



INTERNSHIP REPORT

“Study of a Multidisciplinary Hospital's Blood Bank with a Focus on effect of Blood Transfusion on Adults in the context of Anemia, Surgery, TH, Burn case, Hemophilia, Ex. Trans”

Mentor

Dr. J.P. Singh (**Professor**)

Submitted By-

Shubham Mishra

MBA-HM (1406)

INTRODUCTION

This study aims to examine the impact of blood transfusion on adults in the context of anemia, surgery, trauma, burn cases, hemophilia, and excessive bleeding after childbirth.

Comprehensively studying the effects of blood transfusion on adults in these diverse medical contexts, this research aims to enhance our understanding of the benefits, risks, and appropriate utilization of blood products. The findings will contribute to evidence-based transfusion practices and help healthcare professionals make informed decisions to optimize patient care and outcomes.

JUSTIFICATION OF STUDY

- Blood is a crucial part of the human body and cannot be replaced. Blood cannot be grown artificially or bought off the shelf. The only supply available is another healthy individual. Medical technology advancements have made blood transfusions possible, saving many lives.
- A hospital's blood transfusion services, which are vital to its existence, determine its capacity to offer quality medical care.

OBJECTIVE

GENERAL OBJECTIVES

The general objective of this study will be Study of a Multidisciplinary Hospital's Blood Bank with a Focus on effect of Blood Transfusion on Adults.

SPECIFIC OBJECTIVES

- To estimate the extent of Blood Transfusion among adults.
- To estimate the in which Blood Transfusion is highly required in the context of Anemia, Surgery, TH, Burn case, Hemophilia, Ex. Trans.
- To estimate the extent of Blood Transfusion in Life Supportive, Therapeutic & Life Saving Activity.



ORGANIZATION PROFILE



Overview

Integral University is situated in Lucknow.

A city known for its culture, etiquette, monuments and role in the freedom struggle.

Lucknow is the capital city of the largest state of India and has a population of about 4.6 million.

Lucknow has always been a multicultural city.

Integral University has a unique culture of inclusiveness, diversity, personal intellectual, integrity and value-based education.

DEPARTMENTAL PROFILE (BLOOD BANK)

Blood Bank is situated on the Ground Floor near the Emergency Department.

Total Area: - 3.10*4.16 (12.89 square meter)

- **PREMISES OF THE BLOOD BANK:**

- ☐ DONOR'S ROOM
- ☐ QUALITY CONTROL LAB
- ☐ SEROLOGY LAB
- ☐ MEDICAL OFFICER ROO
- ☐ STORE & RECORD ROOM
- ☐ WASHING & CLEANING ROOM
- ☐ TRANSMISSIBLE DISEASE LAB
- ☐ REFRESHMENT ROOM

- **REQUISTION PROCESSING FOR BLOOD /COMPONENTS**

Requisition form is a yellow color Form. Which contains all the necessary information related to:

1. Patient Identity
2. Type of Product
3. Date & Time
4. Reason for Transfusion
5. Registration No.
6. Name of the Consultant
7. Name of the Hospital, etc.

REVIEW OF LITERATURE

These studies provide insights into various aspects of blood transfusion practices in adult patients, including transfusion protocols, adverse reactions, blood utilization, clinical outcomes, education and training, and cost considerations. They contribute to the existing literature and form a foundation for further research and improvement in transfusion medicine.

