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A project work on role of clinical pharmacist in a haemovigilance unit of a tertiary care hospital

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ABSTRACT

Blood is a very important component of the human body. Blood constituents of about 7% of the total bodies' weight. An average Adult body that is having a weight of 150-180 pounds will have approximately 4.7-5.5 liters of blood.

Blood is a fluid connective tissue that circulate continuously around the body, allowing the constant communication between tissues that are far away from each other. It transports:

- Oxygen from the lung to the tissues, and carbon dioxide from the tissues to the lungs or excretion.
- Nutrients from the alimentary tract to the tissues, and cell washes to the excretory organ, principally the kidney.
- Hormones secreted by endocrine glands to their target organs and tissues.
- Protective substance like Antibodies like to the site of infection
- Clotting factor that coagulates blood, minimizing bleeding from ruptured blood vessel.

Blood is composed of a clear, straw-colored, watery fluid called plasma in which there are several types of blood cell are suspended.

Blood plays a very important role in transport of nutrition and respiratory gases, act as a vehicle to transport hormones and enzymes from their place or origin to the place where it is required, drain waste products, maintaining hemostasis, regulation of body temperature and, most importantly, act as a defense mechanism for the body.

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Blood cells constitute over 40% of blood. There are three main types of blood cells – Red Blood Cells or Erythrocytes, White Blood Cells or Leukocytes and Platelets. Plasma makes up the remaining 60% of blood. Plasma is largely water.^[1]

Blood Transfusion and Cross-Matching:

Blood typing reveals what type of blood an individual consist of. This depends on the presence antigens on your red blood cells (RBCs). Antigens are proteins that trigger your immune system to produce antibodies. There are four main types of blood groups:

- type A blood, which contains type-A antigens
- type B blood, which contains type-B antigens
- type AB blood, which contains type-A and type-B antigens
- type O blood, which contains neither type-A nor type-B antigens

Blood will also be classified as Rh positive (+) or Rh negative (-), based on the presence or absence of a particular protein on your RBCs, known as Rhesus factor.

Crossmatching: it is the method which includes testing of the compatibility of the bloods of a transfusion donor and a recipient by mixing the serum of each with the red cells of the other to determine the absence of agglutination reactions. It is generally done before blood transfusion takes place.^[2]

Blood Transfusion definition:

Blood transfusion: The transfer of blood or blood components from one person (the donor) into the bloodstream of another person (the recipient). Blood transfusion may be done as a lifesaving maneuver to replace blood cells or blood products lost through bleeding or due to depression of the bone marrow. Transfusion of one's own blood (autologous) is the safest method but requires advanced planning, and not all patients are eligible for it. Directed donor blood allows the patient to receive blood from

known donors. Volunteer donor blood is usually most readily available and, when properly tested, has a low risk of side effects.^[3]

Pathological conditions in which blood Transfusions are common:

Many people who have surgery need blood transfusions because they lose blood during their operations. For example, about one-third of all heart surgery patients have a transfusion.

Some people who have serious injuries—such as from car crashes, war, or natural disasters—need blood transfusions to replace blood lost during the injury.

Some people need blood or parts of blood because of illnesses. You may need a blood transfusion if you have:

- A severe infection or liver disease that stops your body from properly making blood or some parts of blood.
- An illness that causes anemia, such as kidney disease or cancer. Medicines or radiation used to treat a medical condition also can cause anemia. There are many types of anemia, including aplastic, Fanconi, hemolytic, iron-deficiency, and sickle cell anemias and thalassemia
- A bleeding disorder, such as hemophilia or thrombocytopenia .

Complications of Transfusion:

Blood transfusion can be life-saving and provides great clinical benefit to many patients but it is not without risks:

- Immunological complications.
- Errors and 'wrong blood' episodes - UK data from Serious Hazards of Transfusion (SHOT) suggests an error incidence of 283 per million components transfused in 2014.
- Infections (bacterial, viral, possibly prion).
- Immunomodulation.
- Litigation.

Causes of acute complications of transfusion:

Acute hemolytic transfusion reaction

- Incompatible transfused red cells react with the patient's own anti-A or anti-B antibodies or other alloantibodies (e.g., anti-rhesus (Rh) D, RhE, Rhc and Kell) to red cell antigens. Complement can be activated and may lead to disseminated intravascular coagulation (DIC).
- Infusion of ABO incompatible blood almost always arises from errors in labelling sample tubes/request forms or from inadequate checks at the time of transfusion. Where red cells are mistakenly administered, there is about a 1 in 3 risk of ABO incompatibility and 10% mortality with the severest reaction seen in a group "O" individual receiving group A red cells.
- Non-ABO red cell antibody hemolytic reactions tend to be less severe but the Kidd and Duffy antigens also activate complement and can cause severe intravascular hemolysis.

