Summer Training at
Plasmagen Biosciences Pvt ltd
(April 16-June 1, 2012)

Plasma Product Therapy and Blood Banking Scene in India

By
Vaishali Jamwal

Under the guidance of
Dr. Seema Mehta

Post Graduate Diploma in Pharmaceutical Management
2011-2013

Institute of Health Management Research,
Jaipur

2012

INSTITUTE OF HEALTH MANAGEMENT RESEARCH
1, Prabhu Dayal Marg
Sanganer Airport, JAIPUR - 302 011, INDIA
Tel. : 3924700, 2791431-32
Fax : 91-141-3924738
E-mail : iihmr@iihmr.org
URL : http://www.iihmr.org
Gram : HEALTHINST

Certificate

This is to certify that Vaishali Jamwal has undergone summer training in PlasmaGen Biosciences,Bangalore from 16th April to 9th June, 2012

The candidate carried out all the studies related to summer training herself. Her approach to the studies has been sincere, scientific, and analytical. This summer training in partial fulfillment of the course requirement is recommended for the award of Post Graduate Diploma in Pharmaceutical Management.

I wish her success in all future endeavors.

P Sodani

Dr .P. R.Sodani

(Dean Academics and student affairs)

Seema Mehta

Dr.Seema Mehta

(Assistant Professor)

ACKNOWLEDGEMENT

This project report is a result of two months of training which would’ve never been this successful without the help of some people. I take this opportunity to express my gratitude to all of them.

First of all I would like to thank **Dr. S.D.Gupta (director) and Brig. S.K.Puri (Dean Academic and Student Affairs), IHMR,Jaipur,for** giving me the opportunity to work in Plasmagen Bioscience pvt Ltd.

I am thankful to **Dr.Seema Mehta, IHMR,Jaipur** for her support and motivation without which this would’ve never been possible.

I sincerely thank our Placement **Officer,Mr Dalbir** Singh For his efforts and support throughout the project.

I am highly thankful to **Dr.Ranjeet Ajmani (CEO,PlasmaGen Biosciences), Dr Amit Jha (product manager,Plasmagen Bioscience) and Mr Nipun Garg(National head,Plasmagen Biosciences**)for their invaluable guidance for the execution of the project.

I would like to acknowledge the entire Plasmagen team for their updates and guidance which was of great help in completing our project.

TABLE OF CONTENTS

PART 1

PLASMA PRODUCTS THERAPY IN INDIA

EXECUTIVE SUMMARY

The project undertaken is a market research on the demand, consumption pattern & personal preferences of doctors & patients while buying Plasma products for medication. As plasma products such as IVIG, Human Albumin, Anti-D, Hepatitis and Tetanus Immunoglobulin are all very expensive in the market because their only source is Human Blood & blood donors charge a hefty sum for any donation of blood they make. Despite the fact that all Plasma products are life saving drugs & the last line of defense for many doctors, many patients refrain from buying it as their price are well beyond the reach of many poor people which form a large percentage of our population. Also because of the fact that plasma products are new in the market, there is not much of awareness among doctors & patients regarding its uses & implementation. Therefore the plasma market is not a very favorable place to do business in, since the option of minimization of production costs doesn't hold over here.

However the purpose of this market research was to determine what the obstacles are and to draw a perfect reflection of the current plasma market, thereby finding new prospects for Plasmagen Biosciences, a branch of Trigenesis as it sets foot into the plasma market on their own. Throughout the market survey on doctors of reputed hospitals in Chandigarh,Patiala,Ambala,Shimla,Solan, demand, the consumption pattern, personal preferences and quality & availability of currently available blood & plasma brands in the this region of India were determined.

From all the responses collected from the doctors it was evident that availability and quality of plasma products are not very satisfactory in the northern region. A clear majority of the doctors found that the current prices of plasma products are very expensive. Doctors have unanimously said that awareness is required for both patients and themselves regarding plasma products. Consumption rate is very less for plasma products since one in fifty or hundred need to be prescribed with plasma products. And choosing their favorite brand has been done purely on the basis of availability, quality of the product and price.

The following few pages are a detailed account along with graphical representations of all the responses gathered during the field-work. The intentions are to depict a close reflection of the Plasma market scenario in Chandigarh,Patiala,Ambala,Shimla and Solan region of India and come up with new business prospects and ways to counter the limitations of trade in Plasma market.

ORGANISATION PROFILE

The study is conducted by Plasmagen Biosciences pvt. ltd. an offshoot of Trigenesis Life sciences situated in 160,KCI Chambers,2nd Floor,5th Main Road,Chamarajapet,Bangalore-560018 which is a pharmaceutical company dealing in protein therapy & plasma products for Indian & global markets. Its estimated sales for 2010-11 is approximately 5.3 million US $ which would most likely to go up to 24 million US $ by 2011-12 & 30 million US $ by 2015.With a capacity of 100,000 liters of Plasma collection & having an employee strength of 150 people, they are all set to embark into the plasma market by themselves. It is basically involved in direct sales in the International & domestic market and plasma products manufacturing by the process of fractionation. Here is a brief introduction of its parent company Trigenesis Lifesciences, its history and its business activities.

In the history of Indian Pharmaceutical Lifesciences industry , one name is worth a reckon i.e Trigenesis Lifesciences (P) Ltd. It is the dominant and vital arm of RSM group having diversified business areas such as Textile clothing, Finance consulting and plastic additives & moldings along with pharmaceuticals.

In the realm of success, today RSM group earns a standing as one of the top 20 well trounced conglomerate business group of the Indian Inc. with group turnover exceeding Rs 1600 million. RSM pharmaceuticals, the Flag Ship Company of the group struck its roots in the Indian pharmaceutical distribution and marketing industry in 1987 and presently is one of the top 5 distribution houses, employing around 500 people having an annual turnover of Rs. 500 Million. RSM group is built on the sturdy pillars of reliability, sound infrastructure, operational expertise and financial stability.

The success of RSM group in the distribution sector has given a strong footage for Trigenesis Lifesciences (P) Ltd - A business venture destined to the noble cause of social welfare in the emergency and critical care segment.

