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‘Blood Donor, Life Server’- A Unique and Convergent Model
A Study of Janakeeya Samithy (Arogyam) Blood Bank Complex
and Research Centre, Thrissur

REPORT

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ABBREVIATIONS

AIDS	-	Acquired Immuno Deficiency Syndrome
CPDA	-	Citrate Phosphate Dextrose Solution with Adenine
CRYO	-	Cryo precipitate
ERP	-	Enterprise Resource Planning
ELISA	-	Enzyme Linked Immuno sorbent Assay
FFP	-	Fresh Frozen Plasma
HCV	-	Hepatitis C Virus
HLFPPT	-	Hindustan Latex Family Planning Promotion Trust
Hep B	-	Hepatitis B
HIV	-	Human Immunodeficiency Virus
IMA	-	Indian Medical Association
KSACS	-	Kerala State Aids Control Society
KSBTC	-	Kerala State Blood Transfusion Council
KVVES	-	Kerala Vyapari Vyavasayi Ekopana Samithi
MLA	-	Member of Legislative Assembly
MP	-	Member of Parliament
NACO	-	National Aids Control Organization
PC	-	Plasma Concentrate
PRC	-	Packed Red Cell
RBC	-	Red Blood Cell
WHO	-	World Health Organization

DISCLAIMER

The study report has been prepared by the District Planning Office, Thrissur. The facts and figures in this report are based on primary data and secondary data collected from staff and managing committee of Janakeeya Samithy (Arogyam) IMA Blood Bank Complex and Research Centre, Thrissur and voluntary donors using structured questionnaire and focus discussions and do not reflect the views or policies of Kerala State Planning Board.

Sd/-

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District Planning Office
Thrissur

ABSTRACT

Despite being a country with a population of more than one billion, India faces a blood shortage of more than three million units. Kerala also faces a perennial shortage of blood. The state requires more than four lakh units of blood. The huge gap between demand and supply of blood can be reduced only if people voluntarily come forward to donate blood. Blood banks are operating in all districts of Kerala.

The blood requirement of Thrissur district is mainly met by Janakeeya Samithy (Arogyam) IMA Blood Bank Complex and Research Centre, Thrissur. This blood bank is a joint venture of Thrissur District Panchayath and Thrissur branch of the IMA (Indian Medical Association) under 'People's Plan Programme'. The blood bank started functioning under the coordinated efforts of local bodies of Thrissur and Indian Medical Association.

Janakeeya Samithy (Arogyam) IMA Blood Bank Complex and Research Centre thrive fully on hundred percent voluntary blood donations and is a huge success in initiating blood donation camps. It plays a significant role in supplying whole blood and the various components of blood in Thrissur District. Componentization of blood is of great significance in modern blood bank management as the shelf span of whole blood is less and only the required component is to be replenished in the patient. The youth keeps up a highly positive attitude towards voluntary blood donation.

Chapter 1

Introduction

1.1 Blood

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. An average person has about five liters of blood. Blood constitute seven to eight percent of human body’s weight.

Blood contains antibodies, nutrients, oxygen, and much more to help the body to work. This essential fluid carries out the critical functions of transporting oxygen and nutrients to our cells and getting rid of carbon dioxide, ammonia, and other waste products. In addition, it plays a vital role in our immune system and in maintaining a relatively constant body temperature.

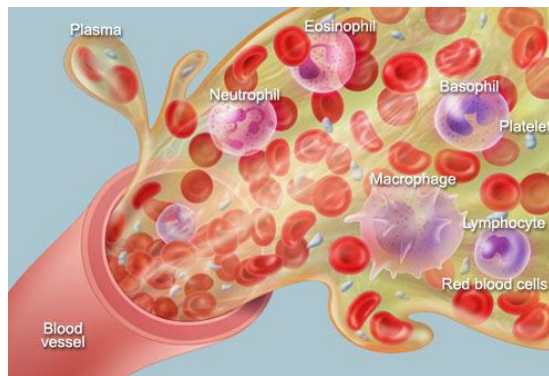
Blood is a highly specialized tissue composed of more than 4,000 different kinds of components. Four of the most important components are red cells, white cells, platelets, and plasma. Irrespective of any population or regional differences, all humans produce these blood components.¹

There are four major blood groups determined by the presence or absence of two antigens – A and B – on the surface of red blood cells:

¹ www.webmd.com/heart/anatomy assessed on 29.11.2015

- **Group A** – has only the A antigen on red cells (and B antibody in the plasma)
- **Group B** – has only the B antigen on red cells (and A antibody in the plasma)
- **Group AB** – has both A and B antigens on red cells (but neither A nor B antibody in the plasma)
- **Group O** – has neither A nor B antigens on red cells (but both A and B antibody are in the plasma)²

Fig 1
Blood components



1.1.1 Need of Blood

More than one million new people are diagnosed with cancer each year. Many of them will need blood, sometimes daily, during their chemotherapy treatment. A single car accident victim can require as many as hundred units of blood. Every two seconds someone needs blood.

² <http://www.redcrossblood.org> accessed on 29.11.2015

India faces a whopping blood deficit of approximately 30 to 35 per cent annually. The country needs around 8 to 10 million units of blood every year but manages a merely 5.5 million units. On top of it, there exists mind-boggling gender disparity among blood donors. Ninety four per cent of blood donations in the country are made by men while women contribute only six per cent, as reported in the World Health Organization's (WHO) global database on blood safety updated in June 2011.³

The average adult has about 10 units of blood in his body. Roughly one unit is given during a donation . Donors can give either whole blood or specific blood components. One donation can save up to three people's lives.

1.2 Blood Donation

Blood donation is carried out when a person voluntarily agrees for blood to be drawn with the intention of donating it. The donated blood may be used for transfusions or it may be separated into individual components to be used as required. The latter procedure is called fractionation.

Blood donation may be of different kinds. In the developed countries unpaid donors give blood to replenish a community supply. In economically poorer countries, however, blood donation is carried out according to demand, as the established blood ties are extremely limited. It may be an altruistic act or it may include a cash payment or incentives other

³ <http://zeenews.india.com> accessed on 29.11.2015

than money. A person can have blood drawn and stored for own future use.

Typically, it is mandatory to get consent from potential donors before blood donation. In the case of minors, parental consent is required. In some countries the donors may enjoy anonymity while in others it may be essential to know their ethnicity. People who are potential donors are physically examined by a physician and their medical history is also examined. They will also have their blood screened for diseases that are easily transmitted through blood donations, such as viral hepatitis and AIDS.

Blood donation is rather easy and safe for most people. Some may faint or feel some pain when the blood is being drawn. The frequency with which blood can be drawn is dependent on various factors and also the law of the land. It may in general vary from days to month.

The amount of whole blood donated may vary between 300 ml to 500 ml (1 pint). Collection may be carried out manually or by using automated equipments, the latter helping to draw specific components from the blood. How often a donor can donate varies from days to months based on which component of the blood they are donating and the laws of the country where the donation takes place.

Blood components have a very short shelf life, therefore, acquiring a steady supply or stock piling blood or any of its

components is a perennial problem. To circumvent this obstacle, scientist even tried their hand at transfusing blood from other animals to humans but in vain. It appears that only the blood of one human suits another.

Globally, there are tragedies happening at magnanimous scale and the demand for blood will escalate. After the September 11tragedy⁴ the need to store blood was discussed with great fervor and the need to keep stock of a steady supply was greatly emphasized. According to 2008 estimates there was an annual collection of eighty one million units of blood.

Fig 2



Donating blood is definitely an altruistic noble and noble gesture filling the donor with happiness and contentment. It is an intensely humanitarian act which tides over manmade barriers and

⁴ A series of four coordinated terrorist attacks by the Islamic terrorist group al-Qaeda on the United States on the morning of Tuesday, September 11, 2001.

one of the best ways to express our love and care for our fellow beings.

1.2.1 Blood Donors

"Donor" means a person who voluntarily donates blood once he has been declared fit after a medical examination, without accepting in return any consideration in cash or kind from any source. This does not include a professional or a paid donor.

When a donor gives blood to be stored and used later for an unknown recipient it is called allogeneic or homologous blood donation. Camps can be held for this kind of donation and an event where many allogeneic donors come to give blood is called a blood drive or blood donor session.

When blood is donated by a person to be used at a later date by that person it is called autologous blood donation

- 1. Voluntary donors** - Here the donor donates blood as a humanitarian act as a result of intense motivation. This is the best kind of blood donation as it is a self-less service. The identity of the donor can be hidden, if he so desires.
- 2. Replacement donors** - During an emergency, the relatives and friends of an affected individual donate blood, irrespective of blood group, to the blood bank and in turn the bank releases the required group blood for the individual's need. This is quite common in developing countries and rare in the developed world.

- 3. Professional donors** -These donors exchange their blood for cash or other incentives. They donate blood at frequent intervals and it is very likely that they transmit lethal diseases through the donated blood.

Before donating blood it is ensured that donors are medically fit to donate blood. Their medical history is recorded and they are physically examined to ensure that they don't suffer from any diseases during blood donation. Their hemoglobin or hematocrit level is tested. Being anemic is the primary reason why most donors are turned down. In addition to this the blood pressure, temperature and pulse rate of the patient are evaluated. Pregnant women and elderly folks are usually discouraged from donating blood.⁵

1.3 Review of Literature

Nicola Lacetera (2010) noted that about 38 percent of Americans are eligible to donate blood and only about 8 percent do. Many of those who donate for the first time don't donate again, and there are some population segments which very rarely give blood.⁶

Dr Piyush A Patel and three more (2012) said that because of anxiety syndrome, the rate of adverse donor reactions

⁵ Blood Donation by Dr. Reeja Tharu

⁶Nicola Lacetera, assistant professor of economics at the university's Weatherhead School of Management, <http://phys.org/news/2010-03-blood-donation.html#jCp> on 6.1.2016

was very high in first time donors as compared to repeated donors. On effect of entertainment on adverse donor reactions during and after blood donation noted that television set with entertaining channels had anxiolytic effect on the donors and striking decline (0.81% to 0.45%) was noted in adverse reactions in replacement donors at blood bank.⁷

Benedict Nwgoch & Alexander Ikenna (2013) said that a significant association between blood donation and sex. Males in our society are more likely to donate blood than females. This is quite understandable since women within the donor age range usually may have one or another factor interfering with their chances of being suitable to donate. Factors such as their frequent menstrual cycles, pregnancy, and lactation may prevent them from donation.⁸

1.4 Blood Bank

A blood bank is a cache of blood or blood components, brought about as a result of blood donation. They are stored and preserved for later use in blood transfusions.

⁷ Effect of Entertainment on Adverse Donor Reactions during and after blood donation- Dr Piyush A Patel & 3 more at National Journal of Integrated Research Medicine 2012:3(4): 102-108

⁸ Knowledge, Attitude, and Practice of Voluntary Blood Donation among Healthcare Workers at the University of Benin Teaching Hospital, Benin City, Nigeria Journal of Blood Transfusion Volume 2013 (2013)

1.4.1 Evolution of Blood Bank

It was in 1915 an institution was started by Richard Lewison of Mount Sinai Hospital, New York, initiating the use of sodium citrate as an anticoagulant. This actually led to the development and establishment of blood banks. This discovery transformed the blood transfusion procedure from direct (vein-to-vein) to indirect.

In the same year, Richard Weil demonstrated the feasibility of refrigerated storage of anticoagulated blood. The introduction of a citrate-glucose solution by Francis Peyton Rous and JR Turner two years later permitted storage of blood in containers for several days. This path-breaking discovery actually led to the opening of the first "blood depot" in Britain during the World War I. Oswald Hope Robertson, a medical researcher and U.S. Army officer during that time established the depots, is now recognized as the creator of the first blood bank.

