of this, there is little research on the contribution of unsafe care to preventable child deaths (Rees et al., 2017).

In Egypt, many previous studies were conducted to assess healthcare providers' perspectives towards patient safety culture in one of the challenging high-risk environments, such as; pediatric intensive care units (PICUs) (Sabry et al., 2020). In a study conducted to identify nursing knowledge and practice regarding patient safety in intensive care units recommended that there is a need to provide pediatric nurses with training courses about patient safety (Ahmed et al., 2018).

When examined in relation to their workplace, the attitudes of healthcare professionals in the GS toward patient safety were moderately positive (Abu-El-Noor et al., 2017). In addition, the nurses' attitudes showed some positive trends when examined across healthcare facilities, though there were fewer positive results in areas of recognizing the importance of formal patient safety instruction (Abu-El-Noor et al., 2019). Accordingly, it is crucial to assess nurses' patient safety competency (PSC). As pediatric nurses have a significant role in ensuring patients' safety.

1.2 Research problem

Patient safety is a health issue of global interest especially in pediatric departments. In recent years, pediatric patient safety has risen to the top of health systems' priorities. Following the publication of the international organization for medical research (IOM) report "To Err Is Human: Building a Safer Health System," scientific research, standards, collaborative efforts, education, and efforts focused on patient safety have significantly increased (Mueller et al., 2019). However, despite increased awareness, harm to patients is still common and has not shown a significant decline (Stockwell et al., 2018). Errors still affect as many as one-third of all hospitalized children (Davenport et al., 2017).

The GS is characterized by its youthful population with 41% of the population under 15 years of age (Ministry of Health [MoH], 2020). Gaza has three pediatric hospitals and there are also pediatric departments in most of the other general hospitals. Nurses should possess the competence necessary to provide care based on relevant nursing standards. In nursing, competency refers to the ability to perform one's role effectively (Kono et al., 2017). PSC, refers to the knowledge and skills that safeguard patients from injuries and errors (Jang & Lee, 2017).

Providing quality nursing care for patient safety contributes to reducing child accidents and deaths as a result of non-compliance with 6IPSGs as an effort to reduce errors, nurses' compliance regarding patient safety is to report patient safety incidents, near-injuries, potential injury incidents, non-injured incidents, and unexpected events (Anugrahini & Hariyati, 2020). As well, the quality of the information recorded in the medical records, the usage of checklists, and the training of health workers all contribute to safe pediatric nursing care (Wegner et al., 2017).

According to the Institute of Medicine, more than one hundred thousand people die annually due to medical errors or infections, which is why many countries have begun stressing the importance of patient safety in maintaining excellent quality health care services by developing a standard quality of safe patient care (Rodziewicz et al., 2022). Additionally, nurses have disregarded procedures, tools, and safety measures in the working environment, leading to many instances of error and harm to patients (Ludin et al., 2019).

1.3 Justification and significant of the study

After reviewing libraries of different universities in GS and searching the different web sites, the researcher found a limited number of studies tried to tackle this problem especially in Palestine, so this study will be the first to point and document the competencies of pediatric nurses regarding patient safety of hospitalized children at pediatric departments in Gaza strip.

The study will be beneficial for the all aspects of nursing profession which include nursing practice, nursing education, nursing research and nursing administration. The results of the study will be disseminated to the decision makers in GS to help them identify priorities and take appropriate decisions regarding the competences of pediatric nurses regarding patient safety at GS. The results of this study could help in identifying the potential factors influencing patient safety among pediatric nurses and subsequently help in finding solutions for improving patient safety of hospitalized children.

1.4 Aim of the study

The overall aim of this study is to assess the competencies of pediatric nurses regarding patient safety for hospitalized children at pediatric departments in the governmental hospitals of GS.

1.5 Objectives of the study

1. To assess the nurses' knowledge regarding international patient safety goals for hospitalized children.
2. To assess the nurses' practice regarding international patient safety goals for hospitalized children.
3. To identify the relationship between knowledge and practice of nurses regarding international patient safety goals in caring for hospitalized children.
4. To determine the association between the socio-demographic characteristics and patient safety competence among nurses caring for hospitalized children in GS.

1.6 Research questions of the study

1. What is the level of nurses' knowledge regarding international patient safety goals for hospitalized children?
2. What is the level of nurses' practice regarding international patient safety goals for hospitalized children?
3. Is there a relationship between the knowledge and practice of nurses regarding international patient safety goals of hospitalized children?
4. Is there an association between the socio-demographic characteristics and patient safety competence among nurses caring for hospitalized children in GS?

1.7 Operational definitions

1.7.1 Patient safety competency (PSC):

Is defined in this study as the extent to which nurses demonstrate proper knowledge and practice regarding the 6IPSGs which consists of: identify patients correctly, improve effective communication, improve the safety of HAMs, (ensure correct site, correct procedure, and correct patient surgery), reduce risk of health care-associated infections, and

reduce the risk of patient harm resulting from fall. It will be assessed through the summation of knowledge and practice scores of participants in the study questionnaire

1.7.2 Knowledge:

The nurses demonstrate score for their knowledge regarding the 6IPSGs which consists of: identify patients correctly, improve effective communication, improve the safety of HAMs, (ensure correct site, correct procedure, and correct patient surgery), reduce risk of health care-associated infections, and reduce the risk of patient harm resulting from fall. It will be assessed through the study questionnaire.

1.7.3 Practice

The nurses demonstrate score for their practice regarding the 6IPSGs which consists of: identify patients correctly, improve effective communication, improve the safety of HAMs, (ensure correct site, correct procedure, and correct patient surgery), reduce risk of health care-associated infections, and reduce the risk of patient harm resulting from fall. It will be assessed through the study questionnaire.

1.8 The context of the study

The researcher provided an overview of the context where the study was performed. The context involves socio-demographic variables, and the health care system in which the study concerning with nurses' knowledge and practice regarding nursing care of children at pediatric department Gaza strip.

1.8.1 Palestine

Palestine is an area in the eastern Mediterranean region between the Jordan River and the Mediterranean Sea in Asia. Palestine territories include the GS, West Bank, and parts of modern Israel. This region has a strategic location between Jordan in the east, Lebanon and part of modern Israel to the north, Mediterranean Sea to the west, and Negev and Gulf of Aqaba to the South. Syria, Egypt, and the Arabian nations are its neighboring countries (Annex1). There are estimated to be 5.28 million Palestinians in the State of Palestine in 2021, with 2.48 million living in the GS and 3.32 million in the West Bank. According to

the united nation, over 1.4 million Palestinian refugees live in 8 camps in countries in the area (Palestinian Central Bureau of Statistics [PCBS], 2021).

1.8.2 Gaza strip

Gaza strip is a narrow zone of land bounded of the south by Egypt, on the west by the Mediterranean Sea, and on the east and north by the occupied territories in 1948. GS is a very crowded place with 41 kilometers long and 5-15 kilometers wide and with a total area of 360 Square kilometers. GS is administratively divided into five governorates: North, Gaza, Mid-zone, Khan Younis, and Rafah. It consists of four cities, fourteen villages, and eight refugees camp. GS has a population of 2.018 million people 1.023.266 males and 995.704 females. In 2019, 41.4% of the population is under the age of 15, and 14.9% is under the age of 5 (MoH, 2020; PCBS, 2021).

1.8.3 Health care system context

According to the Palestinian MoH, as of 2021, there were 749 primary health care centers in Palestine (591 in the West Bank and 158 in Gaza), and 87 hospitals (53 in the West Bank, including East Jerusalem, and 34 in Gaza) (MoH, 2021).

1.8.4 Governmental hospitals

There were 34 hospitals in the GS, of which 13 were for the Ministry of Health, of which the population of this study will distributed in the general hospitals contained pediatric departments, as follows: Al-Shifa Hospital consist of Pediatric Surgery Department, special care baby unit (SCBU), and NICU, Al-Aqsa Hospital divided as follows; Pediatric A Department, Pediatric B Department, SCBU, and neonatal Unit, Nasser Hospital divided as follows; Pediatric Emergency Department, Pediatric A Department, Pediatric B Department, and neonatal Unit, European Gaza Hospitals Hospital divided as follows; Pediatric Surgery Department, Pediatric Medical Department, Pediatric Emergency Department, neonatal Unit, and Pediatric Intensive Care Unit (PICU). Another specialist hospital in pediatric Al-Rantis/ Al-Naser Hospital and Al-Dora Hospital departments (MoH, 2021).

Chapter Two

Literature Review

2.1 Conceptual framework

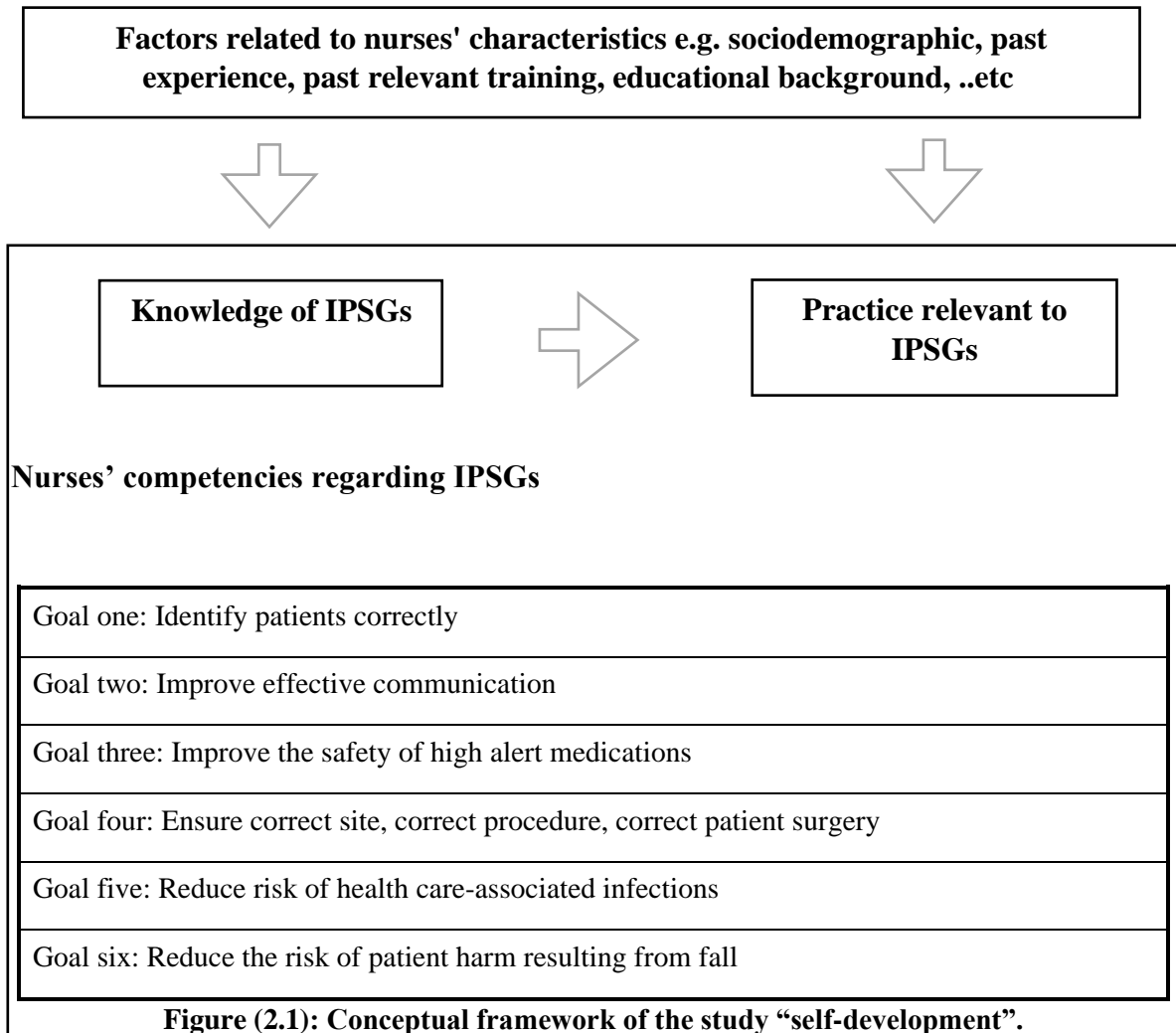


Figure (2.1) shows conceptual framework which was constructed by the researcher after reviewing many of related literature. The model consists of relevant to nurses' characteristics including sociodemographic, previous experience, relevant training, and educational background that was independent variables. The researcher linked knowledge, and practice, as competency regarding IPSGs as dependent variables with the independent variables. Within the following paragraphs, the researcher shows the main concepts that comprise the PSC, including knowledge and practice regarding 6IPSGs, and characteristics of nurses,

including sociodemographic, previous experience, training, and educational background, that are associated with these concepts.

2.2 Background

A nurse's competency is defined as being able to practice nursing in a logical and accurate manner, as well as meeting the needs of clients under their care. Literature indicates PSC is important to reduce medical errors, negligence, and adverse events at pediatric hospitals, so hospitals should assess PSC's main dimensions by identifying the strong elements and optimizing the weak ones, as well as considering the factors that affect how a pediatric patient will receive safe care (Liu et al., 2022).

A high priority is placed on patient safety for children during healthcare delivery, which is reflected in many studies during healthcare delivery. A study was conducted to assess the attitudes of nurses working in governmental hospitals in the GS toward patient safety and to examine the factors influencing their attitudes. A researcher discussed nurses' patient safety attitudes and how positive attitudes are an indication of providing safe care that will result in reduced morbidity and mortality rates, as well as a reduction of the length of stay, number of hospitalizations, and cost of health services. The researcher stated, “Nurses displayed these attitudes, despite the fact that they had not received sufficient education or training related to safety culture, showing great potential for further improvement with the delivery of adequate training” (Abu-El-Noor et al., 2019). In order to ensure pediatric patient safety, education appears to be the best method, with nursing schools and hospital administrators focusing on incorporating patient safety culture into ongoing education and training programs (Attia et al., 2021). Additionally, hospital management should increase its efforts to demonstrate leadership that demonstrates positive attitudes toward patient safety as well as in clinical practice (Abu-El-Noor et al., 2019).

2.3 The concept of patient safety

Basically, it can be described as the prevention of errors and adverse effects to the patient caused by health care. As health care becomes more effective, it also becomes more complex as new technologies, medicines, and treatments are used. When a patient is a child and sicker, they are more likely to present with co-morbidities, which requires more difficult decisions

regarding how to prioritize health care. Increasing economic pressure on health systems contributes to overburdening health care environments (WHO, 2021).

2.4 The history of patient safety

There are five stages in the history of patient safety, since the beginning of civilization to the present which involves; dawn of civilization (Far and Middle East), Hellenistic and Roman periods (West), humanism-Renaissance until the Industrial Revolution, era of statistical quality control (20th century), and finally publication to err is human, launch WHO's first global challenges, and the Iberomeric study of adverse events (IBEAS) study (21st century) (Lark et al., 2018).

One of the most significant contributions in Hellenistic and Roman periods to mankind that medicine has ignored magic, religion, and mysticism to look at the causes of disease and its best treatment from a physical examination of the patient and the investigation of signs and symptoms, which has contributed to the patient's safety. Additionally, the development of hygiene principles in patient care helped ensure safer care (WHO, 2017).

From Humanism and the Renaissance to the Industrial Revolution (476-1453) progress in medicine slowed considerably. Still, the Arabs made the most contributions to medicine (Carlson, 2022). After the industrial revolution, Florence Nightingale established the principles of the aseptic technique for the treatment of those wounded during the Crimean War (1853-1856) in eastern Europe, greatly contributing to patient safety (Dumitrascu et al., 2020). Joseph Lister established the use of antiseptics in 1867 to clean the instruments, hands of surgeons, and wounds, showing that infections deaths dramatically decreased using these techniques (Tan et al., 2020).

In the Age of Quality Statistical Control (20th century), as the father of quality management in hospitals, Ernest Codman published his postulates on quality management in hospitals in 1916, suggesting the results, both positive and negative, should be made public to influence research that contributes to improved diagnoses and treatments (Robinson, 2017). In the final stage of patient safety (21st century). As of publication of the report "To err is human" by the Institute of Medicine of the National Academy of United State Sciences: the construction of a safer health system" whose findings shook public opinion and forced political and

administrative leaders of the country to seriously consider "patient safety" as a fundamental principle in health care (Donaldson et al., 2000).

The WHO establishment "Global Challenges" and the IBEAS study and contemplated the subject in Geneva in 2002 during its 55th World Health Assembly and proposed developing joint strategies to address deficiencies in health care. This resulted in the World Alliance for Patient Safety being founded at the 57th World Health Assembly in 2004. A year after that, the WHO launched the first global challenge of safe entitled "Clean Care is Safe Care," which is the starting point for worldwide efforts to strengthen patient safety. In the following year, the second global challenge was released: "Safe surgery". Currently, the third global challenge has been released: "Medication without harm" (Donaldson et al., 2021).

There was a study published in 2007 in Latin America (on the prevalence of adverse effects in Latin American hospitals), which included 11,379 patients from 58 hospitals in five different countries: Argentina, Colombia, Costa Rica, Mexico, and Peru. This project was created in conjunction with the WHO and Pan American Health Organization (PAHO). Documented adverse events accounted for 10.5% of all adverse events, of which 60% were classified as avoidable, as well as 6% of deaths (WHO, 2011). A final milestone in the history of patient safety is the celebration of "World Patient Safety Day", on September 17 of every year, starting in 2019. Date set by the WHO, during its 72nd world assembly in May 2019. This celebration is important to keep promoting patient safety around the world (Murphy, 2019).

2.5 Six International Patient Safety Goals (6IPSGs)

2.5.1 Goal one: Identify patients correctly

Standard IPSG.1: The hospital develops and implements a process to improve accuracy of patient identifications

Although the institution possessed a wide range of resources, there was a lack of systematic identification of patients, which affected safe care (Bernal et al., 2018). Moreover, the WHO notes that pediatric patient misidentification is likely to lead to medication, surgical, and charting errors (Blignaut et al., 2017). WHO establish at least two ways of identifying the patient. One way is by using the patient's name and the other is by using the patient's birth

date. This is done to ensure the right medications and therapies are administered to each patient. Make sure that the right blood is given to the right patient during blood transfusions (Rezende et al., 2021). It will minimize medication errors, and ensure the patient receives appropriate treatment. The presence of such a safeguard is vital for all patients, and especially for those who are incapable of independently communicating, such as newborns (Alhawsawi et al., 2017).

The study (Fukami et al., 2020) evaluated whether step-by-step problem-solving can reduce patient misidentification incidents classified as level 2 and over (adverse events for patients) at Japanese hospitals. As revealed, the staff member performing the intervention/procedure must verify the patient's identity, which includes the following: A patient's identity is verified by using two patient identifiers, which exclude the patient's room number and location within the hospital; patients are identified before diagnostic procedures, treatment, and other procedures are performed. Finally, comatose patients or newborns not yet named are properly identified by the hospital under special circumstances. According to researchers, these countermeasures and interventions failed to achieve the goal, but they did appear to reduce patient misidentification (Carayon et al., 2020).

2.5.2 Goal two: Improve effective communication

Standard IPSG.2: The hospital develops and implements a process to improve the effectiveness of verbal and/or telephone communication among caregivers

Failures in communication are linked to medical errors and poor health outcomes in healthcare teams. It has become increasingly important for future health professionals to learn how to work in teams (Wu & Busch, 2019). To get healthcare that is tailored to their needs, patients need the ability to communicate effectively with their healthcare providers (Hannawa et al., 2017). Even though overall errors remained unchanged, harmful medical errors decreased and communication between families, nurses, and physicians improved after a structured communication intervention for family-centered rounds. A family-centered approach may act to improve patient safety and quality without negatively impacting the duration of rounds or teaching methods (Khan et al., 2018).

Pediatric patient safety is a very critical issue, hence the IPSGs encourage specific improvements through a variety of approaches, including increasing communication

between service providers. The hospital sets up regulations to improve verbal communication and telephone communication. Effective communication is one that is timely, accurate, complete, clear, understandable, and easy to understand by the recipient, thereby reducing errors and enhancing patient safety (Rodziewicz et al., 2022). Improving nursing quality relies heavily on the communication between officers in interdisciplinary teams. Maintaining patient safety can be achieved through effective communication by nurses using the SBAR technique (Situation, Background, Assessment, Recommendation) (Müller et al., 2018).

Communication between nurses in the hospital is crucial for ensuring patient safety and security, especially when it comes to weighing, receiving, and handover. The most susceptible times to errors in communication are when the shift or guard is moved, when verbal or telephone orders are given, when critical examination results are delivered, and when patients are moved. Health-related hazards are strongly associated with communication and collaboration problems (Machado, 2017). Various factors can lead to this, including individual factors, organizational factors, and job factors. The researchers noted that nurses should be capable of ensuring patients' safety, anticipating possible dangers, and preventing worsening patient conditions, including anticipating patient anxiety related to hospital treatment (Silva et al., 2016).

2.5.3 Goal three: Improve the safety of HAMs

Standard IPSG.3: The hospital develops and implements a process to improve the safety of HAMs

Globally, medication safety during administration is a major concern, and is related to pediatric patient safety and quality of care (Mohiuddin, 2019). Errors in medication administration pose a major concern to nursing professionals around the world. One of the most frequently misused medications, HAMs carry a high risk of serious harm if administered improperly, and are also responsible for the majority of harm (WHO, 2016). In recent times, considerable literature has been produced on nursing knowledge in pharmacology (Caboral-Stevens et al., 2020).