S.no	Title	Author(s)/ Year	Description
1.	Blood Transfusion Practices and Outcomes in Adult Patients: A Systematic Review"	Smith A, et al. / 2012	This systematic review provides an overview of transfusion practices and outcomes in adult patients across various medical specialties. The study highlights the importance of adhering to evidence-based transfusion guidelines and identifies areas for improvement in transfusion practices. It emphasizes the need for research to investigate the impact of transfusion on patient outcomes.
2.	Adverse Reactions to Blood Transfusion: A Retrospective Analysis of Adult Patients"	X Zhang / 2021	This retrospective analysis examines the occurrence and types of adverse reactions to blood transfusion in adult patients. The study identifies common adverse events such as febrile reactions, allergic reactions, and transfusion-associated lung injury. It emphasizes the importance of proper surveillance, monitoring, and management of transfusion-related complications to ensure patient safety.
3.	Blood Utilization and Inventory Management in a Multidisciplinary Hospital: A Quality Improvement Study"	SHW Stanger / 2012	This quality improvement study evaluates blood utilization and inventory management practices in a multidisciplinary hospital. The research identifies areas for optimization such as reducing blood product wastage, improving inventory control, and implementing evidence-based transfusion protocols. The study highlights the potential for cost savings and resource allocation improvements through efficient blood management.
4.	Effect of Blood Transfusion on Clinical Outcomes in Adult Surgical Patients: A Prospective Cohort Study	TE Purvis / 2017	This prospective cohort study investigates the effect of blood transfusion on clinical outcomes in adult surgical patients. The study examines factors such as postoperative complications, length of hospital stays, and mortality in transfused and non-transfused patients. It provides evidence on the association between blood transfusion and adverse outcomes, emphasizing the need for judicious transfusion practices.
5.	Educational Interventions to Improve Blood Transfusion Practices: A Systematic Review"	LJJ Soril / 2018	This systematic review focuses on educational interventions aimed at improving blood transfusion practices among healthcare professionals. The study analyzes the effectiveness of various educational strategies such as workshops, e-learning modules, and simulation-based training. It emphasizes the positive impact of education and training in enhancing transfusion knowledge, skills, and adherence to transfusion guidelines.

METHODOLOGY

- **Study Design:** Descriptive & Retrospective Study.
- **Data Collection:** Primary Data & Secondary Data.
 - **Primary Data-** Observation & Medical Record of Patients.
 - **Secondary Data** – Hospital Record, Department records.
- **Sample Size:** 3 Month (From 01st March'22 to 15th May'2023)
- **Data Analysis:** Data is analyzed with the help of Excel Package.
- **Variables:** The patient's age, gender, underlying medical issues, and blood transfusion information
- **Limitations:** The study's shortcomings may include its retrospective design, the potential for missing data, the possibility of confounding factors, and the generalizability of the findings to other contexts.

TEST CONDUCTED ON EACH BLOOD UNIT'S

Each blood unit provided by the donor is subjected to several tests to ensure a safe blood transfusion.

- A test to check for the malaria parasite.
- Test for Screening for Syphilis.
- For Hepatitis B Surface Antigen testing.
- Test for HIV-1 and HIV-2 Antibodies Screening.

Purpose & Scope: As it determines which blood is compatible and can be transfused to a patient, this is crucially important. Any mistake at this point could cause a deadly transfusion reaction. It will be carried out in the serology lab.