By the mid-1930s, the former Soviet Union had set up sixty large blood centers and more than 500 subsidiaries. They stored "canned" blood and shipped it to all corners of the country. America came to know about this Soviet experience where in 1937 one Bernard Fantus, director of therapeutics at the Cook County Hospital in Chicago, inspired by the Soviets established the first hospital blood bank. The establishment of a hospital laboratory that preserved and stored blood led Fantus to originate

the term "blood bank." Within a few years, hospital and blood banks were established across America.

An important breakthrough came in 1939-40 when Karl Landsteiner, Alex Wiener, Philip Levine, and R.E. Stetson discovered the Rh blood group system. It was found to be the cause of the majority of transfusion reactions up to that time.

In 1942-43, J.F. Loutit and Patrick L. Mollison introduced acid citrate dextrose (ACD) solution, which reduces the volume of anticoagulant. This permitted greater volumes of transfusions and created longer storage life.

It was Carl Walter and W.P. Murphy, Jr., who introduced the plastic bag for blood collection in 1950. It replaced breakable glass bottles allowing for the evolution of a collection system capable of safe and easy preparation of multiple blood components.

Introduced in 1979, it was meant to extend the shelf life of stored blood. It was an anticoagulant preservative, CPDA-1. It increased the blood supply and facilitated resource sharing among blood banks.

Freezing of Red Blood Cells is done by combining them with a solution of glycerol to prevent ice crystal formation. And as such frozen Red Blood Cells have a stated shelf life of ten years. The down side of frozen blood cells is that the process is expensive and time-consuming. Very few blood banks maintain such stocks.

1.5 Blood requirement & availability – Present Scenario

About 108 million blood donations are carried on globally. About 10,000 blood centers in 168 countries have reported to collect blood from a total of 83 million donations. According to a 2012 World Health Organization (WHO) report, in India, only nine million units of blood are collected annually, while the need is for 12 million units.

There are 45 major blood banks functioning in our state, Kerala⁹. Out of these 45, three are functioning at Thrissur district and they are:

1. District Hospital, Thrissur
2. Janakeeya Samithy (Arogyam) I.M.A Blood Bank Complex and Research Centre, Thrissur
3. Medical College Hospital, Thrissur

1.6 Janakeeya Samithy (Arogyam) IMA Blood Bank Complex and Research Centre, Thrissur

Janakeeya Samithy (Arogyam) IMA Blood Bank Complex and Research Centre, Thrissur is a joint venture of Thrissur District Panchayath and Thrissur branch of the IMA (Indian Medical Association) under People's Plan Programme.

The project, Janakeeya Samithy (Arogyam) IMA Blood Bank Complex and Research Centre, Thrissur has been registered under Charitable Societies Act to establish and run the centre. The blood bank is governed by thirteen member managing committee.

⁹ www.ksacs.kerala.gov.in accessed on 4.8.2015

They are president, vice president and health standing committee chairman of district panchayath and ten doctors from IMA. The blood bank complex is being managed chiefly by the Thrissur branch of the IMA.

1.6.1 Evolution and Functioning of the institution

Janakeeya Samithy (Arogyam) IMA Blood Bank Complex and Research Centre, Thrissur was conceptualized in the year 1998 to establish a modern blood bank in this part of Kerala.

The existing blood banks were few and generally had the disadvantages like small scale of operation, poor infrastructure, lack of hygiene, economically unstable, excessive dependence on replacement donors, blood shortage, poor quality of testing - resulting in high percentage of transfusion transmitted diseases like HIV, hepatitis B, HCV, malaria etc. Only five per cent of blood collected was used in blood componentization due to low awareness amongst the clinicians to use the blood components and lack of management systems to shelf them properly.

Since majority of blood banks were attached to hospitals, these would not grow beyond hospital's requirement of blood. Based on these gaps a concept of modern blood bank under 'People's Campaign' with the support of IMA had aroused and resulted in the establishment of Janakeeya Samithy (Arogyam) IMA Blood Bank Complex and Research Center, Thrissur.

The blood bank is designed to expand in a modular manner to accommodate 150,000 units of blood per annum. The objective of making this blood bank was to create a modern blood bank, operating with high efficiency and accuracy similar to the blood banks of developed countries, but still runs at cost which a developing country's economy can manage.

The blood centre was conceptualized to cost ₹ 300 lakhs. This required indigenous design and development of technology and systems. A free plot of land of three acres was allotted by district panchayath to build a double storied building with an area of 2715 sq meter.

The institution was inaugurated on 18.10.2004. This is essentially a people's project, to be established and run on a self sustaining basis.

1.6.2 The special features of the institution

The blood bank provides round the clock service. The blood bank has component separation unit, central laboratory, computerized library and training center.

The three fundamental philosophies guiding Janakeeya Samithy (Arogyam) IMA Blood Bank Complex and Research Centre are:

1. Encourage only non- remunerated voluntary blood donors (NRVBD) and avoid replacement donation
2. Maximum component separation and their distribution.
3. Keep the scale of operations reasonably high to bring down the processing cost of blood components.

1.6.3 Geographical coverage by the institution

Janakeeya Samithy (Arogyam) I.M.A Blood Bank Complex & Research Centre is situated at Thrissur, the geographical center of Kerala. The immediate beneficiaries of this facility will be the people of three districts i.e. Thrissur, Palakkad, and Malappuram.

1.6.4 Marketing efforts of the institution

Patients need blood for cure and survival is the sole reason for the existence of a blood bank. This blood bank has been providing patients with safe, high quality blood without replacement in shortest possible time, along with sensitizing and mobilizing the society to donate blood. This was the foundation philosophy of the blood bank's societal marketing efforts.

The blood bank had developed a social marketing team, in-house studio, educational materials, motivational materials and inspirational blood drive systems to request the society to help their brethren. The blood bank maintains tie up with annual functions and social gatherings of Thrissur and remain connected with them. Every year the blood bank calls the organizers of these gatherings and gets permission for organizing camps.

'Blood Mobile' a blood collection van is also functioning under the institution with sophisticated facilities and can collect blood from 25 to 30 people in three hours time.

Even though the processing cost of the blood is intended to be charged from the user, a great part of the population is given subsidy or even free services.

Ten years of operation and efforts have brought to the blood centre 95,712 blood donations and issuance of 165,123 blood & components and an opportunity to save thousands of precious lives.

1.6.5 Blood donation process in the institution

Blood donation is carried out under the supervision of trained, skilled technicians. The entire procedure, from start to finish, does not take more than 45 minutes.

The blood is usually drawn from the median cubital vein, from the inside of the elbow. An antiseptic such as iodine is used to clean the skin above this vein. This helps to prevent bacterial infection at the site of puncture and also helps to prevent the blood drawn from being infected.

A tourniquet may be used to elevate the blood pressure in the veins of the arm. This helps to ease and speed up the process. Sometimes the donor is given an object to squeeze repeatedly in order to increase blood flow to the targeted vein.

Invariably a needle with a larger gauge is used in order to minimize the shearing forces that can cause damage to the RBCs. A mild sting may be experienced when the needle is inserted, but there should be no pain during the donation.

Fig 3
Blood Donation Process



There are two main procedures that are used to draw blood from a donor. The first and most common method is when whole blood is drawn from the donor and is collected in a plastic bag that contains anticoagulants and preservatives such as sodium citrate, phosphate, dextrose or adenine.

The collected blood has been separated into its components (mainly the RBCs and the plasma) and is stored for future usage.

Most recipients are in need of only certain components and do not require whole blood. The second method is apheresis, where blood is from the donor, separating the components using a centrifuge, storing the component required for transfusion and returning the remaining components to the donor. Usually the RBCs are transferred back to the donor while the plasma and platelets are put to good use. Apheresis is carried out using specifically designed instruments.

Fig 4
Stock Room



On an average 450ml to 500 ml of blood is drawn from one individual at a time. This amount of blood, along with the anti coagulants present in the collection bag is referred to as ‘one unit’ of blood.¹⁰

Fig 5
Blood Bags



¹⁰ Standards for Blood Banks and Blood Transfusion Services- National Aids Control Organization, Ministry of Health and Family Welfare, Government Of India

1.6.6 Janakeeya Samithy (Arogyam) IMA Blood Bank Complex and Research Centre - Today

Janakeeya Samithy (Arogyam) IMA Blood Bank Complex and Research Centre is a non-profit organization registered as a charitable society involved in hundred per cent voluntary blood collection.

The blood bank is collecting about 20,000 units of blood per annum. About 40,000 blood & its components are distributed annually. This blood centre ensures the provision of highest quality of blood and components comparable to any developed country at the cost of ₹ 400 to ₹ 650 per unit.

Now this blood bank is one of the leading blood banks of Kerala professionally managed by a team of experienced doctors and others devoted to the cause. The institution is a fully automated blood centre with barcode systems and fully integrated ERP¹¹ software. The blood bank has introduced novel campaigns to attract and involve the different sections of the society towards blood donation.

The blood bank has also launched their website to salute blood donors, hundreds of physicians who use blood to save their patients and hundreds of organizations who become part of the

¹¹ Enterprise resource planning (ERP) is a category of business management software-typically a suite of integrated applications that an organization can use to collect, store, manage and interpret data from many business activities including product planning, cost manufacturing, marketing sales etc.

great social act of blood donation drive for the benefit of the society at large. Their website's main aim is to sensitize the society towards blood donation and make our society self sustained and insured with respect to blood requirement.

The objective of this mission is to give enough coverage towards the life saving deeds of blood donors, physicians and the hardships of patients needing blood.

Janakeeya Samithy (Arogyam) I.M.A Blood Bank Complex and Research Centre has launched a What's App group named '*Rare Group Guys*' in 2015. More than 2000 repeated donors of the blood bank are already members of this group. The group ensures instant spreading of information with regard to need of blood and ensures availability.

The institute has received numerous certificates for the best social service organization towards its contribution to safe blood availability

- 2008-Kerala State AIDS Control Society recognized the outstanding performance for the voluntary blood collection
- 2009- Elevated as a Regional Blood Transfusion Centre
- 2008, 2009 and 2010 - Award for the best blood bank in Private Sector
- 2011- award for conducting maximum number of blood donation camps

1.7 Relevance of the Study

Within ten years of operation this institution have initiated 95,712 blood donations to blood bank and issued 1,65,123 blood & components. Thus, the blood bank has been established as the biggest contributor to voluntary blood donations and life saving efforts in Thrissur district and had received the awards for best blood bank in private sector and for maximum blood donation camps. The three tiers of the panchayaths, MLA & MPs contributed their development fund to this project and through this project grama, block & district panchayaths, MPs & MLA and I.M.A Thrissur branch joined their hands in the mission to save precious human lives and serve as a symbol of the social commitment.

1.8 Objective of the Study

Janakeeya Samithy (Arogyam) IMA Blood Bank Complex and Research Centre now claim that they fulfill fifty per cent blood requirement of various hospitals in the district and save a lot of precious human lives. This study aims to show the role of this institution to take Thrissur city to one of the model societies in the world with respect to meeting its own blood requirements.

Based on the above broad objective, specific objective framed for the study are:

1. To evaluate the functioning of Janakeeya Samithy (Arogyam) IMA Blood Bank Complex and Research Centre, Thrissur
2. To study the requirement satisfaction of blood of the hospitals in Thrissur city
3. To examine the attitude of the people towards blood donations

1.9 Methodology and data collection

The study requires the collection of primary as well as secondary data. In order to evaluate the functioning of the institution, the primary data was collected from managing committee & staff of the institution through interviews and discussions. The primary data has been collected from the hospitals which received blood and blood components from this blood bank through interviews.

In order to understand the requirement of blood and blood components in the hospitals of Thrissur district, data were collected from the major hospitals of the district which have blood bank facilities. Thirty percent of the hospitals who received blood and blood components from the blood bank were taken. Convenient sampling method is adopted for the selection of the sample. The sample contains Govt. Medical College, Thrissur; Amala Medical College, Thrissur; District Hospital, Thrissur; Elite Hospital, Thrissur; Mother Hospital, Thrissur; West Fort Hospital, Thrissur and Aswini Hospital, Thrissur.