Improving the safety of HAMs by the labels should be visible on all medications, the nurses and others in the clinical setting should keep detailed records of the medication the patient

is taking, written documentation should be provided to patients about the medications they must take, and they should be encouraged to keep their providers informed of any changes to their medications (Tingle et al., 2019). As a result of a study conducted to assess the doses of medications after reviewing the pediatric patients' medical records, all prescribed medications, their doses, and frequency were documented. For 400 pediatric inpatients in the West Bank/Palestine, researchers investigated medication dosing errors and possible associated factors. Study results revealed that pediatric hospitalized patients in Palestine were highly susceptible to medication dosing errors. Patients who are younger, have lower body weights, and have a high number of medications prescribed are more likely to have inappropriate doses, so they require special attention. strategies are recommended to reduce infant and pediatric medication dosing errors (Hmedat et al., 2017).

An interview questionnaire was used to assess the level of knowledge 280 nurses had about high alert medications in government hospitals in the West Bank, Palestine. Nurses have insufficient knowledge about high alert medications, according to the study; 67.1% of participants scored less than 70%. Training in high alert medications and intensive care unit training are associated with nurses having sufficient knowledge. Most knowledgeable groups included nurses with a master's degree, those in wards with intensive care units, head nurses, and male nurses. Eighty-one percent of respondents hoped to obtain additional training. There were two of the most prevalent obstacles reported: inconsistent opinions between doctors and nurses (37.9%) and no standard operating procedure for high alert medications (37.1%) (Zyoud et al., 2019). Identifying high-alarm drugs, locating them, labeling and storing them are governed by rules or procedures. Those rules and procedures are implemented in Singapore (Connors et al., 2017).

With IPSTG, medical professionals around the world can administer high-alert medicines safely while achieving a number of aims and objectives. Among these medications are antibiotics, anticoagulants, cardiac medications, chemotherapeutic agents, and others classified as very high risks. Efforts are being made to improve healthcare practices to increase the safety of these medications (Zyoud et al., 2019). In order to distinguish high alert medications from other medications, a red sticker with the words "High alert" is added to them which indicates that they are medications that look and sound similar, concentrated electrolytes are stored in double lockable cabinets that are kept separate from other medications and are only accessible in an emergency. The LASA (Look Alike Sound Alike

Medicines) category recognizes pharmaceutical names whose packaging is similar to that of another medication, and names of medications whose names sound similar to those of another medication (Shallik et al., 2022).

2.5.4 Goal four: Ensure correct site, correct procedure, correct patient surgery

Standard IPSG.4: The hospital develops and implements a process for the preoperative verification and surgical/invasive procedure site-marking.

World health organization surgical safety checklists (SSCs) have been found to reduce both mortality and morbidity. A well-implemented SSC improved the operating room care process; consequently, SSC implementation and improved care process led to better patient outcomes (Haugen et al., 2019). In a systematic review, pediatric SSCs and their implementation strategies were examined for their effectiveness and meaning. Implementing an SSC strategy that targets pediatric patients and their families can result in high acceptance and good compliance. SSCs' effectiveness in improving pediatric surgery outcomes is not well established, but they may benefit high-risk patients in low-resource settings when they are integrated into a comprehensive implementation strategy (Lagoo et al., 2017).

Surgical safety and quality can be improved by engaging implementation science more strongly, and until this rapidly developing field is more deeply integrated into surgical research and implementation initiatives, the researchers will struggle to understand why checklists appear effective in some settings and ineffective in others (Hull et al., 2017). Implementation science is particularly relevant in surgical care for better understanding, intervening, and preventing adverse effects such as injury and death. Through evidence-based interventions, the political and policy drive towards improving surgical care has flourished over the past two decades (Aarons et al., 2017).

The implementation of a protocol within a hospital depends on its acceptance by health professionals, and introducing a standard procedure into operating theatres was more challenging than expected, particularly since patient identification practices vary between surgical specialties. Likewise, the protocol revealed that nurses generally prefer rules-based practices, whereas surgeons generally prefer discretionary ones. In contrast, in some hospitals, the protocol has exacerbated tensions between different professional groups, rather than being an opportunity to build teams. Over the past four years, some hospital audits have

found that protocol compliance in operating theaters rose from below 30 percent to over 70 percent, and in some units, it increased to over 90 percent after the hospital managers implemented multiple regulatory mechanisms for compliance, both in terms of support and sanctions, by establishing softer mechanisms like information and training, and then escalated to stronger mechanisms (Healy, 2019).

In order to ensure safe and effective patient care, IPSGs were developed. If followed, it helps reduce the possibility of mistakes and errors. A crucial step in the process is to confirm that the right site is being operated on. As part of IPSG goal 4, an organization must ensure procedures are written to accommodate patients with different needs, including age, weight, height, and other factors that may affect the surgery. Before each surgery is performed, these procedures should be examined for accuracy (Stahel & Stahel, 2022). In order to perform safe surgery, IPSGs recommend that the surgical site must be readily recognizable and the patient be involved in the marking process. Prior to surgery, it is essential to choose the right location, technique, and patient, as well as have all the necessary documents and equipment available, accurate, and functioning (Collings & Stefanidis, 2022).

In the moments before a surgical operation, the entire surgical team conducts and records a time-out process in which the team agrees on the following components: Correct patient identity, correct procedure to be done at the correct surgical/invasive procedure site. After the procedure is completed, a final process known as sign-out is conducted in the area where the procedure took place which consists of the following components verbally confirmed by a team member, typically a nurse: The name of the surgical/invasive procedure, the instrument and sponge counts, the labeling of specimens (if specimens were present, the labels included the patient's name), and any equipment problems to be addressed. A consistent approach is being implemented to ensure patients receive the proper location, technique, and identification. The term includes dental and medical treatments performed in locations other than operating rooms (Papadakis et al., 2019).

2.5.5 Goal five: Reduce risk of health care-associated infections

Standard IPSG.5: The hospital adopts and implements evidence-based hand-hygiene guidelines to reduce the risk of health care–associated infections

Health care-associated infections (HCAIs) are infections that occur during hospitalization and occur in a health care facility that first manifest 48 hours or more after admission to the hospital or within 30 days of receiving health care (Ramli et al., 2018). According to several studies, adverse drug events, HCAIs, and surgical complications are the most frequent adverse events for hospitalized patients. According to the Center for Disease Control and Prevention (CDC) statistics indicate that nearly 1.7 million hospitalized patients annually get HCAIs while being treated for other health issues, and one in 17 of those patients die from them (CDC, 2019).

In various studies, it has been shown that simple infection-control procedures like hand cleaning and alcohol-based hand rubs can prevent HCAIs, reduce mortality, and reduce health care costs (Hillier, 2020). According to other study estimated that HCAI prevalence decreased from 2011 to 2015. It is recommended that attempts at preventing such infections should continue, and prevention strategies for *Clostridium difficile* infection and pneumonia should be augmented (Magill et al., 2018). The routine education of health care professionals can help prevent the spread of infection by changing the way they wash their hands. As part of this initiative, the WHO has developed guidelines to encourage hand-washing practices among member countries (Phan et al., 2018).

In healthcare settings, hand hygiene is a simple yet effective way to prevent infections. Hand hygiene, consisting of washing the hands with soap and water for at least five minutes or using an alcohol-based hand sanitizer for 25 seconds, is one of the best ways to prevent getting sick and spreading germs. Hands should be washed routinely for at least 50 seconds with soap and water when hands are visibly dirty, before food, after bathroom use, and after caring for people with infectious (WHO, 2021)

2.5.6 Goal six: Reduce the risk of patient harm resulting from fall

Standard IPSG.6: The hospital develops and implements a process to reduce the risk of patient harm resulting from falls for the inpatient participants

Fall-related injuries the second leading cause of death in the world (WHO, 2021). In all quality improvement programs, fall rates and fall prevention practices are measured (Pelczarski et al., 2021). During treatment at a health care facility, patients could experience suicidal ideation. Hospitals must perform environmental risk assessments and use relevant screening tools to mitigate suicide risks (Haslinda et al., 2021). Establishes a process for the initial assessment of patients for fall risk and subsequent reassessment of patients when conditions or medications change, among others. For those deemed at risk, measures are implemented in order to reduce the fall risk. Measuring results, both the reduction of fall injuries and any unintended side effects such as gait belts to prevent injury if the patient does fall and ensure a non-cluttered environment to prevent accidental fall events while ambulating post operatively (Hill et al., 2018).

It has not been found that there is a single effective predictor that can accurately predict whether a patient will experience a fall in the hospital (Austin, 2017). As contributing factors, the researchers identified decreased balance, mobility deficits, medication errors, insufficient Vitamin D, vision impairment, and decreased depth perception. In healthcare facilities, several tools have been developed to predict fall risk, including the Morse Fall Risk Scale (MFS), St. Thomas Risk Assessment Tool in Falling Elderly Inpatients (STRATIFY), and Hendrich II Fall Risk Model (HFRM). While each of the tools had been verified for inter-rater reliability, the STRATIFY showed low sensitivity and the HFRM had the most specificity in acute care hospitals (Stevens & Lee, 2018). Nevertheless, the researchers recommended using the HFRM to assess predictors of falls in acute care settings in a comparison of MFS and HFRM (Nassar et al., 2014). Despite other tools being developed and adapted for acute care hospitals, the MFS remains the most widely used in this setting, exceeding 30% of acute care hospitals nationwide, and has been found effective for assessing patient falls in Korea (Baek et al., 2014).

Morse fall risk scale is a tool that is used to determine the risk of a patient falling based on a numeric rating scale. Developed in 1989, the scale focuses on a patient's history of falling, medical conditions, use of ambulatory devices, intravenous fluid use, gait patterns, and mental state. Based on a rating scale of 0-125, higher scores indicate higher risk of falling (Janice M Morse et al., 1989). According to standardized scoring, low fall risks fall within the ranges of 0-24, moderate fall risks fall within the range of 25-44, and high fall risks fall within the range of 45+ (JANICE M Morse, 1986). Any healthcare professional, including occupational therapy practitioners, can administer and score the assessment because no formal training is required. In acute care hospitals, it is typically administered by nursing staff. As a result of this assessment, interdisciplinary plans of care have been developed for hospitalized patients (Jewell et al., 2020; Watson et al., 2019).

2.6 Importance of pediatric patient safety competencies

Among the common occurrences of patient safety incidents are medication errors, falls, surgical site infections, ventilator-associated pneumonia, and pressure ulcers (Han et al., 2020). Nursing is one of several health care personnel who must be responsible for patient safety (Liukka et al., 2018). In order to ensure safe patient care is delivered and that no harm is done to patients, they are expected to possess certain competencies (Melnik et al., 2018). To minimize hazards and errors, nursing staff must understand and apply the six IPSGs (Mady et al., 2017). The authors state that the six IPSGs reinforce patient safety and highlight areas of healthcare that require immediate attention. To receive accreditation by JCIA, healthcare services must adopt these IPSGs (Kobayashi et al., 2021). The researchers also recommend establishing a system for applying the international safety goals for children in hospitals and emphasizing the importance of applying them to minimize hazards and errors (Mady et al., 2017).

Azis and Safina (2016) examined the views and compliance of Malaysian healthcare personnel, based on records gathered in 2014 and 2015, at a private hospital that received JCIA accreditation in 2013. In IPSG1, the system that focuses on pediatric patient identification, compliance decreased by 1.4% in 2015 compared to 2014, as a result of hiring new staff and inadequate training. In addition, compliance with IPSG2, which is concerned with effective communication, decreased by 0.56 % in 2015 compared to 2014, because staff members lacked confidence in communication and lacked necessary knowledge. In contrast,

compliance rates for IPSTG3 and IPSTG4, which pertain to high-alert medication safety, and ensuring the correct surgery site, side, and marking, respectively, were 100% for both years (2014 and 2015) due to nursing staff awareness. Healthcare-associated infection (IPSTG5) compliance in 2015 was 75.2%, just 0.1% lower than in 2014. In contrast to 2014, compliance with the IPSTG6 theme, which focuses on reducing the risk of patient harm caused by falls, increased by 14% in 2015, due to the increased awareness exhibited by staff regarding the importance of performing frequent assessments and reassessments. Thus, the knowledge, recognition, and experience of healthcare staff likely contribute significantly to improving patient safety in hospitals (Azis & Safina, 2016).

2.7 Competencies of pediatric nurses regarding IPSTGs

A healthcare professional's competency is the ability to meet the demands of working in a position of responsibility; it includes knowledge, skills, and other capabilities (von Vogelsang et al., 2020). Nurses' competence is critical to improving the productivity of work and ensuring the quality of healthcare services (Melnik et al., 2018). An IPSC is an important clinical competency that increases awareness among healthcare providers, particularly nurses, and improves their performance and safety (Attia et al., 2021). In addition, patient safety competence is essential to improving the quality of healthcare, as it focuses on the essential knowledge, skills, and abilities of healthcare professionals (Konttila et al., 2019). In conclusion, patient safety competencies are the knowledge and skills, that ensure the safety of patients in the work environment.

Nurses' competencies in 6IPSTGs are crucial and the roles they play in healthcare are prominent due to their close contact with the patients (Hwang et al., 2019). Additionally, patient safety competencies are required of nurses as part of their core performance to enhance the professionalism of their work and reduce harm to patients (Kim & Sim, 2020). As a result, pediatric patient safety competencies are important to ensure patient safety, create a professional culture among nurses, and improve their knowledge and skills.

2.7.1 Knowledge of IPSTGs

According to Abu Mostafa et al. (2019) in a study conducted in Saudi Arabia to assess nurses' knowledge about improving pediatric patient identification, the majority (87%) of healthcare providers and almost half (48%) of non-healthcare providers knew about patient

identification standards, including the importance of using two patient identifiers. In contrast, audit results showed that only (18%) of health-care providers used two identifiers, with 82% checking the patient's name instead of their medical record number.

According to Rashmi et al. (2021), 200 nursing staff members in an accredited hospital in Mangalore were assessed on their knowledge of hospital culture on patient safety, a survey revealed that 79% of nurse staff are aware of the hospital's patient safety goals. In 200 samples, 68% of the patients are identified by identification bands, 24% by their names, and 8% by their bed numbers. The results are consistent with the study conducted in a training hospital in Turkey by Cengiz et al. (2016), most staff participants (81.1%) agreed that patient wristbands (PW) and patient identification (PI) were important and that staff cared about PW and PI. In contrast, 29.7% of participants in the survey thought that medical procedures could be administered without verifying wristbands because of heavy workloads, and 17.2% believed that they were not required to verify wristbands because they knew their patients. As well, 100% of samples are working with emergency medicines, 90% of samples are storing high alert medicines with high alert labels and 10% of nurses are storing high alert medicines in their stations. Moreover, 52% of samples preferred to identify fall risk patients by their disease condition, 5% by fall risk assessment records, and 43% by observation. In spite of the MFS remains the most widely used in this setting (Baek et al., 2014).

In a qualitative study conducted by Biasibetti et al. (2019), 44 healthcare professionals and 94 companions/families discussed how to improve communication for PS in pediatric hospitalizations in Brazil. The results were divided into two groups: "Barriers to Successful Communication," which discusses obstacles and issues that arise throughout the communication process, and "Tools to Improve Communication," which offers solutions, such enlisting the assistance of friends and family. The study found that a wide range of issues can make it difficult to communicate well, and that effective communication techniques might help to improve pediatric patient safety.

A study conducted in Tennessee by Simmons et al. (2019) sought to identify needs that could be met through later communication training and education. A local pediatric hospital's study found that 59% of participants communicate frequently with caregivers/parents/family members, while only 7% communicate directly with patients. The majority of nurses (58%)

reported that effective communication could assist their communication when interacting with people with complex communication needs, despite limited knowledge or access to the topic.

PS identified as one of the five most important hospital safety concerns. The third goal from IPGs, which focuses on the safety of treatment, particularly HAMs. After heart disease and cancer, medication errors rank third in terms of causes of death (Alhidayah et al., 2020). The incident can be harmful to the patient and can endanger the safety of his or her health, which is a task for health workers, particularly when giving drugs to patients. As a consequence, it is vital to know how much knowledge the nurse has on this subject (Jannah, 2020). A study conducted by Jannah, assessed the knowledge about the third Goal IPG for nurses working in internal medicine, pediatrics, and surgery at Petala Bumi Hospital, which totaled 20 nurses, and at Sansani Hospital, which totaled 25 nurses in Pekanbaru City. It was revealed that 55% nurses at Petala Bumi Hospital have good knowledge of IPG 3 goals and for respondents' knowledge of Sansani Hospital with a good category of 48%. In both hospitals, respondents did not understand or define the third IPG well (Jannah, 2020).

Bartz-Kurycki et al. (2017) conducted a study from 2014 to 2016 to measure adherence to the debrief checklist of the surgical safety checklist at an academic children's hospital across 8-week intervals. Despite minor yearly gains in overall compliance to the debriefing checklist of 90.6%, 90.3%, and 94.9%, respectively, approximately half of all checklists were completed in full. Furthermore, the study suggested that future efforts to improve adherence would involve treatments targeted at the debriefing phase and improving operating room performance.

A Canadian study conducted by Gołębiowska et al. (2018) examined how surgical checklists and preoperative checklists were implemented at 15 children's hospitals in Canada within a 12-month period with the participation of 3 sub teams (anesthesia, surgery, nursing). Based on the findings of the study, no specific leader is required for the checklist implementation. Additionally, the study found that errors were detected when using the check list, such as the wrong patient, incorrect procedure, or the wrong site for the surgery of the patient. There was an improvement in the safety culture in operating rooms in 87% of hospitals.

A study conducted by Cherian & Rajesh (2018) in the PICU Pondicherry Institute of Medical Science, 60 nurses were assessed on their knowledge of infection control measures. It was found that only 23% of participants in the study possessed adequate knowledge, while the remaining 78% lacked adequate knowledge. Moreover, the researcher recommends providing in-service education to nurses at various levels so that they can become more knowledgeable regarding infection control. Nurse educators should also be knowledgeable about infection control measures.

According to (Doyle et al., 2015), they administered a survey to 406 Canadian medical students and 436 postgraduate trainees to determine their health professional education in patient safety competency. It was revealed that in both groups, postgraduate trainees (84%) and medical students (63%) were most confident in learning clinical safety skills (e.g., hand hygiene), but least confident when learning about sociocultural aspects of safety (e.g., understanding human factors); 61% for postgraduate trainees and less than 50% for medical students. In most aspects of safety, the confidence of medical students increased with experience. Similarly, reports conducted in nursing students and post-graduates (Amilia & Media, 2020). Furthermore, the emphasis on hand hygiene and medication safety campaigns may influence confidence in these areas (Allegranzi et al., 2022). Additionally, other research shows that clinical faculty overwhelmingly identify clinical safety as aspects of patient safety that they teach, rather than sociocultural aspects of patient safety (Mbuthia & Moleki, 2019).

Park & Ju (2017) conducted a Korean study to determine the effect of pediatric fall prevention education using leaflets and picture books on caregiver fall-related knowledge for children aged 5 to under who are hospitalized. According to the study, fall related knowledge score increased by 2 points in the experimental group after the intervention, and only by 0.1 points in the comparison group. In the study conducted by Han et al. (2020), 212 nurses from two university hospitals located in two provinces of South Korea participated in examining nurse perceptions of patient safety culture, patient safety competency, and adverse events. It was revealed that patient safety culture scores that were higher demonstrated lower rates of pressure ulcers and falls. The finding suggests that patient safety competencies and safety culture perception are positively correlated, which agrees with previous findings, showing that strong safety cultures affect nurses' knowledge, attitudes, and skills related to patient safety (Cho & Choi, 2018). A positive safety culture is also likely

to be promoted by nurses with higher safety competencies. As a result, hospital executives and nurse managers should provide nurses with relevant training and programs in order to enhance their patient safety competency (Amiri et al., 2018).

According to the study (Omer et al., 2018), the researchers assessed the residents' awareness and understanding of the six IPSGs in accordance with the Joint Commission International Accreditation (JCIA) standards for 100 residents of different training levels and specialties at King Fahad Medical City (KFMC). It was revealed that most participants (77%) were familiar with IPSGs with different scoring for each goal, while others were not. Most providers (96%) understand that JCIA certifies their facilities. About 75% of them chose the correct number of IPSGs, whereas 25% did not. In contrast, the minor results indicate that 86% of respondents acknowledge the approach for accessing KFMC's policies and procedures (73.3 % for R1, 92% for R2, 96% for R3 and 80% for R4). In an aim to familiarize residents with IPSGs, 31% suggested incorporating them into medical curricula, 29% preferred notebooks, 27% wanted workshops, and 13% wanted lectures.

2.7.2 Practice relevant to IPSGs

Following the Institute of Medicine reports, a number of efforts were made to decrease medical error (De Rezende et al., 2021). Patients safety was the focus of nurses' reviews, researchers explained better ways to do things, and safety and quality facilities emphasized the importance of patient safety. In many countries, healthcare practices have undergone a great deal of change. Patient safety in healthcare is considered to be one of the most important improvements that must be made. Even though this topic has been controversial in the past, we can no longer ignore it. In the coming years, more and more people will come up with innovative ways to improve healthcare, making it easier for them to implement their ideas (Malliaris et al., 2021).

Bernal et al. (2018) conducted a study in three public hospitals in the south of Brazil in the pediatric ICU. The practices of nurses in identifying patients were investigated. The study found that there was an identification nameplate beside the bed for 98 percent of the 96 patients observed. A wristband was not used to identify participants. On the identification nameplates, the name of the child (95%) was included, along with the child's age (31%), and the name of the person responsible (78%). 70 percent of the 89 individuals whose names were identified were complete. As well, the Study conducted by Tres et al. (2016) in two

units at a university hospital in Paraná, Brazil. Indicators related to patient identification were used to assess nurses' quality of care. The data were gathered on 15 random days in August and September 2015, yielding 1068 observations. According to the patient identification markers on the beds/bracelets, the quality of care was poor (0%), borderline (77%), and adequate (95%). The requirement for enhanced patient identification was concluded, which could be addressed by rationally selecting the technique of identification and allowing nurses to make judgments about the indicator.

