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Assessment Knowledge of Blood Transfusion among Nursing in Al-Diwaniya City

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

وَقُلْ اعْلَمُوا

فِي نَفْسِي أَنَّ اللَّهَ عَزَّ وَجَلَّ مَلِكٌ عَزِيزٌ
وَرَسُولُهُ أَمِينٌ وَالمُؤْمِنُونَ



105 آية / سورة التوبة

Dedication

I would like to dedicate this research to:

To my dear father, who supported me with all seriousness and love,
and to my mother, who was the best example of her hardships. May

God prolong their lives and provide them with good health and
wellness. Required.

Researchers

/ /2023

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Researchers

/ /2023

ABSTRACT

Back ground: Blood is a valuable and unique product obtained from humans, Blood is very important to save lives and restore human health. Data from Serious Hazards of Transfusion estimates that approximately one case of wrong blood transfusion occurs for every 13,000 transfusions. Most errors occur on the clinical side. Failure to identify the correct patient, either during blood sampling or at the patient's bedside prior to blood transfusion, is a major cause of serious patient morbidity and mortality.

Objective: The present study aims to assess nurses' knowledge about blood transfusion at Al-Diwaniyah Teaching Hospital, and find out association between nurses' knowledge and their demographic characteristics.

Methodology: a quantitative descriptive study design has been carried out. The period of the study started from (5th of December, 2022) to (1th of March, 2023) on a non-probability (purposive) sample consisting of (100 nurses) work in Al-Diwaniyah Teaching Hospital.

To find out nurses' knowledge about blood transfusion, the researcher utilizes the instrument that is composed of two part: part one is demographic data form to participate in the study (age, gender, level of education, years of experience in nursing, Transfusion time ,Training course) and part two knowledge about administration of blood transfusion form included (5) parts and (26) question. The validity of the questionnaire were examined by submitting it to (5) experts, and a pilot study was performed to realize the reliability of the questionnaire

(Pearson correlation coefficient=0.85). For analyzing the findings of the study it was utilizing descriptive and inferential statistics that employ the Statistical Package of Social Sciences (SPSS) and the Microsoft Excel (2010).

Results: The results of this study shows that the majority of the study sample was fair at percentage (48.0%) level of nurses' knowledge about blood transfusion.

Conclusion: The researcher concluded that the nurses' knowledge was (fair), about blood transfusion in Al-Diwaniyah Teaching Hospital.

Recommendations: This study recommended that working educational courses and improve nurses' knowledge about blood transfusion especially nurses working in thalassemia, and there is a need across Iraqi hospitals to perform similar studies at a larger sample size and sufficient period of time.

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Chapter one

Introduction

1.1 Introduction

Blood transfusion is a highly effective and potentially life-saving treatment for many patients (Bradbury & Cruickshank, 2000).

Red cell transfusions are the backbone of blood transfusion therapy as they account for the majority of components issued to patients. Lack of knowledge of various aspects of blood transfusion by clinical staff, including nurses, continues to be a real threat to patient safety. For example, errors in practice involving remote checks at nurses' stations may indicate that nurses are unaware that such checks serve no purpose; they detract from performing proper bedside identification of patient, and contribute to mistransfusion (Whitehead et al. 2003; Taylor et al. 2010).

Blood transfusion is the most common life-saving critical intervention performed in hospitals that needs to be appropriately prescribed, stored and transfused as per guidelines to ensure recipient safety (Kaur et.al.,2014).

The blood and its components are used as support for treatment of several diseases and as support in transplants, chemotherapy and surgeries. Thus, representing essential and irreplaceable products. Although there are risks, blood transfusion is an essential part of health care, promotion and recovery (SILVA; SOMAVILLA, 2010).

The transfusion act occurs routinely in hospitals, especially in sectors in which patients are in more serious and complex situations, as for example, in intensive care units (ICU). Anemia is very common in patients hospitalized in these units and this may get worse after hospitalization and during the patient's stay. In these cases, blood transfusions are more frequently needed (CORWIN et al., 2004; COSTA FILHO et al., 2009).

The transfusion process requires skilled professionals, trained to perform this function. The monitoring of nurses is needed in all its stages, to ensure the safety of the procedure and of the patient (BARBOSA et al., 2011). Adequate knowledge is essential for safe practice (King 1981).

One of the current trends in nursing research emphasizes the importance of investigating nurse's knowledge of clinical procedures. Thus, the literature is replete with studies investigating nurses' knowledge base of many areas (Juan et al., 2004).

Over the last few decades, blood and blood component transfusion have been a lifesaving therapy and are commonly practiced in clinical settings (Szczepiorkowski & Dunbar, 2013).

While blood transfusion is a complex process which involves more than 70 steps, it is very prone to errors (McClelland et al., 1996).

Every single step need to be carefully monitored and recorded to avoid errors and ensure traceability. Safe blood transfusion requires the collaboration from different parties of medical practitioners, including doctors, laboratory staffs and most importantly, the nurses (Hogg et al., 2006).

Nurses play an important role in blood transfusion process. Their responsibilities cover from pre-transfusion sampling, requesting blood from blood banks, collecting blood products, administrating the transfusion and monitoring patients' vitals before, during and after transfusion event, Errors in practice may therefore lead to severe, and sometimes life-threatening consequences to the patients (Gray et al., 2007).

The main goal of blood transfusion is to treat recipients' underlying disorders and to replace blood loss. Blood transfusion is generally considered safe, but there are risks for adverse effects. It is imperative that the blood transfusion is performed while taking precautions for possible adverse blood transfusion reactions and infectious diseases the donor and recipient may face (Akçay et al., 2014). To implement the blood transfusion safely, it is very important for health institutions to use national transfusion guidelines and establish blood banks, transfusion laboratories, and blood transfusion protocols (World Health Organization, 2013).

1.2 The Importance of the Study of the Blood Transfusion:

To determine the knowledge of nurses in handling blood transfusion event. The findings from this study help to identify areas of weaknesses and highlight the needs to devise educational and training policies for improvements.

Developing high-quality and safe blood transfusion services can be achieved through collaboration, developing multidisciplinary strategies, and implementing standards based on evidence-based practice. The knowledge and skills of health care professionals are fundamental to developing and strengthening the quality of blood transfusion procedures. A lack of knowledge by health care professionals may lead to an increased risk of mortality and morbidity associated with blood transfusion. For the safety and quality of blood components and transfusion, determining health care professionals' knowledge is necessary for developing educational programs (Hajji et al ., 2012).

1.3 Statement of The Problem:

Measurement knowledge of Blood Transfusion among Nursing in Al-Diwanyah.

1.4 Objective of The Study:

1. To assess the nurse's knowledge about blood transfusion.
2. Find out association between nurse's knowledge and their demographic characteristics.

1.5 Definition of The Study

1.5.1 Knowledge:

a. Theoretical Definition:

Its familiarity or awareness, such as facts, skills, or objects that contributes to one understands. When discussing knowledge, it is important to note that it can refer to both theoretical and practical understanding. As a theoretical understanding of a formal or informal; systematic or specific; systematic or particular (Oxford dictionary, 2010).

b. The Operational Definition:

Measuring the extent of nurse's knowledge about the transfusion of blood.

1.5.2 Nurses:

a. Theoretical Definition:

Nurses are one member of the health-care team, and their services are extremely active in supporting physical and mental health. They also play an important role in educating patients, families, and communities (Askari-Majdabadi, 2020).

b. The Operational Definition:

The nurses have direct contact with patients who are need blood transfusion.

1.5.3 Blood:

a. Theoretical Definition:

Blood is a constantly circulating fluid providing the body with nutrition, oxygen, and waste removal. Blood is mostly liquid, with numerous cells and proteins suspended in it, making blood "thicker" than pure water (Carol Dersakissian, 2021).

b. The Operational Definition:

It is a fluid in the human body that transports essential substances such as nutrients and oxygen to cells and transports metabolic waste products such as carbon dioxide.

1.5.4 Transfusion:

a. Theoretical Definition:

Transfusion is a routine medical procedure in which donated blood is provided to you through a narrow tube placed within a vein in your arm (Oxford dictionary, 2010).

b. The Operational Definition:

Blood transfusions work to replace blood that is lost due to injury or surgery. People can also get blood transfusions to treat certain medical conditions.

1.5.5 Hospital:

a. Theoretical Definition:

Hospital is a place for the diagnosis and treatment of human ills and restoration of health and well-beings of those temporarily deprived of these (Oxford dictionary, 2010).

b. The Operational Definition:

Is a health care institution that provides treatment to patients with specialized medical and nursing staff and medical equipment.

Chapter two

Review Of Literature

2.1 General

This chapter provides overview based on established knowledge and research done previously on the related fields. The topics covered include blood transfusion service and its safety, the responsibilities of nurses in blood administration and approaches in assessing the knowledge level.

2.2 Overview of Blood Transfusion

Blood transfusion remains as an important therapeutic and life-saving approach in managing anemic, traumatized, or major hemorrhagic resuscitation cases (Shander et al. 2013). The goal of blood transfusion service is to provide appropriate, safe and sufficient blood products to the patient's in-need (World Health Organization 2015). Since its establishment on the early twentieth century, blood transfusion has been one of the most common procedures done to hospitalized individuals, where Blood or its constituents are infused to the individuals through intravenous administration (Aulbach 2013). The transfusion of blood products is essential in restoring the body oxygen transport capacity or replenishing loss or depleting components of blood (Singer et al. 2015). However, blood transfusion does possess certain risks to the recipients, including transmissions of transfusion transmitted infections (TTIs), acute or delayed transfusion reactions, alloimmunisation and immunomodulation (Clevenger & Kelleher 2013). Extensive research and efforts had been done to prevent these undesired events. Nonetheless, errors in blood transfusion can lead to severe morbidity or even mortality to the recipients (Norfolk 2013). Statistics showed that most transfusion errors are due to human factors, which are preventable through trainings and revision of transfusion protocols (Holmberg 2015). Hence, healthcare workers who play a part in blood

transfusion service must always be competent and cautious to provide not harm, but safe and beneficial transfusion therapy to the patients.