This blood bank is organizing 15 to 20 blood donation camps per month and the data were collected from the donors of 30 percent blood donation camps using a pre scheduled questionnaire during the study period (December 2015). Field visits and focus group discussions especially with the blood donors were conducted and relevant information regarding the attitude of the donors where collected.

Secondary data were collected from District Panchayath, Janakeeya Samithy (Arogyam) IMA Blood Bank Complex and Research Centre, Thrissur, the hospital's blood bank in the sample& the web site.

A stakeholder's meeting was conducted on 13-07-2016 attended by the director and other staff of the blood bank along with representatives of local bodies who contributed to the starting of the blood bank, donors, camp organizers and the beneficiaries of the blood bank. Power point presentation explained the various aspects covered in the working paper. The meeting then discussed the technical aspects of the report.

Fig 6
Stakeholder's Meeting



The stakeholders contributed valuable suggestions such as free counseling was provided to the donors who was found positive to diseases accredited by WHO. Simple arithmetic tools like percentages, averages and convenient sampling were used for the study. Bar and pie diagrams, line and column graphs were used to represent data graphically.

1.10 Scope of the study

Janakeeya Samithy (Arogyam) IMA Blood Bank Complex and Research Centre is the only blood bank formulated under the leadership of District Panchayath and other local self governments and completed ten years of functioning. The study will analyze the strength, weakness, opportunities & challenges of the centre. This study will help other local bodies to establish this type of unique, sustainable and convergent projects in future.

1.11 Organization of the report

This report is organized in three chapters. Chapter one is organized in respect of available review of literature closely connected to the objectives of the study. Blood, blood bank and its evolution, blood donation, blood donors in general and evolution and functioning of Janakeeya Samithy (Arogyam), I.M.A Blood Bank Complex and Research Centre in particular is explained in the chapter. Second chapter contains the analysis and interpretations based on the various objectives of study. Findings and some suggestions based on the analysis are summarized in the last chapter.

Chapter 2 Analysis and Interpretations

Janakeeya Samithy (Arogyam) IMA Blood Bank and Research Centre, Thrissur was a people's project and was inaugurated on 18.10.2004. The capital required for the beginning of the blood bank was mainly raised through contributions from the local bodies of Thrissur district. The initiatives from the local bodies were further strengthened by contributions from various people and philanthropic institutions. The blood bank had received the initial contributions as follows:

**Table 2.1
Capital of the institution**

Contributors	Amount (in lakhs)
District panchayath	36.32
Block panchayaths (7)	7.50
Grama panchayaths(47)	80.34
Municipalities(7)	33.35
MPLADS	15.00
MLA SDF	5.00
IMA	6.00
Doctor's contributions	9.44
Others	15.00

Source: Reports of blood bank

Hon.MP Sri.C.O.Poulose had contributed ₹ 5 lakhs towards the construction of building, Hon.MP Sri.A.C.Jose provided ₹ 10 lakhs for the construction of bleeding room and Hon.MLA Sri.Therambil Ramakrishnan had contributed ₹ 5 lakhs for the purchase of 63kv generator. The fund for the purchase of blood bank machineries and instruments were collected through donations from various sources.

The patients need blood for cure and survival is the sole reason for the existence of every blood bank. The immediate availability of blood in need is the efficiency and success of a blood bank and to attain this, systematic functioning of the institution is necessary.

2.1 Functions of the Janakeeya Samithy (Arogyam) IMA Blood Bank and Research Centre

Blood donation, collection, componentization and issuance are the main functions of the Janakeeya Samithy (Arogyam) IMA Blood Bank and Research Centre, Thrissur. The effective and successful functioning of the blood bank required skilled human resources, supported by finance and efficient office management.

2.1.1 Human Resources of the Institution

The institution is governed by a 'management committee'. The management committee consisted of chairman, vice chairman, director, joint director, immediate past director and eight members. Out of the eight members, three members are from district panchayath that is, panchayath president, vice president and chairman, health standing committee. All the others of the committee are doctors by profession and members of IMA.

Forty regular employees plus thirteen temporary staff were working in the blood bank. The staff consists of medical officers, technical supervisor, blood bank technician, lab assistant, staff nurses, receptionist, data entry operator, manager, clerical

staff, driver, attender and security personal. All the doctors in the blood bank work on honorary basis for the institution.

They worked 24 hours to ensure supply of different groups of blood and blood components in adequate quantity to any one in need of the same. The coordination between the managing committee and the staff enabled the effective functioning of the institution.

2.1.2 Major Income and Expenditure of the Institution

Income:

Since the blood bank originated and ran with only donations, the major income of the blood bank was the service charge received on issuance of the blood and blood components and the grants in cash and kind from NACO, camp fund from KSACS and donor refreshment fund from KSBTC.

Table 2.2
Service charges received on issuance (₹ in lakhs)

Year	Income		%
	Total	Service charges	
2007-08	96.82	85.39	88
2008-09	116.40	99.56	86
2009-10	158.96	131.83	83
2010-11	163.13	149.19	91
2011-12	168.52	148.67	88
2012-13	215.5	183.92	85
2013-14	198.30	186.51	94
2014-15	225.28	185.54	82

Source: Reports of blood bank

The above table shows that on an average 87 percent of the income of the blood bank comes from the service charges it received on supplying blood and its components.

Table 2.3
Grants received from NACO (₹ in lakhs)

Year	Grants
2007-08	4.01
2008-09	9.27
2009-10	18.03
2010-11	6.25
2011-12	15.86
2012-13	15.83
2013-14	3.81
2014-15	16.55

Source: Reports of blood bank

The grants received from NACO in cash and kind forms a major source of income for the blood bank¹². Grants were provided in cash till the beginning of the year 2009, because they did not have the facility to store kits. From 2009 April onwards grants was provided in the form of kind which includes blood bags, test kits, reagents, medicines and lab items.

Blood bags provided by NACO included quadrable, triple and single blood bags. The test kits for HIV, HCV, malaria, HBsAg. The main lab items supplied were gloves, syringes, cotton, tips, pipette, test tube, glass slide, band aid and lancet. The reagents and medicines consisted of Anti-A, B, D, H, bovine

¹² From 1st April 2016 onwards NACO has stopped providing grants in cash to the blood bank.

albumin, RPR, eryclone. Voluntary blood donation certificates and leaflets are also provided by NACO.

Expenditure:

In order to analyze the major expenses of the blood bank, we had taken the audit reports of last eight years (2007-15).

The blood bank had fifty employees whose salaries, wages and allowances ¹³ forms the major item of expenditure of the blood bank (see table 2.4).

Table 2.4
Salary & wage of staff (₹ in lakhs)

Year	Expenditure		%
	Total	Salary & Wages	
2007-08	87.39	35.35	41
2008-09	114.22	25.28	22
2009-10	139.53	27.04	19
2010-11	156.44	43.17	28
2011-12	185.10	51.97	28
2012-13	197.30	61.49	31
2013-14	198.40	67.31	34
2014-15	230.81	84.91	37

Source: Audit reports of blood bank

The collected blood is going through a series of testing in the blood bank which requires reagents and medicines. The table below shows that purchase of reagents and medicines forms 10% of the expenditure of blood bank as below:

¹³ Salaries & Allowances included EPF &ESI contributions, filing fee, salary, wages& allowances, security charges, staff uniform& others.

Table 2.5
Reagents & medicines purchased (₹ in lakhs)

Year	Expenditure	Reagents & Medicines	%
2007-08	87.39	14.63	17
2008-09	114.22	13.09	11
2009-10	139.53	9.02	6
2010-11	156.44	13.37	9
2011-12	185.10	22.47	12
2012-13	197.30	17.38	9
2013-14	198.40	21.56	11
2014-15	230.81	22.63	10

Source: Audit reports of blood bank

One of the major functions of blood bank was the issuance of blood and blood components. The blood components had to be centrifuged, separated and shelved properly and safely at refrigerated temperatures. The blood bank used refrigerators, refrigerated centrifuges, -80⁰ & -40⁰ deep freezers, agitators, and incubators etc. These required uninterrupted electricity supply. Five to seven percent of the total expenses of the institution were spending on this (see table 2.6).

The blood bank has come up with a proposal to utilize solar energy to meet their energy requirements costing ₹ 25 lakhs, and is expecting that the District Panchayath will include this project in their annual plan 2016-17, which will reduce one of their major expenses.

Table 2.6
Electricity, water & generator expense (₹ in lakhs)

Year	Expenditure		%
	Total	Electricity, water / Generator	
2007-08	87.39	7.43	9
2008-09	114.22	10.04	9
2009-10	139.53	9.09	7
2010-11	156.44	9.97	6
2011-12	185.10	10.02	5
2012-13	197.30	11.29	6
2013-14	198.40	12.85	6
2014-15	230.81	11.91	5

Source: Audit reports of blood bank

Table 2.7
Repairs & maintenance charges (₹ in lakhs)

Year	Expenditure		%
	Total	Repairs & Maintenance	
2007-08	87.39	3.14	4
2008-09	114.22	5.48	5
2009-10	139.53	7.19	5
2010-11	156.44	6.32	4
2011-12	185.10	7.97	4
2012-13	197.30	9.92	5
2013-14	198.40	7.57	4
2014-15	230.81	12.32	5

Source: Audit reports of blood bank

The Blood Bank Complex and Research Centre had completed twelve years of functioning leads to the wear and tear

of machines, equipments, vehicles and repairs of building. As per the above table, four to five per cent of the expenditure was spent on repairs and maintenance. Some machines required replacement itself. Being a non profitable organization, the blood bank needs financial support from the local bodies and others for its existence and proper functioning.

As per the table below, only one to four percent of the expenditure is spent on conducting the camps. From the year 2011 onwards, the camp fund had been provided by KSACS through HLPPT.

Table 2.8
Camp Expenses (₹ in lakhs)

Year	Expenditure		%
	Total	Camp Expenses	
2007-08	87.39	0.94	1
2008-09	114.22	0.81	1
2009-10	139.53	1.5	1
2010-11	156.44	3.03	2
2011-12	185.10	4.74	3
2012-13	197.30	7.29	4
2013-14	198.40	8.70	4
2014-15	230.81	8.92	4

Source: Audit reports of blood bank

The blood bank stood with its guiding principle of supporting poor and below poverty line population by providing them with quality blood and blood components free of cost and they had satisfied their claim to a certain extend (see table2. 9).

Table 2.9
Free / discount allowed (₹ in lakhs)

Year	Expenditure	Free / Discount	%
2007-08	87.39	3.34	4
2008-09	114.22	8.28	7
2009-10	139.53	12.15	9
2010-11	156.44	2.91	2
2011-12	185.10	1.43	1
2012-13	197.30	23.14	12
2013-14	198.40	13.51	7
2014-15	230.81	10.56	5

Source: Audit reports of blood bank

The blood bank was initiated to work under a no profit, no loss basis. Please see the income and expenditure statements (table 2.10) of the blood bank for the last eight financial years.

Table 2.10
Income and expenditure 2007-2015 (₹ in lakhs)

Year	Income	Expenditure	Profit / loss
2007-08	96.82	87.39	9.43
2008-09	116.40	114.22	2.18
2009-10	158.96	139.53	19.43
2010-11	163.13	156.44	6.69
2011-12	168.52	185.10	-16.58
2012-13	215.5	197.30	17.86
2013-14	198.30	198.40	-0.11
2014-15	225.28	230.81	-5.53

Source: Audit reports of blood bank

The statements showed that in the years of its initiation it ran on profit but by 2011-12 the blood bank started incurring losses, profits were regained in 2012-13 but by 2014-15 the losses were increasing.