(A) Details of Blood Unit's Collected & Voluntary Donation Camps: - March-2023

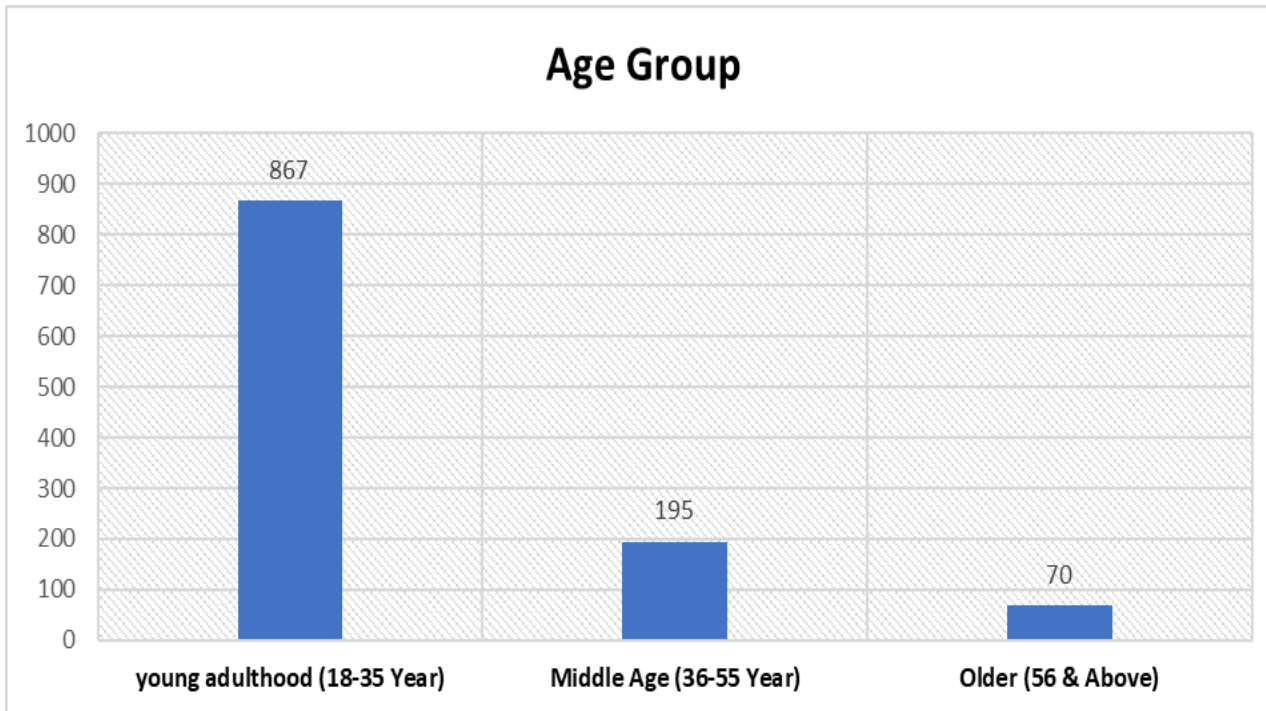
Types of Donors	No. of Donor's During the Internship			Details
	Male	Female	Total	
V.D	80	9	89	0
Replacement Donor	1026	17	1043	0
Total Donor's	1106	26	1132	0
Are Donor's Counselling Services provided at Blood BANK?				Yes
No. of Donor's Counseled?				1132
No. of Blood Unit's Supplied during the Month?				1079
No. of Voluntary Blood Donation Camp organized during the Month?				2
No. of Donor's From whom Blood was collected?				86

INTERNSHIP						
TEST CONDUCTED	VOLUNTARY COLLECTION UNIT'S		REPLACEMENT COLLECTION UNIT'S		Total	
	TESTED	POSITIVE	TESTED	POSITIVE	TESTED	POSITIVE
HIV	89	0	1043	1	1132	1
HEPATITIS - B	89	0	1043	18	1132	18
HEPATITIS - C	89	0	1043	11	1132	11
VDRL	89	0	1043	9	1132	9
MALARIA	89	1	1043	12	1132	13

STATUS OF TESTING OF BLOOD UNIT’S

- Out of the total collected blood units (1132), the hospital performed tests for HIV, Hepatitis-B & C, VDRL, and Malaria before any blood transfusion activities. The results showed that there was 1 unit positive for HIV, 18 units positive for Hepatitis-B, 11 units positive for Hepatitis-C, 9 units positive for VDRL (syphilis), and 13 units positive for Malaria.
- It is important to note that these positive cases were identified during the screening process, and appropriate measures should be taken to ensure the safety of patients receiving blood transfusions. The infected units should be properly disposed of, and the donors should be informed and counseled about their test results. Furthermore, strict adherence to transfusion guidelines and protocols should be followed to prevent the transmission of these infections to recipients.