2.3 Definition of Blood

The blood is the main transport system in the body. It carries raw materials and finished products from where they originate to where they are used and transports waste products to disposal sites. Some of the contents of the blood are traveling to a specific destination. For example, sugar (glucose) may be going from the liver to muscle to provide a source of energy for movement; coagulation factors may be carried from the liver to a cut blood vessel to ensure clotting. Integral parts of the blood are the red cells, different types of white cells and platelets. Red cells and platelets perform their functions and spend their mature existence entirely within the blood .The blood accounts for about 7 percent of the body weight of a normal adult. This means that a 154-pound person (70-kilogram) has about 10 pints (5 liters) of blood. Smaller adults and children have proportionately smaller blood volumes (Fang et al, .2004).

Blood is composed of plasma and cells suspended in plasma (red cells, platelets and white cells [neutrophils, monocytes, eosinophil's, basophils and lymphocytes]). Plasma is largely made up of water in which many chemicals are dissolved. These chemicals include:

- Proteins
 - Albumin, the most common protein in blood.
 - Blood-clotting proteins, made by the liver.
 - Erythropoietin, a protein made by the kidneys that stimulates red cell Production.

- Immunoglobulin's, antibodies made by plasma cells in response to infections including those we develop from our vaccinations (such as poliovirus Antibodies, which are made by normal plasma cells in the bone marrow).
- Hormones (such as thyroid hormone and cortisol)
- Minerals (such as iron and magnesium)
- Vitamins (such as floate and vitamin B12)
- Electrolytes (such as calcium, potassium and sodium).

2.3.1 Red Blood Cells

The red cells make up a little less than half the volume of the blood. They are specialized cells that are composed of a disc-like envelope that contains the red-colored protein hemoglobin, which gives the blood its characteristic color. Hemoglobin picks up oxygen in the lungs and delivers it to the cells all around the body, and then picks up carbon dioxide from the body's cells and delivers it back to the lungs, where it is removed when we exhale. The normal red cell lives for 120 days in circulation, and so about 1 percent of the body's red cells (about half an ounce) must be replaced by the bone marrow each day. The red cell membrane is composed of protein, fats and carbohydrate molecules that are associated with the various blood groups. The ABO blood group (the four principal types are A, B, AB, and O) was described in 1900 and the Rh blood group in 1945. Transfused red cells should match the patient's ABO and Rh blood groups. Many other blood group antigens (foreign substances that stimulate an immune response in the body) have since been described. However, these are not usually matched for transfusion unless the patient has developed antibodies to these antigens as a result of previous pregnancies or blood transfusions (Spinelli et al, .2007).

2.3.2 White Blood Cells

The white cells include neutrophils, eosinophil, basophils, monocytes and lymphocytes. Neutrophils and monocytes are called “phagocytes” (eating cells) because they can ingest bacteria or fungi and kill them. Unlike the red cells and platelets, the monocytes can leave the blood and enter the tissue, where they can attack the invading organisms and help combat infection. The neutrophils survive for short periods, less than a day or two, and thus must be replaced quickly by new cells delivered from the marrow. Eosinophil and basophils are white cells that participate in allergic reactions. Lymphocytes are a key part of the immune system. There are three major types of lymphocytes: T lymphocytes (T cells), B lymphocytes (B cells) and natural killer (NK) cells. They make up a complex immune system that responds to foreign organisms and helps fight cancer. Most of the lymphocytes are found in the lymph nodes, the spleen, a few other lymphatic organs and the lymphatic channels, but some enter the blood. They move from one lymphatic organ to another by means of the lymphatic channels and the circulation. About one billion new lymphocytes are made each day (Spinelli et al, .2007).

2.3.3 Platelets

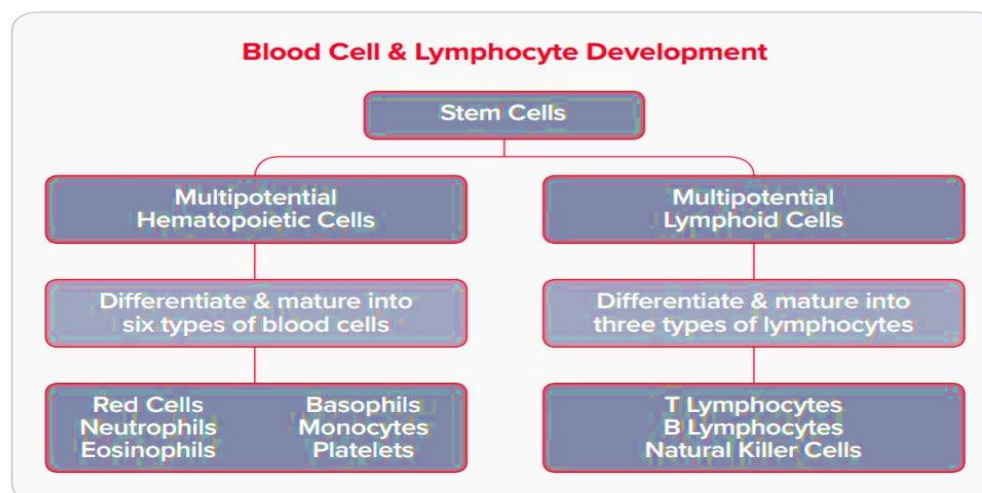
The platelets are small cells (one-tenth the size of red cells) that help stop bleeding at the site of an injury. They are present in high concentration in the blood and circulate for only about 10 days. That means that 10 percent of them are replaced each day to maintain the platelet count at normal levels. Platelets function in two ways. When a person has a cut, the vessels that carry blood are torn open. Platelets stick to the torn surface of the vessel, clump together and plug up the bleeding site with the help of blood-clotting proteins such as fibrin and electrolytes such as calcium. Later, a firm clot forms. The

vessel wall then heals at the site of the clot and returns to its normal state. The second function of platelets is to provide a surface that promotes blood clotting. Recent research suggests that platelets are an important part of the immune system and contribute to inflammation and blood clotting (The national blood collection, 2011).

2.3.4 Plasma

The plasma is the liquid portion of blood in which blood cells are suspended. It is composed primarily of water, in which many chemicals and gases are dissolved. In addition, there are minerals, carbohydrates, fats, vitamins, hormones and enzymes. Plasma contains coagulation factors and gamma globulin, which contains antibodies. Coagulation factors can be removed from plasma and manufactured into concentrated products to treat patients with coagulation factor deficiencies, such as hemophilia. Gamma globulin can also be concentrated from plasma and is used to help people who lack the immunoglobulin that fight infection (The national blood collection, 2011).

Figure 2.1: Stem cells develop into blood cells (hematopoiesis) and lymphocytic cells.



2.3.5 Bone Marrow

Marrow is a spongy tissue where blood cell development takes place. It occupies the central cavity of bones. In newborns, all bones have active marrow. By the time a person reaches young adulthood, the bones of the hands, feet, arms and legs no longer have functioning marrow. The spine (vertebrae), hip and shoulder bones, ribs, breastbone and skull contain the marrow that makes blood cells in adults. The process of blood cell formation is called “hematopoiesis.” A small group of cells, the stem cells, develop into all the blood cells in the marrow by the process of differentiation (Fang et al, .2004).

2.4 Administration of Blood and Blood Transfusion

Administration of blood and blood products is complex process which must be performed by trained and competent personnel (Hajji et al, .2012). Described administration of blood products as five phasic procedures, as stated below:

- Decision to transfuse
- Patient preparation before collecting blood units from storage site
- Blood bag collection
- Pre-transfusion activities
- Post-transfusion activities and monitoring

While decisions to transfuse are determined by physicians, the latter phases are controlled by the operators, nursing staffs (Hajji et al. 2012). All phases need to be monitored and safeguarded by multiple parties to ensure the efficacy and efficiency in transfusion. Safe blood administration must be accompanied by proper documentation of related tasks, especially on reasons,

time or durations and operators to ensure traceability and facilitate loopback procedure (Norfolk, 2013).

2.4.1 Decision to Transfuse

Based on clinical judgments, medical practitioners will have to weigh risks and benefits and decide whether or not to give a patient blood transfusion therapy (Ayob et al. 2008). A series of guidelines have been published regarding indications for transfusion of blood and blood products. However, the adherence and compliance to these guidelines are still heavily dependent on the clinicians' practice and attitudes. All decisions must be backed up with appropriate evidence and justification. Liberal and unnecessary transfusion should be avoided as allogeneic bloods possess great risks that may do more harms than goods to the patients. Other alternatives should be considered to replace or avoid the use of transfusion, such as saline colloid replacement, good surgical or anesthetic management and well-planned surgery (Wood et al. 2011). If transfusion is unavoidable, the reason of transfusion must be clearly recorded (Ayob et al. 2008).

Blood products requests must be duly filled in with the necessary information, including patients' details, diagnosis, indications for transfusion, previous history which are relevant to blood transfusion such as pregnancy, transfusion reactions, types of blood components needed and urgency of request (Norfolk 2013). If there are any special requirements such as irradiation, leukoreduction, it must be clearly stated down as well (Norfolk 2013). Medical practitioners must provide patients with proper information for them to make decision whether to accept blood transfusion. Patients must be briefed about the goal of therapy, procedures, possible risks and alternatives to

the transfusion therapy (McClelland 2007). An informed consent must always be obtained from the patient before commencing the transfusion (Ayob et al. 2008).

2.4.2 Patient Preparation before Collecting Blood Units from Storage Site

Upon the prescription of blood transfusion by clinicians, a pre-transfusion blood sample must be obtained for blood grouping and compatibility testing. Nurses or medical doctors are responsible to undertake this task. Positive patient identification is the critical point in this step. A patient must be correctly identified by asking them to state their name, address or date of birth. This will then be counterchecked with the identification wristbands which patients' wear. If the patient is unconscious, the relatives may help to identify the patient. After bleeding the patient, operators need to label the blood at patient's bedside. This is to ensure right blood is in the right tube. Labels on blood tube should be handwritten and must contain patient's name, identity card number or hospital registration number, operator's initials and sampling time and date (Ayob et al. 2008). Pre-printed label is not recommended to be used as these increases the risks of errors (Ayob et al. 2008). This sample can then be sent to transfusion medicine laboratory or blood bank for testing. Pre-transfusion sampling is one of the commonest steps where errors occur and causes fatal blood transfusion reactions (Bolton-Maggs, 2013). Errors occur when operator fails to identify the correct patient for sampling or wrongly labels the sample (Bolton-Maggs 2013). Thus, operators are advisable to focus and handle one patient at one time to prevent mixing up the samples (McClelland 2007). Often, these human errors are preventable by implementation of better workflow instructions and trainings.