The director of the blood bank in a discussion on the increasing losses revealed the fact that they are finding it very difficult to move on meeting the rising expenditure and low income. The blood bank received help from local bodies of Thrissur in its beginning which helped the institution to rise and being known for its quality products.

2.1.3 Office management of the blood bank

The blood bank had introduced automation as it scores advantage in blood bank management due to high precision, easy accessibility of donor - patient data, and convenient inventory management.

The automation included introduction of specially designed *barcode system* that is barcodes were used on donor form, donor record, both tubes and blood collection bags including every satellite bag issues. Donor database management was initiated with each donor being assigned a unique barcode number. All information collected about the donor and donation was maintained on this number.

Robotic equipment was used to read barcodes. The barcode system integrates all the activities of blood bank. This

has become the basis of a warmer and more effective customer relationship management to serve and retain blood donors.

Automation was used for preparing plates for ELISA test¹⁴; *automated ELISA processor* did incubation, washing, conjugating blood, and grouping.

The blood collection monitor was used at the time of blood collection, which measures volume, mixing etc. component separation was done by using programmable refrigerated centrifuges.

The *ERP software* used in the blood bank enables quarantine and labeling. Intelligent labeling was used in composite labeling using different information from different module like donation number, date of donation, product name, group name, expiry date and screening report. Screening report was generated through software.

The software links up the blood testing machines with donor database, product database and patient database. Through this integration, large number of screening and blood grouping was performed accurately and efficiently. This had taken away the fear of mistakes and infused high confidence in the medical team with its fault free performance.

¹⁴ ELISA- The Enzyme –Linked Immunosorbent-Assay is a technique used to detect antibodies or infectious agents in a sample. Antibodies are made in response to infection and so an antibody ELISA can indicate whether or not an animal has been in contact with a certain virus

At a given point of time, the blood bank could have a large number of different components. The unique system helped to trace and locate instantly. The software ensured *first in first out (FIFO)* and unique online stock information. The system held a comprehensive patient database and issue report. The system was geared up to deliver a unique blood reservation system and incorporates predefined service charges and subsidy structures to generate accurate service charge invoice for every component issue. The software enabled the practices of *just in time (JIT)* and *FIFO*. It supported integrated stock maintenance for multiple locations, online stock statement, stock ledger, and inventory evaluation.

The finance module in the software contains all major entities of a traditional finance system like ledger, and voucher maintenance. It could segregate cost wise financial information generate trial balance, profit and loss, fixed asset monitoring, and reconciliations.

The human resource module maintained all employee information and records training, leave, loan information along with salary registers, pay structures, provident fund forms and medical insurance details.

Even though the key personals of the district panchayath are the members of the managing committee of the blood bank, the district panchayath was not showing much interest in supporting the blood bank. Apart from the initial investment no

further help had been received from other local bodies to maintain the institution. At the same time, the officials of the blood bank failed to attract the attention of the local bodies or District Planning Committee.

The blood bank requires the purchase of new machineries to enhance its functioning, which has to be supported by local bodies, well wishers and nongovernmental organizations.

2.1.4 Blood Donation Process

The blood donation process was done in a full proof manner in blood bank. When a voluntary blood donor visited the blood bank, blood mobile van or any of the blood donation camps or drives to donate blood, they were asked to fill a ‘Donor Registration’ form (Annexure 1). This is his or her consent to donate blood at the blood centre.

Donors were asked few questions by the doctor on drive to assess whether the person qualify under eligibility criteria to donate blood. After filling the registration form he\she undergoes a medical screening. Trained staff of blood centre would check temperature, blood pressure, pulse & weight to ensure that the person eligible to donate. This was called *primary screening*.

Once the person qualifies at primary screening, they should proceed to *secondary screening*. Here hemoglobin level was checked by staff and medical history by the doctor present. Once they consider the person eligible, he or she was qualified to donate blood.

Before the donation, a trained staff member cleaned the place where it was punctured for blood donation. All supplies used in this process, cotton, bandage, including the needle, were sterile and disposable; therefore, it was highly safe to donate blood at blood bank.

The actual blood donation would only take 5 to 10 minutes. After donation, the donor was asked to lie on bed for few minutes. Then the staff assisted the donor to the refreshment area where he/she was provided with juice and food item to replenish the sugar and fluids in body.

The collected blood is tested for four core tests recommended by WHO, that are- hepatitis B-surface antigen; antibody to Hep C; antibody to HIV and serologic tests for syphilis¹⁵. The donors, if found infected are informed and provided with free counseling for further treatment at the blood bank.

The blood bank however did not provide any sort of blood bank entertainment which could prevent adverse donor reactions. Adverse blood donor reactions during and after blood donation process, had a great value in improving the blood donation.¹⁶

¹⁵ Safe Blood and Blood Products-Module 2: Screening for HIV and Other Infectious Agents-WHO Publication,2009:10-32

¹⁶ Effect of Entertainment on Adverse Donor Reactions during and after blood donation- Dr Piyush A Patel & 3 more at National Journal of Integrated Research Medicine 2012:3(4): 102-108

2.1.5 Blood Collection Drives

The blood bank thrives fully on hundred percent voluntary blood donations. The collection of blood was done mainly through camps, special drives, and replacement.

Table 2.11
Blood donation camps 2011-15

Year	No of Camps	Camp per month
2011	233	19
2012	293	24
2013	280	23
2014	260	22
2015	252	21

Source: Blood bank records

Table 2.12
Donation camps conducted per month

Month	2014	2015
January	24	20
February	20	22
March	25	21
April	13	19
May	22	23
June	24	24
July	21	20
August	24	19
September	17	21
October	21	26
November	24	18
December	25	19
G. Total	260	252

Source: Blood bank records

On an average blood bank conducted 20 blood donation camps in a month to encourage voluntary blood donation (see the table 2.11).

The monthly details of the camps for the years 2014 and 2015 are placed in table 2.12.

Replacement donations help to replenish blood used from the community blood supply by a particular patient. The replacement donors give blood to replace the blood used by the patients. Replacement donors play a key role in replenishing the blood supply for the next patient in need of a transfusion.

Table 2.13
Replacement donations

Month	2014	2015
January	90	154
February	128	158
March	147	88
April	145	164
May	154	159
June	144	111
July	121	143
August	148	121
September	133	156
October	140	132
November	135	128
December	144	88
G. Total	1629	1602

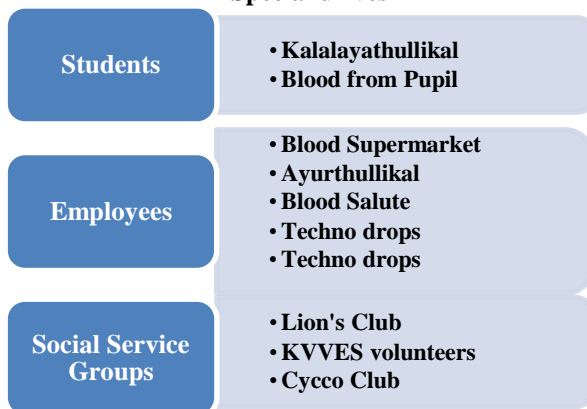
Source: Blood bank records

In replacement blood donation the donors need not provide the same blood group used for the patient. The blood bank had been promoting the replacement donation. 135 replacement donations take place in a month (see table 2.13).

2.1.6 Special blood donation drives

Attractive blood donation drive was the secret of success of the blood bank. It aims to reach all sections of eligible donors in the society. Several new campaigns were introduced which accommodated educational institutions to border security forces battalion had been widely appreciated. People were attracted whenever a new campaign was introduced to promote blood donation. Some of the attractive and special blood donation drives of the blood bank were placed below:

Fig 7
Special drives



1. **Kalalayathullikal** – The blood donation camps organized in various colleges¹⁷.
2. **Blood from pupil** - A new scheme introduced in the schools. It consists of blood donation by the teachers and parents in the presence of the students¹⁸.
3. **Blood Supermarket** - Kerala Vyapari Vyavasayi Ekopana Samithi, of trading and business establishments and its youth wing conducted blood donation drives in different parts of the district¹⁹.
4. **Ayurthullikal** – Blood donation drive for the employees of the ayurveda drug manufacturing firms and the selling outlets²⁰.
5. **Blood Salute** – This was the newly introduced blood donation drive based at the different police stations in the district and has been offered full support by the District Police Commissioner to make it a success²¹.

¹⁷ It is not just blood donation camps but the students actively participate in the painting, slogan, quiz competitions and awareness classes on blood donation.

¹⁸ This programme contains awareness classes on blood and its functions, quiz and painting competitions and blood grouping for students. This is coupled with video presentation on blood and its functions, the need for blood donation along with music and entertainment programs by the students themselves. A celebration atmosphere is created to get rid of the fear of blood.

¹⁹ At the end of the year trophies are given to the local KVVES branches which donated the maximum number of blood units and for the best arrangements and publicity.

²⁰ The campaign has also helped to associate the members of two different systems of medicine who did not have a common platform.

²¹ Kerala Police Academy, the Armed Reserve Police, Janamythri wing of Kerala Police and Border Security Force Battalion are always come forward to donate blood whenever there is an emergency or shortage.

Fig 8
Blood salute



6. **Techno drops** - Blood donation drives conducted in the different big or small industrial units.
7. Exclusive blood donation drives for couples²².
8. An exclusive blood donation drive in the women's wing of Cycco Club; Marathakkara was a great success with 87 ladies donating blood on the occasion.
9. **Snehathullikal** - A video film produced by the blood bank on blood donation is screened for the public at the camp sites to increase the awareness.
10. **Thrissur Chapter of Club 25 International** - A club of more than 100 youths as members to become regular blood donors. The members donate blood once in 3/4 months and they are encouraged to follow

²² The venture got very good media coverage.

a healthy lifestyle free from alcohol, drugs and other vices.²³

11. Lions Clubs International District 324 E2 conducted blood donation drives under the different clubs in Thrissur, Malappuram and Palakkad districts.
12. The hundredth anniversary of the National Anthem was celebrated in a befitting way with 100 KVVES volunteers donating blood on that day.
13. Valentine's Day was celebrated by the youth of Thrissur by donating blood in the name of the loved one. **"I will love you giving blood"** was the special message for the occasion and it got very good media attention.
14. **Life Click** - All Kerala Photographers Association organize voluntary blood donation camps, which will go on for a year²⁴.

2.1.7 Issuance of Blood & Blood Components

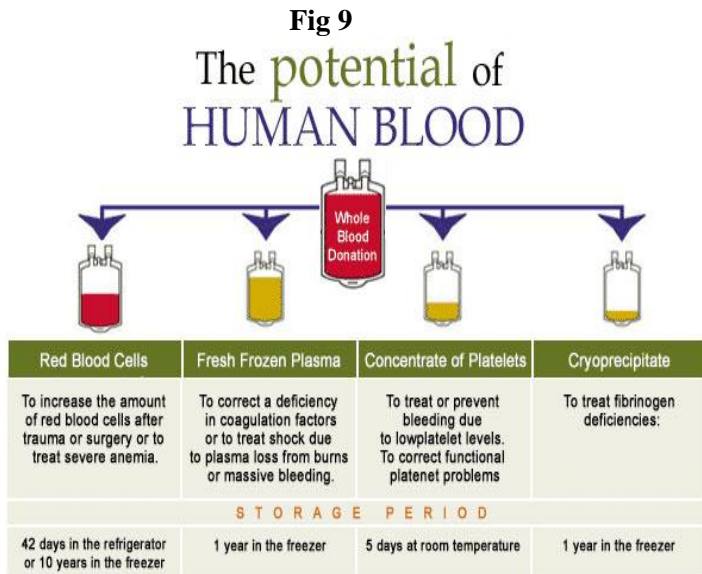
Since whole blood (WB) was highly unstable, the best and safest possible method was to separate the blood into components. The process of componentizing increases the

²³ Club is formed to motivate the youth between the age group of 18 to 25 to become regular blood donors. The members also get the opportunity to interact with the youth of similar interests in more than 65 countries across the world through Club 25 Online and participate in activities of mutual interest.