The Therapeutic Marvels include:

- Plasma products
- Hormonal Therapy
- Recombinant Therapeutics
- Sterile anti infective
- Oncology
- Antibiotics lyophilized
- Anesthetics

PROBLEM STATEMENT

The project is undertaken to understand the factors which influence the prescription pattern of doctors with respect to plasma products.

For an aspiring company to do business in protein therapy, plasma market is not a very congenial place to do business in, since plasma products such as IVIG, Human Albumin, Anti-D, Hepatitis and Tetanus Immunoglobulin all are very expensive, their only source being Human Blood & blood donors have to be paid hefty sums of money for any donation of blood they make.

Another issue is the lack of awareness since it is new to the market and there is little awareness among doctors & patients regarding its uses & implementation.

Some of the other concerns would include:

- Ever rising cost of plasma.
- Government control of pricing: Since the government does not want the prices of plasma products to jet off beyond the reach of the common man.

With in depth market survey on the plasma market determination of the demand, consumption pattern, personal preferences and quality & availability of currently available blood & plasma brands in Chandigarh-Shimla region of India will come handy when embarking on new business propositions in the plasma market.

OBJECTIVES OF THE STUDY

The Key Research Objectives are:

- To determine prescribing behavior of doctors.
- To determine the consumption pattern of different plasma products by consumers.

METHODOLOGY

- **RESEARCH DESIGN: DESCRIPTIVE RESEARCH DESIGN**

Research design is a total plan or strategy of a proposed research.

Research was conducted in four cities:

- Chandigarh
- Patiala
- Ambala
- Shimla
- Solan

DATA COLLECTION:

Structured questionnaire was designed considering the various factors identified, so that the data collected would be in compliance with the information needed.(copy enclosed)

In depth interviews were conducted which were optimal for collecting data on individuals personal perspectives, and experiences.

- ## SAMPLE DESIGN

TARGET POPULATION:

During the market survey of the plasma market in these cities, the target population had been primarily the doctors of well reputed hospitals in Chandigarh,Patiala,Ambala,Shimla and Solan of India as directed by the company.

SAMPLE SIZE:

Total number of doctors studied is 217, from different specialties:

Neurosurgeons (26)

Gynecologists (49)

General surgeons (54)

Physicians (44)

Pediatricians (42)

Plastic surgeons (2)

SAMPLING TECHNIQUE:

Judgmental sampling method was used.

TYPE OF SCALING:

Ordinal scaling has been used.

ANALYSIS OF DATA

Data obtained from the questionnaires was summarized in MS-Excel 2007.

The Data Analysis was done using analytical tools of MS-Excel 2007.

Analysis of the data is done product wise for all the questions given in the questionnaire.

<u>RESPONSE PROFILE FOR INTRAVENOUS IMMUNOGLOBULIN (IVIg)</u>:

Total respondents: 70

1. **USAGE IN YEARS**:

   It was observed that 17.1% doctors were using IVIg for less than 3 years, 48.5% have been using IVIG for 3 to 7 years and rest 34.2% has been using it for more than 7 years.

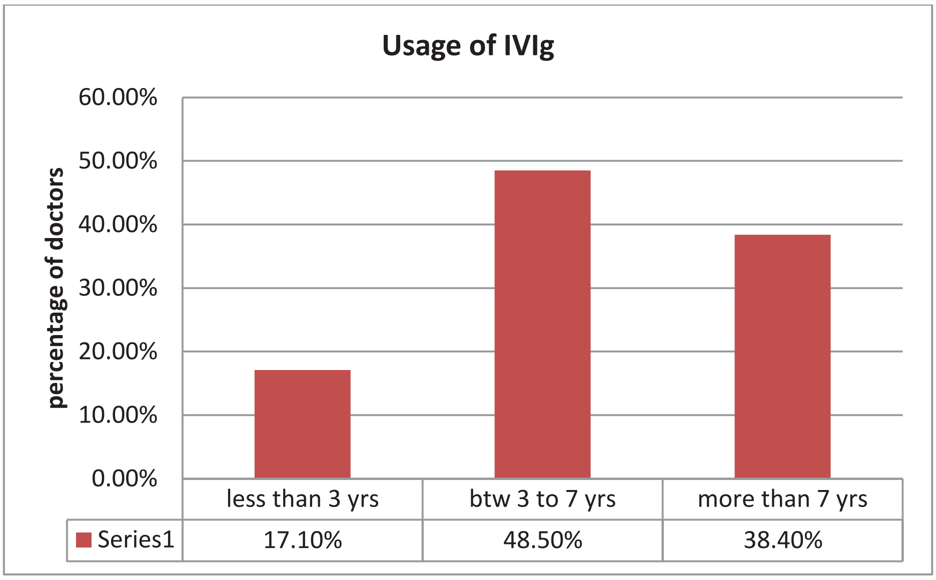


Figure 1.shows the years doctors have been using IVIG.

2. **SATISFACTION LEVEL OF DOCTORS WITH THE AVAILABILITY OF THE PRODUCT:**

   41.4% doctors found the availability excellent and rest 58.4% found it good enough to be used.