Infective shock

- Bacterial contamination of a blood component is a rare but severe and sometimes fatal cause of transfusion reactions.
- Acute onset of hypertension or hypotension, rigors and collapse rapidly follows the transfusion.
- Three UK cases of bacterial contamination of blood products during 2008-2009 were confirmed by SHOT.
- Platelets are more likely to be associated with bacterial contamination than red cells, as they are stored at a higher temperature.

Transfusion-related acute lung injury (TRALI)

- TRALI is a form of acute respiratory distress due to donor plasma containing antibodies against the patient's leukocytes.

- Transfusion is followed within six hours of transfusion by the development of prominent nonproductive cough, breathlessness, hypoxia and frothy sputum. Fever and rigors may be present.
- CXR shows multiple perihilar nodules with infiltration of the lower lung fields.
- Implicated donors are usually multiparous women (who are more likely to have become alloimmunised) and should be removed from the blood panel where possible. Gas exchange was significantly worse after transfusion of female but not male donor blood products in one study of high plasma volume transfusions in the critically ill.

Fluid overload

- Fluid overload occurs when too much fluid is transfused or too quickly, leading to pulmonary oedema and acute respiratory failure.
- Patients at particular risk are those with chronic anemia who are normovolaemic or hypovolemic and those with symptoms of cardiac failure prior to transfusion.
- These patients should receive packed cells rather than whole blood via slow transfusion, with diuretics if required.

Non-hemolytic febrile reactions to transfusion of platelets and red cells

- Fevers (>1°C above baseline) and rigors may develop during red cell or platelet transfusion due to patient antibodies to transfused white cells.
- This type of reaction affects 1-2% of patients.
- Multiparous women and those who have received multiple previous transfusions are most at risk. Reactions are unpleasant but not life-threatening. Usually symptoms develop towards the end of a transfusion or in the subsequent two hours. Most febrile reactions can be managed by

slowing or stopping the transfusion and giving paracetamol.

Severe allergic reaction or anaphylaxis

- Allergic reactions occur when patients have antibodies that react with proteins in transfused blood components.
- Anaphylaxis occurs where an individual has previously been sensitized to an allergen present in the blood and, on re-exposure, releases immunoglobulin E (IgE) or IgG antibodies. Patients with anaphylaxis become acutely dyspnoeic due to bronchospasm and laryngeal oedema and may complain of chest pain, abdominal pain and nausea.
- Individuals with severe IgA deficiency may develop antibody to IgA and, with repeated transfusion, are at high risk of allergic reaction.
- Urticaria and itching are common within minutes of starting a transfusion.
- Symptoms are usually controlled by slowing the transfusion and giving antihistamine and the transfusion may be continued if there is no progression at 30 minutes.
- Pre-treatment with chlorphenamine should be given when a patient has experienced repeated allergic reactions to transfusion.

Symptoms

- Feeling of apprehension or 'something wrong'.
- Flushing.
- Chills.
- Pain at the venepuncture site.
- Myalgia.
- Nausea.
- Pain in the abdomen, flank or chest.
- Shortness of breath.

Signs

- Fever (rise of 1.5°C or more) and rigors.
- Hypotension or hypertension.

- Tachycardia.
- Respiratory distress.
- Oozing from wounds or puncture sites.
- Haemoglobinaemia.
- Haemoglobinuria.

Fatalities reported to the FDA following blood collection and Transfusion in the year 2011 included nearly 51% of the fatalities where transfusion related and 36% in which Transfusion could not be ruled out as the cause of fatality.

In order to reduce blood Transfusion related fatalities a committee known as the haemovigilance is been set up in hospital organization.

Haemovigilance:

It is a set of surveillance procedures covering the whole transfusion chain from the collection of the blood sample and its components to the follow up of its recipients intended to collect and asses the information on unexpected or undesirable side effects resulting from the therapeutic use of liable blood products and to prevent their occurrence and recurrence. It is an important tool in for improving safe blood Transfusion practice in country. The Haemovigilance program of India (HvPI) was launched on 10th December, 2012 in the country.^[5]

Need of Haemovigilance:

It is designed to detect, gather and analyse unexpected or undesirable effect associated only with transfusion in order to remedy their causes and avoid recurrence. The information generated through a system is a key to bring about changes in the Transfusion Policies, Improve Transfusion Standard, assist in formation on transfusion guidelines and thus improve the safety and quality of the entire transfusion process.^[6]

A WHO guideline on adverse event reporting and learning system emphasized that an effectiveness of an adverse event reporting system is measured not only by accurate

collection and analysis of data, but also by its use to make recommendations that improve patient safety.

The need of safe blood transfusion was felt as early as 1980-1990 when many hemophilia patients in the U.K, France, Canada, and the U.S.A contracted HCV and HIV during Blood Transfusion. The work of Haemovigilance was first started in France in 1991.

Currently on a global scale an International Haemovigilance Network (INH) is functional. To further augment the safety of blood transfusion an international data base-International Surveillance of Transfusion Associated Reactions and Events has been formed to share hem vigilance data across the globe.