²⁴ A photography competition is also arranged covering the interesting moments in the blood donation camps.

availability of blood products at the expense of increased costs of holding, processing and wastage at a blood bank.

The blood bank collected whole blood and also separated the components into fresh frozen plasma (FFP)²⁵, platelet concentrate (PLC)²⁶, cryoprecipitate (CRYO)²⁷, and packed red blood cells (PC)²⁸.



The Table below shows a rising trend in the units of blood collected and issued from the year 2004 to 2014.

²⁵ FFP- Liquid portion of human blood has been frozen and preserved after blood donation and will be used for blood transfusion.

²⁶ PLC- It is a blood product prepared which transiently increases platelet count in the blood.

²⁷ CRYO- An extract rich in blood clotting factor obtained as a residue when frozen blood plasma is thawed.

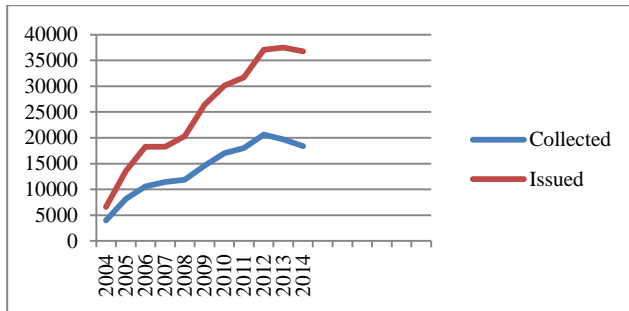
²⁸ PC- They are red blood cells that have been collected, processed and stored in bags.

Table 2.14
Collection and issuance of blood 2004-2014

Year	Total No: of units Collected	Total No: of units Issued
2004	3984	6565
2005	8148	13548
2006	10559	18258
2007	11428	18267
2008	11879	20301
2009	14582	26368
2010	17048	30113
2011	18029	31703
2012	20603	37076
2013	19690	37499
2014	18370	36752
Total	154320	276450

Source: Blood bank records

Fig 10
Collection and issuance of blood 2004-2014



As per the above table and figure it was clear that the issuance was double the collection of blood and this was possible

due to the componentization of blood. One unit of blood can be separated into components and made available to multiple patients by transfusing suitable components.

The details below show the month wise collection and issuance of blood and blood components for the year 2014 and 2015. The table revealed that through component separation the blood bank could save more lives.

Table 2.15
Collection and issuance of components and whole blood 2014

Month	2014					
	No: of units collected	FFP	PC	PLC	WB	No: of units issued
January	1424	1947	1217	377	379	3920
February	1299	873	957	394	337	2561
March	1704	1329	1123	278	376	3106
April	1242	974	1061	363	393	2791
May	1469	920	1097	399	407	2823
June	1844	1185	1139	579	382	3285
July	1442	1111	1098	474	360	3043
August	1780	1161	1125	560	350	3196
September	1401	964	1131	406	342	2843
October	1669	1065	1078	374	370	2887
November	1539	1094	1097	415	337	2943
December	1557	1274	1225	467	388	3354
G. Total	18370	13897	13348	5086	4421	36752

Source: Blood bank records

During January 2014, the units of blood collected were 1424 but issued 3920 units, which is twice the collection. Similar trend is seen in the following year.

Table 2.16
Collection and issuance of components and whole blood 2015

Month	2015					
	No: of units collected	FFP	PC	PLC	WB	No: of units issued
January	1387	1135	1166	376	363	3040
February	1646	1060	1063	366	286	2775
March	1504	1175	1005	303	353	2836
April	1277	970	1075	259	296	2600
May	1486	1038	1174	325	333	2870
June	1635	1138	1039	460	266	2903
July	1149	939	1127	419	302	2787
August	1575	1253	1018	516	297	3084
September	1774	1262	1157	386	313	3118
October	1658	1222	1168	420	271	3081
November	1510	1153	1214	441	312	3120
December	1194	901	1063	369	242	2583
G. Total	17795	13246	13269	4640	3634	34797

Source: Blood bank records

During 2014 and 2015, the blood bank was able to collect 18,370 and 1,775 units of blood, but could issue 36,752 and 34,797 units of components and whole blood respectively, that was twice the collected units of blood. Therefore, through componentization of blood, blood is safer and also could save more lives. Thus, one unit of blood could save up to four lives.

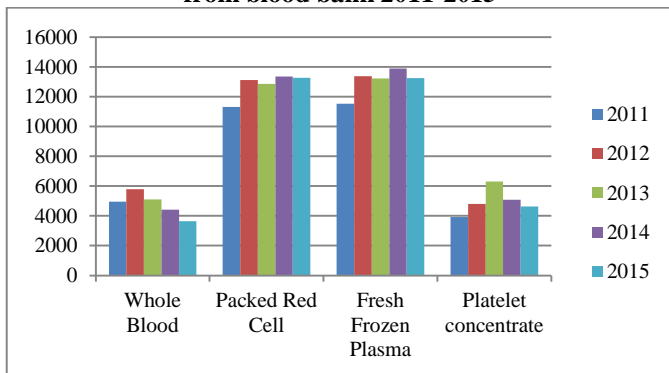
The issuance of whole blood and two components (PRC and FFP) for five years is placed below. The data show that the issuance of whole blood is only 13% while PC is 36%, FFP is 37% and PLC is 14%.

Table 2.17
Issuance of blood and its components 2011-2015

Compo nents	Year					Total	%
	2011	2012	2013	2014	2015		
WB	4950	5782	5108	4421	3634	23895	13
PC	11303	13114	12853	13348	13269	63887	36
FFP	11532	13377	13224	13897	13254	65284	37
PLC	3918	4803	6314	5086	4640	24761	14

Source: Blood bank records

Fig 11
Issuance of blood and its components
from blood bank 2011-2015



The above data shows that the blood bank gave more emphasis to componentization than providing whole blood. The hospitals of Thrissur district depends more on blood bank for components than whole blood. The full proof componentization raises the blood bank to the standards of a modern blood bank.

2.1.8 Training programmes at the blood bank

The blood componentization process requires effective and efficient hands to perform the process successfully. The blood bank provided practical training to students doing Medical Laboratory Technician (MLT), Diploma in Medical Laboratory Technician (DMLT) courses approved by Government of Kerala.

Two weeks to one month training was provided in blood bank management to students enrolled. Two weeks training programme included only orientation programme while one month course included orientation, practical and viva.

The students were trained in blood collection, grouping, separation, screening and cross matching. The training programmes were conducted during the month of April, May, June, and July.

The fees charged for the training programme was Rs.1000/- for one month course and Rs.500/- for two weeks training per head. The amount was used for the purchase of reagents and practical classes only. During last five years, they trained 224 students as below:

Table 2.18
Number of students trained

Year	Number of students
2011	65
2012	26
2013	21
2014	55
2015	57

Source: Blood bank records

The students from School of Medical Education, Mahatma Gandhi (M.G) University Angamaly, Presentation College (M.G University), West Fort Academy of Higher Education (Paramedical Institute under Directorate of Medical Education), Mother College (Health University), and Al Ameen College attended the training sessions. Janakeeya Samithy (Arogyam) IMA Blood Bank and Research Centre provided training to students only to ensure adequate supply of trained technicians for future.

The componentization done by effective hands helps to meet the requirement of safe blood and its components of the district.

2.2) Requirement satisfaction of blood in Thrissur city

Janakeeya Samithy (Arogyam) IMA Blood Bank and Research Centre had been established with the aim to satisfy fifty percent of the blood requirement of Thrissur city. In order to examine whether the institution achieved this goal, a sample of

eight blood banks were chosen from the city. The sample included Government and private sector medical colleges and major hospitals. The issuance details of whole blood and components were collected from those institutions.

During the discussion with the blood bank officials of the samples, it was clear that all the blood banks except Govt. Medical College depend on the blood bank under study for whole blood as well as components.

The blood componentization is advantageous in terms of increasing the effective availability of blood units and reducing the transfusion related risks. The modern blood bank management gave more emphasis on providing the required blood components only rather than the whole blood.

Only a few institutions had secured the rights for componentization of collected blood. In Thrissur District, other than the medical colleges only the blood bank under study had secured this right.

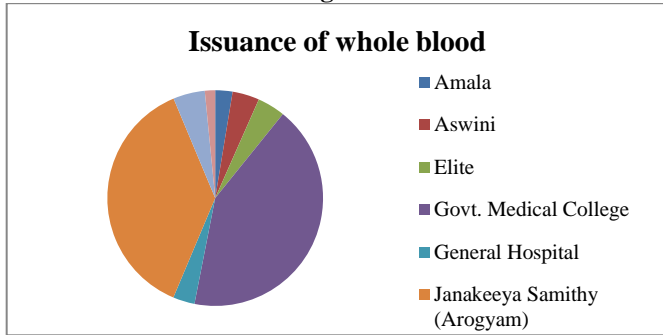
The issuance details of whole blood in the city were as follows:

Table 2.19
Issuance of whole blood 2011- 2015

Sl No	Institution	Issuance	%
1	Amala Medical College	1659	3
2	Aswini Hospital	2579	4
3	Elite Hospital	2670	4
4	Govt. Medical College	27051	42
5	General Hospital	2084	3
6	Janakeeya Samithy (Arogyam) IMA Blood Bank and Research Centre	23895	37
7	Mother Hospital	3045	5
8	West Fort Hospital	989	2
	Total	63972	100

Source: Primary data

Fig 12



The major share of whole blood requirement was met by Govt. Medical College that was, 42% and the Janakeeya Samithy (Arogyam) IMA Blood Bank and Research Centre's share was only 37% of the requirement. While other major blood banks satisfies hardly 3to 4% of the whole blood issue in the district.

The blood banks of the district are attached to the hospitals and they meet the hospital's requirements only. People depend on Janakeeya Samithy (Arogyam) IMA Blood Bank and Research Centre for blood components.

The issuance details of various blood components were placed in the following tables:

Table 2.19.1
Issuance of Fresh frozen plasma 2011-2015

Name of Institutions	Year				
	2011	2012	2013	2014	2015
Janakeeya Samithy (Arogyam) IMA Blood Bank and Research Centre	11532	13377	13224	13897	13254
AmalaMedicalCollege	4372	5060	4350	4761	4826
Govt. Medical College	4806	5680	6472	9058	9058

The blood bank supplied the highest number of units of FFP²⁹ in Thrissur District, followed by Govt. Medical College in the period 2011-15.

Table 2.19.2
Issuance of Packed red cells 2011-2015

Name of Institutions	Year				
	2011	2012	2013	2014	2015
Janakeeya Samithy (Arogyam) IMA Blood Bank and Research Centre	11303	13114	12853	13348	13269
Amala Medical College	4372	5060	4350	4761	4826
Govt. Medical College	4935	5811	6561	9068	9068

²⁹ A unit of FFP contains all coagulation factors and is used in patients who are bleeding or at a high risk of bleeding.

It is clearly understood from the table above that the blood bank issued highest amount of red blood cells³⁰ in Thrissur district during the period 2011-15.

Govt. Medical College supplied the highest number of platelet concentrate³¹ in the district during 2011-2015.

**Table 2.19.3
Issuances of Platelet concentrate 2011-2015**

Name of Institutions	Year				
	2011	2012	2013	2014	2015
Janakeeya Samithy (Arogyam) IMA Blood Bank and Research Centre	3918	4803	6314	5086	4640
AmalaMedicalcollege	948	1668	1558	1506	1440
Govt. Medical College	4930	5806	6560	9067	9067

Source: Blood banks records

The blood bank obtained the right to process cryo³² only by 2015 and issued only six units in the year while Amala Medical College and Govt. Medical College has been providing cryo precipitate to the hospitals in the district.