The study conducted by Silva et al. (2016) examined 32 nurses' perceptions of shift handover communication and how it affects the safety of children patients at a pediatric inpatient unit of a university hospital in the South of Brazil using a semi-structured interview. The study revealed that effective communication during shift handovers is crucial for providing safe care. According to Spooner et al. (2016), without handover of blood results and medications orders, incoming clinicians are more likely to make mistakes, compromising patient care. Furthermore, it is necessary to transmit information objectively. This will include reorganizing shift handover records and improving information dissemination. In order to ensure high-quality care, the researcher recommends standardizing nurse handoffs between shifts.

Globally, unsafe medication practices and errors such as incorrect dosages or infusions, unclear instructions, abbreviations and inappropriate prescriptions are a leading cause of avoidable harm in health care (WHO, 2019). Especially since technology has progressed so much, many different types of solutions are being sought after or being created by a wide range of people in the field, including: identifying the patient, providing high quality healthcare based on international standards, not what is local or what the patient considers high quality, providing the service within the community, and addressing all patient concerns, then obtaining testimonials and complaints and using both to improve service (Davenport & Kalakota, 2019).

According to Mohammed et al. (2017), they assessed 167 nurse's practice regarding high alert medications at the Alexandria Main University Hospital using nurse's practice dealing with HAMs observation list. The study revealed that nurses' practice differed from the standard guidelines for administering HAMs. practice levels were below average for all nurses, which might result in hazardous practice and dangerous complications. In accordance

with the study conducted by Labib et al. (2018) in the NICU, at Cairo University Pediatric hospital. According to the study, the mean percent score of nurses' knowledges was higher than the mean percent score of their total practice. Based on analysis of nurse errors, the most common type of error was wrong dose (15%), followed by wrong drug type (13.6%). Further, nurses' knowledge and training are not automatically incorporated into improved implementation practices. In contrast to Sessions et al. (2019) findings, improving collaboration and educating employees on safe HAM practices, as well as using advanced technology, are recommended to prevent HAM mistakes.

The study conducted by Younis et al. (2021) assessed nurses' knowledge of HAMs and obstacles encountered during HAM administration in tertiary care hospitals in Lahore, Pakistan. Based on the results, nurses have a poor understanding of HAMs and how they are administered and regulated. A lack of knowledge was one of the significant barriers' nurses encountered when administering HAMs. 63.7% of participants reported conflicting views between nurses and doctors as the most common obstacle during HAM administration. These obstacles can contribute to the possibility of medical errors. In contrast to (Keers et al., 2013), where it was mentioned that physicians had committed the most medication errors, followed by pharmacists, and then nurses.

As part of an effort to reduce medication errors, a study was conducted which found various research articles under discussion that nurses were reporting patient safety incidents, near injuries, incidents of potential injury, non-injured incidents, and unexpected events in an effort to improve drug safety. The study concludes that training and updating knowledge about patient safety are necessary for reducing medication errors. Additionally, compliance with reporting patient safety incidents needs to be improved, since the report is an early response to a future patient safety incident that can prevent it from happening again (Anugrahini & Hariyati, 2020).

A study conducted by Almeida & Rodrigues (2019) evaluated nurses' compliance with the surgical safety checklist during 431 pediatric surgeries at a public hospital in the Federal District. Approximately 90% of the surgeries were performed with the checklist, however the instrument did not appear to be complete and verbal compliance with all items was not observed. It was observed that 95% of the surgeries continued even with inappropriate checks, improper timing, and improper participation from key professionals. As determined

by the study conducted by Mahmood et al. (2019), surgical safety checklists were completed during 51 surgeries at a pediatric academic hospital. According to the results, 94 percent of surgical safety checklist items were completed for briefing, time out, and debriefing in hospital-recorded cases, compared with 26 %, 59%, and 42% for matched cases.

According to Koros et al. (2018), 100 nurses were assessed for their compliance with infection prevention and control practices in the surgical wards of Moi Teaching and Referral Hospital Eldoret, Kenya. According to the results, 69% of nurses followed recommended hand hygiene practices; 99% of nurses used gloves, but few used other personal protective equipment, such as goggles (25%) and gowns (37%). It was estimated that 70% were in compliance with safe injection practices. A total of 85.6% of nurses in the study reported being compliant, while 80% were observed to be compliant. The results of this study inconsistency those found by Tabash et al. (2018), which included all health care providers in Gaza Hospital's hemodialysis units. Most study participants (79.2%) lacked adequate training in infection prevention and control protocols. Based on the standard precautions, hand hygiene compliance was 56.2%, personal protective equipment compliance was 87.5%, waste management compliance was 39.6%, environmental infection control practices compliance was 54.3%, and aseptic technique compliance was 62.8%. Additionally, the researcher recommended continuing education and training programs for health-care staff and physical fitness regarding infection prevention and control protocols.

The study conducted by Mamdouh et al. (2020) assessed 50 nurses' performance regarding implementation of patient safety in the intensive care units at Damanhur university hospital in Egypt. The study revealed that over half of the study nurses lacked satisfactory performance in regard to implementing patient safety measures. The analysis showed that over two thirds of nurses studied did not practice fall prevention adequately. These results may be due to a shortage of staff and insufficient supervision, according to the researchers. It is consistent with the findings of Baris et al. (2016). In their study, "The cost of serious patient fall-related injuries at hospitals" they calculated a US\$3,302.60 additional hospital cost and a 14.61-day length of stay due to serious fall injuries.

Study conducted by Tanjung et al. (2021), reveal that there was ineffective communication after instructions were given to the implementing nurses, resulting in ineffective implementation of the patient safety program. There has been a lack of effective collaboration and communication between staff and the patient's family in preventing the risk of falls. Managing human resources properly is the most basic matter to address, as a lower workload will ensure that officers are more effective in establishing a patient safety culture. Additionally, health workers can be educated and trained continually to increase their understanding.

The study conducted by Adly et al. (2020) assessed 56 nurses' knowledge and practices regarding the application of IPSCs in pediatric critical care units at Ain Shams University Hospitals using a structured interviewing questionnaire sheet and observational checklist. Researchers found that two thirds of the studied nurses had inadequate knowledge concerning IPSGs, and more than half had incompetent practices such as: the wristbands for pediatric patients are not worn, medication and blood products are not double-checked before administration, all forms and papers are marked with pediatric patient identification labels, and all medications are dispensed with the child's name. There was also a statistically significant difference in nurses' qualifications and experience regarding IPSG application, based on their knowledge and practices. In accordance with the Emergency Care Research Institute (ECRI) notes that in its database, over a period of about 2.5 years, there were more than 7,000 events related to patient identification, many of which had serious consequences (ECRI, 2016).

According to Nurhanifah et al. (2021), they analyzed the relationship between 122 nurses' characteristics and their work motivation with IPSG implementation at Aceh Government Hospital in Indonesia using a questionnaire that integrated characteristics, implementation of IPSGs, and The Unified Motivation Scales (UMS). The results revealed that 68 respondents (55.7%) had implemented IPSGs in the inpatients room at Aceh Government Hospital, but 67 respondents (54.9%) were unmotivated to make IPSGs work. In accordance with the study conducted by Gunawan et al. (2019) it was concluded that four factors that were significantly related to nurses' performance, which were length of work, latest education level, perception of team nursing methods, and work motivation.

2.8 Relation between knowledge and practice relevant to IPSGs

The researchers assessed 75 nurses at pediatric units in the ICUs at El Menofia university hospital based on their knowledge of (patient identification, effective communication, medication safety, etc.) and their practice in regard to patients' safety goals using two tools for data collection, one to evaluate nurses' knowledge, and another to assess their practice. The study revealed that more than half of the nurses under study displayed poor knowledge of all patient safety issues in intensive care units, and two-thirds exhibited incompetence in practical skills. Additionally, the researchers recommend that educational programs should include topics related to patient safety in the initial education and continuous learning phases (Ahmed et al., 2022).

By using a patient safety knowledge questionnaire and an observation checklist for new graduate Nurses' safety performance, Zagazig University Hospitals assessed the effect of self-learning on new graduate nurses' performance related to the patient safety goals. The study concluded that applying the self-learning package to new graduates improved their knowledge and performance in patient safety goals (Kheder, 2019). In accordance with another study revealed that, 96% of nurses are aware of good patient safety practices, and the average length of work respondents at Petala Bumi Hospital contributed to good knowledge of patient safety, especially drug administration. Additionally, 96% of the respondents in his survey have a good understanding of patient security based on their average work experience of ten years (Arumaningrum, 2014).

2.9 Factors affecting the competencies of pediatric nurses regarding IPSGs

Patient safety competencies attained by pediatric nurses can be influenced by several factors, described below:

2.9.1 Individual factors

In various studies, individual factors are crucial in identifying the competence of nurses in order to improve patient safety, including educational levels and work experience. Following is a brief description of these factors:

2.9.1.1 Educational level

Research has demonstrated that nurse education is essential to the development of nursing competency capability, which is based on improving the knowledge and skills for patient safety. Further, the educational level influences nurses to perform high-level skills effectively in their jobs (Rizany et al., 2017). As a result, a competency that is based on the approach to education will also be able to document the accomplishment of any health professional's ability to improve performance, protect environmental safety, and manage risks in health care services (Rahardja et al., 2018). In nursing education at a high level, the students can develop their personal capacity and professional maturity (Widarsson et al., 2020).

There is evidence that safety education improves the costs, outcomes, and safety of patients (Doyle et al., 2015). Nevertheless, other studies have examined quality and safety cultures among health care providers and trainees. It is widely acknowledged that patients' safety and quality of care are important factors that determine the strength of healthcare institutions (Mathias & Sethuraman, 2016).

2.9.1.2 Work experience

Work experience of an individual impacts many aspects of the quality of health services, mostly regarding patient safety and the provision of safe care. In addition, nurses can use their past experiences to properly manage care and avoid errors that harm patients (Elsous et al., 2017). The study of Farokhzadian et al. (2018) reported that nurses with a long period of experience are generally better at managing the duties and responsibilities of patient care. This indicates that sharing experiences and knowledge among the nursing staff, specifically between senior nurses and new nurses, can enhance the quality of care (Kieft et al., 2014).

2.9.2 Organizational factors

Nurse organizational factors can have an impact on improving the quality of nurses' performance and patient safety by managing organizational culture, climate, and nurse leader participation and support. Following is a brief description of these factors:

2.9.2.1 Organizational culture

Organizational culture is defined as the shared system of actions, values, and beliefs it develops and how it guides the behavior of its healthcare providers and staff (Silva et al., 2021). Studies relating to organizational culture and patient safety have been conducted in great quantity. According to a study on the relationship between nurses' safety performance, ethical leadership, and organizational culture, administrators and managers in hospitals have the ability to improve the nurses' performance in terms of patient safety by optimizing the organizational commitment and adherence to ethical leadership. In order for healthcare organizations to ensure patient safety, they should establish policies, rules, and an organizational culture that integrates and supports the skills of healthcare workers, especially nurses. The implementation of ethical leadership can enhance nurses' organizational commitment and perception of safety culture. Nursing managers' efforts to develop ethical leadership strengthen the organization's commitment to improving patient outcomes. Engaging nurses in this process and making sure that they perform well are essential for its success (Lotfi et al., 2018).

2.9.2.2 Organizational climate

An organizational climate consists of a set of characteristics that describe an organization, make it stand out from others, and affect employees' behavior. A study of organizational climate attempts to identify the environments which influence the behavior of the employees, as the effects of organizational climate on employee attitudes and behaviors are receiving increasing attention (Mohamed & Fekry, 2018). Research has found a relationship between organizational climate and employee satisfaction, empowerment, performance, and competence (Syahrums et al., 2016).

2.9.2.3 Support of the nurse's leader

Leaders in healthcare systems have a vital role in ensuring the safety of patients and attempting to promote patient care. Collaboration and good communication are crucial for improving patient outcomes, such as minimizing hospital stays and reducing mortality rates (Rosen et al., 2018). For patient safety improvement, a comparable study that looked at patient safety, improving work conditions, increasing nurse staffing levels, and providing

adequate support for the nurse leader to spend more time on direct patient care would be helpful (Liu et al., 2018).

2.10 Relation between the factors affecting the competencies of pediatric nurses regarding IPSGs and pediatric patient safety competencies

A study by Alhidayah et al. (2020) examined nurses working in the inpatient rooms of the X Hospital in Cilacap, Central Java, Indonesia to determine factors related to compliance with patient safety indicators. According to the results of this study, adherence to IPSGs was significantly influenced by the leadership style of the head nurse, rewards, attitudes, and motivation. As part of another study, Safrudin (2019) used a questionnaire and observation sheet with a purposive sampling technique to determine the correlation between the age of nurses and adherence to the implementation of prevention of falling patients in Samarinda Government Hospital. According to a previous study, the age of nurses has a significant effect on adherence in the prevention of patients falling.

Ain-Shams University Hospitals assessed 110 nurse interns' performance and awareness of the patient safety culture using a self-learning package regarding patient safety goals. It was concluded that nurses' knowledge of patient safety, awareness of patient safety culture, and performance of patient safety goals were improved when they applied the self-learning package developed by researchers (Abd El Hamid et al., 2018). A different study in China compared scores of nursing practices before and after JCIA to investigate the impact of JCIA on nursing practice in 30 medical institutions that had passed the JCIA. The study found that the JCIA promotes nursing practice by making the nursing process more systematic and comprehensive and by guaranteeing the safety of nurses (Zhang et al., 2018).

2.11 Measurements of pediatric patient safety competencies

A review of the literature shows that pediatric patient safety competencies can be evaluated using a variety of methods, such as observation or survey (Alquwez et al., 2019; Attia et al., 2021). Studies have been conducted on healthcare professionals particularly nurses to measure their patient safety competencies (Cho & Choi, 2018; Hwang et al., 2019). The study by Liu & Aungsuroch (2018) noted that among the more than 32 instruments they identified to evaluate the patient safety competencies, five were developed for all healthcare professionals, particularly nurses, that focused on knowledge, skills, and behavior. Six core

domains are included in these instruments, including contributing to a culture of patient safety, working together to ensure patient safety, communicating effectively to ensure patient safety, managing safety risks, optimizing human and environmental factors, and recognizing, responding, and disclosing adverse events.

2.12 Education and training about IPSGs

Learning approaches used in patient safety education demonstrate the importance of combining multiple methods of teaching and learning to promote continuity, logical order, and the entirety of patient safety competence. Nursing students should have a good understanding of patient safety tools before graduating. Patient safety tools, such as checklists, were used in simulation education, but it was not clear whether the tools were used consistently throughout the program (Jang & Lee, 2017). It is also necessary to develop and implement educational programs and training courses for staff nurses about how IPSGs can be used to improve patient safety (Attia et al., 2021).

Wu & Busch (2019) state that staff training at healthcare facilities can help achieve patient safety standards. However, nurses' habits and behaviors can also influence the implementation of safety standards. It is essential that nurses receive education and training to ensure patient safety and promote quality care. As such, focusing on nurses' knowledge about safety issues will be beneficial to patient safety at hospitals. Ji et al. (2021) study showed that patient safety topics need to be addressed in both theoretical and practical settings across the entire nursing curriculum according to the continuity and sequence of education principles.

2.13 Competencies of pediatric nurses regarding IPSGs in other countries

Panagioti et al. (2019) analyzed several medical settings worldwide to quantify the prevalence, severity, and nature of preventable harm to patients. In the study, one out of every twenty patients were exposed to preventable harm in medical care. The international agenda for patient safety encourages policymakers to focus on preventable patient harm. As part of another study, (Hoffman et al., 2019) used consensus development methods to identify and prioritize pediatric patient safety research topics among pediatric clinicians, health care leaders, and families. The previous study revealed that high reliability, a safety

culture, open communication, and early detection of severe infection were the most important topics.

Among 364 participants, a study evaluated the association between working hours and patient care competency with adverse nurses' outcomes by using structured questionnaires. Researchers found that most nurses worked over 40 hours per week, working hours had the strongest correlation with adverse nurse outcomes, low perception of patient safety competencies, and frequent reporting of patient safety accidents correlated with adverse nurse outcomes. Nurse leaders, according to this study, should promote a work culture that discourages overtime and emphasizes patient safety skills (Son et al., 2019). In South Korean nursing educators were assessed for their competency in patient safety as well as their educational needs by Jang & Lee. The study showed a high level of attitude toward patient safety versus relatively low levels of knowledge and skill for nursing educators. According to the researcher, nurse educators reported the need for education in "medication" and "infection prevention" was higher than the need for education in "human factors" and "complexity of systems" (Jang & Lee, 2017).

The patient safety competency nurse evaluation scale (PSCNES) was used to assess and analyze the PSC of Chinese associate degrees nurses (ADNs). They found that ADNs had moderate PSC levels. The ADNs performed well in the clinical practice and safety risk management dimensions of PSC, but poorly in the patient-centered care and patient safety culture dimensions. A significant difference was found in the two items. As a result, ADNs who completed patient safety training had a higher level of proficiency across all PSC dimensions than those who did not. The patient safety culture of ADNs without a professional title was higher than that of those with a professional title (Yan et al., 2021).

A study used the Hospital Survey on Patient Safety Culture questionnaire to understand the contributing factors to patient safety in New York City. Overall, the study found the composite measures to be low, with the exception of teamwork within units. Healthcare leaders and policymakers must create a culture of safety through open communication, continual learning, and eliminating the fear of blame and punishment (Alsabri et al., 2021). From the perspective of 155 registered nurses from pediatric care units in a medical center in Taiwan, Huang et al. analyzed the correlation between different work environment factors affecting patient safety in a pediatric care unit. They used the Chinese version of the safety

attitude questionnaire (SAQ). Among the factors affecting patient safety climate are teamwork climate, job satisfaction, working conditions, and emotional exhaustion. Furthermore, improving teamwork climate, job satisfaction, and working conditions, as well as reducing emotional exhaustion may improve patient safety in pediatric care units (Huang et al., 2020).

As a result of a study performed by (Alves & Guirardello, 2016) using the Safety Attitudes Questionnaire, the researchers analyzed the evolution of quality of care and hospital indicators for 136 nurses at pediatric units in So Paulo, SP, Brazil, as well as described the characteristics of the nursing work environment, safety attitudes, and quality of care. The study revealed that the work environment is favorable for nursing practice, nursing professionals are satisfied with the quality of care, and the indicators often reduce adverse events and lengths of stay. One positive indication of patient safety was job satisfaction (Constantina et al., 2019).

Al Akoum et al. (2022) assessed 764 nurses' patient safety knowledge and practices in a public hospital in Lebanon and compared its results to those from rural and urban hospitals, using a self-administered questionnaire that explored the six IPGs. Researchers found that despite the varying levels of education among participants, nurses in urban hospitals were more knowledgeable and compliant with IPG than those in rural ones. Moreover, hospitals in rural areas should form and activate a patient safety committee, establish a patient safety program, and conduct periodic audits. In addition, they should implement effective patient safety policies and train their healthcare providers to improve patient handoffs and communicate patient safety events for ongoing learning and improvement. According to Vaismoradi et al. (2020), a sufficient understanding of the proper provision of patient care is key to ensuring patient safety. As well as providing appropriate equipment and electronic systems for communication and information sharing, regular feedback in the workplace, and standardizing care processes can help nurses adhere to patient safety principles.

Harsiwi et al. (2017) described a study that aimed to analyze patient safety implementation with the help of nurses at the Queen Latifa Hospital in Yogyakarta, Indonesia. The quantitative data were collected through observations by 32 nurses, and IPGs were performed effectively, improving the safety of high-alert medication handling by 100% and reducing the risk of falls by 81 %. Moreover, the occurrence of associated infections

decreased by 94%, while the safety of surgical procedures increased by 100%. In healthcare facilities, staff training can be effective in ensuring patient safety standards are met. Nevertheless, nurses' habits and behaviors can also affect the implementation of safety standards. Nursing education and training are essential to improving patient safety and improving the quality of care. As a result, patient safety at hospital is likely to be enhanced by focusing on nurses' knowledge regarding safety issues (Simamora, 2020).

According to (Attia et al., 2021), a study was conducted to assess nurses' application of IPSGs at Elaraby International Hospital (accredited hospital) and general intensive care units (ICU) in Benha University Hospital (non-accredited hospital). As a result of the study, the researchers examined both accredited and non-accredited hospitals and analyzed how accreditation could impact the knowledge and practice of IPSGs among staff nurses. Nurses are crucial to understanding and implementing IPSGs to reduce hazards and errors, therefore the researcher recommended developing and implementing education programs and training courses to help nurses understand how IPSGs can be used to improve patient safety in non-accredited hospitals.

2.14 Competencies of pediatric nurses regarding IPSGs in Palestine

As patient safety issues in Palestine, especially GS, are still relatively new, necessary steps have not been taken in the healthcare service, especially in pediatric hospitals. Studies from 2007 have shown that due to a lack of nurses' competency, about 10% of pediatric hospitalizations are due to nosocomial infections; in addition, 16.4% of deaths between 1 and 4 years of age are due to pneumonia, meningitis, and other infectious diseases (1.3%, 10.9%, and 4.2%, respectively) in pediatric hospitals in GS (Eljedi & Dalo, 2014)

In Palestine, no published data are available regarding nurses' competency in patient safety. A study examined several competencies for Palestinian nurses as part of essential competencies, so that nurses can contribute appropriately based on their abilities, such as interpersonal communication, ethics, nosocomial infection control, precaution, wound treatment, safe patient care, and blood transfusion management (Orr & Unger, 2020). In addition, several studies indicated that nurses faced many challenges in the improvement of their competencies, such as a lack of human resources supporting patient safety, high rates of errors, and adverse events that could have an impact on the achievement of quality

healthcare services and increase patient risk (Taha & Westlake, 2017). However, most of the nurses in Palestine who had a diploma still required support and training (Elshanti et al., 2020).