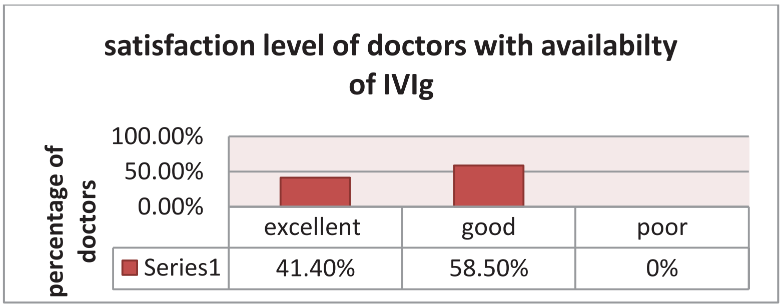
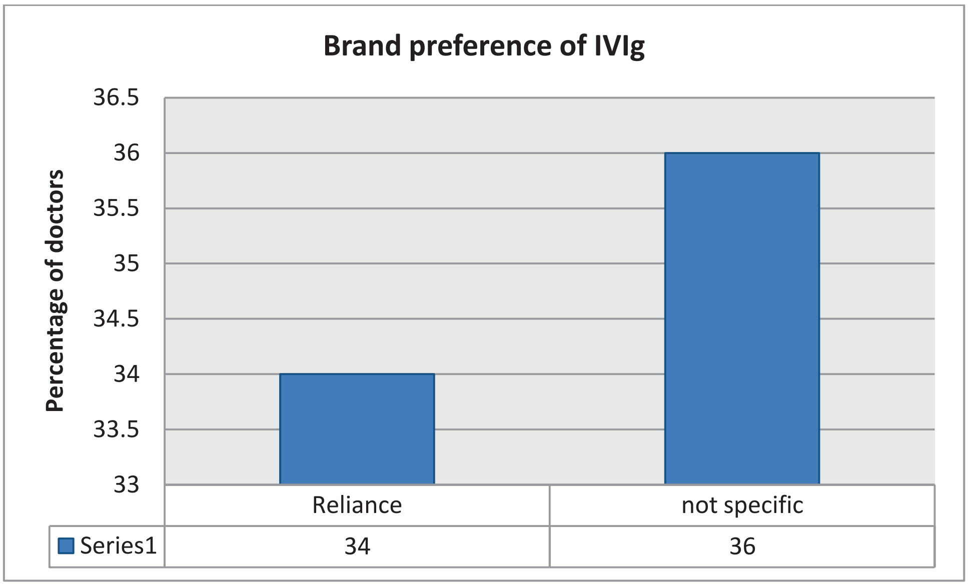


Figure 2.shows how doctors feel about the availability of the product.

3. **BRAND PREFERENCE**:

Most of the doctors do not prefer any particular brand as 36 out of 70 said they don't prefer nay particular brand and 34/70 preferred Reliance.



4. **REASON FOR BRAND PREFERENCE:**

It was observed that73% of doctors preferred a particular brand due to better product,13% preferred a brand due to the availability of the product while 11.5% doctors preferred a brand due to both the product itself and the availability of the Product.

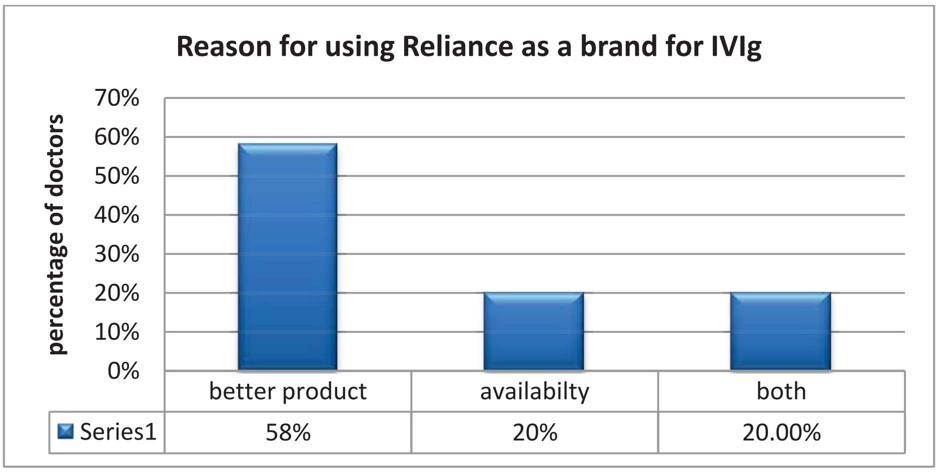


Figure3.shows why doctors prefer the brand they use.

5. **CONSUMPTION PATTERN:**

79.2% doctors were prescribing less than 10 vials per month of IVIG while 21.4% prescribed 10 to 20 vials per month. None of them was found to prescribe more than 20 vials a month.

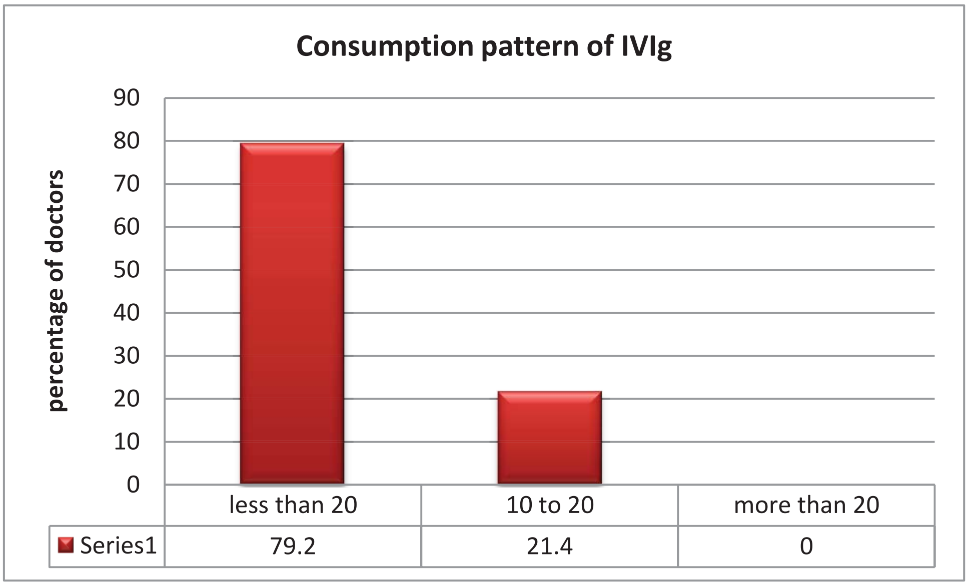


Figure 4. Shows consumption pattern of doctors

6. **SOURCE OF PLASMA AS CRITERIA FOR SELECTION OF PRODUCT:**

71.9% doctors consider source of plasma as critical criteria for selection of the product while 29.1% consider it very critical.

