

# Blood Bank Service: An Experience at Karnali Academy of Health Sciences, Jumla, Nepal

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## ABSTRACT

**INTRODUCTION:** In January 2016, Karnali Academy of Health Sciences (KAHS) began providing blood bank services to the Red Cross Society of Jumla. The purpose of this study was to investigate the most prevalent blood group in the study area. We must know the blood group based on the demand for blood in order to store the most common blood group and compile a donor list. **MATERIALS AND METHODS:** The retrospective study was done between 1 June 2021 and 30 November 2021 at KAHS JUMLA. We are required to donate whole blood to various departments at Karnali Academy of Health Science (KAHS), Jumla. Blood group and socio-demographic profile was collected. Descriptive analysis performed using Excel software. **RESULTS:** Out of 500 transfusion units dispatched, 416 (83.2%) were male and 84(16.8%) were female. Out of 500 units of blood, most common blood group is A +ve which was 175 and 2<sup>nd</sup> most common blood group was O+ve which was 115 (23.0%) followed by B+ve which was 111 (22.2%). The rarest blood group was B-ve which is 5 (1.0%). **CONCLUSIONS:** The most common blood group demand by patient was B +ve. The most frequent demand came from gynecological department followed by surgery and orthopaedics department. Hence, the findings may help for the planning and storing the required amount of blood by blood group for KASH to meet the future demand.

**Keywords:** Blood group, Donor, Transfusion.

## INTRODUCTION

The American Association of Blood Banks was founded in 1492, the year of the first attempt at blood transfusion in history. The transfusion of three ten-year-old boys' blood into Pope Innocent VIII [1]. The Harveys discovered blood circulation; following the discovery of blood circulation, blood transfusions began in the 1700s. The first reported human blood transfusion occurred on June 15, 1667, when Dr. Jean-Baptiste Denys administered it. He administered sheep's blood to a 15-year-old boy, who survived the transfusion. In 1818, British obstetrician Dr. James Blundell performed the first successful blood transfusion for the treatment of postpartum hemorrhage [2]. After the creation of this blood transfusion history, a significant amount of routine surgery was performed. Prior to the discovery of blood grouping, many people died due to blood group incompatibility. In 1901, the Austrian Karl Landsteiner identified human blood types, resulting in little mortality due to blood transfusions. Through the Department of Pathology

at Bir Hospital, the Nepal Red Cross Society (NRCS) has initiated a Blood Transfusion Service (BTS) in Nepal (1964). The first BTS, Laxmi Blood Bank, was established in 1966 with the mission of ensuring an adequate, safe, and cheap supply of blood and blood products to meet the transfusion needs of the Nepalese people [3, 4]. The most essential treatment for blood transfusion is the management of adverse reactions. We require information to enhance our blood transfusion policy. Our study aims to determine the optimal method of blood use to meet the need for future preparations. The precise update applicable to transfusion therapy. This could be a crucial component of the quality assurance program that provides the required data for enhancing clinical blood transfusion practice [5].

## MATERIALS AND METHODS

The retrospective study was done between 1 June 2021 and 30 November 2021 at KAHS JUMLA. We are required to donate whole blood to various

departments at Karnali Academy of Health Science (KAHS), Jumla. Blood group and socio-demographic profile (age and gender) during the aforementioned time frame was collected. Descriptive analysis performed using Excel software.

**RESULTS**

The present study was conducted for 500 transfusion blood units dispatched for various department at Karnali Academy of Health Science, Jumla, Nepal over a period of 6 months from 1<sup>st</sup> June 2021 to 30<sup>th</sup> November 2021. Out of 500 units of blood dispatched, 416 (83.2%) for male and 84 (16.8%) for female (Figure-1).