In regards to available resources, several studies have also reported that there are many factors related to nurses' lack of awareness of contributing to patient safety, along with the availability of the minimum clinical equipment (Bottcher et al., 2019). The providers are also faced with problems related to minimal financial support and the high cost of required clinical equipment to maintain quality care (Akinleye et al., 2019).

In a study, the Arabic SAQ was used to assess 210 nurses' perceptions of patient safety culture and see if it is affected by their position, age, experience, and time spent working in four public general hospitals in the GS. The study found that job satisfaction was perceived as having the greatest impact on patient safety, followed by management perception. The attitudes of nurse managers toward patients were more positive than those of frontline clinicians. Nurses with more experience were more likely to have positive attitudes toward patient safety. Among nurses 35 and older, those working the minimum required hours had better attitudes towards all patient safety dimensions except stress recognition. The significance of evaluating safety culture can be seen in identifying hindrances or drivers in order to ensure safe patient care and job satisfaction. Similarly, perceptions of management and teamwork need to be strengthened, while work conditions, stress recognition, and safety climate need to be improved (Elsous et al., 2017). In order to identify and analyze children's patient safety competencies in healthcare services, careful attention needed to be given by the government, providers, and healthcare professionals, especially pediatric nurses.

2.15 Summary of literature review

Nurses' competencies in pediatric patient safety are defined as skills and knowledge that reflect the performance of nurses in terms of safety. It is crucial for nurses to develop these competencies in order to improve their abilities and awareness of patient safety while working in a hospital. In Palestine, pediatric patient safety has become a major concern to the government since they have issued guidelines that emphasize promoting pediatric patient safety in the healthcare system, particularly in hospitals. Moreover, there are many factors influencing the competency of individual nurses and organizational factors in regards to

pediatric patient safety. Organizational factors such as culture, support of nursing leaders, and climate are equally important in addition to individual factors like education and experience. On the basis of the review, the researcher concluded that there is a need to assess the competencies of pediatric nurses regarding patient safety for hospitalized children at pediatric departments in the governmental hospitals of Gaza strip.

Chapter Three

Method and Materials

This chapter presents the study methodology and illustrates the study design, target population, study setting, study population, sample size, and the study period. It also illustrates the used instrument and its scientific consistency, the administrative and the ethical procedures, the pilot study, data collection, data entry and analysis, and the limitations of the study.

3.1 Study Design

The study is a descriptive-analytical study that utilized a quantitative cross-sectional approach. The researcher used a quantitative data collection method to numerically illustrate the extent to which pediatric nurses' competency toward pediatric patient safety at hospitals in GS. This design used because it is suitable, relatively simple, and is logistically easy, and less expensive. Also, it enables the researcher to meet the study objectives in a short time.

3.2 Study population

The study targeted the pediatric departments' nurses who have direct contact with pediatric patients and also the pediatric departments' nurses who have indirect contact with pediatric patients, but still their work affects patient care as senior and head nurses. The total number of nurses working in all Gaza pediatric departments in governmental hospitals at the time of calculating the sample was 554.

3.3 Study setting

This study was conducted at six conveniently selected governmental hospitals at pediatric departments in GS as follows: AL-Rantisy /Al-Naser Hospital, Al-Dora Hospital, Al-Shifa Complex Hospital, Al-Aqsa Hospital, Nasser Hospital, and European Gaza Hospital.

3.4 Study period

In February 2022, the study started after receiving approval from the university and ethical approval from the Helsinki committee. The pilot study was conducted in the second week of

August 2022. Data collection began in the fourth week of September and was completed in the first week of September 2022. Data entry and cleaning took place during September, data analysis and writing the final research report were done in the next period until the end of October 2022.

3.5 Sample size and sampling

According the report of MoH (2021) and data from the License and Accreditation Unit in MoH, the total number of hospitals pediatric nurses in governmental hospitals is about 554. Then, the researcher used the Epi Info™ Statistical Program (Annex 2) to calculate the sample size which recommended a sample of 227 of the hospitals' pediatric nurses. The researcher increased the sample to 254 to compensate for non-respondents and to increase statistical power. The following parameters were used to calculate the sample:

- Acceptable margin of error 5%.
- Confidence level 95%.
- Expected frequency 50%.
- Total population 554.

3.5.1 Eligibility Criteria

3.5.1.1 Inclusion Criteria

All nurses working at the selected hospitals in GS during the period of the study were regarded as eligible. They included: Nurses who had direct contact with patients such as practical nurses/associate degree nurses and bachelor nurses, and also other nurses who did not have direct contact with patients but directly affects pediatric patient care such as senior nurses and head nurses.

3.5.1.2 Exclusion Criteria

The study excluded private hospitals and military medical hospitals. Also, the study did not include the students and volunteer nurses.

3.5.2 Sample Process

Six hospitals were chosen from a total of nine governmental hospitals in GS (Annex 3). The GS was once split into five sections (clusters). Available pediatric hospitals or any hospitals with a pediatric department were selected for each region. A percentage corresponding to the number of pediatric hospital nurses in each of the six hospitals that were chosen was then applied to the sample of 254 pediatric nurses. The selection of participants was then conducted using practical convenient sampling.

3.6 Study instruments and tools

A self-administered questionnaire (Annex 7) was constructed by the researcher based on the review of the literature and past experiences to assess the knowledge and practices of the pediatric nurses regarding 6IPSGs of admitted pediatric patients at governmental hospitals in GS and it was prepared in the English version. The questionnaire was validated by disseminating this questionnaire to a panel of experts (Annex 8).

First, the questionnaire asked about the respondent's sociodemographic data, such as their age, gender, residence, monthly income, marital status, university graduation status, nursing degree, how many years had passed since their last nursing degree, data about the IPSGs, how long they had worked as a nurse after graduation, where they currently worked, the department they were in, how many hours per week they worked, work in your hospital, position, special training course about the IPSGs after graduation, hospital policy and procedures about the IPSGs, hospital training on their policy and procedures regarding IPSGs and department address the application of the IPSGs.

The second part of the questionnaire was developed by the researcher to assess the knowledge of the participants about IPSGs of admitted pediatric patients. It was composed of 6 domains as IPSGs as follows: Goal one: Identify patients correctly (3 items), Goal two: Improve effective communication (2 items), Goal three: Improve the safety of high alert medications (5 items), Goal four: Ensure correct site, correct procedure, correct patient surgery (5 items), Goal five: Reduce the risk of healthcare-associated infections (5 items), Goal six: Reduce the risk of patient harm resulting from fall (4 items). All domains contain 24 multiple-choice items. Each knowledge item had four possible answers. A mark will be

given for every correct response, a zero if the response is incorrect. Total scores ranged from 0-24, which were converted into percentages. A higher score indicates greater knowledge.

The third part of the questionnaire was developed by the researchers to assess the practices of the participants towards IPSGs of admitted pediatric patients. It was composed of 6 domains as IPSGs as follows: Goal one: Identify patients correctly (4 items), Goal two: Improve effective communication (5 items), Goal three: Improve the safety of high alert medications (3 items), Goal four: Ensure correct site, correct procedure, correct patient surgery (3 items), Goal five: Reduce the risk of healthcare-associated infections (5 items), Goal six: Reduce the risk of patient harm resulting from fall (4 items). The total number of items in all domains is 24. The practice section of the questionnaire had three possible responses, there were three possible responses: Never = zero, Sometimes = one, and Always = two, except for item number 18: Never = two, Sometimes = one, and Always = zero. Scores ranged from 0 to 24. A percentage was then calculated based on these scores. Higher scores indicate a higher level of practice.

3.7 Scoring of the questionnaire

Based on literature reviews the level of Knowledge/Practice for pediatric nurses regarding IPSGs of admitted pediatric patients was categorized into three groups (Nguyen et al., 2021); Level of Knowledge/Practice Composite percent of scores.

- High $\geq 80\%$.
- Moderate = 60-79.9%.
- Low $< 60\%$.

3.8 Scientific consistency

The English version constructed questionnaire was a valid and reliable instrument for assessing the knowledge and practice of pediatric nurses towards patient safety in hospitals in Arabic-speaking hospital settings as verified by the pilot study activity.

3.8.1 Content validity

Seven experts (Annex 8) evaluated the amended questionnaire in the tendering and bidding environments. According to the experts, the questionnaire is valid and suitable for measuring

the purpose for which it is designed after considering the comments of the experts and modifying it accordingly.

3.8.2 Reliability

Table (3.1) shows the values of Cronbach's Alpha for each questionnaire domain of participants. The table illustrated the reliability of domains, values of Cronbach's Alpha were in the range of 0.701 and 0.744. Cronbach's alpha equals 0.761 for the entire questionnaire in the pilot sample, which indicates the good reliability of the entire questionnaire.

Table (3.1): Reliability of the research for each domain of the questionnaire

No.	Domains	No. of item	Cronbach's Alpha
1.	Knowledge Assessment	24	0.701
2.	Practice Assessment	24	0.744
Total		48	0.761

Half-Split Method

As shown in table (3.2), the correlation between forms was 0.804 and Unequal Length Spearman-Brown Coefficient was 0.892 and finally, Guttman Split-Half Coefficient was 0.890. This result ensures the high reliability of the questionnaire.

Table (3.2): Split and half for each domain of the questionnaire

Split half			R
Cronbach's Alpha	Part 1	Value	0.761
		N of Items	24
	Part 2	Value	0.769
		N of Items	24
	Total N of Items		48
Correlation Between Forms			0.804
Spearman-Brown Coefficient	Equal Length		0.892
	Unequal Length		0.892
Guttman Split-Half Coefficient			0.890

3.9 Pilot study

The researcher performed a pilot study in six selected hospitals after receiving approval to perform it from the hospital general directorate. The researcher conducted the pilot study to refine the methodology of the larger study by using the same subjects, settings, and methods of data collection and analysis as those used in the large study as recommended by (In, 2017). Thirty questionnaires for nursing working in the pediatric surgical department, SCBU, and NICU were distributed and then collected. Cronbach's Alpha equation was used to compute the reliability coefficient for questionnaires, it was 0.761 for the entire questionnaire which indicates a good reliability coefficient. No any change or modifications were performed to the questionnaire. The pilot study participants have been added to sample size.

3.10 Data collection

The researcher used an approach of self-administered questionnaires. During the day, evening, and night shifts at the selected hospitals, the researcher distributed the questionnaires to the participants and then received them after the questionnaires had been completed. Approximately 20 minutes were spent filling out the questionnaire. A consent form outlined the title and purpose of the study, as well as the identity of the researcher. Approximately two weeks were needed for data collection.

3.11 Response rate

A total of 270 questionnaires were distributed. 254 participants responded positively with a response rate of 94.1%.

3.12 Ethical and administrative considerations and procedures

- Academic approval was asked from the School of Pediatric Nursing at Al-Quds University and an official letter from the Helsinki Committee (Annex 4).
- Administrative approval was obtained from the Health Research Department in the MoH for conducting this study at Governmental hospitals (Annex 5).
- To guarantee the participants' rights, a consent form indicating that the participation was voluntary, confidentiality was secured for all, and the roughly time needed to accomplish the questionnaire (Annex 6).

3.13 Data entry and analysis

After coding the questions, the researcher entered the collected information into Statistical Package for Social Sciences (SPSS) version 25 computer software. A questionnaire sampling was checked, and frequency distributions were conducted to check the data's accuracy, missing values, and cleaning.

The questionnaire included both positive and negative items. Items were rated on a three-point frequency scale (including the neutral category). Positive answers have always been for positively worded items. There were no positive responses to negatively worded items. The percentage of positive responses was calculated for each item and domain, and items with negative words were reversed when calculating percentages. Domain-level scores were calculated by summing the items within the domain scale and dividing them by the number of items.

Descriptive statistics and frequency tables were used to show sample characteristics and plot differences between various GS hospitals and pediatric nurses' characteristics. Advanced statistical tests such as independent t-test and one-way ANOVA test (including Post Hoc-Scheffe test) were used as appropriate to clarify the variances and differences between means of categorical variables.

Chapter Four

Results and Discussion

This chapter illustrates the results of statistical analysis of the data from 254 nurses' participants, including descriptive analysis that presents the socio-demographic characteristics of the study sample and answers to the study questions. In this chapter, the results of this study are presented under the following headings:

1. Characteristics of the study participants
2. Scores of items measuring knowledge
3. Scores of items measuring practice
4. Mean difference in knowledge and practice domains
5. Correlation between studied domains among the study participants

4.1 Characteristics of the study participants

This section presents description of study sample socio-demographic characteristics.

4.1.1 Distribution of the study participants according to their gender

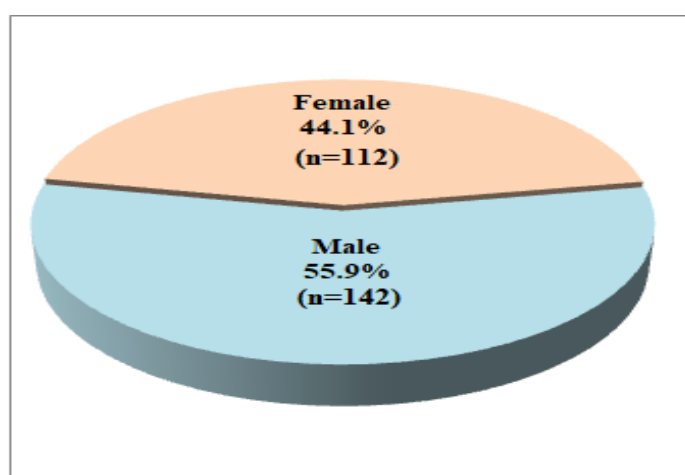


Figure (4.1): Distribution of the study participants according to their gender (n=254)

Figure (4.1) pointed out that more than half of the study participants were males (55.9%), while 44.1% were females. These results were consistent with those obtained by Zyoud et al. (2019), as well as the results of Kuntz, Anazodo, Bowden, Sender, & Morgan (2019), who found that 55% of nurses and 74% of nurses were males, respectively. This is contrary

to the findings of a study conducted in the United States by Roney & Aciri (2018), which found that female pediatric nurses' participation was higher by 96 percent than that of males.

4.1.2 Distribution of the study participants according to age

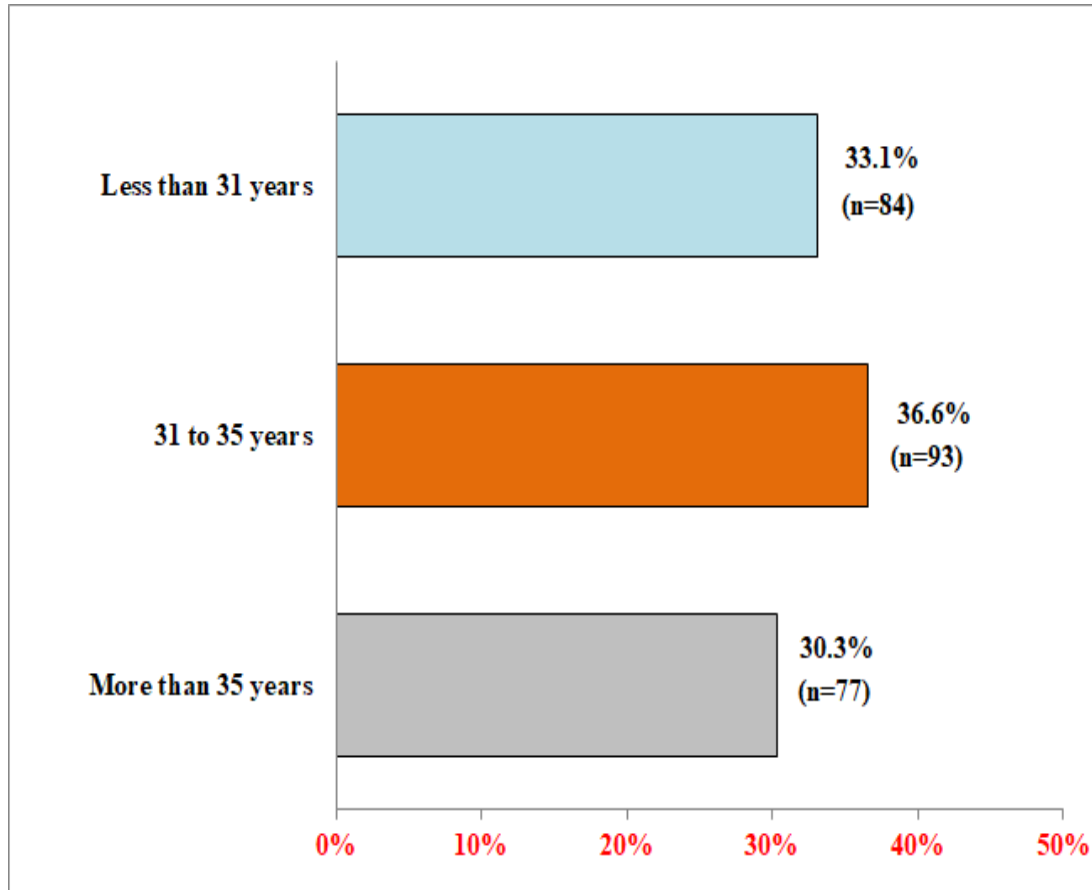


Figure (4.2): Distribution of the study participants according to their age (n=254)

Figure (4.2) the distributions of the study participants according to age showed that the highest group of the study participants was from 31 to 35 years (36.1%), while 33.1% of them were less than 31 years and 30.3% more than 35 years. D. F. S. Alves & Guirardello (2016), also found an average age of 35 among participants, in agreement with these findings. This contradicts a study conducted in Turkey by Akman et al. (2016), which found that nurses were on average 29 years old and another study conducted by Han et al. (2020) in South Korea. The results showed that most nurses were aged 24 to 29 years. According to the researcher, these results could be attributed to the possibility of hiring nursing professionals in previous years being higher than now.

4.1.3 Distribution of the study participants according to their residency

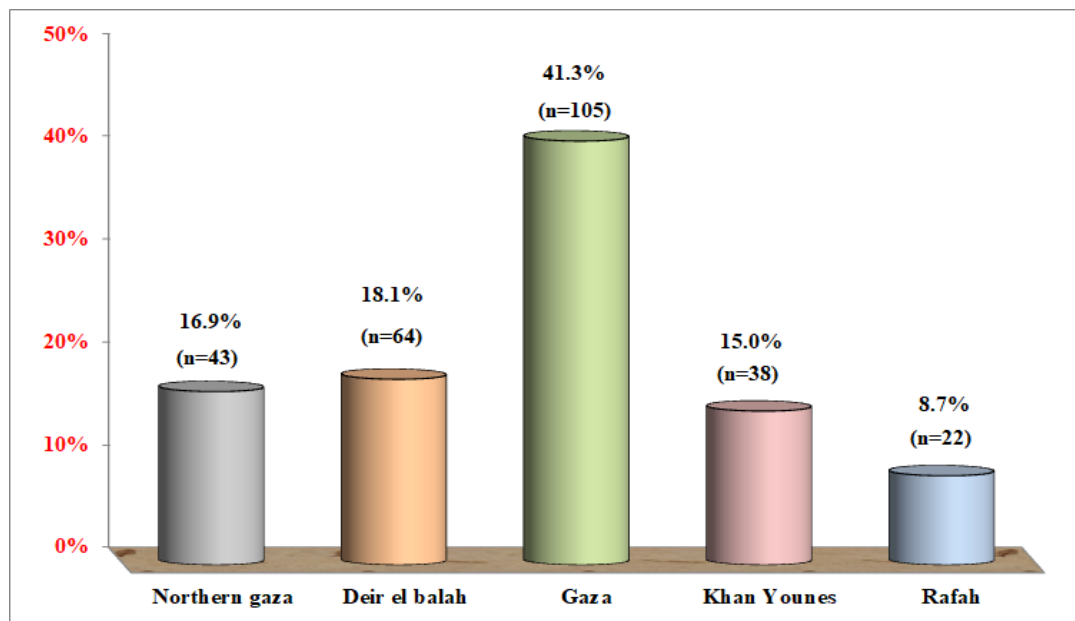


Figure (4.3): Distribution of the study participants according to their residency (n=254)

Figure (4.3) the results detected that 41.3%, 18.1%, 16.9%, 15.0%, and 8.7% study participants from Gaza, Deir-El-Balah, Northern Gaza, Khan Younes and Rafah, respectively. These results were consistent with the findings of Omer et al. (2018), Saudi residents were the subjects, the number of participants varied by area of residence (30 for R1, 25 for R2, 25 for R3 and 20 for R4). As opposed to the findings of the Dall'Oglio et al. (2021), which found that participants worked across Italy, but slightly more in the north (37%). In the opinion of the researcher, 41.3% of participants were from the Gaza governorate, which included the largest pediatric hospital in Gaza City, Al-Rantisy / Al-Naser Hospital and Al-Dora Hospital. However, the other hospitals did not specialize in pediatrics.

4.1.4 Distribution of the study participants according to their socio-demographic information

Table (4.1): Distribution of the study participants according to their socio-demographic information (n=254).