Haemovigilance includes the monitoring, reporting, investigation and analysis of adverse events related to the donation, processing and transfusion of blood, and taking actions to prevent their occurrence or recurrence. The document aims to support countries in establishing effective national systems for haemovigilance throughout the transfusion

chain. It provides policy guidance on establishing a haemovigilance system as part of the national blood and health systems, and includes technical information and guidance on the specific measures and actions which need to be taken to implement a haemovigilance system.

The haemovigilance system should involve all relevant stakeholders and should be coordinated between the blood transfusion service, hospital clinical staff and transfusion laboratories, hospital transfusion committees, the national regulatory agency and national health authorities.

The resulting modifications to transfusion policies, standards and guidelines, as well as improvements to processes in blood services and transfusion practices in hospitals, lead to improved patient safety.

Standard Guidelines for Treatment of Transfusion Related Reaction:

NON-INFECTIOUS ADVERSE TRANSFUSION REACTION:^[7]

Type of ADR	MANAGEMENT
Acute (Occurring within < 24 hours of transfusion. Immune Mediated Acute Hemolytic Transfusion reaction	Stop transfusion and keep i.v line open; maintain urine output >1 ml/kg/hr and i.v diuretics, analgesics, low dose dopamine for hypotension, Blood components for bleeding.
Febrile Non Hemolytic Transfusion Reaction	Antipyretics, meperidine for rigors, use of leukofiltered blood components.
Urticarial	Antihistamine,
Anaphylactic	Adrenaline 0.5ml of 1:1000 solution(500ug) SC or IM in adults or in severe conditions 1:10,000 i.v initial rate 1ug/min. antihistamine(10mg of chlorphenamine IM or IV) corticosteroids(200mg of hydrocortisone IM or IV) washed IgA deficient blood components.
Transfusion Related Acute Lung Injury	Treatment may Range from Oxygen to Ventilator Support.
Non Immune Mediated Transfusion related sepsis	Antibiotics and Management of Shock, Bacterial Culture Pathogen Inactivation in Blood components.
Non Immune Hemolysis	Symptomatic Treatment
Air Embolism	Left trendelenberg position; aspiration of air and possibly priming of all line before connection.
Delayed(occurring >24 hours of Transfusion Delayed Hemolytic Transfusion Reaction	Cross match compatible unit to be transfused after identifying red blood cell.

Alloimmunization to red cell antigens, platelets and leukocytes	Rational use of blood components ,leukofiltered blood
Transfusion associated Immuno modulation	Leukofiltered blood, Autologous Blood.
Transfusion Associated Graft v/s Host Diseases	Irradiation of all cellular components.
Post Transfusion Purpura	High dose of i.v immunoglobulin.

Standard Guidelines of Blood collection and storage Include:

Blood is collected at body temperature, i.e. +37 °C. But in order to maintain its vital properties, it must be cooled to below +10 °C to be transported, and stored at refrigeration temperatures of around +4 °C until use. Hence the term, blood cold chain, which begins the moment the blood is collected and continues until it is transfused. If blood is stored or transported outside of these temperatures for long, it loses its ability to transport oxygen or carbon dioxide to and from tissues respectively upon transfusion.

Storage and transport condition of Whole blood and Red blood cells:

Condition	Temperature Range	Storage time
Transport of pre-processed blood	+20 °C to +24 °C	Less than 6 hours
Storage of pre-processed or processed blood	2 °C to +6 °C	Approx. 35 days
Transport of processed blood	+2 °C to +10 °C	Less than 24 hours

Fresh frozen plasma (FFP) is plasma that has been separated from a unit of whole blood within 6 to 8 hours of collection, and has been rapidly frozen and maintained at all times at a temperature of –20 °C or lower. There is no lower temperature limit for the storage of FFP, although the optimal temperature is –30 °C or lower. Plasma contains water, electrolytes, clotting factors and other proteins (mostly albumin), most of which are stable at refrigerator temperature, i.e. +2 °C to +6 °C. Factor V and Factor VIII, however, which are

essential in the clotting mechanism, will deteriorate and diminish in quantity if they are not stored at –20°C or lower and greatly reduce the clotting activity of the plasma. FFP may be given to a patient to restore or help to maintain coagulation factors such as Factor V or Factor VIII.

Plasma should not be used as a volume expander unless crystalloids and colloids are unavailable.

Platelet transfusions are used to prevent spontaneous bleeding or to stop bleeding in patients with established thrombocytopenia or platelet dysfunction – e.g. hypoplastic anemia or bone marrow failure – due to replacement with malignant cells or to the effects of chemotherapy.

Both manual and automated methods can be used in the preparation of platelet concentrates. Lower temperatures adversely affect platelet function and viability. For this reason, whole blood should be kept at between +20 °C and +24 °C until it is processed into platelet concentrates and other blood components.

Length of time permitted for the storage and transportation of platelet concentrates within the temperature range +20 °C to +24 °C.