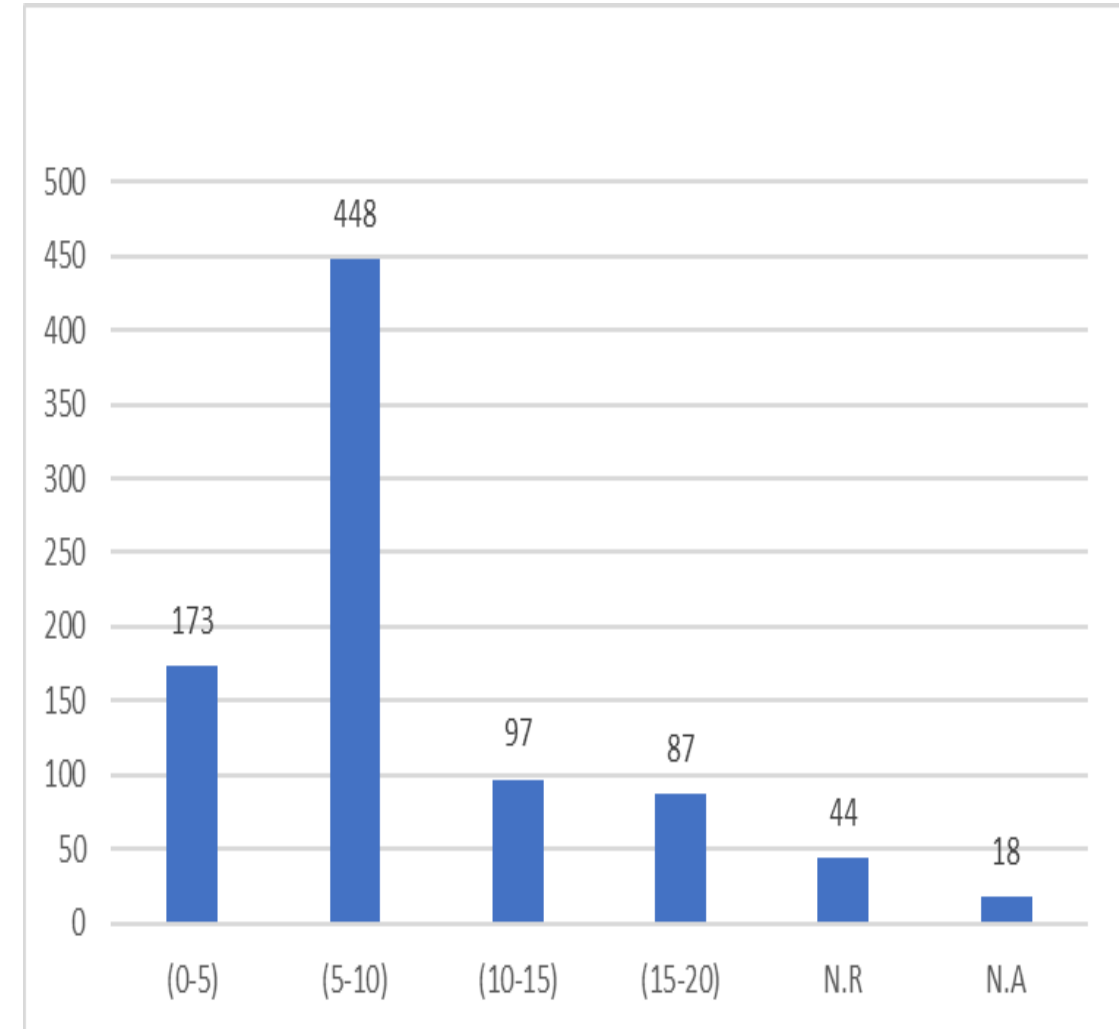
RESULTS



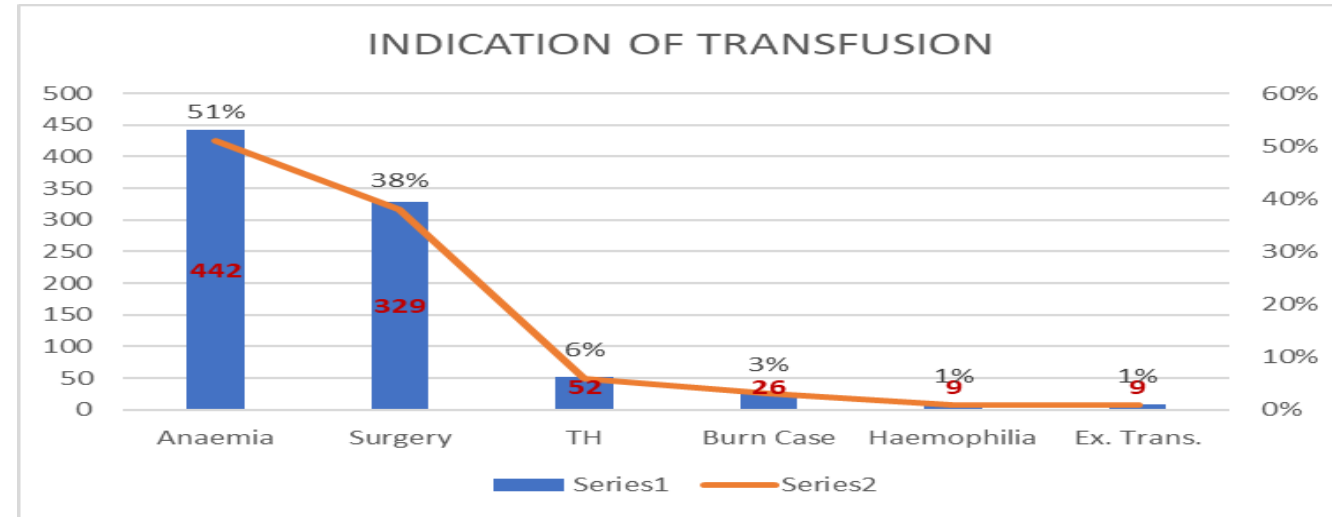
Considering the age group of adult patients (18-35 year) in the study. It enables healthcare professionals to tailor transfusion strategies and anticipate potential age-related challenges, thereby optimizing the safety and effectiveness of blood transfusions in different adult populations.