Demographic data		n	%	Mean±SD
Monthly Income (average) Shekel	Less than 1800	39	15.4	1996.5±696.3
	1800 to 2000	175	68.9	
	More than 2000	40	15.7	
Marital status	Unmarried	48	18.9	
	Married	206	81.1	
Graduated university	Islamic University of Gaza	121	47.6	
	Al-Azhar University - Gaza	10	3.9	
	Palestine College of Nursing	81	31.9	
	University College of Applied Science	30	11.8	
	Others	12	4.8	
Qualification in Nursing	Diploma 2 years or less	33	13.0	
	Bachelor degree	174	68.5	
	Registered Nurse (3years diploma)	14	5.5	
	Higher education	33	13.0	
Number of years from your first nursing qualification	Less than 6	64	25.2	10.0±7.1
	6 to 12	99	39.0	
	More than 12	91	35.8	
Number of years from last nursing qualification	Less than 5	94	37.0	8.2±6.6
	5 to 10	83	32.7	
	More than 10	77	30.3	
Information about the international patient safety goals	Yes	68	26.8	
	No	186	73.2	
Years of experience in nursing services after graduation	Less than 6	87	34.3	9.9±7.1
	6 to 12	60	23.6	
	More than 12	107	42.1	
Place of current work	Al-Shifa Medical Complex	39	15.4	
	Al-Rantisy /Al-Naser Hospital	94	37.0	
	Al-Dora Hospital	34	13.4	
	Al-Aqsa Hospital	26	10.2	
	Nasser Hospital	28	11.0	
	European Gaza Hospital	33	13.0	

Table (4.1): Continued

Demographic data		n	%	Mean±SD
Name of department	Pediatric Surgery Department	15	5.8	
	Pediatric medical Department	84	33.1	
	Pediatric Intensive Care Unit (PICU)	31	12.2	
	Special Care Baby Unit (SCBU)	36	14.2	
	Neonatal Unit	54	21.3	
	Pediatric Emergency Department	34	13.4	
Number of hours per week worked in your hospital	Less than 35	4	1.6	36.6±1.5
	35 to 37	227	89.3	
	More than 37	23	9.1	
Position	Practical nurse/associate degree nurse	49	19.3	
	Bachelor	127	50	
	Senior nurse	41	16.1	
	Head nurse	37	14.6	
Special training course about the international patient safety goals after graduation	Yes	71	28.0	
	No	183	72.0	
Hospital policy and procedures about the international patient safety goals	Yes	158	62.2	
	No	96	37.8	
Hospital training on their policy and procedures regarding international patient safety goals	Yes	110	43.3	
	No	144	56.7	
Department address the application of the international patient safety goals	Yes	144	56.7	
	No	110	43.3	

The table (4.1) pointed out that the average income among participants was 1996.5 ± 696.3 years. Similarly, Ks Qasim et al. (2021) study. According to the researcher, the low income of pediatric nurses can be attributed to the fact that they receive only 60% of their total salary and are usually contract employees who do not have a year at work. Additionally, the highest percentage of participants were married in agreement with Yang & Chen (2020) study. According to the researcher, 81% of the pediatric nurses were married based on the age of the participants. That is, at the age of thirty. Also, nearly half (47.6%) of the study participants were from the Islamic University of Gaza and the majority who qualified for nursing was in bachelor's degree. These results were consistent with the findings of Alotaibi et al. (2019) study. As opposed to the findings of the Adly et al. (2020) study. Also, the average of years graduated from first nursing qualification among participants was 10.0 ± 7.1 years. Furthermore, the average of years graduated from last nursing qualification was 8.2 ± 6.6 years. Also, these results show that most of the study participants (73.2%) have not an information about the IPSGs in nursing education programs. Also, the majority of the study participants have several years of experience in nursing services after graduation years were more than 12 years (42.1%). Similarly, Ahmed et al. (2022) study and opposed to the findings of Alotaibi et al. (2019) study. As well, the results detected that the majority of the study participants according to the place of current work were Al-Rantisy/Al-Naser hospital (37.0%). According to the researcher, these results could be attributed to Al-Rantisy/Al-Naser hospital is a specialized children's hospital unlike other hospitals that are considered general but have children's departments.

Table (4.1) detected that a third of the study participants worked at pediatric medical department (33.1%). As opposed to Alotaibi et al. (2019) study. As well, the average of work hours per week of participants was 36.6 ± 1.5 years. As opposed to the findings of Wang et al. (2020) study. The majority of the study participants have position were bachelor's (50.0%) consistent with the findings of Akman et al. (2016) study. Moreover, only (28.0%) of study participants had a special training course about the IPSGs after graduation and (62.2%) had hospital policy and procedures regarding the IPSGs and nearly half (43.3%) of participants' hospital training on their policy and procedures regarding IPSGs and the same percentage was addressing the application of the IPSGs. This result consistent with Gamal Attia et al. (2021) but inconsistent with Jang & Lee (2017).

4.2 Scores of items measuring knowledge

4.2.1 Distribution of the study participants according to their responses to the knowledge assessment

Table (4.2): Distribution of the study participants according to their responses to the knowledge assessment.

Variable and level	n (%)	Mean [‡]	(SD)	Min	Max
Knowledge level		63.22	14.15	16.67	91.67
High	20 (7.9)				
Moderate	136 (53.5)				
Low	98 (38.6)				

n: number of subjects; **SD**: standard deviation; **Min**: minimum; **Max**: maximum. [‡]Maximum score of mean = **100** points; **High**= equal 80% or more; Moderate = 60-79.9%; **Low** = less than 60%.

Table (4.2) illustrated the distribution of the study participants according to their responses about knowledge assessment. This table showed that 53.5% of participants have moderate levels of Knowledge. Also, the average level of knowledge was 63.22 out of 100 points.

These results approximately matched with the study conducted by Jang & Lee (2017) and Al Akoum et al. (2022) found that the nurses lack knowledge of 6IPSG with total score 62%. While the results of this study inconsistent with Omer et al. (2018) study who revealed that most participants (77%) were familiar with IPSGs with different scoring for each goal.

The researcher attributed the current results due to the incorporation of numerous new concepts for PS, the absence of specialized module in universities and training programs in hospitals specialized in IPSGs.

4.2.2 Distribution of the study participants according to their measuring knowledge information

Table (4.3): Scores of items measuring knowledge assessment.

No	Items	Correct (n)	Incorrect (n)	Rank
Identify Patients Correctly		67.1%	32.9%	
1	What are the best identifiers used to identify patients properly	116 (45.7)	138 (54.3)	3
2	Identifying patients correctly, the nurse should have to use at least	173 (68.1)	81 (31.9)	2
3	Patient Identification is performed in which of the following action/s	222 (87.4)	32 (12.6)	1
Improve Effective Communication		63.4%	36.6%	
1	Verbal and telephone orders include	207 (81.0)	47 (19.0)	1
2	The critical results of diagnostic tests are identified by whom of the following	115 (45.0)	139 (55.0)	2
Improve the Safety of High-Alert Medications		69.2%	30.8%	
1	All of the following are examples of high alert medications except	190 (74.8)	64 (25.2)	3
2	High Alert Medications should be labelled by	236 (92.9)	18 (7.1)	1
3	LASA stands for	112 (44.1)	142 (55.9)	5
4	Narcotics should be stored in	197 (77.6)	57 (22.4)	2
5	The process of high alert medication and LASA medications are uniform throughout the	144 (57.0)	110 (43.0)	4
Ensure correct Site, Correct Procedure, and Correct Patient Surgery		44.0%	56.0%	
1	Site marking is done for which of the following surgical procedures	184 (72.4)	70 (27.6)	1
2	Site marking before the operation should be done by	168 (66.1)	86 (33.9)	2
3	The entire surgical team conducts and records a time-out process at which the following time	51 (20.1)	203 (79.9)	4
4	A time-out process does not include which of the following components	116 (45.7)	138 (54.3)	3
5	A sign-out process conducted by a nurse, which consists of all of the following components except	40 (15.7)	214 (84.3)	5
Reduce Risk of HealthCare-Associated Infections		79.0%	21.0%	
1	Hand hygiene is performed by health care providers to avoid	226 (89.0)	28 (11.0)	2
2	Routine alcohol hand rub should be performed for	176 (69.3)	78 (30.7)	5
3	Routine Hand washing, by soap and water, is performed for	179 (70.5)	75 (29.5)	4
4	Hand hygiene should be performed in... Moments	193 (76.0)	61 (24.0)	3
5	Hand hygiene should be performed	229 (90.2)	25 (9.8)	1
Reduce the Risk of Patient Harm resulting from Fall		57.1%	42.9%	
1	Have you ever assessed patients about the risk of falling	192 (75.6)	62 (24.4)	1
2	High falling risk is suspected when the total Morse falling scale (MFS) is	116 (45.7)	138 (54.3)	3
3	Moderate falling risk is suspected when the total Morse falling risk assessment score is	110 (43.3)	144 (56.7)	4
4	Low falling risk is indicated when the total Morse falling risk assessment score is	162 (63.8)	92 (36.2)	2
Total		63.2%	36.8%	

Table (4.3) showed that the total level of identifying patients correctly was 67.1%. The lowest correct answer item was the number (1) "What are the best identifiers used to identify patients properly" (45.7%). This result match to result of study conduct by Abu Mostafa et al. (2019) and inconsistent with study conducted by Cengiz et al. (2016). Also, the total level of improved effective communication was (63.4%), the lowest correct answer item was the number (2) "The critical results of diagnostic tests are identified by whom " (45.0%). In agreement with these findings of studies conducted by Simmons et al. (2019) and Biasibetti et al. (2019). The researcher attributed the current results due to presenting a policy that encourage for the use of bracelets to identify the patient without identifying the health care providers with other identifiers that can be used. With regard to the second goal of PS, the researcher attributes the reason for these results to the job description of hospital healthcare providers is not applied. Also, the total level of improving the safety of HAMs was 69.2%, the lowest correct answer item was the number (3) "LASA stands" (44.1%). The study results were in agreement with (Jannah, 2020). The researcher attributed the present results due to a shortage of pharmacology education opportunities. In this regard, the researcher believes that paying close attention to the variables impacting pharmaceutical safety is crucial and requires more research.

In addition, the total level of ensuring correct site, correct procedure, and correct patient surgery was 44.0%, the lowest correct answer item was the number (5) "A sign-out process conducts by a nurse, which consists all of the following components" (15.7%). The results of the current study agreed with those of Gołębiowska et al. (2018). The researcher attributed the present results due to the lack of regulations and policy in the MoH that would have specified who should be responsible for site marking and preoperative checklist execution. The total level of the reduced risk of healthcare-associated infections was 79.0%, the lowest correct answer item was the number (2) " Routine alcohol hand rub should be performed " (69.3%). This study was in accordance with Doyle et al. (2015) study and inconsistency with Cherian & Rajesh (2018) study. The researcher attributed these results due to less ongoing instruction on infection control precautions is provided, and there is no continuous supervision throughout all shifts. Also, the total assessment of Reduce the Risk of Patient Harm resulting from Falling was 57.1%, the lowest correct answer item was the number (3) " Moderate falling risk is suspected when the total Morse falling risk assessment score" (43.3%). The present study findings were in agreement with study results of Park & Ju

(2017). The researcher attributed the current results due to caregivers' distraction, lower attentiveness, and reduction in vigilante behavior during their child's hospitalization due to stress and anxiety. Further, in many organizations, inpatient falls are a nursing-sensitive quality indicator.

4.3 Scores of items measuring practice

4.3.1 Distribution of the study participants according to their responses to practice assessment

Table (4.4): Distribution of the study participants according to their level of practice assessment.

Variable and level	n (%)	Mean [‡]	(SD)	Min	Max
Practice level		76.60	12.37	35.42	100.00
High	113 (44.5)				
Moderate	115 (45.3)				
Low	26 (10.2)				

n: number of subjects; **SD:** standard deviation; **Min:** minimum; **Max:** maximum. [‡]Maximum score of mean = **100 points**; **High**= equal 80% or more; **Moderate** = 60-79.9%; **Low** = less than 60%.

Table (4.4) illustrated the distribution of the study participants according to their responses about practice assessment. This table showed that 45.3% of study participants have moderate levels of practice assessment and 10.2% of them had a low level of practice assessment. Finally, the average of practice levels was 76.6 out of 100 points. This study finding was in-agreement with Adly et al. (2020) while it concluded that, more than half had incompetent practices concerning IPSGs. This inconsistency with Nurhanifah et al. (2021) study results revealed that only 56 % from the nurses had implemented IPSGs. In this regard, the researcher suggests that colleges build modules of safety standard measures for pediatric patients, emphasizing the importance of their use in pediatric hospitals.

4.3.2 Scores of items measuring practice identify patients correctly

Table (4.5): Scores of items measuring identify patients correctly.

No.	Items	Mean	SD	% Mean	t-test	P-vale	Rank
1	Use two patient identifiers, not including the patient's room	1.40	0.64	70.0	9.9	0.000	4
2	Involve patients/family members in the process of patient identification	1.55	0.59	77.5	15.0	0.000	2
3	Use special hospital approaches to identify the comatose patients or newborn who is not immediately named	1.49	0.67	74.5	11.6	0.000	3
4	Identify the patient before performing the diagnostic procedures, providing treatments, and performing other procedures	1.71	0.51	85.5	22.4	0.000	1
Total		1.54	0.31	76.9	27.65	0.000	

Table (4.5) summarized the distribution of the study participants according to their responses about identifying patients correctly. By using a one-sample t-test this table shows that the weighted mean for the overall perceptions about identifying patients correctly was 76.9%. According to the results, the highest paragraph was the number (4) "Identify the patient before performing the diagnostic procedure, providing treatments, and performing other procedures" with a weighted mean equal to 85.5%. While the lowest paragraph (1) " Use two patient identifiers, not including patient's room" with a weighted mean equal to 70.0%. The findings of the present study are consistence with Bernal et al. (2018) study who noted that on identifying nameplates, the child's name (95%) and age (31%), as well as the name of the person responsible (78%), were all included. Of the 89 people whose names were recorded, 70% had complete names. According to Tres et al. (2016) enhanced patient identification was determined to be necessary, and this could be achieved by enabling nurses to make judgments about the indication and selecting an identification approach that makes real understanding.

4.3.3 Scores of items measuring practice of effective communication

Table (4.6): Scores of items measuring practice of effective communication.

No.	Items	Mean	SD	% Mean	t-test	P-value	Rank
1	Write down, read back and confirm phone orders	1.62	0.55	81.0	18.4	0.000	2
2	Use standardized forms, tools, or methods in the handover process	1.63	0.54	81.5	18.5	0.000	1
3	The hospital identifies by whom and to whom critical results of diagnostic tests are reported	1.29	0.63	64.5	7.3	0.000	5
4	Write down, read back and confirm the complete test result	1.50	0.61	75.0	13.2	0.000	4
5	The hospital policy identifies what information is documented in the medical records	1.59	0.57	79.5	16.7	0.000	3
Total		1.53	0.35	76.30	23.9	0.000	

Table (4.6) summarized the distribution of the study participants according to their responses about improving effective communication. By using a one-sample t-test this table shows that the weighted mean for the overall perceptions about improving effective communication was 76.3%. According to the results, the highest paragraph was the number (2) "Use standardized forms, tools, or methods in handover process" with a weighted mean equal to 81.5%. While the lowest paragraph (3) " The hospital identifies by whom and to whom critical results of diagnostic tests are reported" with a weighted mean equal to 64.5%. This study supported the findings of Silva et al. (2016) who found that safe patient care depends on efficient communication during shift handovers. Additionally, Spooner et al. (2016) found that absent the handover of blood results and prescription orders, incoming clinicians are more likely to error, and threatening patient care. While the results of this study inconsistent with the study results conducted by Gampetro et al. (2022) found that the pediatric nurses' communication, reporting, and perception of patient safety has not improved from 2016-2018. The researcher attributed the current results due to the nearly half of the nurses investigated had less than

six years of experience, and they lacked experience in problem resolution and effective communication.

4.3.4 Scores of items measuring practice the safety of high-alert medications

Table (4.7): Scores of items measuring improve the safety of high-alert medications.

No.	Items	Mean	SD	% Mean	t-test	P-vale	Rank
1	Use hospital policy to prepare a high alert medication	1.74	0.47	87.0	25.1	0.000	1
2	Concentrated electrolytes are present only in in-patient care units identified as clinically necessary in concentrated form	1.49	0.58	74.5	13.5	0.000	2
3	Stock high alert medications in patient care units in a manner that restricts access	1.47	0.67	73.5	11.2	0.000	3
Total		1.57	0.40	78.30	22.6	0.000	

Table (4.7) summarized the distribution of the study participants according to their responses about improving the safety of high-alert medications. By using a one-sample t-test this table shows that the weighted mean for the overall perceptions about improving the Safety of high-alert medications was 78.5%. According to the results, the highest paragraph was the number (1) "Use hospital policy to prepare a high alert medication" with a weighted mean equal to 87.0%. While the lowest paragraph (3) " Stock high alert medications in patient care units in a manner that restricts access" with a weighted mean equal to 73.5%. This study supports the finding of Mohammed et al. (2017) showing that nurses' practice differs from the standard guidelines for administering HAMs and there was a lower level of practice among all nurses. This is according to the study conducted by Labib et al. (2018) who indicated that nurses' knowledge percentage was higher than their total practice percentage. In contrast to Sessions et al. (2019) improving employee collaboration and educating them about safe HAM practices, along with utilizing advanced technology, are recommended to prevent HAM mistakes. The researcher attributed the current results due to the pediatric nurses may be overburdened, which might lead to mistakes. The present findings may have been influenced by a number of variables, such as a shortage of staff nurses, a loud work, and

insufficient communication between nurses and doctors. In addition, there was no infusion pump and one that was malfunctioning.

4.3.5 Scores of items measuring practice to ensure correct site, correct procedure, correct patient surgery

Table (4.8): Scores of items measuring practice to ensure correct site, correct procedure, correct patient surgery.

No.	Items	Mean	SD	% Mean	t-test	P-value	Rank
1	Ensure the correct site before sending patients to a surgical procedure	1.70	0.53	85.0	21.0	0.000	1
2	Mark the site for the surgery or other invasive procedure	1.45	0.68	72.5	10.6	0.000	3
3	Ensure appropriate and available diagnostic images are present with a patient before any documented surgical procedure	1.68	0.48	84.0	22.4	0.000	2
Total		1.61	0.40	80.60	24.5	0.000	

Table (4.8) summarized the distribution of the study participants according to their responses about ensuring the correct site, correct procedure, and correct patient surgery. By using a one-sample t-test this table shows that the weighted mean for the overall perceptions about ensuring correct Site, Correct Procedure, and Correct Patient surgery was 80.5%. According to the results, the highest paragraph was the number (1) "Ensure correct site before sending patients to a surgical procedure" with a weighted mean equal to 85.0%. While the lowest paragraph (2) "Mark the site for the surgery or other invasive procedure" with a weighted mean equal to 72.5%. The results of this study support those of Almeida & Rodrigues (2019) who reported that 90% of the surgeries were done using the checklist. However, the checklist appeared incomplete and verbal compliance appeared to be low. Despite inappropriate checks, improper timing, and improper participation by key professionals, 95% of surgeries continued. The researcher sees that throughout the process, consistency in the documentation of sites and sides is considered crucial. If there is a discrepancy, it is critical to pause operations, alter the documentation, sign it, and inform the surgeon of the discrepancy in the

medical history. The surgeon should confirm that the side and site of operation is appropriate before beginning surgery and include this in the patient's medical records. The nurse must select the proper location, sign on, and recommend the location to the operating room circulating and scrubbing nurse. Surgeons or anesthesiologists should play a part in this role.

4.3.6 Scores of items measuring practice to reduce the risk of healthcare-associated infection

Table (4.9): Scores of items measuring to reduce the risk of healthcare-associated infection.

No.	Items	Mean	SD	% Mean	t-test	P-vale	Rank
1	Apply five moments of hand hygiene before contacting the patient	1.66	0.52	83.0	20.0	0.249	3
2	Perform hand hygiene following contact with patients and their surrounding environment	1.73	0.46	86.5	25.1	0.000	1
3	When cleaning and dressing the wound, I start from the dirty area and then move to the clean area.	0.94	0.87	47.0	-1.2	0.000	5
4	Before suctioning the patient's tracheal tube, I test the catheter by suction of a portion of the sterile water	1.35	0.70	67.5	8.1	0.000	4
5	I discard the suction catheters at the end of each suction	1.67	0.53	83.5	20.2	0.000	2
Total		1.47	0.32	73.50	23.7	0.000	

Table (4.9) summarized the distribution of the study participants according to their responses about reducing the risk of healthcare-associated infection. By using a one-sample t-test this table shows that the weighted mean for the overall perceptions about Reducing the risk of healthcare-associated infection was 73.5%. According to the results, the highest paragraph was the number (2) "Perform hand hygiene following contact with patients and their surrounding environment" with a weighted mean equal to 86.5%. While the lowest paragraph (3) " When cleaning and dressing the wound, I start from the dirty area and then move to the clean area." with a weighted mean equal to 47.0%. The results of this study consistence with

Koros et al. (2018) study revealed that 69% of nurses followed recommended hand hygiene practices. In contrast to Tabash et al. (2018) results revealed that most study participants (79%) lacked adequate infection prevention and control training. In accordance with the standard precautions, only 56% of respondents adhered to hand hygiene. The researcher attributed the current results due to the work overload, a lack of pediatric nurses, and the misconceptions of many nurses regarding infection control and the necessity of protocols for pediatric patients.

4.3.7 Scores of items measuring practice to reduce the risk of patient harm resulting from fall

Table (4.10): Scores of items measuring practice to reduce the risk of patient harm resulting from fall.