³⁰ In transfusion medicine, packed red blood cells are red blood cells used to resolve oxygen carrying capacity to the blood of a patient that is suffering from anemia due to chronic medical problems.

³¹ Platelet concentrate, also called thrombocytes functions to stop bleeding by clumping and clotting blood vessel injuries.

³² Cryo precipitate contains clotting proteins, fibrogen in particular and is commonly used as a part of massive transfusion where large numbers of blood components are required to assist with clotting.

Table 2.19.4
Issuances of Cryo precipitate 2011-2015

Name of Institutions	Year				
	2011	2012	2013	2014	2015
Janakeeya Samithy (Arogyam) IMA Blood Bank and Research Centre	0	0	0	0	6
AmalaMedicalcollege	1	10	9	6	14
Govt. Medical College	126	130	88	12	12

Source: Blood Banks Records

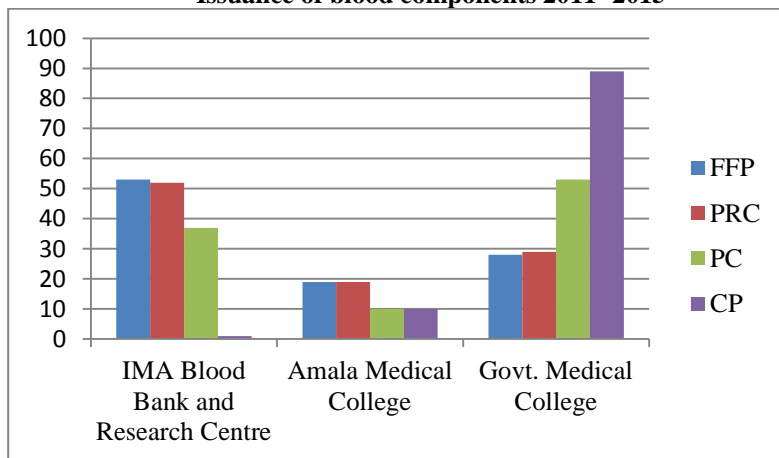
The following table and figure (consolidation of 15.1–15.4) shows the issuance of the blood components from 2011 to 2015.

Table 2. 20
Issuance of Blood Components (consolidated) 2011- 2015

Name of Institution	Components							
	FFP		PRC		PC		CP	
	NO	%	NO	%	NO	%	NO	%
IMA Blood Bank and Research Centre	65284	53	63887	52	24761	37	6	1
Amala Medical College	23369	19	23369	19	7120	10	41	10
Govt. Medical College	35074	28	35443	29	35430	53	368	89
Total	123727	100	122699	100	67311	100	415	100

Source: Blood Banks Records

Fig 13
Issuance of blood components 2011- 2015



2.3 Attitude of Blood Donors

The collection of whole blood and its further componentization can be successful only if the donors keep up a right and positive attitude towards blood donation within regular intervals. The third main objective of study is therefore to analyze the general attitude of donors towards blood donation.

The age profile of blood donors as per table 2.21 is that young people of age group 18 to 27 donated more blood. Out of the 123 respondents 79% belonged to the age group 18 to 27 years. Only 2% belonged to the age group 28 to 37 years. 7% of the donors fell in the category of the age group of 38 to 47. The

people belonging to the age group 48 to 57 years constituted 11% of blood donors. 1% of the donors belonged to 58 to 67 years.

Table 2.21
Age Distribution of blood donors

Age group (in years)	Number of Donors	%
18-27	97	79
28-37	03	2
38-47	08	7
48-57	14	11
58- 67	01	1

Source: Primary Data

Some of the distinct and positive notions about blood donation are:

- ✚ donating blood is for a noble cause
- ✚ good habit as it benefits others
- ✚ blood donation describes the habit of give and take.

According to table: 2.22, 96% of the respondents had positive notion about blood donation. It is evident that majority of the respondents were not aware of the health benefits of blood donation, but considered it as an act of nobility.

Table 2.22
Motives behind blood donations

Motives	No. of Respondents	%
Noble Act	119	96
Healthy Activity	31	25
Received blood before	4	03
Others	0	0

Source: Primary Data

Out of the 123 respondents, only 25% of them were aware about the health benefits. This percentage threw light to the need for intensive awareness camps to promote health benefits of blood donation.

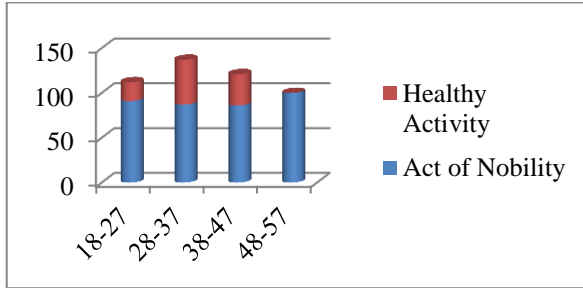
People of the age group 28-37 were more aware about the health benefits of blood donation as it is seen in table 2.23. The respondents of age group 18-27 donated blood but they were less aware of the health benefits of the same. The high percent of donors came under the category of 18 to 27 years depicted the heroic attitude of young men and women. Among the respondents of age group 48-57, none of them were aware of the health benefits.

Table 2.23
Awareness of the benefits of blood donation (in %)

Age Group	Act of Nobility	Healthy Activity
18-27	91	21
28-37	87	50
38-47	86	35
48-57	100	0

Source: Primary data

Fig 14
Awareness of the benefits of blood donation (in %)



Awareness camps can be initiated by colleges and school authorities to make blood donation more popular. Awareness on blood donation can be spread through mass media to reach out to general public.

As per table 2.24 more than half of the respondents that were 61% of the blood donors came to donate blood without knowledge about prior preparations before donating blood which involves six hours of sleep, systematic food habits and proper rest. Only 30 to 33% followed six hours of sleep and systematic food habits before blood donation. 16% only took proper rest before blood donation. The awareness campaigns in colleges, schools and mass media can stress on the preparatory planning before blood donation which will help more people to remain physically fit and thereby contribute to a noble cause.

Table 2.24
Pre planning for blood donation

Preparations	% of people
Six hours of sleep	31
Systematic food habits	33
Proper Rest	16
No preparation	61

Source: Primary data

2.3.1 Male & Female Donors

The blood donation data showed that there was significant difference among the number of female and male who donated blood. Male donors formed a significantly higher percent of voluntary blood donors.

Table 2.25
Male & female donors 2011-2015

Year	Number		%	
	Male	Female	Male	Female
2011	17054	975	18	1.03
2012	19020	1583	20	1.70
2013	18514	1176	20	1.60
2014	16900	1470	18	1.60
2015	16178	1617	17	1.80
Total	87666	6821	93	7.20

Source: Blood bank records

From the above table it is understood that male donors constituted ninety three percent of blood donors while female donors formed only seven percent of the same.

The percent of females who donated blood remained almost stagnant throughout the time period.

Fig 15
Male & female donors 2011-2015

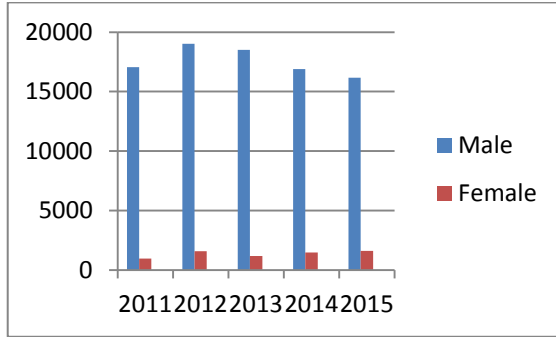


Table 2.26
Number of male and female donors participated in blood donation camps 2014 - 2015

Month	2014		2015	
	Male	Female	Male	Female
January	1242	182	1244	143
February	1213	86	1510	136
March	1581	123	1345	159
April	1205	37	1222	55
May	1415	54	1414	72
June	1716	128	1435	200
July	1342	100	1027	122
August	1591	189	1505	70
September	1279	122	1657	117
October	1534	135	1388	270
November	1399	140	1424	86
December	1383	174	1007	187
G. Total	16900	1470	16178	16178

Source: Blood bank records

Table 2.26 further emphasizes the fact that numbers of female donors were less than male donors in the months of 2014&2015.

The camp doctors of the blood bank in the discussion opined that the decline of female donors was mostly due to lack of required hemoglobin count. Other important factors of this decline were malnutrition, low blood pressure, and maternal morbidity. The monthly menstrual cycle was also a reason preventing females from donating blood.

The voluntary blood donation camp conducted in St. Mary's College, Thrissur, one of the famous women's college of the city reveals the fact that out of 120 students who came for blood donation, 40% of them couldn't participate in the blood donation programme due to lack Hemoglobin count (anemic)³³.

Thus the study revealed that the society in general has a positive attitude towards this noble activity. The parents and relatives of first time donors reacted positively to voluntary blood donations.

³³ Hemoglobin is a substance in red blood cells which help in carrying oxygen around the body. Hemoglobin screening test is performed to ensure that the donor is safe and that there are sufficient red cells for the person receiving the blood.

2.4 Major Challenges Ahead for Janakeeya Samithy (Arogyam) IMA, blood bank and Research Centre

The discussion with Janakeeya Samithy (Arogyam) IMA Blood Bank and Research Centre Management and Administration revealed that the following challenges are faced by the institution:

1. It has been ten years since the blood bank has been started to function, as result of which the equipments has undergone wear and tear. So there is an immediate need for replacing the same at the earliest. However, the blood bank, Thrissur finds it difficult to gather investment for replacement since it is a nonprofit organization. To provide clinical laboratory and allied services to the people of Thrissur on a nonprofit making basis, the Janakeeya Samithy (Arogyam) IMA Blood Bank and Research Centre requires an advanced clinical laboratory.
2. The Janakeeya Samithy (Arogyam) IMA Blood Bank and Research Centre is planning to conduct Diploma Certificate Courses connected with laboratory services, blood bank, and imaging services.
3. They also desire to involve public to encourage systematic use of investigation facilities through media participation, contact classes and regular communication.

4. Presently there is only one virology lab in Kerala at Alapuzha. With the frequent outbreak of viral diseases, there is a greater need of another lab and hence IMA Blood Bank and Research Centre proposes to start one at Thrissur, central part of Kerala.
5. The Janakeeya Samithy (Arogyam) IMA Blood Bank and Research Centre's financial commitments to fulfill all the above initiatives comes to ₹ 700 lakhs. The Blood Bank and Research Centre itself being a people's project, for modernization process and for establishing the above facilities they can adopt the same method as used for the formation. The District Planning Committee can suggest this to the local bodies, MLAs, MPs, public & private organizations, of Thrissur District. If this is materialized, The Janakeeya Samithy (Arogyam) IMA Blood Bank and Research Centre will become a Regional Advanced Diagnostic and Training Centre, providing better medical services on a non profitable basis to the people of Kerala.

Chapter 3

Findings and Suggestions

The major findings of the study are:

- The blood bank is an institution born mainly from the contributions received from local bodies of Thrissur.
- Contributions also came from MPs, MLAs, doctors, well-wishers and IMA, Thrissur branch.
- The blood bank is governed by a thirteen member Managing Committee.
- The management committee consisted of chairman, vice chairman, director, joint director, immediate past director and eight members. Out of the eight members three members are from district panchayath that is, president, vice president and chairman of health standing committee. All the others of the committee are doctors by profession and members of IMA.
- Forty regular employees along with thirteen temporary staff are working in the institution.
- 87% of income to the blood bank is the service charges received on issuance of the blood and blood components and grants from NACO.
- NACO provides grants in the form of kind which includes blood bags, test kits, reagents, medicines and lab items.