2.4.3 Blood Bag Collection

Blood units which are prepared and readily available for transfusion are stored at blood bank before they are issued to individual wards. The storage temperature must be monitored from time to time to maintain the viability of blood components (Ayob et al. 2008). Collection of blood units from the storage site imposes another high risk area for mistakes to occur. Wrong blood unit collection occurs when the staff fails to check the labels attached to blood units against the identification details (Harris et al. 2012).

To collect blood products from storage site, nursing staffs must bring along proper documents to prove patient's identity (Harris et al. 2012). These details must be checked against the labels on the blood bag. Besides that, nurses must also check on both patient's and donor's ABO and Rh blood group as well as the compatibility results. This is to ensure that compatibility blood is given to the right patient. Hence, nursing staffs should equip themselves with adequate knowledge in basic blood group system. Furthermore, the blood units should also be checked for any signs of leakage, less, contamination or unusual appearance which indicates the impaired quality of the products (Ayob et al. 2008). Upon issuing blood products out of storage site, the date, time and involved personnel must be properly recorded. After collection, blood units must be immediately transported back to the site of transfusion. The blood products must be kept at appropriate temperature during transportation to preserve their quality. Only validated blood transport box can be used to transport blood units (Harris et al. 2012). To transport whole blood, packed red blood cells and plasma products, blood box must be added with ice packs to maintain the cold chain (Ayob et al. 2008). However, the ice packs must not be in direct contact with the blood bag as this may lead to hemolysis of cellular

components (Norfolk 2013). Platelets must not be transported with ice because cold temperature will inactivate the clotting ability of platelets (Norfolk, 2013). Any violation to the storage conditions may impair the quality of blood products and render the transfusion ineffective.

2.4.4 Pre-Transfusion Activities

Before initiating transfusion, nurses must prepare patient for transfusion therapy.

Patient must be well informed and psychologically prepared for the therapy he is about to receive (Hurrell 2014). Nurses must ensure that patent intravenous access is available and obtain the baseline vitals (pulse, temperature, blood pressure, respiratory rate) prior to obtaining blood units from storage site, to avoid any delay that would compromise the quality of blood products (Hurrell 2014; Ayob et al. 2008). If patient is medically unfit to receive blood, transfusion must be halted and blood units must remain kept at its storage site.

After blood unit reaches the ward, transfusion must be commenced immediately or at most 30 minutes after blood unit is removed from controlled temperature storage (McClelland 2007). A final blood checking step must always be done at the patient's bedside, despite the cases that patient is actively bleeding, unconscious, after-hours transfusions, or nurses know the patient well. Before starting the blood transfusion, final bedside checking must be done by trained and competent staff who will administer the blood products, together with other trained personnel, either nurses or medical practitioners as a counter-checker (Hurrell 2014). This serve as the final defense to ensure right blood is transfused into the right patient. Should there is any discrepancy between

patient's identity wristband, blood request form and blood unit labels, nursing staff must inform blood bank immediately and transfusion must not be commenced until the discrepancy has been resolved (Ayob et al. 2008).

Blood warming is the procedure of warming the blood units, specifically whole blood or packed red blood cells, to achieve temperature closer to human body before transfuse to patient (Harris et al. 2012). This is to prevent hypothermia and cardiac complications (Harris et al. 2012; Ayob et al. 2008). Blood warming is not done for routine blood transfusion practice. It is only recommended for rapid transfusion of large volume of blood, neonatal transfusion and patients having cold antibodies. Blood warming procedure must be done with calibrated blood warmer machine and shall not exceed 42°C as higher temperature will cause lysis to the red cell membrane (Maynard 2014). In addition, warming plasma products and platelets had shown to be neither beneficial nor harmful to the patients (Harris et al. 2012).

Before initiating a transfusion, there must be clinical staffs available to monitor patient's condition over the entire transfusion episode (McClelland 2007). Hence, as there are limited staffs working at night shift, transfusion after working hours is inadvisable and can only be performed if deemed crucial to patient's survival or health. Infusion of blood products must be done through a blood administration set incorporated with an aggregate filter of 170µm to 200µm (Wood et al. 2011). Micro aggregate filter with size of 20 - 40 µm can trap deteriorating platelets, fibrins or small clots of erythrocytes but it is not routinely used (Ayob et al. 2008). It is only indicated for patients undergoing cardio-pulmonary bypass or those with pulmonary abnormalities receiving massive transfusion (Ayob et al. 2008). Platelet transfusion must never share the same blood administration set that was previously used for with red blood

cells products (McClelland 2007). New administration set must be used. Besides that, blood administration set must be changed at every 12 hours to reduce the possibility of bacterial colonization on the set (Wood et al. 2011). In severe hemorrhagic cases, two intravenous accesses might be needed to administer two different blood products simultaneously.

During transfusion, no solution other than saline can be infused together with blood products (Cliffe & Bond 2014). Normal saline is usually used to improve flow rate of packed red blood cells and maintain intravenous access until the transfusion of next blood unit (Wood et al. 2011). Other solution or medications should not be administered through the same giving set as it may impair the quality of blood products. As an example, calcium-containing fluids such as Ringer's lactate will chelate the citrate anti-coagulant, diminishing its function and cause blood clots formation (Norfolk 2013). Hypotonic solution such as 5% dextrose wills hemolysis red blood cells (Norfolk 2013). Furthermore, if patient develops any undesirable response, it is hard to tell whether the culprit is the blood unit or medication (Harris et al. 2012). Medications should only be given beforehand or after completion of transfusion (Norfolk 2013). If simultaneous administration is deemed necessary, two separate intravenous accesses should be used for each product (Norfolk 2013).

Transfusion of red cells components must be completed within four hours whereas platelet transfusion is to be completed within 30 minutes (Ayob et al. 2008). For plasma products, transfusion must be commenced shortly after thawing, at the infusion rate bearable by the patient (Ayob et al. 2008). Extending the transfusion duration beyond the recommended time subjects' patients to increased risk of getting sepsis (Wood et al. 2011).

Nurses must clearly note down the time of commencing transfusion, patient's vitals and conditions. This information ensures traceability and makes great help to the investigation especially when patients develop undesired symptoms or reactions during blood transfusion. Patients must also be reminded to inform nursing staffs immediately if they feel uneasy or have any reaction.

2.4.5 Post-Transfusion Activities and Monitoring

Patient must be monitored from time to time for any undesired event. After initiating transfusion, nursing staffs must closely observe the patient for the first 5 - 10 minutes, as stated in the local policies (Ayob et al. 2008). Serious Hazards of Transfusion (SHOT) reported that more than 60 percent of transfusion reactions happened at the first 30 minutes of transfusion (Wood et al. 2011). Hence, the first 30 minutes is deemed critical for transfusion event. Besides that, first 50ml blood must be transfused slowly for us to examine how the patient's body responds to the blood product (Ayob et al. 2008). If the blood product is incompatible, the patient will develop acute transfusion reactions and nursing staffs can take immediate actions to minimize the damage to patients.

Vitals signs (body temperature, cardiac rate, respiratory rate and blood pressure) must be taken at the first 5 to 10 minutes, 30 minutes and subsequent hours and after ending of transfusion (Ayob et al. 2008). For unconscious patients, the assessments need to be done every 15 minutes. These data are compared to the baselines taken before the transfusion. Should there's any significant changes to the readings, appropriate intervention must be taken and transfusion may be halted (McClelland 2007).

Nurses must also be well trained to recognize different transfusion reactions. Common acute symptoms reported are fever with increment more than 1°C, urticarial, tachycardia, hypotension or hypertension, breathlessness, anxious and pain (at infusion site, back or chest) (Wood et al. 2011). Once these symptoms are detected within the transfusion episode, the very first action is to stop the transfusion and flush the intravenous access with 0.9% saline (McClelland 2007). Nurses must then inform any doctors nearby and treating physicians to attend the patient instantly and appropriate resuscitation steps must be taken as needed (Norfolk 2013; Harris et al. 2012). Meanwhile, nursing staffs must perform clerical check for patient's identity against the blood units to rule out wrong blood transfusion (Norfolk 2013). With professional judgment by the clinicians, transfusion may be resumed if the symptoms were mild. If a patient is suspected to develop moderate to severe symptoms, transfusion must be stopped and investigation of adverse transfusion reactions must be initiated by clinicians (McClelland 2007). Blood and urine samples must be collected according to hospital protocols. Together with a filled transfusion reaction report form, samples and blood units are sent to the transfusion medicine laboratory for testing (Ayob et al. 2008).

If transfusion is completed without any adverse symptoms detected, nurses must take a last measure of the patient's vitals (Harris et al. 2012). They can then change or remove the administration sets as required. Upon completion of transfusion event, the total volume transfused must be recorded and the blood tag attached must be duly filled up (McClelland 2007). The empty blood bag and filled blood tag must then be sent back to hospital blood bank without much delay (Ayob et al. 2008). Patients must be briefed to watch

out for acute or delayed transfusion reactions that occur within or after 24-hours post-transfusion (Harris et al. 2012).

As for the issues related to blood transfusion procedures only, the researcher noted the existence of written policies for managing blood in the wards designated for blood transfusion (the researcher).

2.5 Previous Studies

In 2009, Reza et al. reported that high proportion of the healthcare workers showed low to moderate knowledge score in a descriptive study at the Zabol, Iran. This study tested 122 subjects for their knowledge on pre-transfusion, tests associated with transfusion, during transfusion and adverse events, three quarters of which were nurses (Reza et al. 2009). With approximately half of the participants (48%) had poor performance, this inflicted a high possibility of unsafe blood transfusion practice (Reza et al. 2009). The data showed no correlation with socio-professional characteristics such as age, gender, transfusion workload per day, years of service and training provided (Reza et al. 2009). Although in this study they failed to show validity and reliability of the designed interview questions, it drew our attention to yet other important risk factors in transfusion safety, the operator's issue.

A descriptive study was done by Hijji et al. (2010) which observed the nurses' practice from blood bag collection, pre-transfusion to post-transfusion phase. This observational study reported that the performance of 75% of the subjects (37 out of 49 nurses) achieved less than 50% out of the total score of 29 points (Hijji et al. 2010). These findings implied poor and unsafe blood transfusion practice that might result in harmful outcomes to the patients. Poor

practice might be attributed to lack of scientific knowledge and personal factors such as ignorance.