No.	Items	Mean	SD	% Mean	t-test	P-vale	Rank
1	Implement a falling risk assessment when a patient's condition changes	1.52	0.61	76.0	13.4	0.000	2
2	Use patient-specific interventions such as gait belts to prevent injury if the patient does fall	1.37	0.67	68.5	8.8	0.000	4
3	Ensure a non-cluttered environment to prevent accidental falling events while ambulating post operatively	1.50	0.63	75.0	12.7	0.000	3
4	I elevate bedside rails for the patients who have the potential for falling	1.71	0.54	85.5	21.0	0.000	1
Total		1.53	0.42	76.3	19.74	0.000	

Table (4.10) summarized the distribution of the study participants according to their responses about reducing the risk of patient harm resulting from falling (76.25%). By using a one-sample t-test this table shows that the weighted mean according to the results, the highest paragraph was the number (4) "I elevate bed side rails for the patients who have potentials for falling" with a weighted mean equal to 85.5%. While the lowest paragraph (2)

" Use patient-specific interventions such as gait belts to prevent injury if the patient does fall" with a weighted mean equal to 68.5%. This result is consistence with Mamdouh et al. (2020) findings which revealed that the over two thirds of nurses studied did not practice fall prevention adequately. The researcher attributed the current results due to the staffing shortage and a lack of measures and supervision. The researcher also highlights that identifying pediatric patients who are at risk of falling and avoiding falls in nursing practice are essential. Falls are a big concern in pediatric nursing duties that must be handled.

4.4 Mean difference in knowledge and practice domains

This section presents relationship between socio-demographic variables and pediatric nurses' knowledge and practices towards 6IPSGs including gender, marital status, age group, monthly income, residency, graduation university, qualification in nursing, the position, place of current work, name of the department, as well as, variables about information about the IPSGs, special training course about the IPSGs after graduation, hospital policy and procedures about the IPSGs, department address the application of the IPSGs, number of years from your first nursing qualification, number of years from the last nursing qualification, years of experience in nursing services after graduation, number of hours per week worked in your hospital.

4.4.1 Mean difference in knowledge and practice domains related to the gender

Table (4.11): Mean difference in knowledge and practice domains related to the gender.

Domains	Gender	N	Mean	SD	T	P-value
Knowledge	Male	142	63.2	14.0	-0.059	0.953
	Female	112	63.3	14.3		
Practice	Male	142	75.8	11.6	-1.129	0.260
	Female	112	77.6	13.3		
Total	Male	142	69.5	10.5	-0.682	0.496
	Female	112	70.4	11.3		

*Significant at $P \leq 0.05$; $P > 0.05$: Not significant; **n**: number of subjects; **SD**: standard deviation; & **t**: independent t-test

Table (4.11) showed the mean difference in studied domains among gender. The student t-test (independent t-test) demonstrated no statistical differences in the average in the mean of the studied domain as the knowledge, practice, and domain as total among males and females ($P>0.05$). This result is consistent with the study conduct by (Nurhanifah et al., 2021), who found that there were statistically significant differences in the nurses' practice between male and female nurse regarding IPSGs. The researcher attributed the current results due to the number of female nurses are small.

4.4.2 Mean difference in knowledge and practice domains related to the marital status

Table (4.12): Mean difference of knowledge and practice domains related to the marital status.

Domains	Marital status	N	Mean	SD	T	P-value
Knowledge	Unmarried	48	65.4	13.6	1.166	0.245
	Married	206	62.7	14.3		
Practice	Unmarried	48	77.4	12.0	0.516	0.606
	Married	206	76.4	12.5		
Total	Unmarried	48	71.4	10.3	1.056	0.292
	Married	206	69.6	11.0		

*Significant at $P\leq 0.05$; $P>0.05$: Not significant; **n**: number of subjects; **SD**: standard deviation; **t**: independent t-test.

Table (4.12) showed the mean difference in studied domains among marital status. The student t-test (independent t-test) demonstrated no statistical differences in the average in the mean of the studied domain as the knowledge, practice, and domain as total among married and unmarried ($P>0.05$).

These results are similar to study conduct by (Nurhanifah et al., 2021) who found that there was no association between nurses' knowledge and practices with their marital status. In addition, these results congruent with the study conduct by Borji et al. (2018) who found that there were no statistically significant differences in the nurses' knowledge between their different marital status.

4.4.3 Mean difference in knowledge and practice domains related to special training course about the IPSGs after graduation

Table (4.13): Mean difference of knowledge and practice domains related to the special training course about the IPSGs after graduation.

Domains	special training course about the IPSGs after graduation	N	Mean	SD	T	P-value
Knowledge	Yes	71	63.4	15.9	0.152	0.879
	No	183	63.1	13.5		
Practice	Yes	71	80.3	11.8	3.001	0.003*
	No	183	75.2	12.3		
Total	Yes	71	71.9	11.8	1.793	0.074
	No	183	69.2	10.4		

* $P \leq 0.05$: Significant, $P > 0.05$: Not significant; **n**: number of the subjects; **SD**: standard deviation; & **t**: independent t-test.

Table (4.13) showed the mean difference in studied domains among special training courses about the IPSGs after graduation. The student t-test (independent t-test) demonstrated higher statistical differences in the average in the mean of Practice among those who have special training courses about the IPSGs after graduation compared to those who haven't ($P < 0.05$). In contrast, demonstrated no statistical differences in the average in the mean of the studied domain as knowledge and domain as total ($P > 0.05$).

These results are similar to study conduct by Wu & Busch (2019) who concluded that staff training at healthcare facilities influence the implementation of safety standards. In addition, these results are inconsistency with finding of the study conducted by Gamal Attia et al. (2021) who say that the vast majority and more than one quarter of studied staff nurses who received training course in IPSG had good level of knowledge.

4.4.4 Mean difference in knowledge and practice domains related to the information about the IPSGs

Table (4.14): Mean difference of knowledge and practice domains related to the information about the IPSGs.

Domains	information about the IPSGs	N	Mean	SD	T	P-value
Knowledge	Yes	68	61.8	16.5	-0.951	0.343
	No	186	63.7	13.2		
Practice	Yes	68	76.2	12.9	-0.315	0.753
	No	186	76.7	12.2		
Total	Yes	68	69.0	12.1	-0.800	0.425
	No	186	70.2	10.3		

* $P \leq 0.05$: Significant, $P > 0.05$: Not significant; n: number of the subjects; **SD**: standard deviation; & **t**: independent t-test.

Table (4.14) showed the mean difference in studied domains among the information about the IPSGs. The student t-test (independent t-test) demonstrated no statistical differences in the average in the mean of the studied domain as the knowledge, practice, and domain as total among those who have information about the IPSGs and who hasn't ($P > 0.05$).

Studies related to the association with information about IPSGs are lacking within previous studies. According to the researcher, these results could be attributed to either ineffective delivered to nurses who attended or the information exchanged by nurses who attended and who did not.

4.4.5 Mean difference in knowledge and practice domains related to hospital policy and procedures about the IPSGs

Table (4.15): Mean difference of knowledge and practice domains related to hospital policy and procedures regarding the IPSGs.

Domains	hospital policy and procedures about the IPSGs	N	Mean	SD	t	P-value
Knowledge	Yes	158	63.4	14.0	0.214	0.831
	No	96	63.0	14.4		
Practice	Yes	158	77.5	12.2	1.567	0.118
	No	96	75.0	12.6		
Total	Yes	158	70.5	11.0	1.032	0.303
	No	96	69.0	10.6		

*Significant at $P \leq 0.05$; $P > 0.05$: Not significant; **n**: number of subjects; **SD**: standard deviation; & **t**: independent t-test.

Table (4.15) showed the mean difference in studied domains among hospital policy and procedures regarding the IPSGs. The student t-test (independent t-test) demonstrated no statistical differences in the average in the mean of the studied domain as the knowledge, practice, and domain as total ($P > 0.05$).

These results are contradicted to study conduct by Omer et al. (2018) who found that there was association between nurses' knowledge and practices with their hospital policy and procedure about IPSG. Furthermore, the researchers discovered that 77% of the participants had aware of IPSGs. However, only 86% of those respondents claimed to be familiar with King Fahad Medical City's policies and procedures. In addition, these results inconsistency with the study conduct by Ali et al. (2019) who found that there were statistically significant differences in the nurses' knowledge with their hospital policy and procedure about patient safety. According to the researcher, these results could be attributed to lack of continuity in mainstreaming and reminding the pediatric nurses for reading the policies and procedures. New staff are not aware of these policies.

4.4.6 Mean difference in knowledge and practice domains related to hospital training on their policy and procedures regarding IPSGs

Table (4.16): Mean difference of knowledge and practice domains related to hospital training on their policy and procedures regarding IPSGs.

Domains	hospital training on their policy and procedures regarding IPSGs	N	Mean	SD	t	P-value
Knowledge	Yes	110	63.4	14.9	0.221	0.825
	No	144	63.0	13.6		
Practice	Yes	110	79.2	11.0	3.023	0.003*
	No	144	74.6	13.0		
Total	Yes	110	71.3	10.9	1.852	0.065
	No	144	68.8	10.7		

* $P \leq 0.05$: Significant, $P > 0.05$: Not significant; n: number of the subjects; **SD**: standard deviation; & **t**: independent t-test.

Table (4.16) showed the mean difference in studied domains among hospital training on their policy and procedures regarding IPSGs. The student t-test (independent t-test) demonstrated statistical differences in the average in the mean of the studied domain as practice ($P < 0.05$). In contrast demonstrated no statistical differences in the average in the mean of the studied domain as D1: The Knowledge level and domain as total ($P > 0.05$).

These findings roughly followed those of Elbilgahy et al. (2019) who found that 83% of pediatric nurses indicated that sufficient training for nurses on safety procedures was the most prevalent preventative intervention for risks in the hospital. Inconsistence with another study conducted by Shahin et al. (2020) who concluded that the continuing staff training in healthcare settings are considered to be the primary methods for improving knowledge about IPSGs. Also, the result of this study inconsistency with Da Silva et al. (2019) who found the nurses competency was affected by training courses.

4.4.7 Mean difference in knowledge and practice domains related to the department address the application of the IPSGs

Table (4.17): Mean difference of knowledge and practice domains related to the department address the application of the IPSGs.

Domains	department address the application of the IPSGs	N	Mean	SD	t	P-value
Knowledge	Yes	144	63.9	13.4	0.859	0.391
	No	110	62.3	15.0		
Practice	Yes	144	79.3	11.0	4.028	0.000*
	No	110	73.1	13.2		
Total	Yes	144	71.6	10.2	2.832	0.005*
	No	110	67.7	11.4		

* $P \leq 0.05$: Significant, $P > 0.05$: Not significant; n: number of the subjects; **SD**: standard deviation; & **t**: independent t-test.

Table (4.17) showed the mean difference in the studied domains department address the application of the IPSGs. The student t-test (independent t-test) demonstrated statistical differences in the average in the mean of the studied domain as Practice and domain as total ($P < 0.05$). In contrast, demonstrated no statistical differences in the average in the mean of the studied domain as knowledge ($P > 0.05$).

Studies related to the association with department address the application of the IPSGs are lacking within previous studies.

4.4.8 Mean difference of studied domains related to age groups

Table (4.18): Mean difference of studied domains related to age groups.

Domains	Age (years)	N	Mean	SD	F	P-value
Knowledge	Less than 31	84	65.8	13.7	2.202	0.113
	31 to 35	93	62.2	14.7		
	More than 35	77	61.5	13.7		
	Total	254	63.2	14.1		
Practice	Less than 31	84	76.8	12.2	0.064	0.938
	31 to 35	93	76.2	12.0		
	More than 35	77	76.8	13.0		
	Total	254	76.6	12.3		
Total	Less than 31	84	71.3	9.9	1.058	0.349
	31 to 35	93	69.3	11.6		
	More than 35	77	69.2	10.7		
	Total	254	69.9	10.8		

*Significant at $P \leq 0.05$; $P > 0.05$: Not significant; **n**: number of subjects; **SD**: standard deviation; & **F**: One-way ANOVA.

Table (4.18) showed that the mean difference of studied domains related to age. The one-way ANOVA test showed that there was no statistically significant difference among age groups in the mean of the studied domain as the knowledge, practice, and domain as total ($P > 0.05$).

These results are similar to study conduct by Nurhanifah et al. (2021) who found that there was no association between nurses' knowledge and practices with their ages. In addition, these results inconsistency with the study conduct by Ali et al. (2019) who found that there were statistically significant differences in the nurses' knowledge between their different age groups. Based on researcher's point of view, there are some nurses specializing in pediatric nurses who share their knowledge and experience with new staff which lead to nurses' knowledge and practice not affected by age differences

4.4.9 Mean difference of studied domains related to monthly income

Table (4.19): Mean difference of studied domains related to monthly income.

Domains	Monthly Income (Shekel)	N	Mean	SD	F	P-value
Knowledge	Less than 1800	39	64.6	12.9	0.348	0.706
	1800 to 2000	175	63.2	14.8		
	More tha2000	40	62.0	12.7		
	Total	254	63.2	14.2		
Practice	Less than 1800	39	79.3	10.8	1.101	0.334
	1800 to 2000	175	76.2	12.0		
	More tha2000	40	75.7	15.2		
	Total	254	76.6	12.4		
Total	Less than 1800	39	72.0	8.8	0.917	0.401
	1800 to 2000	175	69.7	11.1		
	More tha2000	40	68.9	11.3		
	Total	254	69.9	10.8		

*Significant at $P \leq 0.05$; $P > 0.05$: Not significant; **n**: number of subjects; **SD**: standard deviation; & **F**: One-way ANOVA.

Table (4.19) showed that the mean difference of studied domains related to monthly income. The one-way ANOVA test showed that there was no statistically significant difference in monthly income in the mean of the studied domain as the knowledge, practice, and domain as total ($P > 0.05$).

Studies related to the association with monthly income are lacking within previous studies. According to researchers, increased monthly income is one of the incentives that motivates nurses to even provide high-level practice and enable them to receive continuous training courses in the PS, which increases knowledge without wasting precious time looking for another job to increase monthly income.

4.4.10 Mean difference of studied domains related to the number of years from your first nursing qualification

Table (4.20): Mean difference of studied domains related to the number of years from your first nursing qualification.

Domains	number of years from your first nursing qualification	N	Mean	SD	F	P-value
Knowledge	Less than 6	64	64.4	16.6	0.500	0.607
	6 to 12	99	63.5	14.1		
	More than 12	91	62.1	12.4		
	Total	254	63.2	14.2		
Practice	Less than 6	64	77.8	10.6	0.432	0.649
	6 to 12	99	76.3	12.9		
	More than 12	91	76.1	13.0		
	Total	254	76.6	12.4		
Total	Less than 6	64	71.1	11.2	0.649	0.523
	6 to 12	99	69.9	11.1		
	More than 12	91	69.1	10.3		
	Total	254	69.9	10.8		

*Significant at $P \leq 0.05$; $P > 0.05$: Not significant; **n**: number of subjects; **SD**: standard deviation; & **F**: One-way ANOVA.

Table (4.20) showed that the mean difference of studied domains related to the number of years from your first nursing qualification. The one-way ANOVA test showed that there was no statistically significant difference in the number of years from your first nursing qualification in the mean of the studied domain as the knowledge, practice and domain as total ($P > 0.05$).

Studies related to the association with the number of years from first nursing qualification are lacking within previous studies. According to the researcher, these results could be attributed to lack of continuity in the development and training of pediatric nurses. According to the results of this study, there were more than two thirds untrained on the subject of IPGs.

4.4.11 Mean difference of studied domains related to the number of years from the last nursing qualification

Table (4.21): Mean difference of studied domains related to the number of years from the last nursing qualification.

Domains	number of years from the last nursing qualification	N	Mean	SD	F	P-value
Knowledge	Less than 5	94	63.4	16.1	0.056	0.945
	5 to 10	83	63.5	13.5		
	More than 10	77	62.8	12.3		
	Total	254	63.2	14.2		
Practice	Less than 5	94	76.0	12.1	0.308	0.735
	5 to 10	83	76.4	13.0		
	More than 10	77	77.5	12.1		
	Total	254	76.6	12.4		
Total	Less than 5	94	69.7	11.2	0.033	0.967
	5 to 10	83	69.9	11.3		
	More than 10	77	70.1	10.0		
	Total	254	69.9	10.8		

*Significant at $P \leq 0.05$; $P > 0.05$: Not significant; **n**: number of subjects; **SD**: standard deviation; & **F**: One-way ANOVA.

Table (4.21) showed that the mean difference of studied domains related to the number of years from the last nursing qualification. The one-way ANOVA test showed that there was no statistically significant difference in the number of years from the last nursing qualification in the mean of the studied domain as the knowledge, practice and domain as total ($P > 0.05$).

Studies related to the association with the number of years from last nursing qualification are lacking within previous studies.

4.4.12 Mean difference of studied domains related to years of experience in nursing services after graduation

Table (4.22): Mean difference of studied domains related to years of experience in nursing services after graduation.

Domains	years of experience in nursing services after graduation	N	Mean	SD	F	P-value
Knowledge	Less than 6	87	63.0	15.9	0.270	0.764
	6 to 12	60	64.4	14.7		
	More than 12	107	62.7	12.3		
	Total	254	63.2	14.2		
Practice	Less than 6	87	76.8	12.9	0.102	0.904
	6 to 12	60	76.0	11.1		
	More than 12	107	76.8	12.7		
	Total	254	76.6	12.4		
Total	Less than 6	87	69.9	11.9	0.030	0.970
	6 to 12	60	70.2	10.5		
	More than 12	107	69.7	10.2		
	Total	254	69.9	10.8		

*Significant at $P \leq 0.05$; $P > 0.05$: Not significant; **n**: number of subjects; **SD**: standard deviation; & **F**: One-way ANOVA.

Table (4.22) showed that the mean difference of studied domains related to years of experience in nursing services after graduation. The one-way ANOVA test showed that there was no statistically significant difference among years of experience in nursing services after graduation in the mean of the studied domain as the knowledge, practice, and domain as total ($P > 0.05$). These results are similar to study conduct by Shahin et al. (2020) who found that there no significant difference in the level of nurses' knowledge and practices towards IPSG with the work experience. This is not consistent with the results of Ali et al. (2019) who found that there was highly statistical significance relation between total knowledge of pediatric nurse's regarding children safety in hospital related to years of experience. Moreover, the result of this study inconsistent with Ahmed et al. (2022) showed that there was highly statistically significant correlation between total nurses' practice towards IPSG

in the ICU and their years of experience. According to the researcher, these results could be attributed to a lack of a clear policy of working within the job title. All nurses of all degree holders apply all skills within the department, as well as integrating any new nurse and observing him/her from the most experienced nurses in the department so that he/she can rely on himself/herself to apply all skills competitively.

4.4.13 Mean difference of studied domains related to the number of hours per week worked in your hospital

Table (4.23): Mean difference of studied domains related to the number of hours per week worked in your hospital.

Domains	number of hours per week work in your hospital	N	Mean	SD	F	P-value
Knowledge	Less than 35	4	55.2	12.0	2.592	0.077
	35 to 37	227	62.8	14.5		
	More than 37	23	68.8	8.4		
	Total	254	63.2	14.2		
Practice	Less than 35	4	75.5	4.3	0.478	0.621
	35 to 37	227	76.4	12.6		
	More than 37	23	79.0	11.4		
	Total	254	76.6	12.4		
Total	Less than 35	4	65.4	7.5	2.039	0.132
	35 to 37	227	69.6	11.1		
	More than 37	23	73.9	7.5		
	Total	254	69.9	10.8		

*Significant at $P \leq 0.05$; $P > 0.05$: Not significant; **n**: number of subjects; **SD**: standard deviation; & **F**: One-way ANOVA.

Table (4.23) showed that the mean difference of studied domains related to number of hours per week. The one-way ANOVA test showed that there was no statistically significant difference among the number of hours per week of work in your hospital in the mean of the studied domain as the knowledge, practice, and domain as total ($P > 0.05$). These results inconsistency with the study conducted by (Son et al., 2019) who found that the working hours had the strongest association with low perceived patient safety competencies ($\beta = -0.179$, $p = 0.001$) were also correlated with adverse nurse outcomes. Also, these results do not support

the study conduct by (Nurhanifah et al., 2021) who found that there were statistically significant differences in the nurses' knowledge between their different number of working hour per week.

4.4.14 Mean difference of studied domains related to qualification in nursing

Table (4.24): Mean difference of studied domains related to qualification in nursing.

Domains	Qualification in Nursing	N	Mean	SD	F	P-value
Knowledge	Diploma2yearsorless	33	61.2	14.4	0.376	0.771
	Bachelor degree	174	63.8	14.2		
	Registered Nurse (3years diploma)	14	63.4	14.9		
	Higher education	33	62.1	13.5		
	Total	254	63.2	14.2		
Practice	Diploma2yearsorless	33	80.2	10.4	1.869	0.135
	Bachelor degree	174	76.7	12.3		
	Registered Nurse (3years diploma)	14	73.1	12.8		
	Higher education	33	73.9	14.0		
	Total	254	76.6	12.4		
Total	Diploma2yearsorless	33	70.7	10.2	0.563	0.640
	Bachelor degree	174	70.3	11.0		
	Registered Nurse (3years diploma)	14	68.2	10.4		
	Higher education	33	68.0	11.3		
	Total	254	69.9	10.8		

*Significant at $P \leq 0.05$; $P > 0.05$: Not significant; **n**: number of subjects; **SD**: standard deviation; & **F**: One-way ANOVA.

Table (4.24) showed that the mean difference of studied domains related to qualification in nursing. The one-way ANOVA test showed that there was no statistically significant difference among qualifications in nursing in the mean of the studied domain as the knowledge, practice, and domain as total ($P > 0.05$). This result is consistent with the study conduct by Shahin et al. (2020) who found that no statistically significant differences

between nurses' educational qualification and nurses' knowledge in IPSG. Also, this result is consistent with the study conduct by Jang & Lee (2017) who found that the PS competencies were not significantly different by age, educational level. These results are different to study conduct by Ali et al. (2019) who found that there was statistically significant main effect for education on knowledge ($P < 0.05$) who found the Bachelor degree have significant higher knowledge from diploma degree.

4.4.15 Mean difference of studied domains related to the position

Table (4.25): Mean difference of studied domains related to the position.