Process	Maximum Storage Time
Storage	5 days
Transport	24 hours
After issue, before transfusion	30 minutes
Open system and/or pooled	4 hours

Plasma derivatives such as albumin or immunoglobulin are concentrated, sterile

specific proteins, obtained from large pools of donor plasma through a complex pharmaceutical process called plasma fractionation. They are used to treat patients

with specific protein deficiencies or requirements for passive immunity.

Storage of plasma and its derivatives:

Products	Storage	Shelf life	Others
Albumin and plasma protein fractions (liquid)	< +25 °C	3 years	Do not freeze
	+2 °C to +8 °C	5 years	
Immune serum (liquid)	+2 °C to +8 °C	3 years	Do not freeze Globulin. Use promptly
Freeze Dried Factor VIII	+2 °C to +8 °C	2 years	Do not freeze
	< +25 °C	2 years	
Freeze Dried Factor VIII	+2 °C to +8 °C	1 year	Do not freeze Use promptly
	Room temperature	1 month	

AIMS AND OBJECTIVES:

PRIMARY OBJECTIVE:

1. To analyse the purpose and indications of blood transfusion
2. To study the role of clinical pharmacist in Hemovigilance
3. To monitor and report adverse reactions following blood transfusion

SECONDARY OBJECTIVES:

1. To perform a drug utilisation review of drugs prescribed along with blood transfusion
2. To monitor storage condition of blood

REVIEW OF LITERATURE:

A study by Ossear JC *et al* on active Hemovigilance programme characterized by safety profile of 7347 platelet transfusion prepared with amotosalen photochemical treatment. 1400 patients (mean 60 years, range 1-96) received PCT-PLT transfusions. The majority of the patient (53.4%) had hematology-oncology diseases and required conventional

chemotherapy (44.8%) or stem cell transplantation (8.6%). 68 PCT-PLT transfusions were associated with AE. Acute transfusion reactions (ATR), classified possibly related, probably related, or related to PCT-PLT transfusions were infrequent ($n=55$, $55/7437=0.7\%$) and most were grade 1 severity. 39 patients ($39/1400=2.8\%$) experienced one more ATR. The most frequently reported signs and symptoms were chills, Urticaria, dyspnea, nausea and vomiting.^[6]

Haemovigilance in a tertiary care hospital in the north east of India was done by *D R Somagiri et al*. Even though lifesaving blood transfusion can be occasionally risky and result in a spectrum of adverse events. Haemovigilance program was developed to monitor the entire transfusion chain, evaluate and analyse data and improve patient's safety. A total of 51,000 components were transfused and 106 adverse events were reported during the period of the study. The major stakes of adverse events were febrile non-hemolytic transfusion reaction (50%), purities (17.92%) and

rigour/chills (11.32%). All the adverse was found to be Grade I (non-severe type), and there was no life threatening ADR.^[7]

An adverse Transfusion reaction study was done by *Negi G, Gaur SD and Kaur R* in a tertiary care hospital in Utrakhand. All ATRs occurring over a period of 3 years at a tertiary care health center were studied in detail. Of 38,013 units of blood and components that had been issued, 101 (0.2%) cases had an ATR. The most common reaction was allergic - 34/101 (33.6%) followed by febrile - 26/101 (25.7%). Other reactions included transfusion-related acute lung injury in 6/101 (5.9%) cases, and immune reactions were seen in 19/101 (18.8%) cases. Allergic and febrile reactions are most common and least harmful, but fatal reactions can also occur, and preventive measures must be taken to avoid such reactions.^[8]

A study was designed to analyze the incidence and spectrum of adverse effects of blood transfusion so as to initiate measures to minimize risks and improve overall transfusion safety in the institute by *Bhattacharya P, Marwaha M, Dhawan K.H, Roy P and Sharma R* in a tertiary care center of North of India. During the study period 56,503 blood and blood components were issued to 29,720 patients. A total of 105 adverse reactions due to transfusion were observed during the study period. A majority of the adverse reactions was observed in hemato-oncology patients 43% (n = 45) and in presensitized patient groups 63% (n = 66). FNHTR 41% (n = 43) and allergic reactions 34% (n = 36) were the most common of all types of adverse transfusion reactions, followed by AchTR 8.56% (n = 9). Majority of these AchTR were due to unmonitored storage of blood in the refrigerator of wards resulting in hemolysis due to thermal injury. Less frequently observed reactions were anaphylactic reactions (n = 4), bacterial sepsis (n = 4), hypervolemia (n = 2), hypocalcemia (n = 2), TRALI (n = 1), DHTR (n = 1), and TAGvHD (n = 1). Analysis of transfusion-related adverse outcomes is

essential for improving safety. Factors such as improvement of blood storage conditions outside the blood bank, improvement in cross-matching techniques, careful donor screening, adherence to good manufacturing practices while component preparation, bedside monitoring of transfusion, and documentation of adverse events will help in reducing transfusion-related morbidity and mortality.^[9]