A cross sectional study at northern India by Dubey et al. (2013) evaluated the knowledge of nurses and laboratory staffs in their tasks in relation to blood administration and blood products processing, respectively (Dubey et al. 2013). This study reported averagely poor knowledge among the nurses, with the mean score of 17.34 out of 30 points (Dubey et al. 2013). There were significant statistical differences in performances between nurses who based in major medical centers and those of district areas, as well as those who received training in related fields and those who did not (Dubey et al. 2013). This was attributed to the lack of specialized training and regular audits done to assess the staffs' competencies.

A more recent study in Brazil, by Tavares et al. (2015) was conducted in a public teaching hospital in Uberaba City, State of Minas Gerais. With questionnaire developed by local public health authorities, the authors conducted survey among 209 nursing professionals, consisting of nursing technicians (70%), nursing assistants (16%) and nurses (14%) (Tavares et al. 2015). Nursing technicians are pre-registered or student nurses who perform basic patient care under supervision of registered nurses. Similar to other studies, this study reported poor knowledge among nursing staffs with overall mean score of 53%, ranging from 17 to 74% (Tavares et al. 2015). In addition, they identified significant difference of overall score with previous training and profession (Tavares et al. 2015).

Chapter Three

Methology

3.1 General

This chapter deals with the presentation of the study design, administrative arrangements, setting of the study, a sample of the study, instrument construction, methods of data collection, and data analysis.

3.2 The Design of the Study:

A quantitative descriptive study design has been carried out. The period of the study started from (December 5th 2022 to March 1th 2023).

3.3 Administrative Arrangements:

The official permissions were obtained from Al-Diwaniyah Teaching Hospital in order to ensure the agreement and cooperation (Appendix B).

3.4 The Setting of the Study:

The study was conducted in Al-Diwaniyah Teaching Hospital and Genetic Tumor Center (Thalassemia) in Al-Diwaniyah Governorate.

3.5 Sampling of the Study:

A convenient sample or accidental sampling (non-probability) of (100) subject, was selected for the purpose of the study.

3.6 Study instrument:

A questionnaire has consisted of the following:

Part I: This part includes (7) items of general information about socio-demographic characteristics of the study group, which include the following variables (type of hospital, age, gender, level of education, years of experience, transfusion time, training course).

Part II: Issues Relating to Patient Preparation.

Part III: Blood Pack Collection.

Part IV: Pre-Transfusion Initiation Nursing Activities.

Part V: Post Transfusion Initiation Nursing Activities and Issues.

Part VI: Complications Related to Blood Transfusion. (Appendix).

3.7 Validity of the Questionnaire:

Facial viability was determined by assessing complications selection questions through a panel of (5) experts (appendix a), who have more than 10 years of professional experience in their fields of investigation content of multiple choice questions about pain management. these number of experts (4) from faculty members at the faculty of nursing / university al-Qadyisiyah and (1) an expert from the center for genetic diseases (thalassemia). These experts were provided with a copy of the study tool (multiple choice questions for the study) were request a review and evaluation of the tools for the clarity of their content and capacity. Changes and modifications have been made in connection with expert suggestions and recommendations. Some items have been excluded, and others were added after all comments and recommendations were taken in consideration.

3.8 Pilot Study:

To determine the reliability of the study instrument, a pilot study It was conducted on (Ten) nurses working in the Thalassemia Center during Morning shift at random. The sample of the experimental study is excluded from the original Sample of the study because the center could not be emptied of its staff because the critical nature of the patients required it Continuous follow-up. The pilot study was conducted during this period from 15th to 25th

December 2022. The five participating nurses were shown to be tested and re-test.

3.8.1. The Purpose of the Pilot Study:

The purposes of the pilot study are:

1. To find out the reliability of the study instrument.
2. To determine the time required to fill the multiple-choice questions.
3. To find out whether the contents of the questionnaire are clear and understandable by the participants of the study.

3.9 Reliability of the Questionnaire:

The validity of the questionnaire was determined through a test A retest approach was obtained by evaluating (Ten) nurses Work in the center of thalassemia and the interval It was two weeks to determine the reliability of the study instrument. The reliability score shows that the person correlation coefficient is ($r = 0.85$) which is a statistically acceptable match for the minimum reliability coefficient. This means that the results collected from the pilot study showed that the questions were clear and understandable and it was time to fill out the questionnaire (20-30) minutes.

Table 3.1: study questionnaire reliability

Reliability examination technique	Accepted value	Actual value $r =$	Assessment
Stability (test –retest)	0.71	0.85	pass

Table (3.1) shows that there is a high degree of reliability (0.85) which means that the study instrument is reliable in measuring the study phenomenon at any time in the future.

3.10 Data Collection:

The study data collection started was conducted from 10th to 25th December 2022. Participants were asked to complete the questionnaire by themselves or with the help of trained study staff if they had difficulty with reading or writing.

3.11 Statistical Data Collection:

The data were analyzed using Statistical Package for Social Sciences (SPSS) version 25 application of statistical analysis system. The following statistical data analysis approaches were used for analyzing and evaluating the results of the study:

3.11.1. Descriptive Data Analysis:

- a- Tables (Frequencies, Percentages, and Mean of scores).
- b- Statistical figure (Bar Charts).
- c- Pearson's Correlation Coefficients to determine the reliability of the study.

$$r = \frac{n\sum XY - (\sum X)(\sum Y)}{\sqrt{(\{n \sum x^2 - (\sum x)^2\} \{n \sum y^2 - (\sum y)^2\})}}$$

r= correlation coefficient of the variables x & y.

n= number of cases.

x = individual's score of variable X.

y = individual's score of variable Y.

Σ = summation of.

3.11.2. Inferential Data Analysis:

Analysis of variance (chi square) to determine the association between the nurses' knowledge and some demographic characteristics.

Chapter four

Result

General

This chapter presents the findings of the data analysis systematically in tables as they correspond with the objectives of the study as follows:

Part I: Demographic Characteristic:

The questionnaires were distributed to 100 nurses in Diwaniyah hospitals, with a response rate of 100%. The demographic characteristics of the nurses are listed in Table No. (1).

Table 4.1: Important Comparisons between Age, Gender, Level of Education, years of experience, transfusion time, training course:

Demographic characteristic		Frequency	Percentage (%)
Age	20-25	63	63
	26-30	30	30
	31-35	6	6
	36-40	1	1
	Total	100	100
Gender	Male	50	50
	Female	50	50
	Total	100	100
Level of education	Diploma in nursing	58	58
	Bachelor in nursing	25	25
	Diploma in midwifery	11	11
	Master degree	6	6
years of	1-5	92	92

experience	6-10	7	7
	16-20	1	1
	Total	100	100
No. Of Blood Transfusion	1-5	48	48
	6-10	17	17
	11-15	6	6
	16-20	29	29
	Total	100	100
Training course	Yes	20	20
	No	80	80
	Total	100	100

Table 4.1 shows the demographic comparisons of the participants. We note through the participants in the questionnaire that the age of people among those aged between (20-25), the highest percentage was (63%). The lowest was between (36-40) with a rate of (1%), and we note that females were (50%) and males (50%). We too Note that many of them, in terms of educational level, are Diploma in Nursing were the highest the degree (58%) was the lowest percentage for those who obtained a master's degree. The scientific degree is (6%). We also note that in the years of service, (1-5) have the highest degree (92%) and the lowest was (16-20), where the lowest degree was (1%). The same is the case with the courses. We find that 80% of the people did not participate in any courses, and 20% did.

Part II: Nurse Knowledge About Issues Relating To Patient Preparation:

Table 4.2: nurse knowledge about Issues Relating to Patient Preparation:

No.	Items	Response	Frequency	Percent %	Mean	St. Deviation
1	The nurse assigned to a patient in need for a blood transfusion should check the availability and patency of an intravenous access line after bringing the blood to the ward.	Uncorrected	19	19.0	1.81	.394
		Correct	81	81.0		
		Total	100	100.0		
2	Blood collection from blood bank should take place before the administration of any prescribed pre-medication(s).	Uncorrected	36	36.0	1.64	.482
		Correct	64	64.0		
		Total	100	100.0		
3	On what issues should the patient be informed before each blood transfusion	Uncorrected	19	19.0	1.81	.394
		Correct	81	81.0		

	episode?	Total	100	100.0		
4	When should the baseline vital signs be recorded before initiating the blood transfusion?	Uncorrec ted	58	58.0	1.42	.496
		Correct	42	42.0		
		Total	100	100.0		

Issues Relating to Patient Preparation

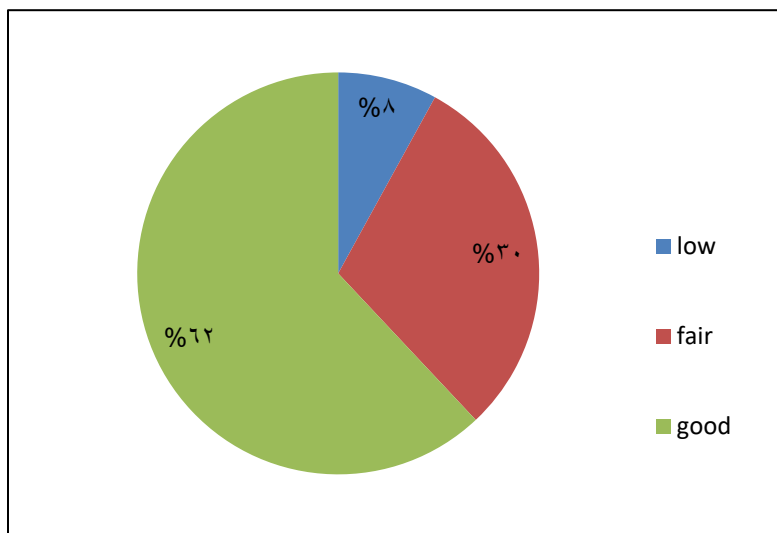


Figure 1: Nurse Knowledge About Issues Relating to Patient Preparation.