- Thirty to thirty five percent of the expenditure is spent on the salaries and wages of the staff.
- Ten percent of the expenditure is spent on purchase of reagents and medicines.
- The blood bank spends on an average 5% of their expenditure on electricity charges.
- Five percent of the expenditure of the blood bank is incurred on repairs and maintenance of machines.
- Three percent of the expenditure is spent on camps conducted by blood bank.
- The blood bank supports people below poverty line by providing them quality blood and blood components free of cost. Five per cent of the expenditure was spend on free services.
- The blood bank ran in profit in the initial years but by 2011-12 it started incurring huge losses.
- The institution is a fully automated blood centre with barcode systems and fully integrated ERP software.
- Consent of the person willing to donate blood is taken, which is followed by primary and secondary screening of him or her. The person who fulfils the eligibility criteria becomes donors of blood.
- Sterile and disposable instruments are used by the blood bank.

- The blood bank provides refreshment to the donors after blood donation process.
- The blood bank does not provide any sort of blood bank entertainment to donors to prevent adverse blood donor reactions.
- The blood bank provides free counselling to those donors who are tested positive for mainly four diseases adhered by WHO.
- The blood bank thrives fully on 100 percent voluntary blood donation.
- Blood bank conducts 20 voluntary blood donations camps in a month.
- On an average 135 replacement donations take place in blood bank.
- The blood bank conducts different drives to motivate and encourage students, employees and social groups.
- The blood bank issues whole blood and components like FFP, PC, PLC and CRYO.
- The blood bank collects 154320 units of whole blood and issued 276450 units of blood for a period of ten years (2004-2014). The issuance includes components of blood.
- The blood bank issues 13% WB, 36% PC, 37% FFP and 14% PLC.
- Practical training is provided to students doing MLT and DMLT.

- The students undergo two weeks to one month training on blood bank activities.
- The fees charged for the training programme is Rs.1000/- for one month course and Rs.500 for two weeks training.
- 224 students are trained during the period of 2011-2015.
- Blood componentization process of the blood bank helps them to issue more units of blood than they have collected annually, thereby saving more lives.
- The blood bank is now only able to satisfy 37 percent of the whole blood requirement of the district.
- The blood bank meets 53 percent of FFP, 52 percent of PLC and 37 percent of PC requirement of Thrissur district. IMA blood bank had started issuing CRYO last year only. So it supplies only one percent of the requirement.
- 79 percent of donors belong to the age group of 18 to 27 years.
- Hundred percent respondents were ready to donate blood again, depicting the positive attitude of the people towards voluntary blood donation.
- 96% of the respondents consider it as a noble activity while only 25% sees it as healthy activity.
- 91% of the donors of the age group 18-27 years consider blood donation as an act of nobility while only 21% see it as a healthy activity.

- People (61%) come to donate blood without knowledge about prior preparations before donating blood which involves six hours of sleep, systematic food habits and proper rest.
- Out of the total donors who donated blood from 2011-2015, only 7 % constituted female donors.
- The percent of females who donated blood remains stagnant in the period 2011-2015.

The suggestions based on the study are:

- The IMA blood bank is an institution born out of the coordinated efforts of local bodies of Thrissur and Thrissur branch of Indian Medical Association. However the institution requires continuous support from local bodies for its existence. The needs of the blood bank can be brought to the notice of the local bodies by the administrative wing of the blood bank, through effective interaction with District Planning Committee. The interactions can be effectively coordinated and supported by the District Planning Office. The MP and MLA funds can be utilized for the further growth and development of the institution to an organization that can bring progress in the health scenario of Kerala.
- If the blood bank introduces blood bank entertainment it will prevent adverse donor reactions during and after blood donation in the camps conducted

- The blood bank has a mobile blood bank unit. It is a vehicle equipped with sophisticated equipments necessary for a blood donation procedure. Blood drives involving bloodmobiles usually happen in public places. The respondents were not aware about this mobile blood bank unit, and the facilities offered in it. Awareness with regard to mobile blood bank unit, its specialties can be popularized through media.
- Awareness camps using expert doctors to generate knowledge among the present generation on the need of having and maintaining a healthy diet at school and college levels will decrease the malnutrition among the youth especially women.
- Awareness camps can stress on the prior preparations for donating blood.
- The less number of women donating blood throws light to the fact that even now women tend to remain malnourished/undernourished. There is a need for large scale awareness among women about the importance of healthy diet.
- The Janakeeya Samithy (Arogyam) IMA Blood Bank Complex and Research Centre plans to develop as a Regional Advanced Diagnostic and Training Centre with Clinical laboratory, and provide diploma certificate courses in connection with laboratory services, blood bank and imaging

services and thereby to encourage public to systematically use the investigation facilities to prevent the spread of diseases. The local bodies and District Planning Committee of Thrissur district can play an active role to materialize the above dream.

˘ The successful completion of the above dream will enable the elevation of the health quotient of the people of Thrissur on par with that of developed countries.

Annexure 1

B.B.No. _____

Bag Segment No. _____

Collection Started time _____

Collection ending time _____



Janakeeya Samithi (Arogyam)

I. M. A. BLOOD BANK COMPLEX & RESEARCH CENTRE

(A Project with District Panchayath & IMA Thrissur Under Pecolles Plan Programme)
 P. O. Ramavaramapuram, Thrissur - 680 631, Phone : 0487-2323964, 2320784
 Blood Bank Licence No. 0143/28C/KER/DC-CLAA/2004
 Regional Blood Transfusion Centre Code No. 3207 BB P 19
 Website: www.imabloodbankthrissur.com, E-mail: admin@imabloodbankthrissur.com

DONOR RECORD CARD/രക്തദാനകാർഡ് സൂക്ഷ്മ പരിശോധന **Sl. No.**

Dear Friend/പ്രിയ സുഹൃത്തേ, (കുറേ നന്മ)
 Please complete this form before you donate blood/താങ്കൾ രക്തം ദാനം ചെയ്യുന്നതിനു മുമ്പ് ദയവായി ഈ ചോദ്യാവലി പൂരിപ്പിക്കുക
 This is strictly confidential/ ഇത് തികച്ചും രഹസ്യമാണ്.

To ensure safety of the donor and recipient, please answer the following questions as correctly as possible
 രക്തം നൽകുന്നവരുടെയും രക്തം സ്വീകരിക്കുന്നവരുടെയും സുരക്ഷയ്ക്കുവേണ്ടി ദയവായി താഴെ പറയുന്ന ചോദ്യങ്ങൾക്ക് ശ്രദ്ധയോടെ ഉത്തരം നൽകുക.

Please Mark "✓" wherever applicable / ദയവായി യോജിച്ചവ "✓" ചെയ്യുക

Donor's Name & Address രക്തദാനാവിന്റെ പേര്, മേൽവിലാസം :		Age <input type="text"/> Male <input type="checkbox"/> Female <input type="checkbox"/>
Marital Status Single <input type="checkbox"/> Married <input type="checkbox"/> അവിവാഹിത/ർ വിവാഹിത/ർ		Weight <input type="text"/> തൂക്കം
Donor Type Volunteer <input type="checkbox"/> സ്വന്നമദായക/ർ		Ph. No. <input type="text"/> മോബൈൽ Mobile <input type="text"/> മൊബൈൽ :
Occupation : തൊഴിൽ : Education : വിദ്യാഭ്യാസം :		

**Have you had any of the following ?
 താഴെ പറയുന്നവയിൽ ഏതെങ്കിലും ഉണ്ടായിട്ടുണ്ടോ ?**

1.	Abnormal Bleeding Tendency / അസാധാരണ രക്തസ്രാവം	Yes <input type="checkbox"/>	No <input type="checkbox"/>
2.	Diabetes/ പ്രമേഹം	Yes <input type="checkbox"/>	No <input type="checkbox"/>
3.	High Blood Pressure / ഉയർന്ന രക്തസമ്മർദ്ദം	Yes <input type="checkbox"/>	No <input type="checkbox"/>
4.	Fits/ ചുഴലി, Mental Depression - മാനസികരോഗം	Yes <input type="checkbox"/>	No <input type="checkbox"/>
5.	Heart Disease/ പുറയരോഗം	Yes <input type="checkbox"/>	No <input type="checkbox"/>
6.	Have you/your family members or close contacts had history of Jaundice with in one year / ഒരു വർഷത്തിനുള്ളിൽ താങ്കൾക്കോ കുടുംബത്തിൽ ആർക്കെങ്കിലുമോ അടുത്ത ബന്ധം പുലർത്തുന്നവർക്കോ മഞ്ഞപ്പിത്തം ഉണ്ടായിട്ടുണ്ടോ?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
7.	Serious Accident/ ഗുരുതരമായ അപകടങ്ങൾ, Serious illness/ ഗുരുതരമായ അസുഖങ്ങൾ (Heart, Liver, Kidney Diseases, TB, AIDS, Hepatitis, Cancer, Asthma, Leprosy)	Yes <input type="checkbox"/>	No <input type="checkbox"/>
8.	Major / Minor Operation- With in one Year/three months വലിയതൊ ചെറിയതൊ ആയ ശസ്ത്രക്രിയ - ഒരു വർഷത്തിനുള്ളിലോ/ മൂന്ന് മാസത്തിനുള്ളിലോ	Yes <input type="checkbox"/>	No <input type="checkbox"/>
9.	Dental Treatment in the past one week? കഴിഞ്ഞ രാഴ്ചക്കുള്ളിൽ ദന്തചികിത്സ നടത്തിയിട്ടുണ്ടോ?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
10.	History of Chiken Pox within six months/ആറു മാസത്തിനുള്ളിൽ ചിക്കൻപോക്സ് ഉണ്ടായിട്ടുണ്ടോ?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
11.	Skin Infections/ ത്വക്ക് രോഗങ്ങൾ	Yes <input type="checkbox"/>	No <input type="checkbox"/>
12.	Any type of Cancer/ ഏതെങ്കിലും തരത്തിലുള്ള അർബുദം	Yes <input type="checkbox"/>	No <input type="checkbox"/>
13.	History of Malaria and duly treated/ ചികിത്സിച്ചു ഭേദമായ മലമ്പനി ഉണ്ടായിട്ടുണ്ടോ? 3 Months - non - endemic, 3 Yrs - endemic	Yes <input type="checkbox"/>	No <input type="checkbox"/>
14.	Sore Throat / Common Cold, Fever in the past 5 days ? തൊണ്ടവേദന, ജലദോഷം, പനി എന്നിവ 5 ദിവസത്തിനുള്ളിൽ ഉണ്ടായിട്ടുണ്ടോ?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
15.	Received Blood Transfusion or Blood Products with in 6 months? രക്തമോ രക്തഘടകങ്ങളോ 6 മാസത്തിനുള്ളിൽ സ്വീകരിച്ചിട്ടുണ്ടോ?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
16.	Vaccination in the past 15 days ? കഴിഞ്ഞ 15 ദിവസത്തിനുള്ളിൽ പ്രതിരോധ കുത്തിവെപ്പ് എടുത്തിട്ടുണ്ടോ? (INJ for Hepatitis, Measles, Yellow Fever, Typhoid, TT - 15 days, Anti Snake Venon - 75 days)	Yes <input type="checkbox"/>	No <input type="checkbox"/>

(Annexure – 1 continued)