HB Level

- Hemoglobin (Hb) levels are essential in assessing an individual's blood status, particularly in relation to anemia and the need for interventions such as blood transfusion. The Hb levels depends on various factors, including age, sex, and underlying medical conditions.
- Based on the graph, the highest patient count is observed in the Hb level range of 5-10, with a total of 448 patients. This suggests that a significant number of patients fall within this range and require interventions such as blood transfusions to address their low hemoglobin levels.
- The second-highest patient count is observed in the range of 0 to 5 Hb level, with 173 patients.

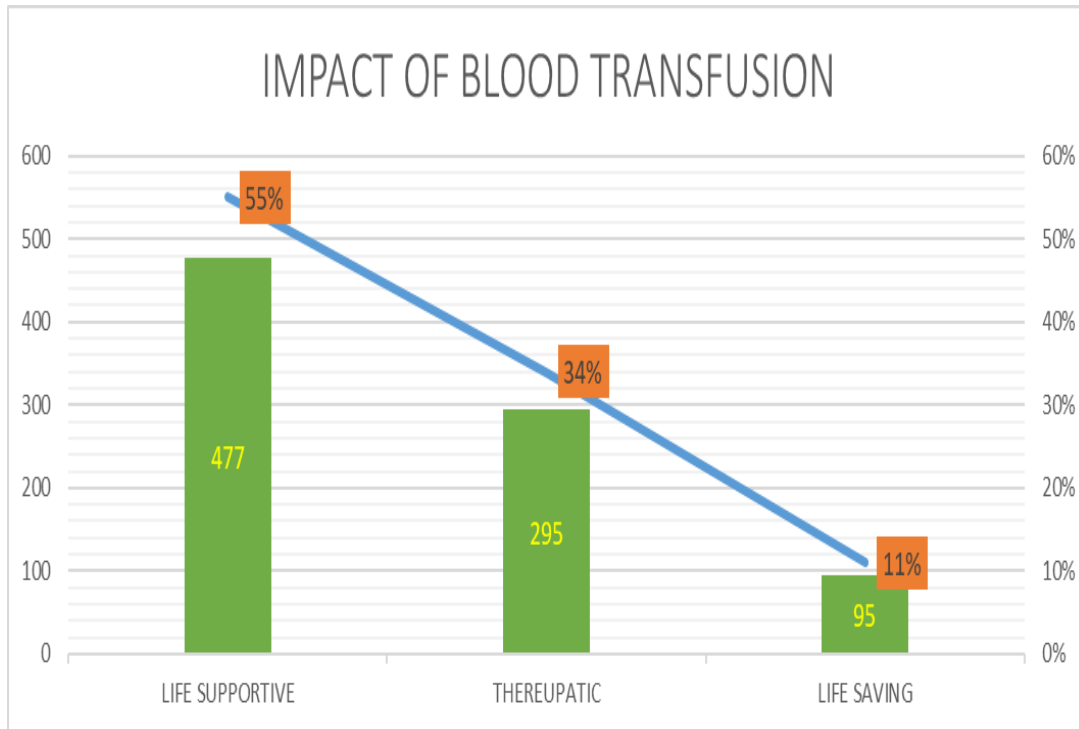


INDICATION OF TRANSFUSION



- Anemic cases:** Approximately 51% of the total blood supplies are mainly required for anemic patients. This indicates that anemia is a significant condition necessitating blood transfusion. Out of the total cases, 574 individuals require blood transfusions to address their anemia.
- Surgeries:** About 38% of the patients, totaling 429 individuals, require blood transfusions for surgical procedures. Surgeries often involve potential blood loss, and transfusions may be necessary to replace lost blood and maintain adequate oxygenation during the operation.
- Trauma and Hemorrhage (TH) patients:** Approximately 6% of the patients, representing a smaller subset, require blood transfusions due to trauma or significant hemorrhage. These cases typically involve acute blood loss, and transfusions are administered to stabilize hemodynamics and restore blood volume.
- Burn cases:** Approximately 3% of the patients, accounting for a smaller proportion, require blood transfusions due to burn injuries. Burn patients may experience substantial fluid shifts and blood loss, necessitating transfusions to maintain hemodynamic stability and support wound healing.
- Hemophilia and excessive bleeding (postpartum hemorrhage):** Hemophilia and excessive bleeding cases each represent 1% of the patients, indicating a relatively smaller number. Transfusions in hemophilia patients are necessary to replace deficient clotting factors, while postpartum hemorrhage cases require transfusions to address excessive bleeding after childbirth.

IMPACT OF TRANSFUSION



- Life supportive activities (55%): Transfusions that fall under this category are aimed at supporting the patient's overall well-being and improving their quality of life.
- Therapeutic activities (34%): Transfusions classified as therapeutic activities typically involve the use of blood products to treat specific medical conditions or complications.
- Life-saving activities (11%): This category refers to transfusions that are performed in critical or emergency situations where the primary goal is to save the patient's life.