Domains	Position	N	Mean	SD	F	P-value
Knowledge	Practical nurse/associate degree nurse	49	62.1	14.1	0.830	0.479
	Bachelor	127	64.3	14.3		
	Senior nurse	41	60.7	12.8		
	head nurse	37	63.7	15.3		
	Total	254	63.2	14.2		
Practice	Practical nurse/associate degree nurse	49	79.7	11.1	3.559	0.015*
	Bachelor	127	77.1	11.8		
	Senior nurse	41	71.4	14.8		
	Head nurse	37	76.5	11.7		
	Total	254	76.6	12.4		
Total	Practical nurse/associate degree nurse	49	70.9	11.1	2.125	0.098
	Bachelor	127	70.7	10.2		
	Senior nurse	41	66.1	11.5		
	Head nurse	37	70.1	11.4		
	Total	254	69.9	10.8		

*Significant at $P \leq 0.05$; $P > 0.05$: Not significant; **n**: number of subjects; **SD**: standard deviation; & **F**: One-way ANOVA.

Table (4.25) showed the mean difference in studied domains among Positions. The one-way ANOVA test demonstrated statistical differences in the average in the mean of the studied

domain as practice regarding ($P < 0.05$). In contrast, the results demonstrated no statistical differences in the average in the mean of the studied domain as knowledge and domain as total ($P > 0.05$).

These results congruent with the study conduct by Shahin et al. (2020) who found that there were no statistically significant differences in the nurses' knowledge between their different Job position. Also, these results consistence with the study conducted by Al Akoum et al. (2022) who revealed that we nurses' knowledge between their different Job position.

Table (4.26): Post Hoc test of mean difference of practice in the position among the study participants.

Dependent Variable	(I) Position		Mean Difference (I-J)	SE	P-value	95% CI	
						Lower	Upper
Practice level	Practical nurse/associate degree nurse	Senior nurse	8.23	2.58	0.002*	3.15	13.31
	Bachelor	Senior nurse	5.66	2.19	0.010*	1.34	9.97

* $P \leq 0.05$: Significant, $P > 0.05$: Not significant SE: standard error and CI: confidence interval.

The Post Hoc test of mean difference of practice in the position among the study participants is pointed out in table (4.26). The Post Hoc (LSD) test showed there was a lower statistically significant among positions between senior nurses compared to other positions except head nurse in the average of practice ($P < 0.05$). In contrast, the result showed that there was no statistically significant between the average of other studies regarding other positions ($P > 0.05$).

These results are similar to study conduct by Adly et al. (2020) who found that there was statistical significant between nurses' practices with their position. Congruent with another study that found that the senior nurse practical score is less than junior nurse as (17.64 ± 5.10 , 17.24 ± 4.98) respectively. (Xie et al., 2020). In addition, these results agree with the study conduct by Shahin et al. (2020) who found that there were no statistically significant differences in the nurses' knowledge between their different position of nurses. According to the researcher, these results could be attributed to frequently active of practical and bachelor nurses in recurrent workshops and seminars and/or aware of quality improvement

and PS. Our findings emphasize the importance of the nurse manager's role in pediatric PS, where care is given by creating a non-punitive learning environment, supporting ongoing training, and enhancing teamwork and employee engagement.

4.4.16 Mean difference of studied domains related to residency

Table (4.27): Mean difference of studied domains related to residency.

Domains	Residency	N	Mean	SD	F	P-value
Knowledge level	Northern Gaza	43	63.9	10.4	2.117	0.079
	Deir-El-Balah	46	62.9	14.9		
	Gaza	105	64.3	15.1		
	Khan Younes	38	57.7	14.6		
	Rafah	22	67.2	11.7		
	Total	254	63.2	14.2		
Practice level	Northern Gaza	43	78.0	13.2	0.429	0.788
	Deir-El-Balah	46	74.7	11.1		
	Gaza	105	76.9	12.2		
	Khan Younes	38	76.2	13.1		
	Rafah	22	77.0	13.3		
	Total	254	76.6	12.4		
Total	Northern Gaza	43	70.9	10.0	1.267	0.284
	Deir-El-Balah	46	68.8	10.1		
	Gaza	105	70.6	11.1		
	Khan Younes	38	66.9	11.7		
	Rafah	22	72.1	10.8		
	Total	254	69.9	10.8		

*Significant at $P \leq 0.05$; $P > 0.05$: Not significant; **n**: number of subjects; **SD**: standard deviation; & **F**: One-way ANOVA.

Table (4.27) showed that the mean difference of studied domains related to Residency. The one-way ANOVA test showed that there was no statistically significant difference among residency in the mean of the studied domain as the knowledge, practice and domain as total ($P > 0.05$).

These results are consistent with the findings of the study performed by Omer et al. (2018) who discovered a link between residence and IPSG awareness.

4.4.17 Mean difference of studied domains related to place of current work

Table (4.28): Mean difference of studied domains related to place of current work.

Domains	Place of current work	N	Mean	SD	F	P-value
Knowledge level	Al-Shifa Medical Complex	39	58.0	15.5	8.971	0.000*
	Al-Rantisy/Al-Naser Hospital	94	61.4	13.0		
	Al-Dora Hospital	34	75.0	5.9		
	Al-Aqsa Hospital	26	68.9	13.2		
	Nasser Hospital	28	57.9	15.0		
	European Gaza Hospital	33	62.6	14.3		
	Total	254	63.2	14.2		
Practice level	Al-Shifa Medical Complex	39	69.1	12.1	5.370	0.000*
	Al-Rantisy/Al-Naser Hospital	94	77.6	12.5		
	Al-Dora Hospital	34	83.1	6.5		
	Al-Aqsa Hospital	26	76.2	11.2		
	Nasser Hospital	28	77.2	12.0		
	European Gaza Hospital	33	75.7	14.2		
	Total	254	76.6	12.4		
Total	Al-Shifa Medical Complex	39	63.5	10.6	9.540	0.000*
	Al-Rantisy/Al-Naser Hospital	94	69.5	10.2		
	Al-Dora Hospital	34	79.0	5.4		
	Al-Aqsa Hospital	26	72.6	8.5		
	Nasser Hospital	28	67.5	11.7		
	European Gaza Hospital	33	69.2	11.9		
	Total	254	69.9	10.8		

*Significant at $P \leq 0.05$; $P > 0.05$: Not significant; **n**: number of subjects; **SD**: standard deviation; & **F**: One-way ANOVA.

Table (4.28) showed that the mean difference of studied domains related to the Place of current work. The one-way ANOVA test showed that there was a statistically significant difference in the mean of the studied domain as the knowledge, practice, and domain as total among places of current work ($P < 0.05$). These results are similar to study conduct by (Ali et al., 2019) who revealed that there was there was highly statistical significance relation between total practices score of studied nurses' and their hospital name ($P < 0.001$). Also, these results congruent with the study conducted by Al Akoum et al. (2022) who found that the hospital name was significantly association with PS knowledge and practices among nurses.

Table (4.29): Post Hoc test of mean difference of the demographic data domain in the Place of current work among the study participants.

Dependent Variable	Place of current work		Mean Difference (I-J)	SE	P-vale	95% CI	
						Lower	Upper
Knowledge	Al-Shifa Medical Complex	Al-Dora Hospital	-16.99	3.09	0.000*	-23.06	-10.91
		Al-Aqsa Hospital	-10.90	3.33	0.001*	-17.45	-4.34
	Al-Rantisy/Al-Naser Hospital	Al-Dora Hospital	-13.65	2.63	0.000*	-18.84	-8.47
		Al-Aqsa Hospital	-7.56	2.91	0.010*	-13.30	-1.82
	Al-Dora Hospital	Nasser Hospital	17.11	3.36	0.000*	10.50	23.72
		European Gaza Hospital	12.37	3.21	0.000*	6.05	18.70
	Al-Aqsa Hospital	Nasser Hospital	11.02	3.58	0.002*	3.97	18.08
Practice	Al-Shifa Medical Complex	Al-Rantisy/Al-Naser Hospital	-8.57	2.26	0.000*	-13.02	-4.11
		Al-Dora Hospital	-14.02	2.79	0.000*	-19.50	-8.53
		Al-Aqsa Hospital	-7.13	3.01	0.018*	-13.05	-1.21
		Nasser Hospital	-8.09	2.94	0.006*	-13.88	-2.30
		European Gaza Hospital	-6.62	2.81	0.019*	-12.15	-1.09
	Al-Rantisy/Al-Naser Hospital	Al-Dora Hospital	-5.45	2.38	0.023*	-10.13	-0.77
	Al-Dora Hospital	Al-Aqsa Hospital	6.89	3.09	0.027*	0.80	12.98
		European Gaza Hospital	7.39	2.90	0.011*	1.68	13.11
Total	Al-Shifa Medical Complex	Al-Rantisy/Al-Naser Hospital	-5.95	1.91	0.002*	-9.71	-2.19
		Al-Dora Hospital	-15.50	2.35	0.000*	-20.14	-10.87
		Al-Aqsa Hospital	-9.01	2.54	0.000*	-14.01	-4.01
		European Gaza Hospital	-5.62	2.37	0.019*	-10.29	-0.95
	Al-Rantisy/Al-Naser Hospital	Al-Dora Hospital	-9.55	2.01	0.000*	-13.50	-5.60
	Al-Dora Hospital	Al-Aqsa Hospital	6.49	2.61	0.014*	1.34	11.63
		Nasser Hospital	11.52	2.56	0.000*	6.48	16.56
		European Gaza Hospital	9.88	2.45	0.000*	5.06	14.71

* $P \leq 0.05$: Significant, $P > 0.05$: Not significant **SE**: standard error and **CI**: confidence interval

The mean difference of studied domains related to the Place of current work is pointed out in table (4.29). The Post Hoc (LSD) test showed there was lower statistically significant among the places of current work between Al-Dora Hospital compared to other places of current work except (Al-Aqsa Hospital; $P>0.05$), also test showed there was lower statistically significant among the place of current work between Al-Aqsa Hospital compared to another place of current work except (Al-Dora Hospital; $P>0.05$) in the average of knowledge ($P<0.05$). Regarding practice, the test showed there was a lower statistically significant among the places of current work between Al-Shifa Medical Complex compared to other Places of current work in the average of practice ($P<0.05$).

In the same way, in Practice, the test showed there was a lower statistically significant among places of current work between Al-Dora Hospital compared to other Places of current work except (Nasser Hospital; $P>0.05$) in the average practice. Finally, domain as a total the test showed there was lower statistically significant in the average domain as a total among places of current work between Al-Shifa Medical Complex compared to other places of current work except for Nasser Hospital ($P<0.05$). The test showed there was lower statistically significant among places of current work between Al-Dora Hospital compared to other places of current work. In contrast, the results showed that there was no statistically significant difference between the average of other studies regarding other places of current work ($P>0.05$).

According to the researcher, these results could be attributed to the small size of the Al-Dora Hospital and thus the ease of meeting nursing staff and its comprehensiveness in holding workshops, training courses and supervisory follow-up in the application of these courses and extracting feedback for development later

4.4.18 Mean difference of studied domains related to the name of the department

Table (4.30): Mean difference of studied domains related to the name of the department.

Domains	Name of department	N	Mean	SD	F	P-value
Knowledge	Pediatric Surgery Department	15	60.0	10.5	0.902	0.480
	Pediatric medical Department	84	62.4	15.0		
	Pediatric Intensive Care Unit (PICU)	31	66.8	12.8		
	Special Care Baby Unit (SCBU)	36	63.3	15.5		
	Neonatal Unit	54	61.8	13.4		
	Pediatric Emergency Department	34	65.6	14.2		
	Total	254	63.2	14.2		
Practice	Pediatric Surgery Department	15	62.9	14.0	4.742	0.000*
	Pediatric medical Department	84	78.6	12.1		
	Pediatric Intensive Care Unit (PICU)	31	77.7	11.4		
	Special Care Baby Unit (SCBU)	36	77.5	11.1		
	Neonatal Unit	54	75.2	11.7		
	Pediatric Emergency Department	34	78.1	12.4		
	Total	254	76.6	12.4		
Total	Pediatric Surgery Department	15	61.5	10.1	2.650	0.024*
	Pediatric medical Department	84	70.5	11.2		
	Pediatric Intensive Care Unit (PICU)	31	72.2	10.7		
	Special Care Baby Unit (SCBU)	36	70.4	9.5		
	Neonatal Unit	54	68.5	10.3		
	Pediatric Emergency Department	34	71.8	11.3		
	Total	254	69.9	10.8		

*Significant at $P \leq 0.05$; $P > 0.05$: Not significant; **n**: number of subjects; **SD**: standard deviation; & **F**: One-way ANOVA.

Table (4.30) showed that the mean difference of studied domains related to name of the department. The one-way ANOVA test showed that there was a statistically significant difference between the name of the department in the mean of the studied domain as D2: Practice level; and domain as total ($P < 0.05$). In contrast, demonstrated no statistical differences in the average in the mean of the studied domain the knowledge and domain as total ($P > 0.05$). These results are congruent to study conduct by Cho & Choi (2018) who

found that there was a significant differences (p-value = 0.000) in nurses' practice of IPSGs based on their departments. In addition, these results inconsistency with the study conducted by Shahin et al. (2020) who found that there was a significant differences (p-value = 0.000) in nurses' knowledge of IPSGs based on their departments. These findings, according to the researcher, might be attributable to departmental variances in training programs.

Table (4.31): Post Hoc test of mean difference of the demographic data domain in the name of department among the study participants.

Dependent Variable	name of department		Mean Difference (I-J)	SE	P-value	95% CI	
						Lower	Upper
Practice level	Pediatric Surgery Department	Pediatric medical Department	-15.65	3.35	0.000*	-22.25	-9.06
		Pediatric Intensive Care Unit (PICU)	-14.77	3.76	0.000*	-22.17	-7.38
		Special Care Baby Unit (SCBU)	-14.57	3.67	0.000*	-21.80	-7.35
		Neonatal Unit	-12.28	3.48	0.001*	-19.14	-5.41
		Pediatric Emergency Department	-15.15	3.70	0.000*	-22.44	-7.86
Total	Pediatric Surgery Department	Pediatric medical Department	-9.03	2.99	0.003*	-14.92	-3.14
		Pediatric Intensive Care Unit (PICU)	-10.79	3.35	0.001*	-17.39	-4.18
		Special Care Baby Unit (SCBU)	-8.94	3.28	0.007*	-15.40	-2.48
		Neonatal Unit	-7.04	3.11	0.025*	-13.17	-0.91
		Pediatric Emergency Department	-10.36	3.31	0.002*	-16.87	-3.84

*P≤0.05: Significant, P>0.05: Not significant **SE**: standard error and **CI**: confidence interval

The mean difference of studied domains related to the name of the department is pointed out in table (4.31). The Post Hoc (LSD) test showed there was lower a statistically significant among the name of department between the Pediatric Surgery Department compared to other names of the department in the average of D2: Practice level ($P<0.05$). Finally, domain as a total the test showed there was lower statistically significant in the average domain as a total among the name of department between Pediatric Surgery Department compared to other names of the department ($P<0.05$). In contrast, the results showed that there was no statistically significant difference between the average of other studies regarding other names of the department ($P>0.05$). Inconsistence with another study conducted by Yan et al. (2021) who found that the pediatric surgery department had the highest score in the application of IPSG to the remaining departments.

4.4.19 Mean difference of studied domains related to the graduated university

Table (4.32): Mean difference of studied domains related to graduated university.

Domains	Graduated university	N	Mean	SD	F	P-value
Knowledge level	Islamic University of Gaza	121	64.3	14.3	1.120	0.348
	Al-Azhar University - Gaza	10	69.2	11.0		
	Palestine College of Nursing	83	61.5	13.5		
	University College of Applied Science	30	63.2	17.9		
	Others,	10	59.2	3.3		
	Total	254	63.2	14.2		
Practice level	Islamic University of Gaza	121	77.3	12.2	1.725	0.145
	Al-Azhar University - Gaza	10	79.6	10.1		
	Palestine College of Nursing	83	75.5	12.2		
	University College of Applied Science	30	78.6	11.4		
	Others,	10	68.3	18.2		
	Total	254	76.6	12.4		
Total	Islamic University of Gaza	121	70.8	10.6	1.853	0.119
	Al-Azhar University - Gaza	10	74.4	9.5		
	Palestine College of Nursing	83	68.5	10.9		
	University College of Applied Science	30	70.9	11.7		
	Others,	10	63.8	9.9		
	Total	254	69.9	10.8		

*Significant at $P\leq 0.05$; $P>0.05$: Not significant; **n**: number of subjects; **SD**: standard deviation; & **F**: One-way ANOVA.

Table (4.32) showed the mean difference of studied domains related to Graduated university. The one-way ANOVA test showed that there was no statistically significant difference among graduated universities in the mean of the studied domain as the knowledge, practice, and domain as total ($P>0.05$).

4.5 Correlation between studied domains among the study participants

Table (4.33): Mean difference of studied domains among the study participants.

		Knowledge	Practice	Total
Knowledge	r	-	0.333	0.843
	P-value	-	0.000*	0.000*
Practice	r	0.333	-	0.788
	P-value	0.000*	-	0.000*
Total	r	0.843	0.788	-
	P-value	0.000*	0.000*	-

r: Pearson correlation & * indicates a statistically significant difference at $P<0.05$.

Table (4.33) showed the correlation between the studied domains among the study participants. Pearson correlation showed that there was a positive significant correlation between knowledge, practice; and domain as a total ($P<0.05$). These results are congruent to study conduct by Ananya et al. (2019) who observed that the highest overall compliance with IPSGs in Doctors with 72%, followed by Nurses with 69% and then Paramedics with 68% compliance. It was noted that the cause of non-compliance with the goals by staff was either because of lack of knowledge or extra work load which reduces the ease of implementation or sometimes combination of both. Furthermore, these research results are consistent with the findings of Sun & Shen (2017) who concluded that the effective implementation of JCI standard PSGs aids in the achievement of scientific, standardized, optimize nursing work processes, standardize operations, reduce nursing risk, and improve nursing quality, all of which contribute to improved patient' satisfaction and patient' trust. According to the researcher, these findings might be attributed to the fact that when technical abilities improved, cognitive skills improved spontaneously.

Chapter Five

Conclusion and Recommendations

In this chapter, the main conclusion and recommendations for decision-makers include putting more emphasis on improving nurses' knowledge and practices about the care provided for hospitalized children in governmental hospitals.

5.1 Conclusion

This study aimed to assess the competencies of pediatric nurses regarding patient safety for hospitalized children at pediatric departments in the governmental hospitals of GS. It was a quantitative descriptive cross-sectional study. Six hospitals were selected " AL-Rantisy /Al-Naser Hospital, Al-Dora Hospital, Al-Shifa Complex Hospital, Al-Aqsa Hospital, Nasser Hospital, and European Gaza Hospital". The study concluded that the study participants had moderate levels of knowledge and practice regarding IPSGs, as well there was significant correlation between nurse's knowledge and practice.

5.2 Recommendations

The study's findings provide a number of meaningful and rewarding recommendations that might be taken into consideration to improve nursing care for hospitalized children.

5.2.1 For managers & policy makers

1. An effective orientation program should be developed that focus on the IPSGs.
2. Modules that prepare nurses for pediatric departments specializing in 6IPSGs should be introduced in nursing colleges.
3. Make a regulations and policy in the MoH that would have specified who should be responsible for site marking and preoperative checklist execution.

5.2.2 For Health care providers

1. Follow up on updates on PS policies and their readings and ask about any vague information.
2. Continuous supervision throughout all shifts in an infection control precaution.

3. Identifying pediatric patients who are at risk of falling and avoiding falls in nursing practice.
4. Sharing pediatric nurses their knowledge and experience about PS with new staff.

5.2.3 For researchers

5. In order to obtain more conclusive results, repeat the study with a larger sample size, random sample selections, including staff from different hospitals.
6. Use an observational checklist in addition to the self-administered questionnaire to provide additional objective data. Observational checklists provide a better reflection of the compliance with IPSPGs than self-administered questionnaires.
7. Factors impacting medication safety require more research.

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Annexes

Annex (1) Palestine map, Gaza strip map and West Bank map



Annex (2): Sample size calculation

Population survey or descriptive study
For simple random sampling, leave design effect and clusters equal to 1.

Population size:	<input type="text" value="554"/>		
Expected frequency:	<input type="text" value="50"/> %		
Acceptable Margin of Error:	<input type="text" value="5"/> %		
Design effect:	<input type="text" value="1.0"/>		
Clusters:	<input type="text" value="1"/>		

Confidence Level	Cluster Size	Total Sample
80%	127	127
90%	182	182
95%	227	227
97%	255	255
99%	302	302
99.9%	366	366
99.99%	406	406

Annex (3): Sample frame and the selected hospitals

Hospitals	North	Gaza	Middle	Khan Younes	Rafah
Governmental	1	5	1	2	2
Selected hospitals	0	3	1	2	0
The selected hospitals					
No.	Hospital	Governorate	Owner		
1.	AL-Rantisy /Al-Naser Hospital	Gaza	MoH		
2.	Al-Dora Hospital	Gaza	MoH		
3.	Al-Shifa Complex Hospital	Gaza	MoH		
4.	Al-Aqsa Hospital	Middle	MoH		
5.	Nasser Hospital	Khan Younes	MoH		
6.	European Gaza Hospital.	Khan Younes	MoH		

Annex (4): Ethical approval from Helsinki Committee



المجلس الفلسطيني للبحث الصحي
Palestinian Health Research Council

تعزيز النظام الصحي الفلسطيني من خلال مؤسسة استخدام المعلومات البحثية في صنع القرار
Developing the Palestinian health system through institutionalizing the use of information in decision making

Helsinki Committee
For Ethical Approval

Date: 07/02/2022 **Number: PHRC/HC/1023/22**

Name: Esraa Waleed Elsayed **الاسم:**

We would like to inform you that the committee had discussed the proposal of your study about:

نفيدكم علماً بأن اللجنة قد ناقشت مقترح دراستكم حول:

Assessment of Pediatric Nurses' Competencies Regarding Patient Safety of Hospitalized Children at Pediatric Departments in Gaza Strip, Palestine

The committee has decided to approve the above mentioned research. Approval number PHRC/HC/1023/22 in its meeting on 07/02/2022

و قد قررت الموافقة على البحث المذكور عاليه بالرقم والتاريخ المذكوران عاليه

Signature

Member 

Chairman 

Member 

Genral Conditions:-

1. Valid for 2 years from the date of approval.
2. It is necessary to notify the committee of any change in the approved study protocol.
3. The committee appreciates receiving a copy of your final research when completed.