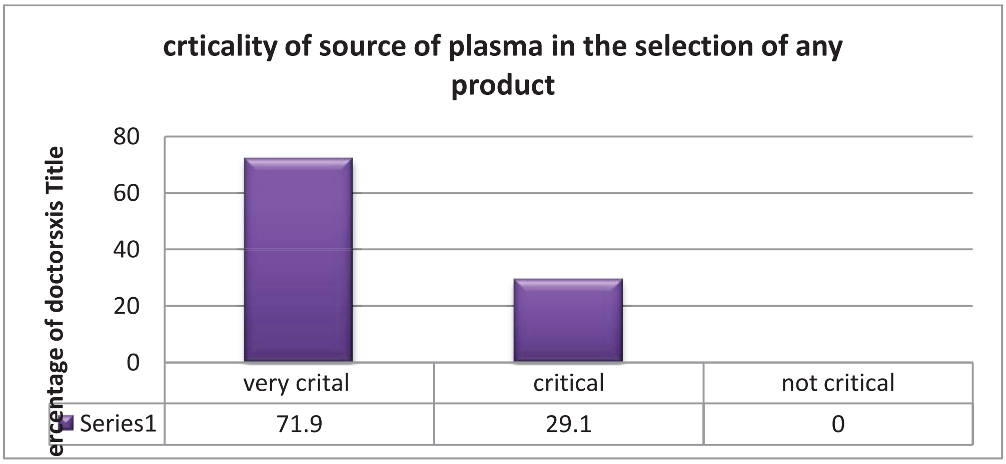


Figure 5.shows the criticality of source of plasma in selection of product.

7. **SATISFACTION WITH THE IVIg AVAILABLE:**

It was observed that doctors are completely satisfied with the product they are using as 54.2% doctors said that they are highly satisfied while 45% doctors said they are satisfied with the product.

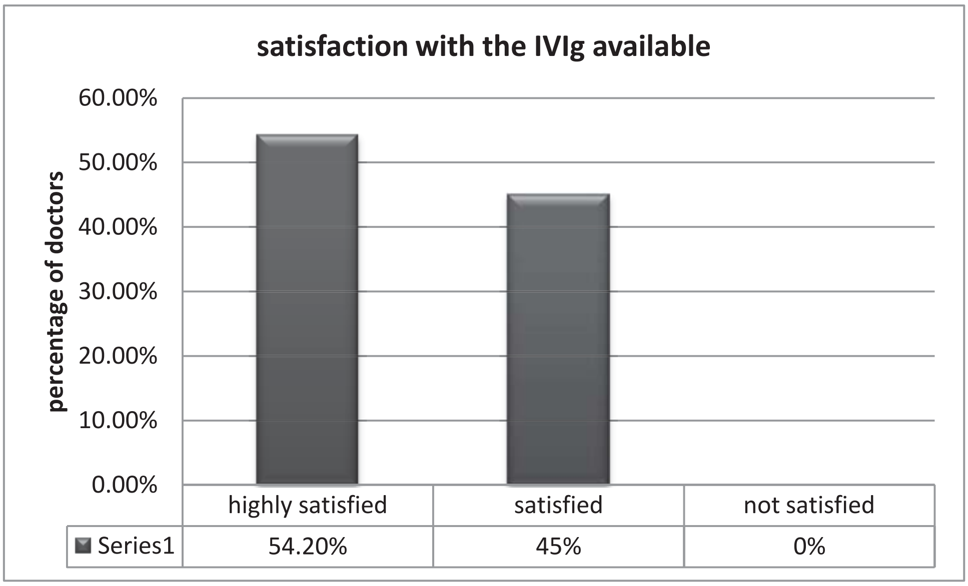


Figure6.shows satisfaction level of doctors with the brand.

8. **PRICE OF IVIg**:

100% doctors considered IVIg as expensive.

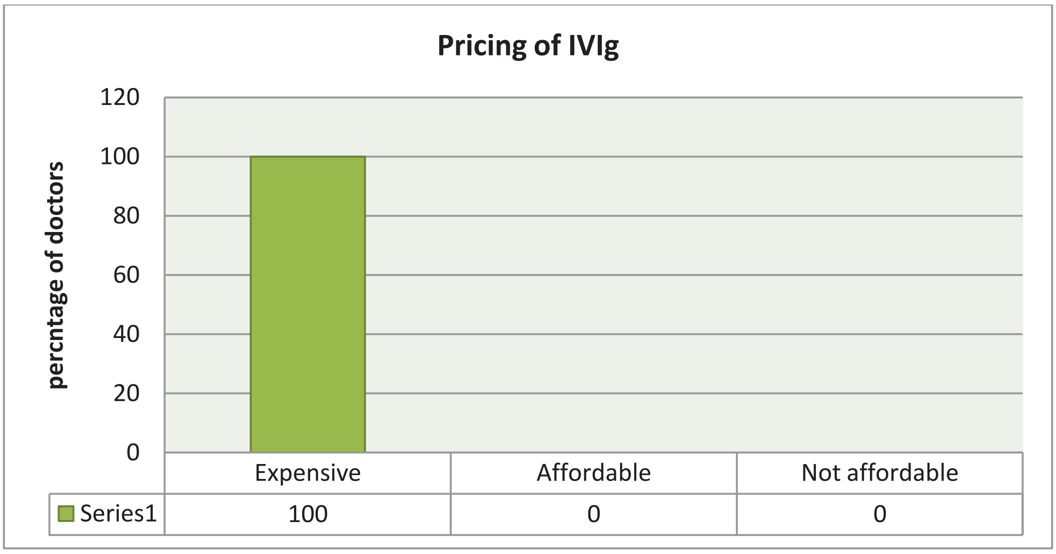


Figure 7: shows the pricing of IVIg.

9. **PLASMA PRODUCTS AWARENESS**:

100% doctors considered plasma product awareness necessary for doctors as well as patients.