Through the responses to the questionnaire, it was found that the highest percentage of the extent of the "correct" paragraph, to the question (The nurse assigned to a patient in need for a blood transfusion should check the availability and patency of an intravenous access line after bringing the blood to the ward & On what issues should the patient be informed before each blood

transfusion episode?) was 81.0%, while the lowest percentage for "correct" was 42.0%, which was related to (When should the baseline vital signs be recorded before initiating the blood transfusion?). As for the "uncorrected" paragraph, the highest percentage was related to (When should the baseline vital signs be recorded before initiating the blood transfusion?) It was 58.0%, while the lowest percentage for "uncorrected" was 19.0%, which was related to (The nurse assigned to a patient in need for a blood transfusion should check the availability and patency of an intravenous access line after bringing the blood to the ward & on what issues should the patient be informed before each blood transfusion episode).

Part III: Nurse Knowledge About Blood Pack Collection:

Table 4.3: Nurse Knowledge About Blood Pack Collection:

No.	Items	Response	Frequency	Percent %	Mean	St. Deviation
1	What information should a nurse have to ensure collecting the right blood for the right patient provided that the nurse has the patient's full name, date of birth and hospital number?	Uncorrected	43	43.0	1.57	.498
		Correct	57	57.0		
		Total	100	100.0		
2	Which method should the nurse use to transport blood from blood bank to ward?	Uncorrected	58	58.0	1.42	.496
		Correct	42	42.0		
		Total	100	100.0		

3	When collecting a unit of blood from blood bank for a patient whose blood group is A positive, the nurse noted that the unit is A negative. IF THE COLLECTED BLOOD IS COMPATIBLE WITH THE PATIENT BLOOD, what action should the nurse take FIRST?	uncorrected	84	84.0	1.16	.368
		Correct	16	16.0		
		Total	100	100.0		

Blood Pack Collection

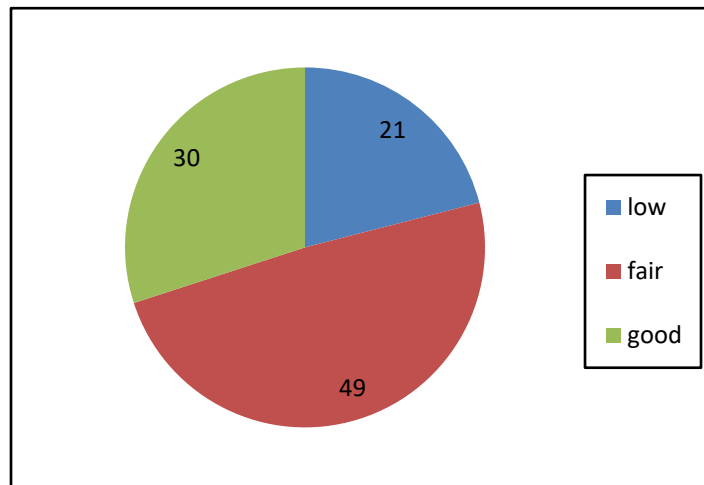


Figure 2: Nurse Knowledge About Blood Pack Collection

Through the responses to the questionnaire, it was found that the highest percentage of the extent of the "correct" paragraph, to the question (What information should a nurse have to ensure collecting the right blood for the right patient provided that the nurse has the patient's full name, date of birth and hospital number?) was 57.0%, while the lowest percentage for "correct" was 16.0%, which was related to (When collecting a unit of blood from blood bank for a patient whose blood group is A positive, the nurse noted that the unit

is A negative. If the collected blood is compatible with the patient blood, what action should the nurse takes first?).As for the "uncorrected" paragraph, the highest percentage was related to (When collecting a unit of blood from blood bank for a patient whose blood group is A positive, the nurse noted that the unit is A negative. If the collected blood is compatible with the patient blood, what action should the nurse takes first?) It was 84.0%, while the lowest percentage for "uncorrected" was 43.0%, which was related to (What information should a nurse have to ensure collecting the right blood for the right patient provided that the nurse has the patient's full name, date of birth and hospital number?).

Part IV: nurse knowledge about Pre-Transfusion Initiation Nursing Activities:

Table 4.4: nurse knowledge about Pre-Transfusion Initiation Nursing Activities:

No.	Items	Response	Frequency	Percent %	Mean	Std.Deviation
1	On the ward after obtaining the blood pack but before starting the transfusion, what is the most important nursing action that the nurse must do with regards to patient?	uncorrected	88	88.0	1.12	.327
		Correct	12	12.0		
		Total	100	100.0		
2	When is blood warming prior to administration clinically indicated?	uncorrected	39	39.0	1.61	.490
		Correct	61	61.0		
		Total	100	100.0		

3	A unit of blood was delivered to the ward at 4.00 PM. What is the best time by which the transfusion should start?	uncorrected	53	53.0	1.47	.502
		Correct	47	47.0		
		Total	100	100.0		
4	In the ward after obtaining a blood bag, how would you handle the blood?	uncorrected	77	77.0	1.23	.423
		Correct	23	23.0		
		Total	100	100.0		
5	Select THREE most important steps that a nurse has to follow in order to properly identify the right patient prior to initiating the transfusion?	uncorrected	25	25.0	1.75	.435
		Correct	75	75.0		
		Total	100	100.0		
6	What is the suitable filter size of blood transfusion set?	uncorrected	56	56.0	1.44	.499
		Correct	44	44.0		
		Total	100	100.0		

Pre-Transfusion Initiation Nursing Activities

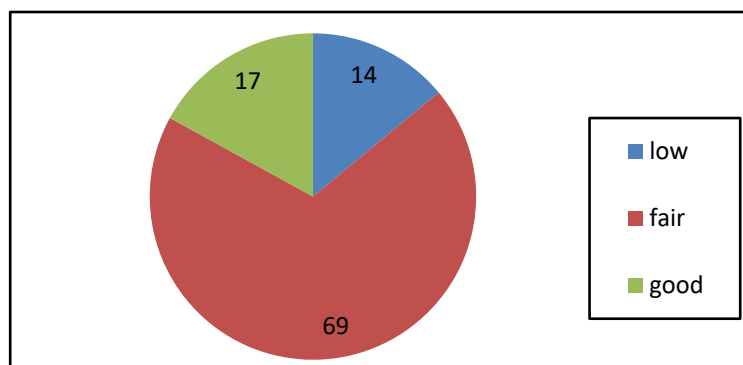


Figure 3: Nurse Knowledge About Pre-Transfusion Initiation Nursing Activities.

Through the responses to the questionnaire, it was found that the highest percentage of the extent of the "correct" paragraph, to the question (Select THREE most important steps that a nurse has to follow in order to properly identify the right patient prior to initiating the transfusion?) was 75.0%, while the lowest percentage for "correct" was 12.0%, which was related to (On the ward after obtaining the blood pack but before starting the transfusion, what is the most important nursing action that the nurse must do with regards to patient?) As for the "uncorrected" paragraph, the highest percentage was related to (On the ward after obtaining the blood pack but before starting the transfusion, what is the most important nursing action that the nurse must do with regards to patient?) It was 88.0%, while the lowest percentage for "uncorrected" was 25.0%, which was related to (Select THREE most important steps that a nurse has to follow in order to properly identify the right patient prior to initiating the transfusion?).

Part V: Nurse Knowledge About Post Transfusion Initiation Nursing Activities and Issues:

Table 4.5: nurse knowledge about Post Transfusion Initiation Nursing Activities and Issues:

No.	Items	Response	Frequency	Percent %	Mean	St. Deviation
1	Select THREE ROUTINE nursing activities a nurse has to perform just after starting the blood transfusion until it	uncorrected	29	29.0	1.71	.456
		Correct	71	71.0		
		Total	100	100.0		

	ends?					
2	What may happen to a patient if rapid administration of cold blood is performed through a central venous route terminating in or near the right atrium?	uncorrected	69	69.0	1.31	.465
		Correct	31	31.0		
		Total	100	100.0		
3	The doctor has prescribed a unit of blood to an adult patient. At what rate would you start this transfusion?	uncorrected	71	71.0	1.29	.456
		Correct	29	29.0		
		Total	100	100.0		
4	In your ward, how do you regulate blood flow rate?	uncorrected	58	58.0	1.42	.496
		Correct	42	42.0		
		Total	100	100.0		
5	For continuous multiple blood transfusions, what is the maximum duration each blood administration set could be used?	uncorrected	66	66.0	1.34	.476
		Correct	34	34.0		
		Total	100	100.0		
6	Slow blood transfusion should be considered for which of the following patients?	uncorrected	21	21.0	1.79	.409
		Correct	79	79.0		
		Total	100	100.0		
7	Specify which of the following solutions/agents could be safely mixed with transfusion of	uncorrected	16	16.0	1.84	.368
		Correct	84	84.0		
		Total	100	100.0		

	blood?					
8	When and for how long it is essential to physically observe the patient for possible transfusion reaction?	uncorrected	48	48.0	1.52	.502
		Correct	52	52.0		
		Total	100	100.0		

Post Transfusion Initiation Nursing Activities and Issues

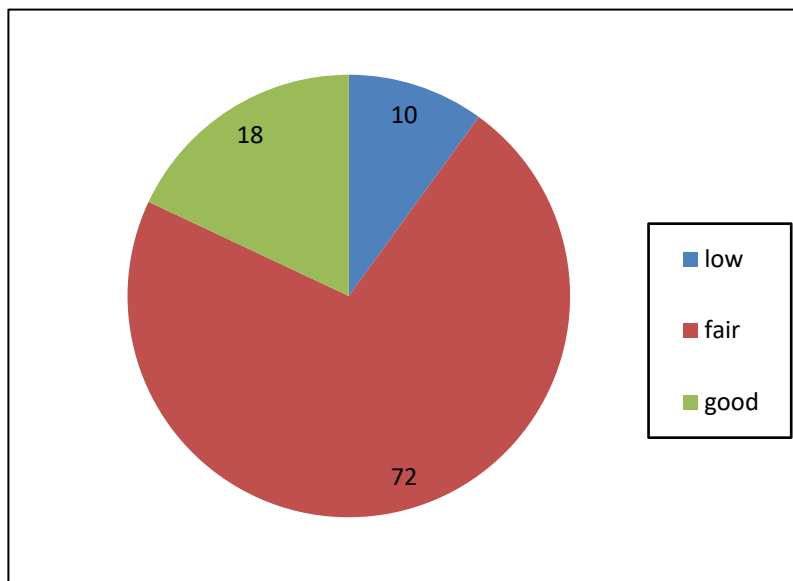


Figure 4: Nurse Knowledge About Post Transfusion Initiation Nursing Activities and Issues.