- Overall, blood transfusions play a crucial role in supporting and saving lives, as well as providing therapeutic benefits in various medical conditions. The appropriate utilization of transfusions based on the specific needs of each patient is essential to maximize their impact and ensure optimal outcomes.

Discussion

- **Anemia:** Transfusions can help alleviate symptoms associated with anemia and enhance oxygen-carrying capacity. It's crucial to consider the underlying cause of anemia and individual patient characteristics when determining the need for transfusions and developing appropriate treatment plans.
- **Surgeries:** Blood transfusions are essential in replacing lost blood and maintaining adequate oxygenation to support successful surgical outcomes. Healthcare professionals need to assess patients' preoperative hemoglobin levels, evaluate potential blood loss during surgery, and closely monitor patients' post-surgery to ensure appropriate transfusion management.
- **Trauma and Hemorrhage (TH) patients:** Transfusions in these cases aim to stabilize hemodynamics and restore blood volume promptly. Close monitoring of vital signs and coagulation parameters is crucial to guide transfusion decisions and ensure effective management of TH patients.



Discussion

- **Burn cases:** Careful assessment of burn severity, estimation of fluid and blood loss, and monitoring of hematologic and hemodynamic parameters are essential in guiding transfusion requirements for burn patients.
- **Hemophilia and excessive bleeding:** Transfusions in hemophilia patients aim to replace deficient clotting factors, while postpartum hemorrhage cases require transfusions to address excessive bleeding after childbirth.



CONCLUSION

The findings indicate that anemia, surgical procedures, trauma and hemorrhage, burn cases, and hemophilia/excessive bleeding are the main conditions that require blood transfusions in this hospital. It highlights the importance of blood transfusions in addressing low hemoglobin levels, replacing blood loss during surgeries and traumatic events, stabilizing hemodynamics in burn cases, and managing bleeding disorders.

The study also emphasizes the need for tailored transfusion strategies based on age groups. Younger adults generally exhibit better overall health and physiological reserves, potentially leading to better outcomes following transfusions. Middle-aged adults may have varying degrees of comorbidities, and older adults often have multiple comorbidities and reduced physiological reserves, necessitating close monitoring and individualized care during transfusions.

Overall, the study underscores the significance of blood transfusions in improving patient outcomes, managing various medical conditions, and supporting critical care interventions. It highlights the need for healthcare professionals to carefully assess the risks and benefits of transfusions, tailor treatment approaches, and provide individualized care to ensure optimal outcomes for adult patients.

Thankyou