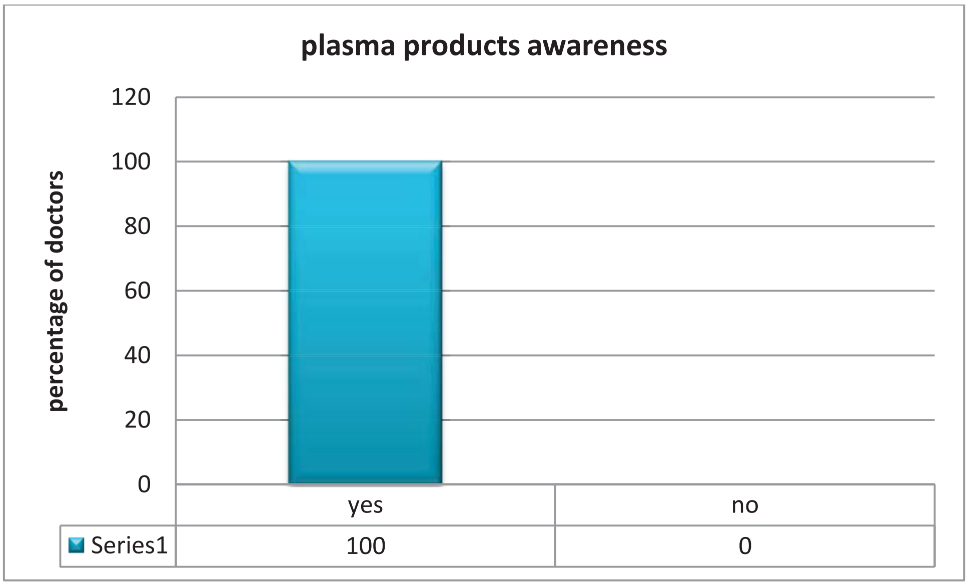


Figure 8: shows the requirement for awareness of plasma products

CRITERIA FOR BRAND SELECTION:

It was found that 81.4% of doctors prescribed a particular product because of company image and safety profile while 16% took both product itself and company image into consideration.4% doctors said they prescribed a drug due to long term relationship with the company.

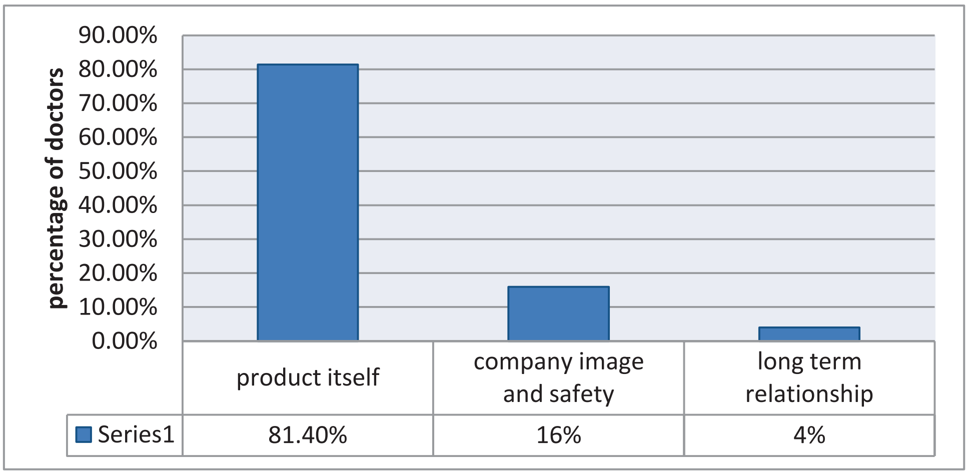


Figure9.shows prescription pattern of doctors

10. **CONCERN WHILE PRESCRIBING IVIg**:

It was found that 65% doctors believed that cost is the main concern regarding prescription of these drugs while rest of them said that their use may cause some anaphylactic risks and shock which needs to be taken care of.

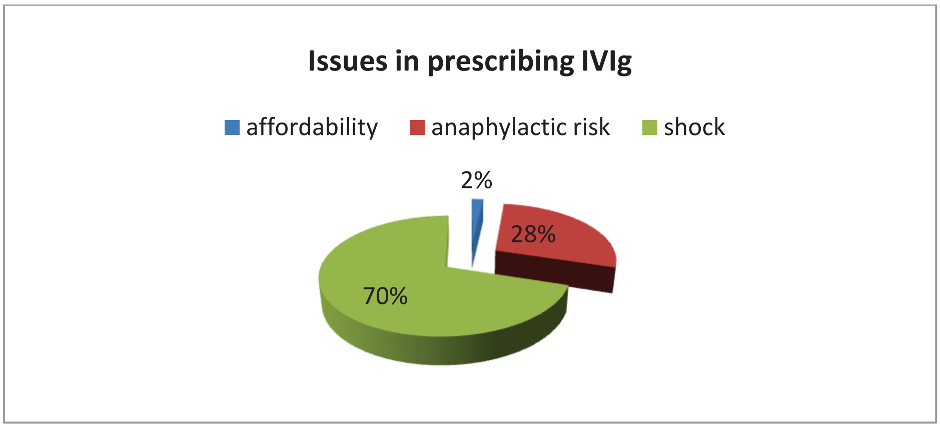


Figure 10.shows the issues while prescribing IVIg

RESPONSE PROFILE FOR HEPATITIS IMMUNOGLOBULIN

Total number of respondents: 40

1. **USAGE OF THE HEPATITIS B Ig**:

It was observed that of all the doctors using Hepatitis B immunoglobulin, 22.5% doctors have been using it for less than 3 years, 45% have been using it for last 3 to 7 years and 32.5% have been using it for more than 7 years.