Through the responses to the questionnaire, it was found that the highest percentage of the extent of the "correct" paragraph, to the question (Specify which of the following solutions/agents could be safely mixed with transfusion of blood?) was 84.0%, while the lowest percentage for "correct" was 29.0%, which was related to (The doctor has prescribed a unit of blood to an adult patient. At what rate would you start this transfusion?) As for the "uncorrected" paragraph, the highest percentage was related to (The doctor has prescribed a

unit of blood to an adult patient. At what rate would you start this transfusion?) It was 71.0%, while the lowest percentage for "uncorrected" was 16.0%, which was related to (Specify which of the following solutions/agents could be safely mixed with transfusion of blood?).

Part VI: Nurse Knowledge About Complications Related to Blood Transfusion:

Table 4.6: Nurse Knowledge About Complications Related To Blood Transfusion:

No.	Items	Response	Frequency	Percent %	Mean	Std.Deviation
1	What interventions could minimize the risk of the patient experiencing acute transfusion reaction?	uncorrected	17	17.0	1.83	.378
		Correct	83	83.0		
		Total	100	100.0		
2	What signs and symptoms indicate that the patient is developing an acute hemolytic transfusion reaction?	uncorrected	22	22.0	1.78	.416
		Correct	78	78.0		
		Total	100	100.0		
3	What should be done IMMEDIATELY when signs and symptoms of	uncorrected	35	35.0	1.65	.479
		Correct	65	65.0		

	acute hemolytic transfusion reaction are seen?	Total	100	100.0		
4	Due to an emergency situation, a unit of blood collected at 8.00 PM was kept in the nurses' station until 9:30 PM. What should the nurse do with the blood?	uncorrected	72	72.0	1.28	.451
		Correct	28	28.0		
		Total	100	100.0		
5	A patient has sustained a mild allergic transfusion reaction. What is the usual presenting complaint?	uncorrected	54	54.0	1.46	.501
		Correct	46	54.0		
		Total	100	100.0		
6	What is the FIRST action that the nurse should take to handle the patient's condition in question 5?	uncorrected	67	67.0	1.33	.473
		Correct	33	33.0		
		Total	100	100.0		
7	What is the commonest cause of the most fatal transfusion reactions?	uncorrected	40	40.0	1.60	.492
		Correct	60	60.0		
		Total	100	100.0		
8	Before administering blood, when is it acceptable NOT to check patients' details at the bedside?	uncorrected	60	60.0	1.40	.492
		Correct	40	40.0		
		Total	100	100.0		

Complications Related to Blood Transfusion

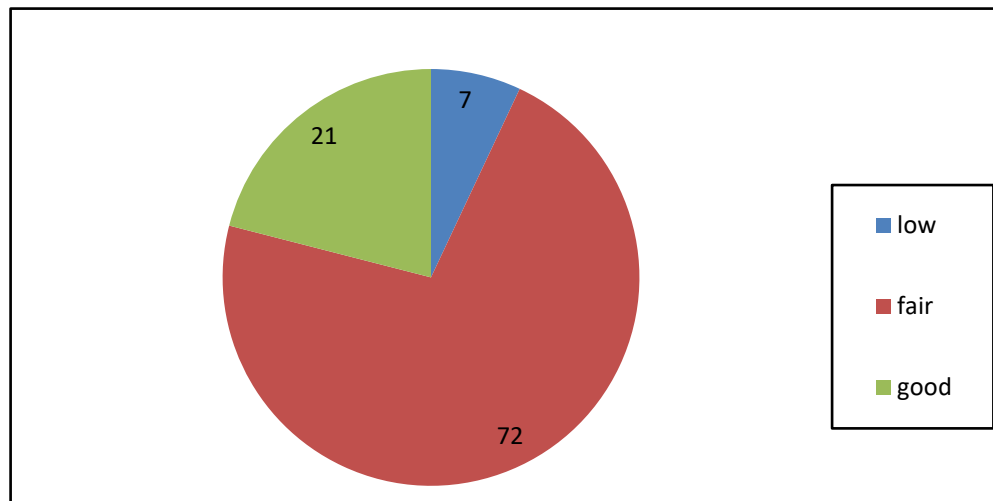


Figure 5: nurse knowledge about Complications Related to Blood Transfusion.

Through the responses to the questionnaire, it was found that the highest percentage of the extent of the "correct" paragraph, to the question (What interventions could minimize the risk of the patient experiencing acute transfusion reaction?) was 83.0%, while the lowest percentage for "correct" was 28.0%, which was related to (Due to an emergency situation, a unit of blood collected at 8.00 PM was kept in the nurses' station until 9:30 PM. What should the nurse do with the blood?) As for the "uncorrected" paragraph, the highest percentage was related to (Due to an emergency situation, a unit of blood collected at 8.00 PM was kept in the nurses' station until 9:30 PM. What should the nurse do with the blood?) It was 72.0%, while the lowest percentage for "uncorrected" was 17.0%, which was related to (What interventions could minimize the risk of the patient experiencing acute transfusion reaction?).

Part VII: The Overall Knowledge of Nurse About the Study Aspect:**Table 4.7: the overall knowledge of nurse about the study aspect:**

Knowledge	Frequency	Percentage (%)	Mean	Std.Deviation
Low	12	12.0	1.48	.503
Fair	48	48.0		
Good	40	40.0		
Total	100	100.0		

Through this table, we note that the higher percentage is in nurses who have Fair knowledge, at 48.0 %, while those who have good knowledge at a rate of 40.0%, and the least is those who have low knowledge, at 12.0 %.

Part VIII: Association Between The Overall Assessments Of Nurses'**Knowledge And Their Demographic Data:****Table 4.8: Association between the Overall Assessments of Nurses'****Knowledge and Their Demographic Data:**

Demographic data	p-value	Sig
Age/years	.270	N.S
Gender	.012	H.S
Level of education	.020	LS
Years of experience in blood transfusion center	.215	N.S
Courses of blood transfusion	.009	H.S

The table (4.8) shows that there is association between the overall nurses' knowledge with their demographic data in gender at p-value (0.01) and level of education at p-value (0.02) and courses of blood transfusion at p-value (0.009) except item most items age and years of experience at p-value more than (0.05) there is no association between the overall nurses' knowledge with their demographic data.

Chapter five

Discussion

This chapter presents a systematically designed interpretation and reasonably derived discussion of the results with the support of the available related studies.

Part I: Discussion of the Nurses' Demographic Characteristics of the Study Sample, as Offer in Table (4.1):

1. Age Group

Regarding the age of nurses, the results of the study revealed that the majority of participants (63.0%) were between (20-25) years old, respectively. These findings of the current study was similar by a study conducted by S. sahmoud & E.M.ashry, (2021) that was displayed about (38.0%) of the nurses were in the age group (20-30) years old.

2. Gender

The results explained that the percentages of the nurses participants in the study's sample were female (50.0%) while the male (50.0%). This finding from the current study agreed with a study conducted by Biosci (2017) which showed that the majority of the study samples were females (53.0%).

3. Education level

With regard to educational levels, the findings of the study showed that less than half of the study sample have Master degree (6.0%), followed by those with a Diploma in midwifery (11.0%), and those who graduated from the nursing college (25.0%), and the study Shaw that more than half sample have Diploma in nursing (58.0%).

This result is confirmed by (Beril Ecan et al., 2018), they found that (12.0%) of participants were graduated from the Master degree. Another study accomplished by (S. sahmoud & E.M.ashry, 2021), which finds that most nurses are graduated from the Bachelor in nursing (30.0%).

4. Years of Experience in Nursing

According to years of experience in nursing field, the results illustrated that half study's sample were (92.0%) had between 1 to 5 years of experience in nursing. This result is confirmed by Beril Ecan et al., (2018), who reported that most the sample of study had between 1 to 6 years of experience in nursing, and supported findings of current study.

Part II: Discussion of the Overall Assessment of Nurses' Knowledge about blood transfusion, as Offer in Tables (4-7):

Although most questions participation in knowledge of the methods and duties of blood transfusion to that it was found that the percentage of them, or Most of the responses, has moderate knowledge about blood transfusion and how it is done. (Table 4-7).

Depending on these results, nurses' knowledge can be raised and enhanced by concluding that the educational program can be continuous use for all nurses. It can also be applied to improve nurses' knowledge as a research process to solve a real problem occurring in any health condition and to giving the best quality of care for patients. The results may encourage all concerned to embrace more similar goals in their curricula (The researcher).

Part III: Discussion the Association between the level of Knowledge and their Demographic Data Table (4-8):

Regarding to association between nurses' knowledge and their age, this study demonstrated that there no significant association between nurses' knowledge and their age with p-value (0.270). The result of the current study was agreed with the study conducted by S. sahmoud & E.M.ashry (2021) that found there is no significant association between knowledge of nurse and age.

Concerning to the association between the nurses 'knowledge and their gender, there is significant association between the knowledge of nurses and their gender with p-value (0.012). The result of the current study was agreed with the study conducted by S. sahmoud & E.M.ashry (2021) that found there is significant association between knowledge of nurse and gender.

Regarding to the association between nurses' knowledge and level of education, the result of study that found significant association between the knowledge of nurses and their level of education with p-value (0.020). The result of the current study was agreed with the study conducted by S. sahmoud & E.M.ashry (2021) that found there is significant association between knowledge of nurse and level of education.

Regarding to the association between nurses' knowledge and years of experience in blood transfusion center, the results of study that found no significant association between the knowledge of nurses and their years of experience in blood transfusion center with p-value (0.215). The result of the current study was agreed with the study conducted by Biosci (2017) that found there is no significant association between knowledge of nurse and years of experience in blood transfusion center.

Regarding to the association between nurses' knowledge and courses of blood transfusion, the results of study that found significant association between the knowledge of nurses and their courses of blood transfusion with p-value (0.009).

The result of the current study was agreed with the study conducted by Biosci (2017) that found there is significant association between knowledge of nurse and courses of blood transfusion.

Chapter six

Conclusions and recommendation

According to the finding of the present study, and after the discussion of the results complete we researchers conclude the following:

6.1. Conclusion:

1. The Study Showed That (63%) Of the Study Sample with In Age (20-25) Years. And Showed Equal Proportions Between Males and Females (50%).

2.The Study Show That (58%) Of the Study Sample Education Level Were (Diploma in Nursing).

3.In Regards To Years of Experience in Nursing (92%) Of Nurse Have (1-5) Years.