A retrospective review of all reported and evaluated acute transfusion reactions during a 2 years period in Mazandaran Heart Center was performed by *Azizi S, Tabary S.Z and Soleimani A*. Associated clinical signs and symptoms were evaluated. In 9193 transfused blood products, there were 34 (0.4%) acute transfusion reactions. The commonest were discomfort and restlessness(0.16%), dyspnea(0.16%), rigors (0.13%), fever (0.08%), chest pain(0.06%), rash or Urticaria (0.04%), nausea and vomiting(0.03%), palpitation(0.03%), hypertension(0.03%)flashing(0.02%), hypotension(0.02%). Acute transfusion reaction is seen in %0.4 of transfused patients therefore, we recommend a well-structured program for monitoring adverse reactions associated with blood transfusion and blood product administration^[1]

Leukodepletion status of blood products and transfusion reactions in thalassemic patients a retrospective study was carried out by *Devi AM and Gakhonlungpou KG* in tertiary Hospitals setting. Multi-transfused thalassemic patients are prone to transfusions related complications. Study of these reactions and correlating them with the Leukodepletion of the transfused packed red blood cells (PRBCs) reduces transfusion complications due to the transfused leukocytes. Out on 1152 transfusions in 161 thalassemic patients at our institute between January 2011 and December 2011. The total transfusions were classified into three categories depending on the leukodepletion status of the PRBC. The clinical records and the reaction workup done to rule out the

hemolytic reactions were recorded. Reactions were noted in three (0.2%) out of 161 thalassemic patients were recorded. Two reactions were recorded on transfusions of leukoreduced (buffy-coat method) and one reaction in nonleukoreduced PRBC, respectively. No reactions were recorded on transfusions leucodepleted done by bedside filter. Leukodepletion by using bedside filter is a better method for avoiding transfusion reactions. Though in resource limited settings, leukoreduction using the buffy-coat method is also effective in reducing the transfusion reactions. Leukoreduction of transfused blood cellular components in thalassemic patients is helpful in preventing transfusion reactions.^[11]

An adverse effect of transfusion was studied in patients suffering from malignancy in a tertiary care hospital was done by *Dasararaju R* and *Marques M*. Patients with malignancy comprise a unique group for whom transfusions play an important role. Because the need for transfusions may span a long period of time, these patients may be at risk for more adverse events due to transfusion than other patient groups. The results were summarized and complemented by clinical experience. Long-term complications of transfusions, such as transfusion-associated graft-v/s-host disease, Alloimmunization, transfusion-related immunomodulation, and iron overload, were discussed. Transfusion-related acute lung injury, transfusion-associated circulatory overload, and haemolytic transfusion reaction are deadly complications from transfusion. These adverse events have nonspecific presentations and may be missed or confused with a patient's underlying condition. Thus, a high level of suspicion and close monitoring of the patient during and following the transfusion is imperative. Common reactions (e.g., febrile nonhemolytic transfusion reaction, allergic reaction) are not life threatening, but they may cause discomfort and blood product wastage. Every transfusion carries risks of immediate and delayed adverse events. Therefore,

oncologists should prescribe transfusion for patients with cancer only when absolutely necessary^[12]

Serious Hazards of Transfusion (SHOT) Haemovigilance and Progress Improving transfusion safety done by *Paula H B* and *Hannah Cohen* began in the UK in the year 1996 and it was observed that more than half the errors were prominent in blood transfusion process even though there were several measures to improve the practice. Concerns over error due to wrong type of transfusion were confirmed by a survey of 400 hematology department in 1991. The 245 respondents 111 wrong blood incidents with 6 deaths and 12 instances of major morbidity due to ABO incompatibility was observed. There were also reports of "near miss events"^[13]

Clinical transfusion practice update: Haemovigilance a study done by *Sunelle E*, *Erica M W* and *Merro F COL* in Australia. In this study it was observed that Doctors and Patients are often concerned about infections caused due to blood transfusion. Sepsis caused due to Bacterial contamination was found to be common in Australia. It was proposed that Vigilance for further emerging infectious diseases (EID) because they have the potential for geographical spread.^[14]

METHODOLOGY:

STUDY SITE

The study was conducted in the Inpatient wards of Dr. B.R. Ambedkar Medical College and Hospital, which is a 760 bedded multispecialty tertiary care teaching hospital in Bengaluru.

STUDY DESIGN AND DURATION

This study was a prospective observational study over a period of 6 months.

STUDY POPULATION

All patients undergoing blood transfusion were included in the study.

SAMPLE SIZE

A total of 60 patients were included in the study.

STUDY CRITERIA

Inclusion Criteria

- Patients of either sex above 18 years of age
- All the patients admitted at inpatient wards
- Patients receiving blood from the hospital's blood bank

Exclusion criteria

- Patients below 18 years of age
- Patients receiving blood from other blood banks
- Patients admitted to the ICU

SOURCE OF DATA

The data was collected from the in-patients wards. The different sources of data used were:

- Case report form
- Medical Record
- Lab reports

STUDY MATERIALS

- **Case Report Form:** Data was collected using a self-designed case report, which consisted of details like demographics, medical history, diagnosis, lab data, comorbidities, drug therapy and other relevant information.