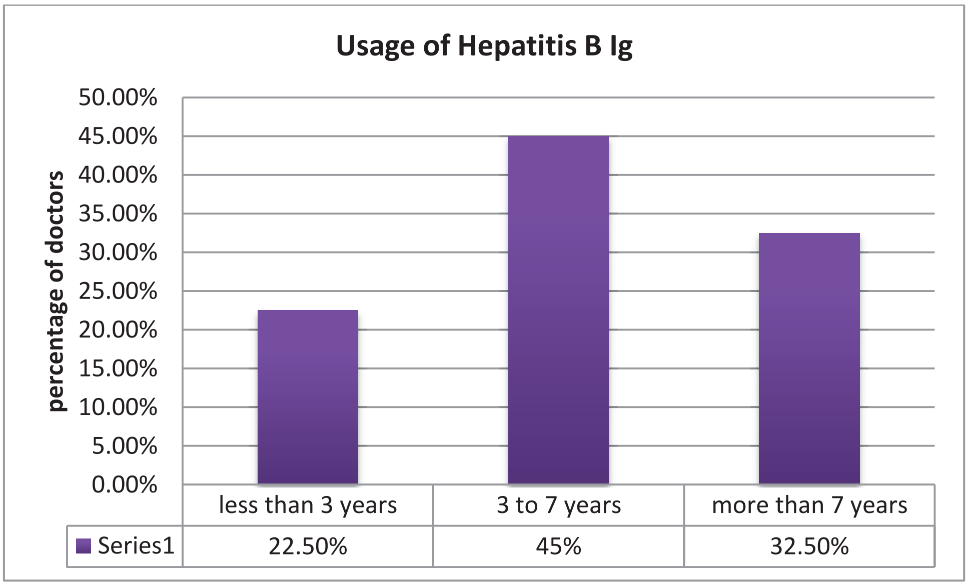


Figure11.shows the number of years doctors have been using the brand.

2. **AVAILABLITY OF HEPATITIS B Ig**:

Around 80% of doctors of doctors considered the availability of the product good while rest 20% considered it excellent.

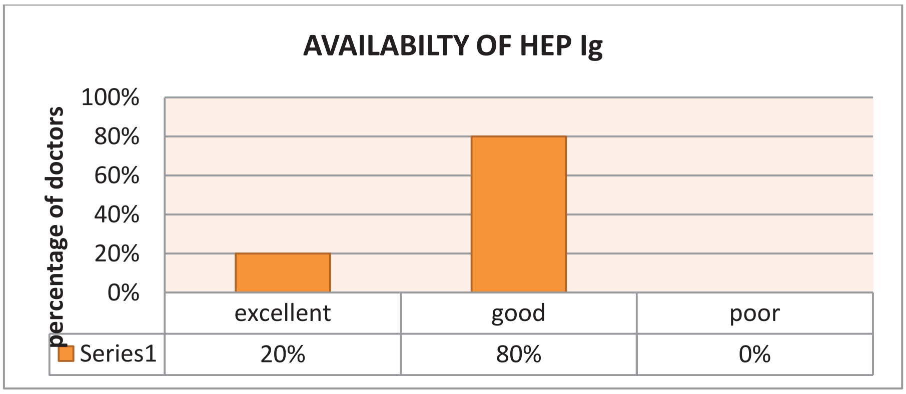


Figure 12.Shows how doctors find the availability of the product.

3. **BRAND PREFERENCE;**

It was observed that of all the brands available 80% of the doctors prefer ENG rex as their product while 13% prefer Bevac and rest prefer Elhep.

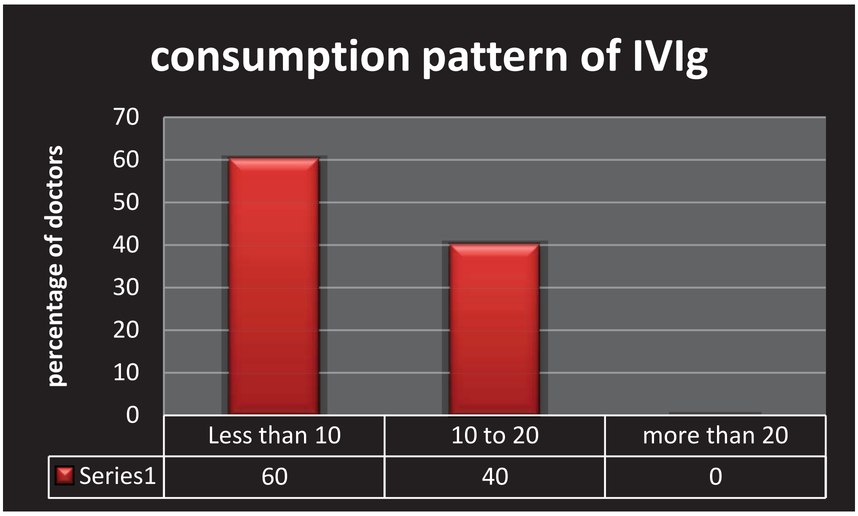


Figure 13 shows the most preferred brand by doctors.

4. **REASON FOR PREFERENCE FOR A BRAND**

58% doctors prefer a particular product due to better quality of the product while 20% preferred it due to availability and rest 20% preferred a particular brand due to both quality and availability.

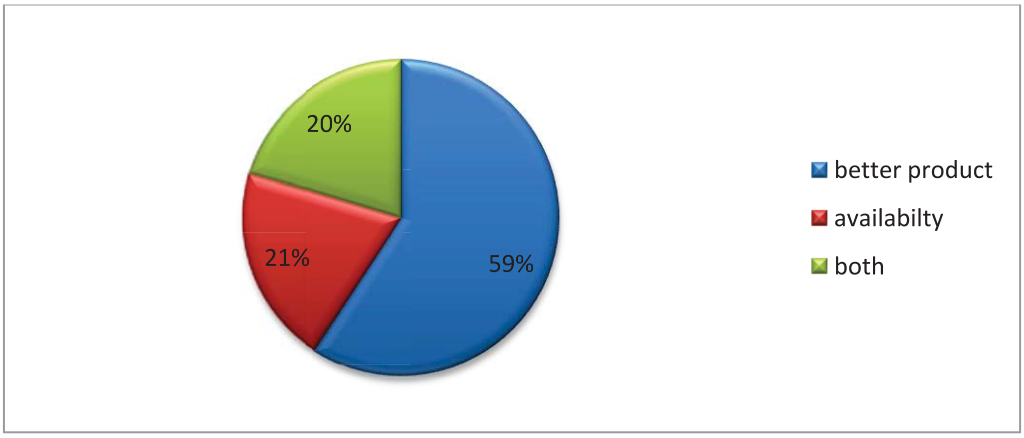


Figure 14.shows why doctors prefer the brand they use.