4. The researchers concluded that the majority of the study samples were fair level of knowledge of nurses regarding blood transfusion. This conclusion is illustrated by statistical methods.

5. This study illustrated there no significant association between overall the knowledge of the nurses and their demographic data (age, years of experience in nursing) except item (gender, level of education, participation in educational courses related to blood transfusion) there is association between overall the knowledge of the nurses and their demographic data.

6.2. Recommendation:

Depending on the results and conclusions of the present study, the researcher recommends the following:

1. The Ministry of Health should find encouraging ways to enable nurses to engage in it, such as seminars and symposiums, to develop their knowledge and keep them up to date on blood transfusions management, and change old information that proved to be wrong with every updated information.
2. Activating the Training and Development Center for action educational courses about blood transfusions management in the hospital, especially nurses working in thalassemia.
3. The educational lectures should be regularly done and updated not only for nurses working in thalassemia about blood transfusions management.
4. Carrying out nursing care programmed on patients with thalassemia.
5. more studies on the result of this sample are needed in the future.

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Appendix

Appendix A

خبراء تحكيم الاستبيان

التسلسل	اسم الخبير	العنوان الوظيفي	مكان العمل	سنوات الخبرة
1	د.سعد عباس جودة	دكتوراه (بوردر) طب الاطفال	مركز امراض الدم الوراثية (الثلاسيميا)	14
2	د.حيدر امير	أستاذ مساعد دكتور	جامعة القادسية/كلية التمريض	17
3	د.عبد الامير كريم ليلو	أستاذ مساعد دكتور	جامعة القادسية/كلية التمريض	31
4	د.علاء ابراهيم سعيد	مدرس دكتور	جامعة القادسية/كلية التمريض	24
5	د.ساجدة خميس عبد الله	مدرس دكتور	جامعة القادسية/كلية التمريض	33

Appendix C

استبيان المعرفة الروتيني لنقل الدم

القسم أ: التفاصيل الديموغرافية والتدريب

*ملاحظة: يرجى وضع دائرة حول الاجابة التي تختارها.

١. ما نوع المستشفى الذي تعمل فيه؟ أ. مستشفى جامعي ب. مستشفى تابع لوزارة الصحة

٢. ما هي مؤهلات التمريض التي تحملها؟

أ. دبلوم في التمريض العام ب. بكالوريوس العلوم في التمريض

ج. دبلوم في القبالة د. درجة الماجستير

٥. أخرى (يرجى التحديد).....

٣. كم عمرك؟؟ سنة

٤. ما هو جنسك؟ أ. ذكر ب. أنثى

٥. منذ متى وأنت تعمل في الجناح (الأجنحة) حيث يتم نقل الدم؟

.....

٦. على مدى الأشهر ال ٦ الماضية، ما هو العدد التقريبي للمرات التي أجريت فيها عملية نقل دم؟
(اختر إجابة واحدة فقط)

أ. لا شيء على الإطلاق ب. ١-٤ مرات ج. ٥-٨ مرات

د. ٩-١٢ مرة ه. أكثر من ١٢ مرة

٧. هل سبق لك أن شاركت في أي برنامج تدريبي أثناء الخدمة فيما يتعلق بنقل الدم خلال الفترة التي عملت فيها في الجناح ، حيث يتم إجراء نقل الدم؟

أ. نعم. إذا كانت الإجابة بنعم، كم عدد البرامج التي شاركت فيها خلال العام الماضي؟.....

متى؟ (قائمة الشهر والسنة)..... أين؟.....

ب. أبدا

القسم ب: القضايا المتعلقة بإعداد المريض

* اقرأ العبارات التالية إذا كانت العبارة صحيحة، فارسم دائرة حول كلمة (صح). وإلا فضع دائرة حول كلمة (خطا).

١. يجب على الممرضة المعينة للمريض الذي يحتاج إلى نقل الدم التحقق من توافر خط الوصول عن طريق الوريد والمباح بعد إحضار الدم إلى الجناح. (صح) _ (خطا)

٢. يجب أن يتم جمع الدم من بنك الدم قبل إعطاء أي دواء (أدوية) موصوفة. (صح) _ (خطا)

٣. ما هي القضايا التي يجب إبلاغ المريض بها قبل كل حلقة نقل دم؟ (اختر إجابة واحدة فقط).

أ. أسباب نقل الدم
ب. إدارة تفاعل نقل الدم الحاد
ج. مخاطر نقل الدم
د. أعراض رد فعل
ه. العواقب المحتملة لرفض إجراء عملية نقل الدم

٤. متى يجب تسجيل العلامات الحيوية الأساسية قبل البدء في نقل الدم؟ (اختر إجابة واحدة فقط)

أ. في غضون ساعتين
ب. في غضون ١ و ٢/١ ساعة

ج. في غضون ساعة واحدة
د. في غضون ٤٥ دقيق

ه. في غضون ٣٠ دقيقة

القسم ج: جمع حزمة الدم

١. ما هي المعلومات التي يجب أن تكون لدى الممرضة لضمان جمع الدم المناسب للمريض المناسب شريطة أن يكون لدى الممرضة الاسم الكامل للمريض وتاريخ ميلاده ورقم المستشفى؟ (اختر إجابة واحدة فقط).

أ. تفاصيل هوية المريض متطابقة في كيس الدم ونموذج طلب الدم.

ب. الاسم الكامل للمريض مطابق على مخطط الدواء ونموذج طلب الدم.

ج. الاسم الكامل للمريض مطابق على ملصق كيس الدم ونموذج طلب الدم.

د. تفاصيل تعريف المريض متطابقة على مخطط الدواء ونموذج الطلب.

٢. ما هي الطريقة التي يجب أن تستخدمها الممرضة لنقل الدم من بنك الدم إلى الجناح؟ (اختر إجابة واحدة فقط).

أ. صندوق نقل دم معتمد.
ب. صينية جناح نظيفة من الستائلس ستيل مع غطاء.

ج. حوض كلى نظيف مع غطاء.
د. كيس بلاستيكي نظيف أو صينية بلاستيكية.

ه. ثلج مكعبات فائق التبريد .

٣. عند جمع وحدة دم من بنك الدم لمريض تكون فصيلة دمه A إيجابية ، لاحظت الممرضة أن الوحدة سلبية A. إذا كان الدم الذي تم جمعه متوافقا مع دم المريض ، فما الإجراء الذي يجب على الممرضة اتخاذه أولا؟ (اختر إجابة واحدة فقط).

أ. إبلاغ الطبيب والحصول على مشورته. ب. نقل الوحدة بعد التحقق من التفاصيل.

ج. تحقق من التفاصيل مع ممرضة أخرى - ثم قم بنقل الوحدة.

د. رفض نقل الوحدة . ه. بدء عملية نقل الدم ، ولكن مراقبة ومراقبة المريض عن كثب .

القسم د: أنشطة التمريض قبل بدء نقل الدم

١. في الجناح بعد الحصول على حزمة الدم ولكن قبل البدء في نقل الدم ، ما هو أهم إجراء تمريضي يجب على الممرضة القيام به فيما يتعلق بالمريض؟ (اختر إجابة واحدة فقط).

أ. توثيق العلامات الحيوية الأساسية ب. تحقق من طلب الطبيب مع ممرضة أخرى

ج. تحديد المريض المناسب د. تقديم معلومات للمريض (أو الأسرة)

ه. الإبلاغ عن ارتفاع درجة الحرارة إلى الطبيب

٢. متى يتم تحديد ارتفاع درجة حرارة الدم قبل تناوله سريريا؟ (اختر إجابة واحدة فقط)

أ. في كل مرة يتم نقل وحدة من الدم ب. في المقابل نقل الدم عند الرضع

ج. في نقل سريع د. في المرضى الذين يعانون من الجلوتينين البارد

ه. في المرضى الذين يعانون من انخفاض حرارة الجسم

٣. تم تسليم وحدة دم إلى الجناح في الساعة ٤:٠٠ مساء. ما هو أفضل وقت يجب أن يبدأ فيه نقل الدم؟ (اختر إجابة واحدة فقط).

أ. ٤:١٠ م ب. ٤:٢٠ م ج. ٤:٣٠ م د. ٤:٤٠ م ه. ٤:٥٠ م

٤. في الجناح بعد الحصول على كيس دم، كيف ستتعامل مع الدم؟ (اختر إجابة واحدة فقط).

أ. لف الوحدة ببطانية أو ملاءة سرير. ب. اترك الدم ينتظر في درجة حرارة الغرفة.

ج. اغمر الوحدة في الماء الساخن. د. بدء عملية نقل الدم على الفور.

ه. يسخن في الميكروويف.

٥. حدد أهم ثلاث خطوات يجب على الممرضة اتباعها من أجل تحديد المريض المناسب بشكل صحيح قبل البدء في نقل الدم

أ. اطلب من المريض ذكر اسمه عندما يكون ذلك ممكناً ب. اتصل باسم المريض عندما يكون ذلك ممكناً

ج. تحقق من رقم الغرفة والسرير

د. تأكد من تطابق تفاصيل هوية المريض على كيس الدم وشريط الهوية ونموذج الطلب

هـ. اطلب من المريض ذكر تاريخ ميلاده عندما يكون ذلك ممكناً

و. مقارنة شريط الهوية مع كيس الدم

٦. ما هو حجم المرشح المناسب لمجموعة نقل الدم؟ (اختر إجابة واحدة فقط).

أ. ٩٠-١٢٠ ميكرون ب. ١٣٠-١٦٠ ميكرون ج. ١٧٠-٢٠٠ ميكرون د. ٢١٠-٢٥٠ ميكرون

القسم هـ: أنشطة وقضايا التمريض بعد بدء نقل الدم

١. حدد ثلاثة أنشطة تمريضية روتينية يجب على الممرضة القيام بها بعد بدء نقل الدم مباشرة حتى ينتهي.

أ. إعداد معدل التدفق. ب. توثيق المعلومات ذات الصلة بما في ذلك العلامات الحيوية.

ج. خط التدفق باستخدام محلول ملحي عادي. د. إبلاغ الطبيب بأي تفاعل لنقل الدم.

هـ. مراقبة تفاعل نقل الدم. و. إجراء العلاج الطارئ في حالة تفاعل نقل الدم كما هو مطلوب.

ي. التحقق من هوية المريض.