STUDY PROCEDURE

The present study was a longitudinal observational study. The investigators identified all patients prescribed a blood transfusion through requests received at the hospital's blood bank. The patients, or the caretakers, were interviewed and complete medical history was obtained. Additional information, like demographics, current medication, diagnosis and indication for blood transfusion was obtained from medical charts. The investigators cross checked blood grouping reports prior to commencement of blood transfusion, and the

patients were monitored through the period of transfusion. Any information about adverse events after the transfusion was obtained from nursing staff. The data obtained were recorded in the case report form, and the collected data was then entered in Microsoft Excel® and appropriate analysis was performed.

DATA ANALYSIS:

Measures of central tendency were performed. The data was presented in appropriate graphical and tabular presentations.

RESULTS:

The present study was conducted at Dr BR Ambedkar Medical College and Hospital, Bengaluru over a period of three months from January to March 2017. A total of 60 patients who satisfied the inclusion and exclusion criteria were included in the study. Majority of the patients included in the study belonged to the age group 21-30 years (26.66%), and the least belonged to the group 71-80 years (5.00%), as presented in Figure 1. There were more females than males in the study population, as shown in Figure 2.

The most common indication for blood transfusion was Anemia (38, 63.33%) followed by Gynecological disorders (12, 20.00%).

All patients received a blood transfusion were monitored for presence of transfusion related reactions. Only one study patient (1.66%) developed an allergic reaction. Severity of the reaction was assessed using Hartwig's Severity Assessment Scale. The reaction was classified as level three (moderate) on the Hartwig's scale.

The present study analysed the prescribing pattern of drugs associated with blood transfusion. The most commonly prescribed drugs belonged to the category of Antihistamine & Anti-inflammatory (42, 70.00%), while the least prescribed was Calcium Dobesilate (8, 13.33%). Detailed distribution is presented in figure 5.

Distribution of patient based on number of transfusion:

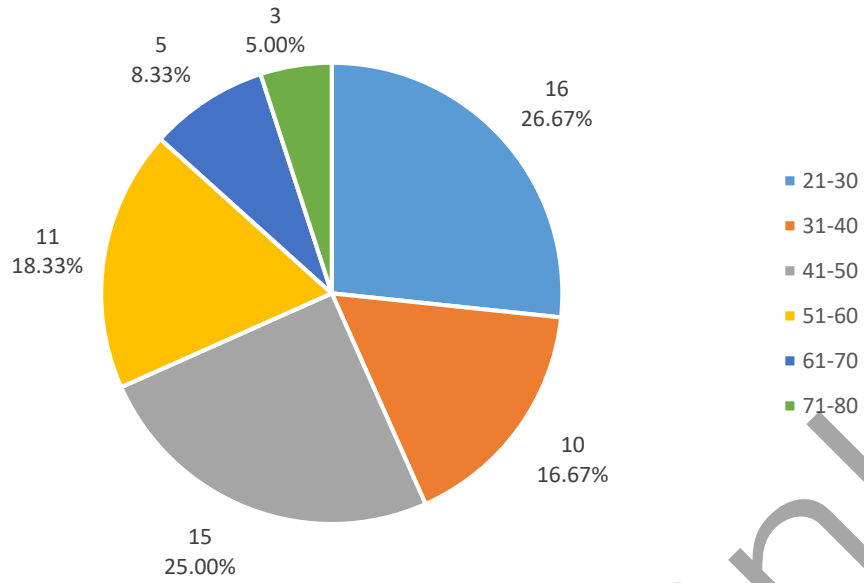


Fig:1

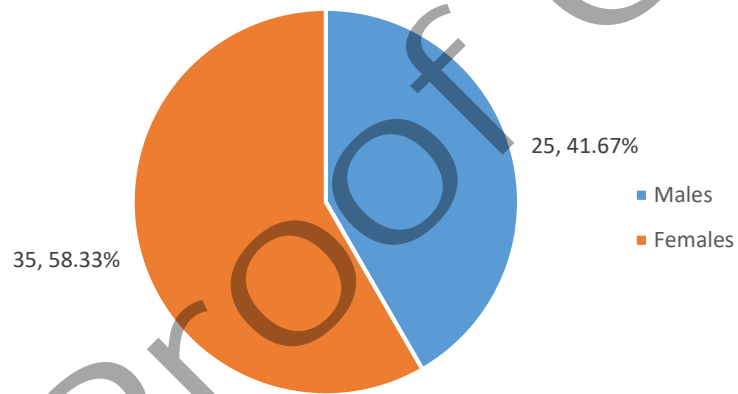


Fig: 2 Distribution of patients by gender

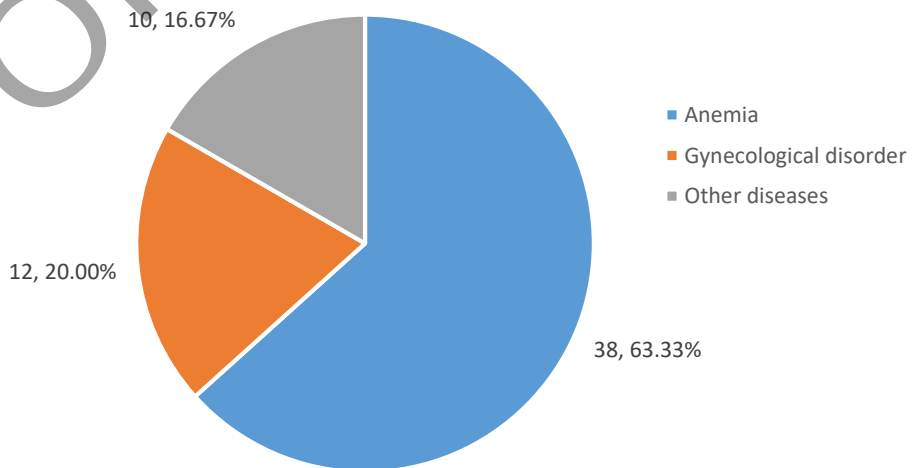


Figure 3: Distribution of patients by indication for transfusion

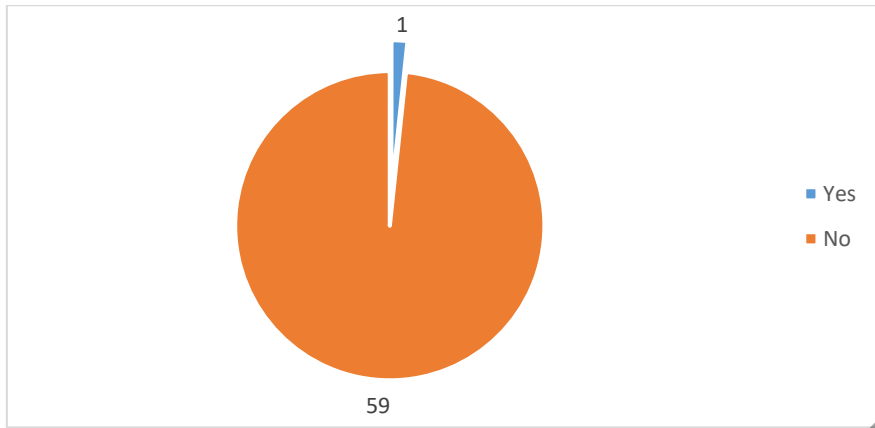


Figure 4: Distribution of transfusion reactions

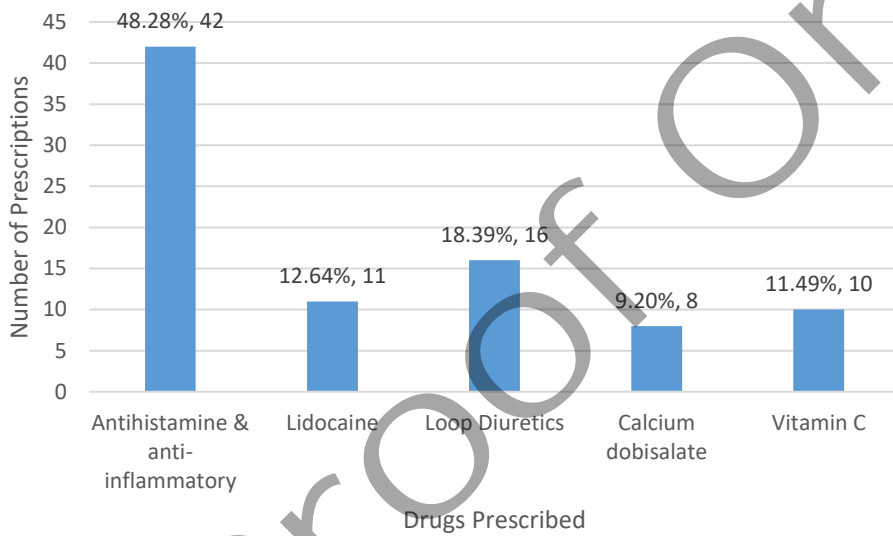
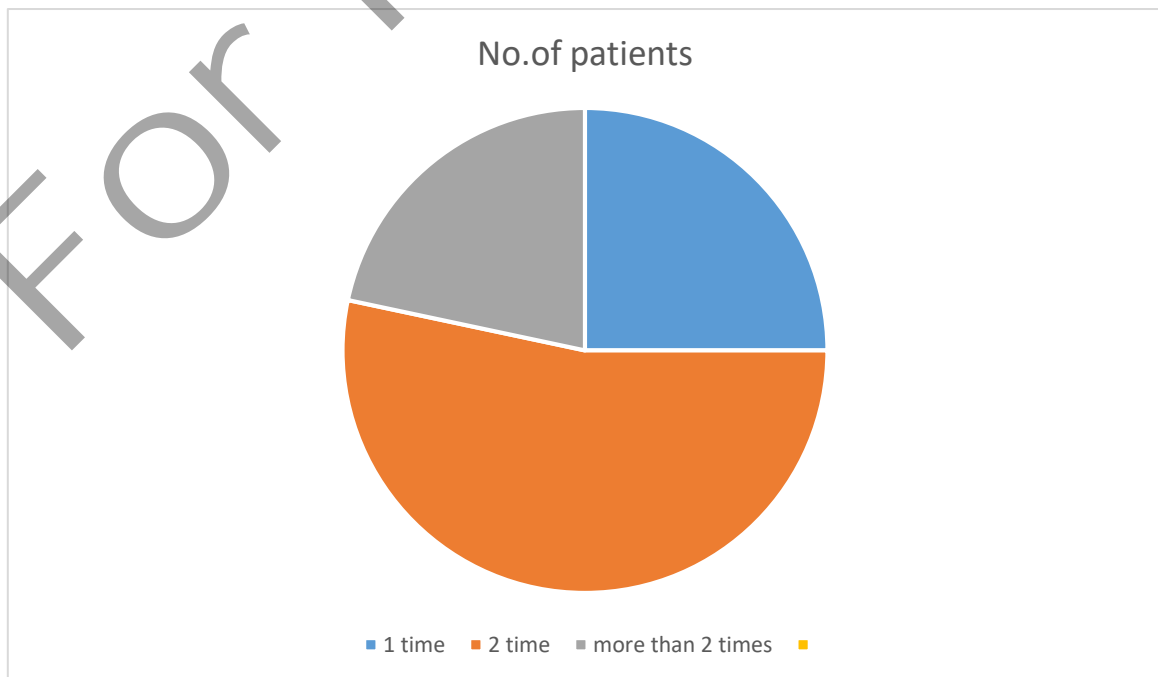