Specific Conditions:- 



E-Mail: pal.phrc@gmail.com

Gaza - Palestine **غزة - فلسطين**
شارع النصر - مفترق العيون

Annex (5): Administrative approval from Al-Quds University

<p>Al Quds University Faculty of Health Professions Nursing Dept. – Gaza</p>		<p>جامعة القدس كلية المهن الصحية دائرة التمريض - غزة</p>
<p>حضرة الأخ/ أ. هاني سلطان الوحيدي حفظه الله مدير عام وحدة المعلومات الصحية بوزارة الصحة السلام عليكم ورحمة الله وبركاته</p>		
<p>الموضوع: تسهيل مهمة الطالبة الباحثة اسراء وليد السيد</p>		
<p>تهديكم كلية المهن الصحية بجامعة القدس أطيب التحيات، ونرجو من حضرتكم مساعدة الطالبة المذكورة بخصوص جمع معلومات خاصة بموضوع دراستها البحثية للحصول على درجة الماجستير في تمريض الأطفال، والدراسة بعنوان:</p>		
<p>Assessment of Pediatric Nurses' Competencies Regarding Patient Safety of Hospitalized Children at Pediatric Departments in Gaza Strip, Palestine</p>		
<p>حيث ستكون عينة الدراسة من الممرضين والمرضات العاملين بأقسام الأطفال بمستشفيات وزارة الصحة (مجمع الشفاء - م. الرنتيسي/النصر للأطفال - م. الدرة - م. الأقصى - مجمع ناصر - م. غزة الأوروبي) وستجمع البيانات بواسطة استبانة.</p>		
<p>وتفضلوا بقبول وافر الاحترام والتقدير</p>		
<p> د. حمزة محمد عبد الجواد استاذ مساعد في علوم التمريض منسق برامج ماجستير التمريض بغزة كلية المهن الصحية - جامعة القدس hamjawad1@gmail.com تلفاكس: +972 8 2644220 خلوي: +972 599 852755</p>		
<p> دائرة التمريض Nursing Department</p>		
<p>تلفون: 08 2644210+08 2644220 تلفاكس: 082644220</p>		

Annex (6): Administrative approval from MoH (Human Resources Development General Directorate)

State of Palestine
Ministry of health



دولة فلسطين
وزارة الصحة

التاريخ: 15/08/2022
رقم المراسلة: 1031063

السيد : جهاد عبدالقادر عكاشه المحترم

مدير دائرة الإبرارة العامة للوحدات الإبرارية المساعدة لوزارة الصحة

السلام عليكم ...

الموضوع/ تسهيل مهمة الباحث/ة اسراء وليد السيد

التفاصيل // السلام عليكم نهدىكم أطيب التحيات ونود منكم تسهيل مهمة الباحث/ة اسراء وليد محمود السيد الملتحق/ة ببرنامج ماجستير تمريض الأطفال – جامعة القدس أبو ديس في اجراء بحث بعنوان: ' Assessment of Pediatric Nurses Competencies Regarding Patient Safety of Hospitalized Children at Pediatric Departments in Gaza Strip, Palestine حيث الباحث/ة بحاجة لتعبئة استبانة من عدد من العاملين في مرافق وزارة الصحة (المستشفيات) ، دون اجراء أي تدخل طبي او سحب عينات دم ، نأمل توجيهاتكم لذوي الاختصاص بضرورة الحصول على الموافقة المستنيرة من المشاركين ، بما لا يتعارض مع مصلحة العمل وضمن أخلاقيات البحث العلمي، ودون تحمل الوزارة أي أعباء أو مسئولية وتفضلوا بقبول التحية والتقدير ملاحظات / تسهيل المهمة الخاص بالدراسة أعلاه صالح لمدة 3 أشهر من تاريخه. يرجى التأكد من توافق الاستبانة المرفقة والتي يتم تعبئتها ميدانيا على ان لا يتم أي إضافة او تعديل على الاستبانة المرفقة

علي حسن البليسي
رئيس قسم تمريض طوارئ أطفال

المرفقات

■ استبانة اسراء وليد السيد.pdf



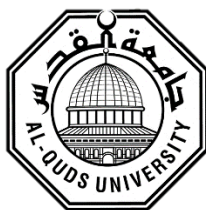
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غزة

Annex (7): A consent form for participants



Questionnaire on assessing the competency of pediatric nurses towards patient safety in hospitals

Greetings,

The aim of this research is to assess your competency with the six international patient safety goals (6IPSGs) of admitted pediatric patients within the hospital. The competency definition of the safety of patients in hospital can be defined by the extent to which the 6IPSGs are known and applied in services for pediatric patients.

Questionnaire consists of some questions and paragraphs about the knowledge and practice of 6IPSGs during service delivery to admitted pediatrics. For each question or paragraph there are a range of possible options, please choose an answer that corresponds to your view. **This questionnaire takes 10-15 minutes to answer.** It is important to note that **your participation in the study is critical** to obtaining an accurate picture of your competence and that the accuracy of this research depends on the rate of participation of staff in the hospital.

This questionnaire will be distributed to a sample of all personnel in the pediatrics' departments, including those with direct or in direct contact with patients, so we ask you to answer and return the questionnaire. Participation is voluntary. You can call if you have any questions or queries about this study.

Finally, we would like to note the complete confidentiality about the identity of the person who participate in this research.

Thank you so much for your cooperation

Researcher: Esraa Waleed Mahmoud El-Sayed

Annex (8): Self-administered questionnaire

No.:.....

INSTRUCTIONS

This questionnaire asks for your knowledge and practice about the six international patient safety goals (6IPSGs) for pediatric patients in your hospital and will take about 10-15 minutes to complete.

SECTION A: Sociodemographic Characteristics:

Make ONE answer by marking ✓ in the right box.

1. Gender ☐ 1. Male ☐ 2. Female

2. Age in years:.....

3. Residency

☐ 1. Northern Gaza ☐ 3. Gaza ☐ 4. Khan Younes
☐ 2. Dair Al Balah ☐ 5. Rafah

4. Monthly Income (average) Shekel

5. Marital status

☐ 1. Single ☐ 2. Married ☐ 3. Divorced ☐ 4. Widowed

6. Graduated university:

☐ 1. Islamic University of Gaza ☐ 5. Palestine College of Nursing
☐ 2. Al-Azhar University - Gaza ☐ 6. University College of Applied Science
☐ 3. Al-Aqsa University
☐ 4. Al-Isra University ☐ 7. Others, please specify.....

7. Qualification in nursing

☐ 1. Diploma 2 years or less ☐ 3. Registered Nurse (3 years diploma)
☐ 2. Bachelor degree ☐ 4. Higher education

8. Since how many years you graduated from your first nursing qualification?

..... years

9. Since how many years you graduated from your last nursing qualification?

..... years

10. Did you have information about the international patient safety goals in your nursing education program?

☐ 1. Yes ☐ 2. No
If yes specify the program.....

1. How many years of experience do you have in nursing services after graduation?

..... years

2. Place of current work:

- | | |
|---|---|
| <input type="checkbox"/> 1. Al-Shifa Medical Complex | <input type="checkbox"/> 4. Al-Aqsa Hospital |
| <input type="checkbox"/> 2. AL-Rantisy /Al-Naser Hospital | <input type="checkbox"/> 5. Nasser Hospital |
| <input type="checkbox"/> 3. Al-Dora Hospital | <input type="checkbox"/> 6. European Gaza Hospitals |

3. The name of your department:

- | | |
|--|--|
| <input type="checkbox"/> 1. Pediatric Surgery Department | <input type="checkbox"/> 4. Special Care Baby Unit (SCBU) |
| <input type="checkbox"/> 2. Pediatric medical Department | <input type="checkbox"/> 5. Neonatal Unit |
| <input type="checkbox"/> 3. Pediatric Intensive Care Unit (PICU) | <input type="checkbox"/> 6. Pediatric Emergency Department |

4. How many hours per week do you work in your hospital?..... hours

5. Position

- | | |
|--|--|
| <input type="checkbox"/> 1. Practical nurse/associate degree nurse | <input type="checkbox"/> 3. Senior nurse |
| <input type="checkbox"/> 2. Bachelor | <input type="checkbox"/> 4. Head nurse |

6. Did you receive special training course about the international patient safety goals after graduation?

- | | |
|---------------------------------|--------------------------------|
| <input type="checkbox"/> 1. Yes | <input type="checkbox"/> 2. No |
|---------------------------------|--------------------------------|

If yes where?.....

7. Does your hospital have a policy and procedures about the international patient safety goals?

- | | |
|---------------------------------|--|
| <input type="checkbox"/> 1. Yes | <input type="checkbox"/> 2. No (if no skip to question 19) |
|---------------------------------|--|

8. If the answer is yes to question 17, has your hospital trained you on their policy and procedures regarding international patient safety goals?

- | | |
|---------------------------------|--------------------------------|
| <input type="checkbox"/> 1. Yes | <input type="checkbox"/> 2. No |
|---------------------------------|--------------------------------|

9. Did your department address the application of the international patient safety goals?

- | | |
|---------------------------------|--------------------------------|
| <input type="checkbox"/> 1. Yes | <input type="checkbox"/> 2. No |
|---------------------------------|--------------------------------|

SECTION B: 6IPSGs' Knowledge Assessment

Make ONE answer by circling around the number:

➤ IP SG1: Identify Patients Correctly

1. What are the best identifiers used to identify patients properly?

- | | |
|---|-------------------------------|
| 1. Bed number and patient name | 3. Room number & patient name |
| 2. Medical record number and patient name | 4. ID number & patient name |

2. To identify patients correctly, the nurse should have to use at least:

- | | |
|------------------------------|-----------------------------|
| 1. One patient identifier | 3. Two patient identifiers |
| 2. Three patient identifiers | 4. Four patient identifiers |

3. Patient Identification is performed in which of the following action/s:

- | | |
|-----------------------------------|---------------------------|
| 1. Diagnostic radiology procedure | 3. Therapeutic procedures |
| 2. Operation theaters | 4. All of the above |

➤ IP SG2: Improve Effective Communication

4. Verbal and telephone order include:

- | | |
|------------------|---------------------|
| 1. Write it down | 3. Get confirmation |
| 2. Read it back | 4. All of the above |

5. The critical results of diagnostic tests are identified by whom of the following?

- | | |
|--------------------|--------------------------|
| 1. The hospital | 3. Supervisor of nursing |
| 2. Medical manager | 4. Laboratory manager |

➤ IP SG3: Improve the Safety of High-Alert Medications

6. All of the following are examples of the high alert medications except:

- | | |
|--------------------------|----------------------|
| 1. Insulin | 3. Heparin |
| 2. Opiates and narcotics | 4. Diclofenac Sodium |

7. High Alert Medications should be labeled by:

- | | |
|-----------------------|-----------------------|
| 1. Purple-color label | 3. Red-color label |
| 2. Green-color label | 4. Orange-color label |

8. LASA stands for.....?

- | | |
|--------------------------|---------------------------|
| 1. Look Alike Sing Alike | 3. Look Alike Sound Alike |
| 2. Look Alike See Alike | 4. Look Alike Smell Alike |

9. Narcotics should be stored in.....:

- | | |
|----------------|---------------------|
| 1. Double lock | 3. Without any lock |
|----------------|---------------------|

- 2. Single lock
- 4. Steel cupboard

10. The process of high alert medication and LASA medications are uniform throughout the...

- 1. Hot areas within the hospital
- 3. All departments within the hospital
- 2. Pediatric departments
- 4. Pharmacies

➤ **IPSG4: Ensure correct Site, Correct Procedure, Correct Patient Surgery**

11. Site marking is done for which of the following surgical procedures?

- 1. Bilateral organs
- 3. Transplantation
- 2. Single organ
- 4. All of the above

12. Site marking before the operation should be done by:

- 1. Permanent marker
- 3. Board marker
- 2. Temporary marker
- 4. Skin marker

13. The entire surgical team conducts and records a time-out process at which of the following time?

- 1. In the moments before a surgical operation
- 3. During surgical operation
- 2. In the moments after surgical operation
- 4. All of the above

14. A time-out process does not include which of the following components:

- 1. Correct patient identity
- 3. Correct surgical/invasive procedure site
- 2. Correct procedure to be done
- 4. The instrument and sponge counts

15. A sign-out process conducted by a nurse, which consists all of the following components except:

- 1. The labeling of specimens
- 3. Any equipment problems to be addressed
- 2. Correct patient identity
- 4. The instrument and sponge counts

➤ **IPSG5: Reduce Risk of Health Care-Associated Infections**

16. Hand hygiene is performed by health care providers to avoid:

- 1. Health Care Associate Infections
- 3. Infections
- 2. Cross Contamination
- 4. All of the above

17. Routine alcohol hand rub should be performed for:

- 1. 20-30 seconds
- 3. Two minutes
- 2. 45 seconds
- 4. Five minutes

18. Routine Hand washing, by soap and water, is performed for

- | | |
|-------------------|------------------|
| 1. 43 seconds | 3. Four minutes |
| 2. 40- 60 seconds | 4. Three minutes |

19. Hand hygiene should be performed in.....Moments.

- | | |
|----------|----------|
| 1. Five | 3. Eight |
| 2. Seven | 4. Ten |

20. Hand hygiene should be performed:

- | | |
|----------------------------|--|
| 1. Before patient touching | 3. After touching patient surroundings |
| 2. After patient touching | 4. All of the above |

➤ **IPSG6: Reduce the Risk of Patient Harm resulting from Fall**

21. Have you ever assessed patients about the risk of falling?

- | | |
|--------|-------|
| 1. Yes | 2. No |
|--------|-------|

22. High fall risk is suspected when the total Morse fall scale (MFS) is:

- | | |
|--------------|--------------|
| 1. 50 points | 3. 20 points |
| 2. 30 points | 4. 15 points |

23. Moderate fall risk is suspected when the total Morse fall risk assessment score is:

- | | |
|--------------|--------------|
| 1. 50 points | 3. 20 points |
| 2. 35 points | 4. 15 points |

24. Low fall risk indicated when the total Morse fall risk assessment score is:

- | | |
|--------------|--------------|
| 1. 45 points | 3. 15 points |
| 2. 35 points | 4. 50 points |

SECTION C: 6IPSGs' Practice Assessment

Please choose of the following statements by marking ✓ besides each sentence based on how frequently it's implemented in your daily clinical practice.

IPSG1: Identify Patients Correctly		Always	Sometimes	Never
1.	Use two patient identifiers, not including patient's room			
2.	Involve patients/family member in the process of patient identification			
3.	Use special hospital approaches to identify the comatose patients or newborn who is not immediately named			
4.	Identify the patient before performing diagnostic procedure, providing treatments, and performing other procedures			
IPSG2: Improve Effective Communication		Always	Sometimes	Never
5.	Write down, read back and confirm phone orders			
6.	Use standardized forms, tools, or methods in handover process			
7.	The hospital identifies by home and to home critical results of diagnostic tests are reported			
8.	Write down, read back and confirm the complete test result			
9.	The hospital policy identifies what information is documented in the medical records			
PSG3: Improve the Safety of High-Alert Medications		Always	Sometimes	Never
10.	Use hospital policy to prepare a high alert medication.			
11.	Concentrated electrolytes are present only in-patient care units identified as clinically necessary in concentrated form			
12.	Stock high alert medications in patient care units in a manner that restricts access			

IPSG4: Ensure correct Site, Correct Procedure, Correct Patient surgery		Always	Sometimes	Never
13.	Ensure correct site before sending patients to a surgical procedure			
14.	Mark the site for the surgery or other invasive procedure			
15.	Ensure appropriate and available diagnostic images are present with patient before any documented surgical procedure			
IPSG5: Reduce Risk of Health Care-Associated Infections		Always	Sometimes	Never
16.	Apply five moments of hand hygiene before contacting the patient			
17.	Perform hand hygiene following contact with patients and their surrounding environment			
18.	When cleaning and dressing the wound, I start from the dirty area and then move to the clean area.			
19.	Before suctioning the patient's tracheal tube, I test the catheter by suction of a portion of the sterile water			
20.	I discard the suction catheters at the end of each suction			
IPSG6: Reduce the Risk of Patient Harm resulting from Fall		Always	Sometimes	Never
21.	Implement a fall risk assessment when a patient's condition changes			
22.	Use patient specific interventions such as gait belts to prevent injury if the patient does fall			
23.	Ensure a non-cluttered environment to prevent accidental fall events while ambulating post operatively			
24.	I elevate bed side rails for the patients who have potentials for falling			

Annex (9): Name of panels of expert

No.	Name of experts	Place of work
1.	Dr. Osama Alyan	University of Gaza
2.	Dr. Akram Abu Salah	Palestine College of Nursing
3.	Dr. Ali Khatib	University College of Applied Sciences
4.	Dr. Moatasem Salah	MoH
5.	Dr. Khalil Shuaib	Palestine College of Nursing
6.	Dr. Mohammed Al-Jerjawi	MoH
7.	Dr. Abdul Rahman Al-Hams	Palestine College of Nursing

عنوان الدراسة: تقييم كفايات ممرضى الأطفال فيما يتعلق بسلامة المرضى من الأطفال المنومين في أقسام المستشفيات في قطاع غزة، فلسطين.

إعداد : إسراء وليد محمود السيد

إشراف : د. حمزة محمد عبد الجواد

ملخص:

يتعرض الأطفال لمجموعة متنوعة من القضايا التي تهدد حياتهم، والتي ترتبط بارتفاع معدل المراضة والوفيات. سلامة المرضى هو مصدر اهتمام صحي عالمي، لا سيما في نطاق الأطفال. وهدفت الدراسة الحالية إلى تقييم كفايات ممرضين الأطفال فيما يتعلق بسلامة المرضى الأطفال المنومين في أقسام الأطفال في المستشفيات الحكومية في قطاع غزة. وكانت هذه الدراسة وصفية مقطعية، وقد أجريت هذه الدراسة في جميع أقسام مبيت الأطفال التابعة للمستشفيات الحكومية "مستشفى الرنتيسي/النصر، ومستشفى الدرة، ومستشفى مجمع الشفاء، ومستشفى الأقصى، ومستشفى ناصر، ومستشفى غزة الأوروبي". تألفت العينة من جميع الممرضين والممرضات العاملين في أقسام الأطفال في المستشفيات المذكورة سابقاً. حيث كان العدد الإجمالي للعينة "554" ممرض وممرضة. استخدم الباحث استبياناً ذاتياً لجمع البيانات من المشاركين في الدراسة وكان معدل استجابة المشاركين في الدراسة (94.1%). في هذه الدراسة، تم تصنيف متوسط النسب المئوية للمعرفة والممارسات التمريضية المقدمة للأطفال على أنها متوسطة (63.22% و 76.60% على التوالي)، وأظهرت النتائج ارتباطاً إيجابياً كبيراً بين المعرفة والممارسات التمريضية. وكما أظهرت النتائج وجود اختلافات في المعرفة والممارسات التمريضية وفقاً لأماكن عملهم المختلفة، وكانت هذه الاختلافات لصالح العاملين في مستشفى الدرة للأطفال. وكانت هناك اختلافات كبيرة في ممارسة المشاركين بين مناصبهم المختلفة، لصالح أولئك الذين هم ممرضون عمليون، اسم القسم لصالح أولئك الذين يعملون في قسم الباطنة للأطفال. وبينت نتائج هذه الدراسة وجود علاقة ذات دلالة إحصائية بين المعرفة والممارسات التمريضية وتلقيهم لدورات خاصة بمعايير وأهداف سلامة المرضى العالمية، وبين من تلقى دورات تدريبية حول سلامة المرضى ومن لم يتلق، كما وأوجدت الفروقات بين من كانت إدارتهم قد تابعت تطبيق الممرضين والممرضات لهذه السياسات والإجراءات من عدمه. وكما أظهرت نتائج هذه الدراسة عدم وجود علاقة ذات دلالة إحصائية بين أغلب المتغيرات الاجتماعية-الديموغرافية "العمر، الجنس، الحالة الاجتماعية، الإقامة، الدخل الشهري، وعدد السنوات منذ أول وآخر مؤهل تمريض، وسنوات الخبرة في التمريض، المسمى الوظيفي، عدد ساعات العمل، المؤهل العلمي، ووجود السياسات والإجراءات، والمعلومات والدورات التدريبية الخاصة المتعلقة بأهداف سلامة المرضى العالمية" ومعرفة وممارسات الممرضين. بشكل عام بينت النتائج أن مستوى المعرفة والممارسات التمريضية باتجاه أهداف سلامة المرضى العالمية كان متوسطاً. أوصت الدراسة بوضع برنامج تعريفى فعال يتضمن معايير وأهداف سلامة المرضى العالمية، وبشأن تحسين سلامة عمليات المرضى على وجه التحديد. أيضاً، حول كيفية إدارة الأدوية عالية الخطورة والآثار المترتبة على سلامة المرضى. بالإضافة لمتابعة السياسات الخاصة بسلامة المرضى من قبل ممرضين الأطفال والسؤال عن أي معلومات غير مفهومة. تحديد ممرضى الأطفال المعرضين لخطر السقوط وحمايتهم من السقوط.