٢. ماذا قد يحدث للمريض إذا تم إجراء إعطاء سريع للدم البارد من خلال طريق وريدي مركزي ينتهي في الأذنين الأيمن أو بالقرب منه؟ (اختر إجابة واحدة فقط)

أ. ادعاء ما بعد نقل الدم. ب. عدم انتظام ضربات القلب.

ج. تفاعل انحلاي حاد داخل الأوعية الدموية. د. إصابة الرئة الحادة المرتبطة بنقل الدم.

٣. وصف الطبيب وحدة دم لمريض بالغ. بأي معدل ستبدأ عملية نقل الدم هذه؟ (اختر إجابة واحدة فقط).

أ. لا يزيد عن ٦٠ مل / ساعة ب. لا يزيد عن ١٢٠ مل / ساعة ج. لا يزيد عن ١٥٠ مل / ساعة

د. لا يزيد عن ٢٠٠ مل / ساعة

٤. في جناحك، كيف تنظم معدل تدفق الدم؟ (اختر إجابة واحدة)

أ. يدويا ب. عبر مضخة إلكترونية.

٥. بالنسبة لعمليات نقل الدم المتعددة المستمرة، ما هي المدة القصوى التي يمكن استخدامها لكل مجموعة من مجموعات إعطاء الدم؟ (اختر إجابة واحدة فقط).

أ. ٤ ساعات ب. ٦ ساعات ج. ٨ ساعات د. ١٠ ساعات هـ. ١٢ ساعة

٦. يجب النظر في بطء نقل الدم لأي من المرضى التاليين؟ (اختر إجابة واحدة فقط)

أ. المرضى الذين يعانون من أمراض القلب ب. المرضى الذين يعانون من حصوات الكلى

ج. المرضى الذين يعانون من الربو القصبي د. المرضى الذين يعانون من فقر الدم الحاد

هـ. المرضى الذين مصابين بحادث وعائي دماغي.

٧. حدد أي من المحاليل / العوامل التالية يمكن خلطها بأمان مع نقل الدم (اختر إجابة واحدة فقط)

أ. 5% Dextrose Water ب. Normal Saline 0.9% ج. Lactated Ringer

د. Morphine 1.0 Mg/Ml In Ns هـ. Frusemide (Lasix) 20 Mg/2ml

٨. متى وإلى متى من الضروري مراقبة المريض جسديا لرد فعل محتمل لنقل الدم؟ (اختر إجابة واحدة فقط)

أ. للساعة الأولى ب. لأول ١٠-١٥ دقيقة

ج. طوال فترة نقل الدم د. طوال فترة التحول

القسم و: المضاعفات المتعلقة بنقل الدم

١. ما هي التدخلات التي يمكن أن تقلل من خطر تعرض المريض لتفاعل حاد في نقل الدم؟ (اختر إجابة واحدة فقط)

أ. إعطاء الدم المتوافق مع دم المتلقي.

ب. بدء نقل الدم في غضون ٢٠ دقيقة بعد الاستلام من بنك الدم

- ج. بدء عملية نقل الدم في غضون ٤٠ دقيقة بعد جمعها من بنك الدم
- د. إعطاء وحدة دم للمريض في غضون ٤ ساعات بعد جمعه المريض.
- و. عدم نقل الأدوية أو المحاليل التي لا تتوافق مع الدم معا.
- ي. إيقاف الدم إذا كانت هناك علامات وأعراض لتفاعل نقل الدم.
٢. ما العلامات والأعراض التي تشير إلى أن المريض يعاني من تفاعل انحلالي حاد لنقل الدم؟ (اختر إجابة واحدة فقط).
- أ. عدم انتظام دقات القلب ب. السعال المنتج ج. ألم الصدر د. بطء القلب
- هـ. انخفاض ضغط الدم و. الضحلة بطيئة التنفس ن. الغثيان / القيء ي. آلام الرقبة
٣. ما الذي يجب فعله على الفور عند ظهور علامات وأعراض تفاعل نقل الدم الانحلالي الحاد؟ (اختر إجابة واحدة فقط)
- أ. اوقف نقل الدم ب. اخطر بنك الدم ج. إبلاغ مشرف التمريض
- د. اجعل الوريد مفتوحا بنسبة ٩,٠٪ محلول ملحي طبيعي ه. تحقق من العلامات الحيوية للمريض و. اكتب تقرير الحادث حسب الامر الطبي
٤. بسبب حالة طوارئ ، تم الاحتفاظ بوحدة دم تم جمعها في الساعة ٨:٠٠ مساء في محطة الممرضات حتى الساعة ٩:٣٠ مساء. ماذا يجب أن تفعل الممرضة بالدم؟ (اختر إجابة واحدة فقط)
- أ. بدء عملية نقل الدم على الفور وإكمالها في غضون ٢ / ١ ساعة.
- ب. بدء عملية نقل الدم على الفور وإكمالها في غضون ٤ ساعات.
- ج. لا تبدأ عملية نقل الدم ، وإخبار بنك الدم وإعادة الدم.
- د. بدء نقل الدم ومراقبة المريض عن كثب لأي رد فعل.
٥. أصيب مريض برد فعل تحسسي خفيف. ما هو تقديم الشكوى المعتاد؟ (اختر إجابة واحدة فقط)
- أ. ألم في الذراع ب. ألم الخاصرة ج. طفح شرروي د. انخفاض في BP ه. ضيق التنفس الخفيف

٦. ما هو الإجراء الأول الذي يجب على الممرضة اتخاذه للتعامل مع حالة المريض في السؤال ٥؟
(اختر إجابة واحدة فقط)

أ. إيقاف عملية نقل الدم وإخطار الطبيب ب. إخبار الطبيب وإبطاء معدل نقل الدم

ج. إبطاء معدل نقل الدم وإخبار الطبيب هـ. إخبار ممرض أول

د. تحقق من العلامات الحيوية للمريض وأبلغ الطبيب

٧. ما هو السبب الأكثر شيوعاً لتفاعلات نقل الدم الأكثر فتكاً؟ (اختر إجابة واحدة فقط)

أ. ارتفاع درجة حرارة الدم إلى أكثر من ٣٧ درجة مئوية ب. خطأ في اختبار بنك الدم

ج. الأجسام المضادة في نظام Rh د. خطأ تحديد المريض

٨. قبل إعطاء الدم ، متى يكون من المقبول عدم التحقق من تفاصيل المرضى بجانب السرير؟ (اختر إجابة واحدة فقط)

أ. ممرضة تعرف بوضوح المريض ب. المريض فاقد الوعي

ج. أبداً هـ. المريض هو حاجز التمريض

القسم ز: القضايا المتعلقة بسياسات وإجراءات نقل الدم:

١. هل هناك سياسة مكتوبة لإدارة الدم في جناحك؟

أ. نعم ب. لا لا ج. لا أعرف

٢. إذا كانت الإجابة بنعم ، هل قرأت السياسة؟

أ. نعم ب. لا

الخلاصة

المقدمة: الدم هو منتج قيم وفريد من نوعه يتم الحصول عليه من البشر، والدم مهم جدًا لإنقاذ الأرواح واستعادة صحة الإنسان. تقدر البيانات المستمدة من المخاطر الجسيمة لنقل الدم أن حالة واحدة تقريبًا من عمليات نقل الدم الخاطئة تحدث لكل ١٣٠٠٠ عملية نقل. تحدث معظم الأخطاء من الناحية السريرية. يعد عدم تحديد المريض الصحيح، سواء أثناء أخذ عينات الدم أو بجانب سرير المريض قبل نقل الدم، سببًا رئيسيًا لمرض ووفيات المريض الخطيرة.

الهدف: تهدف الدراسة الحالية إلى تقييم معرفة الممرضات بنقل الدم في مستشفى الديوانية التعليمي، ومعرفة العلاقة بين معرفة الممرضات وخصائصهم الديموغرافية.

المنهجية: تم تصميم الدراسة الوصفية الكمية. بدأت فترة الدراسة من (٥ ديسمبر ٢٠٢٢) إلى (١ مارس ٢٠٢٣) على عينة غير احتمالية (هادفة) مكونة من (١٠٠ ممرضة) يعملون في مستشفى الديوانية التعليمي.

لاكتشاف معرفة الممرضات حول نقل الدم، يستخدم الباحث الأداة التي تتكون من جزأين: الجزء الأول عبارة عن نموذج بيانات ديموغرافية للمشاركة في الدراسة (العمر، الجنس، المستوى التعليمي، سنوات الخبرة في التمريض، وقت نقل الدم، الدورة التدريبية) والجزء الثاني المعرفة حول إعطاء نموذج نقل الدم تضمنت (٥) أجزاء و (٢٦) سؤال. تم فحص مصداقية الاستبيان من خلال تقديمه إلى (٥) خبراء وتم عمل دراسة تجريبية لمعرفة مصداقية الاستبيان (معامل ارتباط بيرسون = ٠,٨٥). لتحليل نتائج الدراسة، تم استخدام الإحصاء الوصفي والاستنتاجي الذي يستخدم الحزمة الإحصائية للعلوم الاجتماعية (SPSS) وبرنامج ميكروسوفت امسب (٢٠١٠).

النتائج: أظهرت نتائج هذه الدراسة أن غالبية عينة الدراسة كانت نسبة معقولة (٤٨,٠٪) من مستوى معرفة الممرضات بنقل الدم.

الاستنتاج: توصل الباحث إلى أن معرفة الممرضات كانت (عادلة) حول نقل الدم في مستشفى الديوانية التعليمي.

التوصيات: أوصت هذه الدراسة بعمل الدورات التعليمية وتحسين معرفة الممرضات بنقل الدم وخاصة الممرضات العاملات في مرض التلاسيميا، وهناك حاجة عبر المستشفيات العراقية لإجراء دراسات مماثلة بحجم عينة أكبر وفترة زمنية كافية.



جمهورية العراق
وزارة التعليم العالي والبحث العلمي
جامعة القادسية
كلية التمريض

قياس معرفة نقل الدم بين الممرضين والممرضات في مستشفيات الديوانية

مشروع بحث مقدم من

حسين حامد راضي

نور جواد عبد الكاظم

آيات أحمد جلاوي

زهراء جاسم زيدان

هبة خضير عباس

الى قسم اساسات علوم التمريض كلية التمريض / جامعة القادسية

وهو جزء من متطلبات نيل شهادة البكالوريوس في كلية التمريض

إشراف

أ.م.د. محمد جلوب مراد