Figure 5: Prescription of transfusion related drugs



CONCLUSION:

A study was carried out in suburban area of a tertiary care teaching hospital to study the Transfusion related reactions and the methods to prevent them. The study included patients from all inpatient wards and only patients below 18 years of age were excluded. The study showed that most of the patients undergoing blood transfusion were anaemic patients that consisted of 63.33% and the majority of the Patient belonged to age group between 20-30 i.e 26.66%

Total number of cases that were collected was 60 and out of which only 1 transfusion related reaction was observed and it was caused due to transfusing the wrong blood bag number.

Most of the indication given by the doctor for Transfusion related reaction was found to be Anticoagulants, Antihistamine and immediate stop to blood transfusion.

Blood transfusion is a critical process that takes place in hospitals when a patient has Loss or blood or low haemoglobin levels or any other diseased condition it should be noted that the patient undergoing the blood transfusion process should be continuously monitored and vitals should be checked before and after transfusion and also that if transfusion is avoidable to avoid it.

It was Observed that the maximum number of patients that underwent blood transfusion was due the patients were suffering of anaemia which was then followed by patients undergoing gynaecological disorder.

Blood transfusion was also done multiple times in certain patients. Patients undergoing multiple drug transfusion did not show any sign of ADR.

DISCUSSION:

A Three month long Prospective Observational study was performed in all Inpatient ward of a teaching hospital to study transfusion related Reaction. Total number of cases collected were 60 and it was observed that the number of female patients that underwent transfusion (35) were higher than that of the male patient (25)

In the present study carried out in the tertiary hospital the percentage of transfusion related reaction was found to be 1.66%.The study is similar to the study at a tertiary care hospital that was carried out by D.R Somagiri *et al.* where haemovigilance set up was made where in it was observed that out of 51,000 Transfusion that had taken place 106 show transfusion reaction i.e 0.207% out of which non febrile transfusion reaction Transfusion reaction consisted of 50% and A study done by Paula H B Maggs, Hannah Cohen in the UK started with the haemovigilance program and it was observed that out of 400 hematology department 111 wrong blood incidents were recorded i.e 25% and 6 deaths. The record of these studies helped in developing a haemovigilance committee in the hospital.

In our study carried out it was observed that the Transfusion related reaction was an allergic reaction. The same type of reason for transfusion related reaction was found in a study carried out by Negi G, Gaur SD and Kaur R in a tertiary care hospital in Uttarakhand where the major cause of Transfusion related reaction was allergic and it was observed in 34 patients out of total 101. Standard Guidelines of Blood collection and storage Include:

It was observed that patients underwent multiple transfusion. It should be noted that patients undergoing multiple transfusions are at a higher risk of developing infection and transfusion related ADR.

If patient undergoing transfusion develops Bleeding, pain or bruising at the IV site, severe back pains, chills, nausea, vomiting, dark or reddish urine or yellowing of skin or eyes the transfusion process should be stopped immediately. The Blood Pressure of the patient should be monitored regular.

Storage of blood components was found to be in the conducted hospital of study as follows:

1-PCV and whole blood cells: it is kept in blood bank refrigerator at 2-6 degree Celsius

2-Fresh frozen Plasma: stored at -30 degree Celsius

3-Platelet RDP (random donor platelet concentration): 20-22 degree Celsius.

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