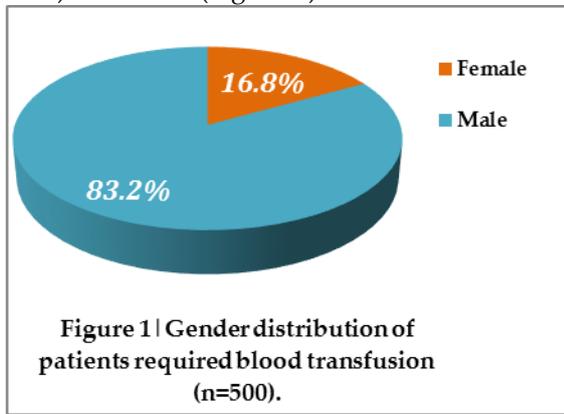


Table 1 shows the distribution of blood and its type demanded by patients during transfusion therapy at various departments of Karnali Academy of Health Science, Jumla, Nepal. Out of demanded blood, most common blood group given to patients was A+ve which is 175, 2<sup>nd</sup> most common blood group was O +ve which was 115 (35.0%) followed by B+ve which was 111(22.2%). The list common blood group given was B -ve which was 5 (1.0%), 2<sup>nd</sup> last common blood group was O -ve of 7 (1.4%) followed by A -ve which was 10 (2.0%).

The largest numbers (48.0%) of requisitions for transfusion units were from Gynecology and Obstetrics department followed by Orthopedics department, General surgery, Internal Medicine and Pediatrics department were as 32.0%, 14.0%, 4.0% and 2.0% of requisitions for transfusion units respectively (Table 2).

**DISCUSSION**

This retrospective study reveals the various patterns of blood utilization and prepares Karnali

**Table 1 | Distribution of blood group demanded at KASH during transfusion therapy (n=500)**

Blood Group	Rh		Total
	+ve	-ve	
A	175 (35.0)	10(2.0)	185
B	111(22.2)	5(1.0)	116
AB	77(15.4)	0(0.0)	77
O	115(23.0)	7(1.4)	122
<b>Total</b>	<b>478</b>	<b>22</b>	<b>500</b>

**Table 2 | Demand of blood from various department at KASH during transfusion therapy (n=500)**

Department	Number	Percentage
Gynecology	240	48.0
Orthopedics	160	32.0
General surgery	70	14.0
General Medicine	20	4.0
Pediatrics	10	2.0
<b>Total</b>	<b>500</b>	<b>100</b>

academy of health science Jumla for the future need for various blood groups. The majority of patients come from Jumla district in addition to other districts in the Karnali region. The conclusion of Venkatachalapathy and Das's [5] study on the usage patterns of various blood components in hospitals was that the use of various blood transfusion units and blood components helps to reduce the incorrect use of blood units and their components. According to a study, if we implement our plan to employ blood components, we can only use the patient-specific blood components. Consequently, unnecessary blood component usage is reduced.

We can determine the availability of blood components at our hospital using this information. The gynecological department had the most cases, followed by the orthopedics department. This observation is significant because it allows us to determine the predominant blood group. Which age group is the intended recipient of a blood transfusion? Which ethnic group is most frequently transfused? Similarly, our study found that out of 500 units of blood, A+ blood groups are the most

prevalent, comprising 175 (35.0%). The second most common blood group was O +ve 115 (23.0), the third most common was B +ve, and the rarest was B-ve. We continuously update data to determine how many blood units are required. This is useful information for quality control mechanisms. According to research conducted by McCullough J and Steeper TA et al. and Silver H and Tahhan HR et al., data utilized in quality control mechanisms should be continuously updated [6,7]. Brandia K et al. and Joshi GP et al. conducted studies [8,9] describing the simple and proper usage of blood transfusion units and blood components that are in high demand due to the easy availability of sophisticated blood banking services. Blood components are life-sustaining substances. In JUMLA, a remote region of Nepal, it saves many lives.

Karnali academy of health sciences [KASH] is doing an excellent job in this area to help the locals. Our research may play an essential role in determining which blood groups are most frequent in this

region. This discovery reveals the rarest blood group, allowing us to assist patients in need. Additionally, we can arrange for the preservation of blood to serve the public, and thereby save the lives of patients. This study gives useful information about blood banks and their components, but it relies on data from the blood bank service at Karnali academy of health science, which may limit the findings.

## CONCLUSIONS

The most common blood group demand by patient was B +ve. The most frequent demand came from gynecological department followed by surgery and orthopedics department. From this study, we knew about commonest blood group and rarest blood group demanded in KAHS. Hence, the findings may help for the planning and storing the required amount of blood by blood group for KASH to meet the future demand.

## ADDITIONAL INFORMATION AND DECLARATIONS

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**Data Availability:** Data will be available upon request to corresponding authors after valid reason.

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