11. CONSUMPTION PATTERN:

Around 60% doctors prescribed less than 10 vials per month while rest 40% prescribed around 10 to 20 vials per month.

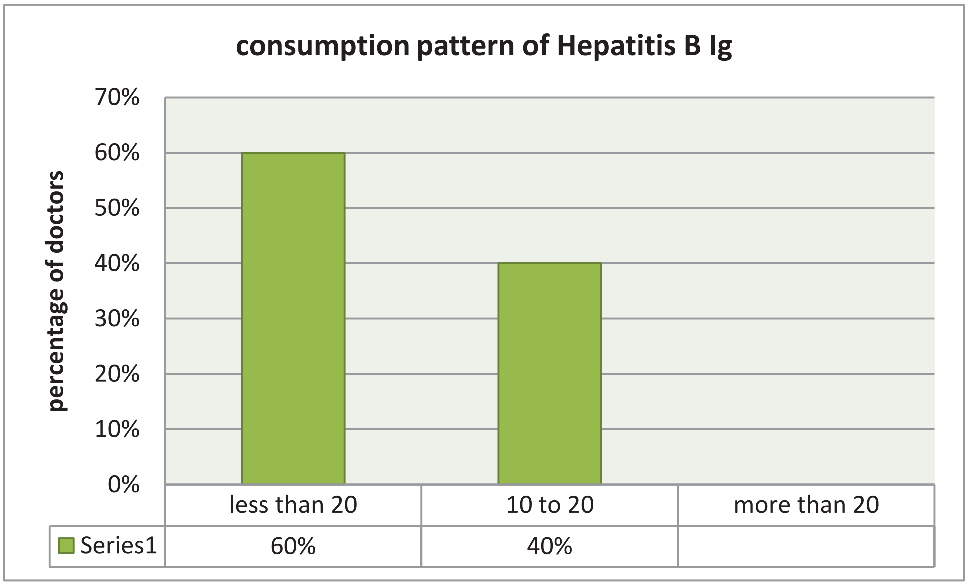


Figure 15.shows the consumption pattern of the product.

12. **SOURCE OF PLASMA AS A CRITERION FOR SELECTION OF PRODUCT**:

It was found that 75% of the doctors considered plasma as critical criteria for selection of the product while 25% considered it as very critical criteria.

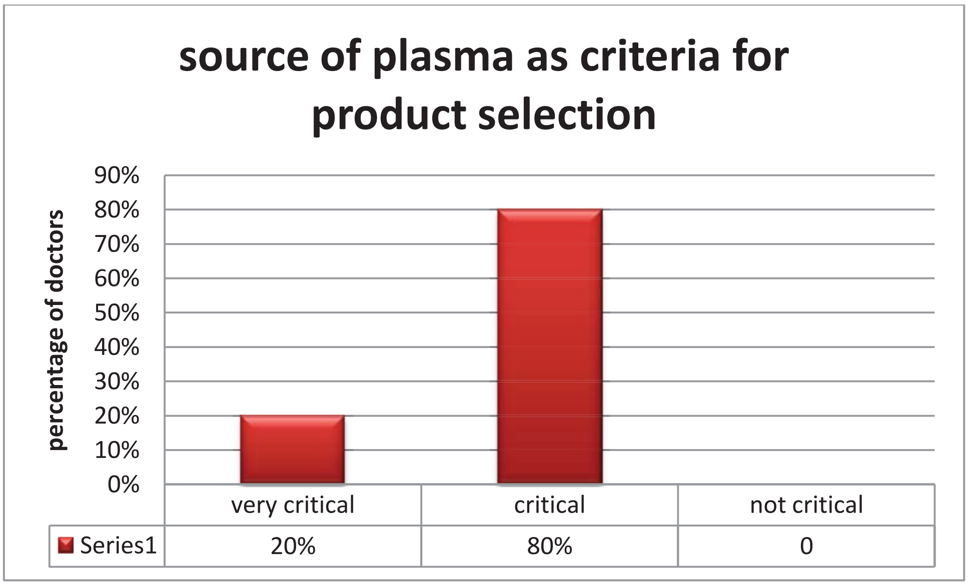


Figure 16.shows the criticality of source of plasma while selecting a product.

13. SATISFACTION OF DOCTORS WITH HEPATITIS B Ig:

63% doctors were satisfied with the present product they are using while rest 37% was highly satisfied with the product available.

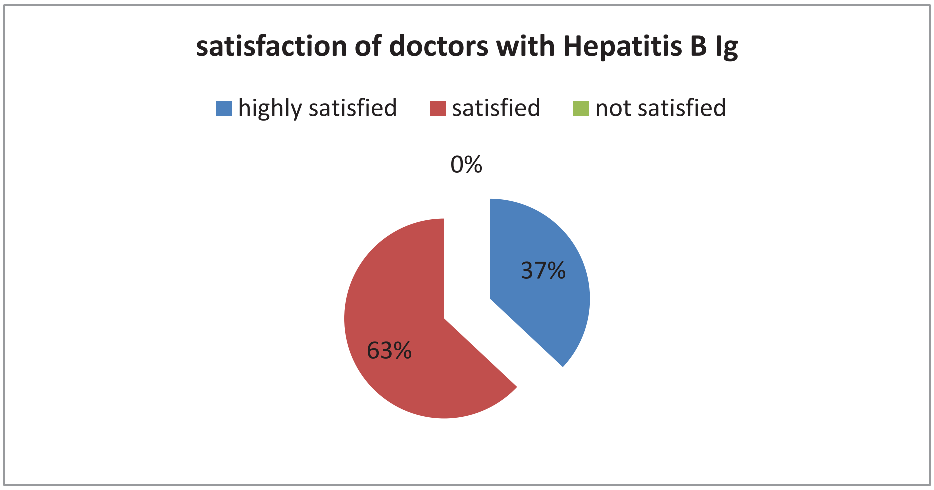
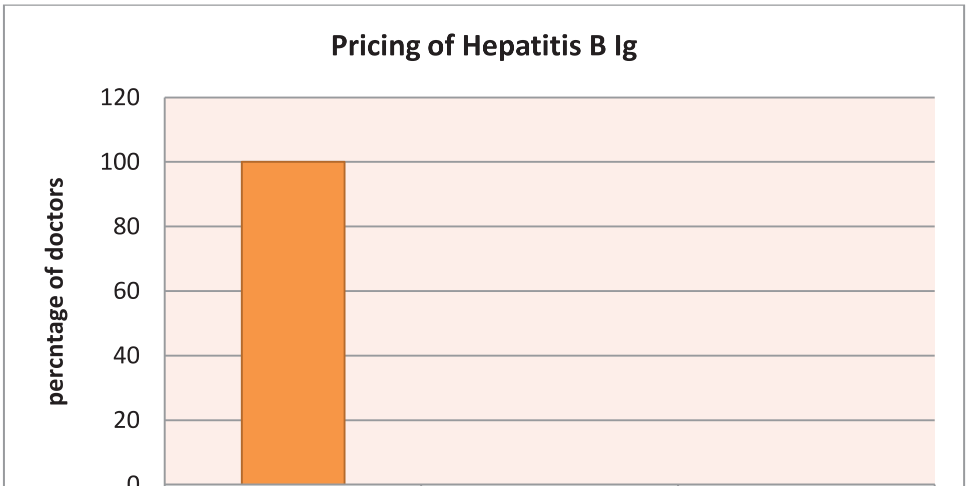