17. Have you taken Rabies vaccination in the past One Year ? കഴിഞ്ഞ ഒരു വർഷത്തിനുള്ളിൽ പേന്ററി വിഷബാധയ്ക്കെതിരായുള്ള കുത്തിവെയ്പ്പ് എടുത്തിട്ടുണ്ടോ?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
18. History of Typhoid with in 1 Year? ഒരു വർഷത്തിനുള്ളിൽ ടൈഫോയിഡ് വന്നിട്ടുണ്ടോ?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
19. Have you taken Immunoglobulin injection in the past One Year ? കഴിഞ്ഞ ഒരു വർഷത്തിൽ ഇമ്മ്യൂണോഗ്ലോബുലിൻ കുത്തിവെയ്പ്പ് എടുത്തിട്ടുണ്ടോ?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
20. Are you on any medication at present or in past one week ? താങ്കൾ ഇന്നോ, കഴിഞ്ഞ ഓഴ്ചയ്ക്കുള്ളിലോ, ഏതെങ്കിലും മരുന്ന് കഴിച്ചിട്ടുണ്ടോ?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
21. Have you had any problem during last donation ? കഴിഞ്ഞ തവണ ദൈഹം ചെയ്ത ശേഷം താങ്കൾക്ക് എന്തെങ്കിലും ബുദ്ധിമുട്ടുകൾ അനുഭവപ്പെട്ടിട്ടുണ്ടോ?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
22. Have you ever had a tattoo done with in six months? താങ്കളുടെ ദൈഹത്ത് ആറുമാസത്തിനുള്ളിൽ പച്ച കുത്തിയിട്ടുണ്ടോ?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
23. Unhealthy Sexual Habits/ അനാരോഗ്യകരമായ ലൈംഗികസ്വഭാവങ്ങൾ	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
a. Drug Abuse (injection)/ മയക്കുമരുന്നുകൾ കുത്തിവെയ്ക്കാനുണ്ടോ?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
b. Had sex with such people ? മയക്കുമരുന്നിനടിപ്പെട്ടവരുമായി ലൈംഗികബന്ധം പുലർത്താനുണ്ടോ?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
c. Multiple Sex Partners / ഒന്നിൽ കൂടുതൽ ലൈംഗിക പങ്കാളികളുണ്ടോ?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
d. Perverted Sexual Habits / പ്രകൃതി വിരുദ്ധ ലൈംഗികപ്രവൃത്തികൾ ഉണ്ടോ?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
e. Do you or your partner have any sexually transmitted diseases ? ലൈംഗികപരമായി പകരാനുണ്ടോ അല്ലെങ്കിൽ താങ്കൾക്കോ പങ്കാളിക്കോ ഉണ്ടോ?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
f. Have you consumed alcohol with in 24 hrs? കഴിഞ്ഞ 24 മണിക്കൂറിനുള്ളിൽ മദ്യം കഴിച്ചിട്ടുണ്ടോ?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
g. Did you sleep well last night ? കഴിഞ്ഞ രാത്രി നന്നായി ഉറങ്ങിയോ/	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
24. Have you taken food before bleeding/ ദൈഹാനത്തിന് മുൻപ് ഭക്ഷണം കഴിച്ചിട്ടുണ്ടോ?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
25. FEMALES : Pregnancy/ Recent Abortion / ഗർഭം/ ഗർഭച്ഛിദ്രം	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
After Pregnancy - 1 year, Abortion - 6 months			
Baby less than one year old ? ഒരു വയസ്സിൽ താഴെയുള്ള കുട്ടി ഉണ്ടോ?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Breast Feeding / മുലയൂട്ടുന്നുണ്ടോ?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
26. Do you want to be a regular Voluntary Donor ? താങ്കൾ സ്ഥിരമായി ഒരു സ്വന്തമദായകൻ ആവാൻ തയ്യാറാണോ?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes, how often you would like to donate blood ? തയ്യാറാണെങ്കിൽ എത്ര സമയ പരിധിക്കുള്ളിൽ ദൈഹം ദാനം ചെയ്യാം?	3 Months 3 മാസം	6 Months 6 മാസം	Annually വർഷത്തിലൊരിക്കൽ

ദൈഹദായകരുടെ ശ്രദ്ധയ്ക്ക്

താങ്കളുടെ ദൈഹം എടുത്തതിന് ശേഷം ദൈഹത്തിൽ കൂടി പകരുന്നവൻ സാധ്യതയുള്ള രോഗങ്ങളുടെ സസ്യൂകൾ (1. എയിഡ്സ് - HIV/AIDS), 2. മഞ്ഞപിത്തത്തിനുള്ള പരിരോധനം - HBsAg, 3. മഞ്ഞപിത്തത്തിനുള്ള പരിരോധനം - HCV, 4. ലൈംഗിക രോഗങ്ങൾ - VDRL, 5. മലമ്പനി - Malaria) ചെയ്തതിനുശേഷമേ ദൈഹിക്ക് ദൈഹം കൊടുക്കുകയുള്ളൂ. ഇതിലേതെങ്കിലും സസ്യൂകൾ പൊതുവായി ആരോഗ്യത്തിൽ മൂലം താങ്കളെ വിവരം അറിയിക്കുന്നതും താങ്കൾ ദൈഹദായകനായി ബന്ധപ്പെടേണ്ടതാകുന്നു.

I have completed eighteen years of age. I have read all the above. Since I am not having any of the above mentioned ailments/ conditions. I hereby convey my willingness to donate one unit of blood. I have no objection in testing my blood for infectious diseases.

ഞാൻ 18 വയസ്സ് തികഞ്ഞ വ്യക്തിയാണ്. മുകളിൽ പറഞ്ഞിരിക്കുന്ന അസുഖങ്ങളിൽ നിന്നെല്ലാം ഞാൻ വിമുക്തനാണ് അതു കൊണ്ട് ഒരു യൂണിറ്റ് ദൈഹം ദാനം ചെയ്യാൻ എനിക്ക് പൂർണ്ണസമ്മതമാണ്. എന്റെ ദൈഹത്തിൽ പകരുന്നവൻ സാധ്യതയുള്ള രോഗങ്ങളുടെ സസ്യൂകൾ ചെയ്യാനായി എനിക്ക് വിരോധമില്ല.

Date: _____ Signature of the Donor
തിയ്യതി _____ ദൈഹദായകന്റെ ഒപ്പ്

Pulse rate	/ Minute	B.P.	m.m. of Hg	Temperature
Weight	Kgs.	Date of last donation	Haemoglobin	gms. Group
RH	VDRL	HBs Ag	HIV	HCV
				MP

Medical History _____
Name & Signature of Technician

Remarks _____
Signature of Medical Officer

Annexure – 2

ചിലവ് ആവശ്യമെന്ന ബാഹിസ്, തുല്യത

അവലോകന ചോദ്യാവലി

1	രക്തദാന ക്യാമ്പിന്റെ പേര്	:	
2	രക്തദാന ക്യാമ്പ് നടക്കുന്ന സ്ഥലം	:	
3	രക്തദാന ക്യാമ്പ് നടക്കുന്ന തീയതി	:	
4	രക്തദാനാവിന്റെ പേര്	:	
5	രക്തദാനാവിന്റെ വയസ്സ്	:	
6	രക്തദാനാവിന്റെ ഫിസൽ	:	പുരുഷൻ / സ്ത്രീ
7	ദാതാവിൽ രക്തദാന ക്യാമ്പിനെക്കുറിച്ചറിഞ്ഞത്	:	<ol style="list-style-type: none"> 1. മാധ്യമങ്ങളിലൂടെ 2. പറഞ്ഞ് കേട്ടത് 3. നേരിട്ട് 4. തൃപ്തമല്ല
8	രക്തദാനാവിന്റെ പ്രവേശന	:	<ol style="list-style-type: none"> 1. നല്ല(മഹത്) പ്രവർത്തനം ആയതുകൊണ്ട് 2. ആരോഗ്യകരമായ പ്രവർത്തനമായതുകൊണ്ട് 3. നേരത്തെ രക്തം സ്വീകരിച്ചതുകൊണ്ട് (സന്തോ/ബന്ധുക്കൾക്ക്/സുഹൃത്തുക്കൾക്ക്) 4. ഫിനാൻഷ്യൽ (സാമ്പത്തികം) 5. മുകളിൽ പറഞ്ഞതെല്ലാം
9	രക്തദാനാവിന്റെ തൊഴിൽ മേഖല	:	<ol style="list-style-type: none"> 1. വിദ്യാർത്ഥി 2. കായികാധ്വാനം ആവശ്യമുള്ളത് 3. കായികാധ്വാനം ആവശ്യമില്ലാത്തത്
10	ആദ്യമായി രക്തം നൽകുന്നത്	:	ആണ് / അല്ല
11	അല്ലെങ്കിൽ മുമ്പ് എത്ര പ്രാവശ്യം രക്തം നൽകിയിട്ടുണ്ട്	:	ഒന്ന് / രണ്ട് / മൂന്ന് / അതിൽ കൂടുതൽ
12	സഹായം രക്തം നൽകുന്ന ആളാണെങ്കിൽ രക്തം നൽകുന്ന ഇടവേള	:	
13	രക്തദാനാവിനു മുമ്പുള്ള തയ്യാറെടുപ്പുകൾ	:	<ol style="list-style-type: none"> 1. 6 മാണിക്കൂർ ഉറക്കം 2. കൃത്യമായ ഭക്ഷണം 3. നീശ്വാസം 4. ഒന്നുമില്ല

(Annexure -2 continued)

11. രക്തബാങ്ക് വിനോദം, വിവിധ വിനോദങ്ങളുടെ കൂടെയും (Blood Bank Entertainment)	1. പ്രത്യേകിച്ചൊന്നുമില്ല 2. ബുദ്ധിമുട്ടുണ്ട്
15. രക്തബാങ്കിനു ശേഷമുള്ള അനുഭവം	1. ശാരീരിക അസ്വസ്ഥ്യം 2. അനേക ദിവസം തൊഴിലിന് ഏർപ്പെടാൻ സാധിക്കുന്നില്ല
16. ബുദ്ധിമുട്ടുകളെക്കുറിച്ച് എന്താണ്	1. ശാരീരിക അസ്വസ്ഥ്യം 2. അനേക ദിവസം തൊഴിലിന് ഏർപ്പെടാൻ സാധിക്കുന്നില്ല
17. അനേക ദിവസം തൊഴിലിടത്തിൽ അധിഷ്ഠിക്കാൻ സാധിക്കുമോ	ഉണ്ട് / ഇല്ല
18. രക്തബാങ്കിനു ഇനിയും ന്യൂനതയോ	അതെ / അല്ല
19. താങ്കൾക്ക് അടുത്ത ബന്ധുക്കളുടെ (മാതാപിതാക്കൾ, ഭർത്താവി/ഭാര്യ, മക്കൾ, സഹോദരങ്ങൾ) രക്തബാങ്കിന് അനുകൂല നിരീക്ഷണമോ	അതെ / അല്ല
20. താങ്കളുടെ രക്തബാങ്കിന് അടുത്ത ബന്ധുക്കളുടെ നില്പാട് എന്താണ്	അനുകൂലം / പ്രതികൂലം
21. അല്ലെങ്കിൽ എന്തെല്ലാമെന്ന്	1. ആരോഗ്യമില്ല 2. പ്രായപൂർത്തി ആയിട്ടില്ല 3. മരണമില്ല
22. രക്തബാങ്ക് ക്യാമ്പുകൾ നടപ്പിലാക്കുമോ	അതെ / അല്ല
23. ആരാണ് കൂടുതൽ ആളുകളെ രക്തബാങ്ക് ക്യാമ്പുകളിൽ കൊണ്ടുവരാനുണ്ടോ	ഉണ്ട് / ഇല്ല
24. രക്തബാങ്കിനുശേഷം സൗകര്യമുള്ള രക്തദാതാക്കൾ കണ്ടെത്താൻ സാധിക്കുമോ	ഉണ്ട് / ഇല്ല
25. രക്തബാങ്ക് നടത്തിയതിനെത്തുടർന്ന് രക്തബാങ്ക് യൂണിറ്റിലാണോ	അതെ / അല്ല
26. തൊഴിലിന് രക്തബാങ്ക് യൂണിറ്റ് സൗകര്യമില്ലാതെ	അതെ / അല്ല