Figure 17.shows the satisfaction of doctors with the brand.

1. **PRICE OF HEPATITIS B Ig**:

100% doctors considered Hepatitis B Ig as expensive.



	Expensive	Affordable	Not affordable
Series1	100	0	0

Figure 18. Shows the pricing of the product.

2. **CRITERIA DOCTORS CONSIDER WHILE SELECTING A PRODUCT**:

It was found that 70% of the doctors prescribe a particular drug taking into account company's name and safety records of the drug while13% prescribe it due to the product itself and other 17% keep in mind both the factors i.e product itself and company image.

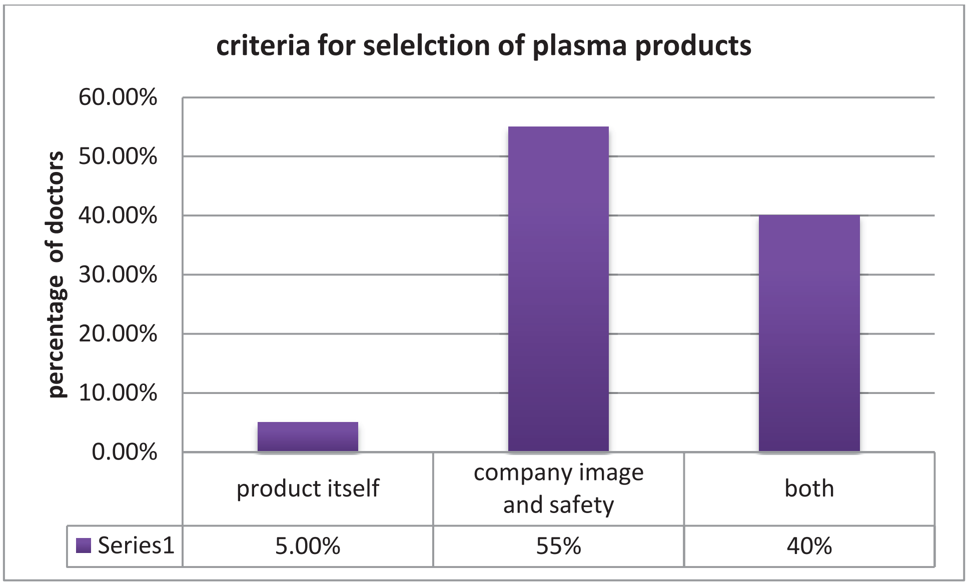


Figure 19.shows the preference level of doctors with the brand available.

RESPONSE PROFILE FOR ALBUMIN

Total no. of respondents:54

1. **USAGE OF THE ALBUMIN**:

   Of all the doctors studied, 22%doctors have been using this product for less than 3 years, 44.4% have been using it for 3 to 7 years and other 35.18% have been using it for more than 7 years.

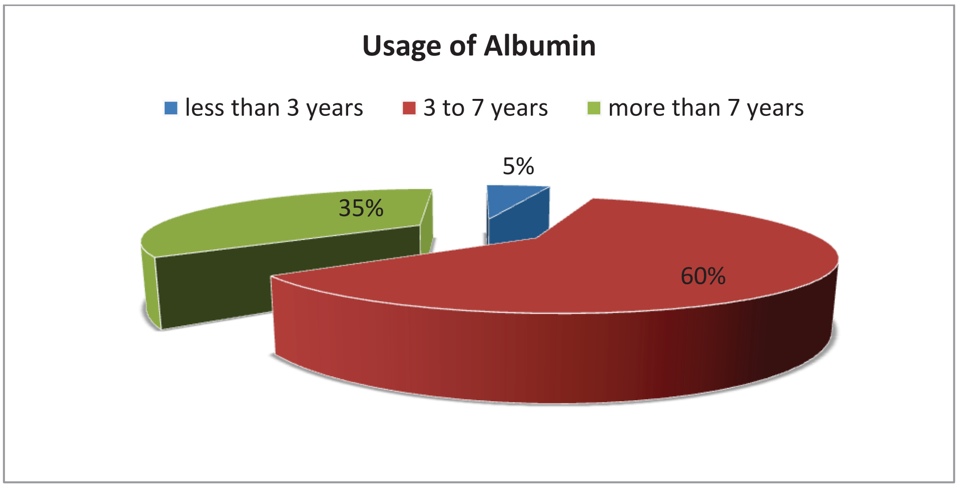


Figure 20.gives the number of years doctors have been using the product.

2. **AVAILABILITY OF ALBUMIN:**

   Availability of the product is excellent according to 15% doctors, good for 83.3% doctors and poor for around 2% doctors.

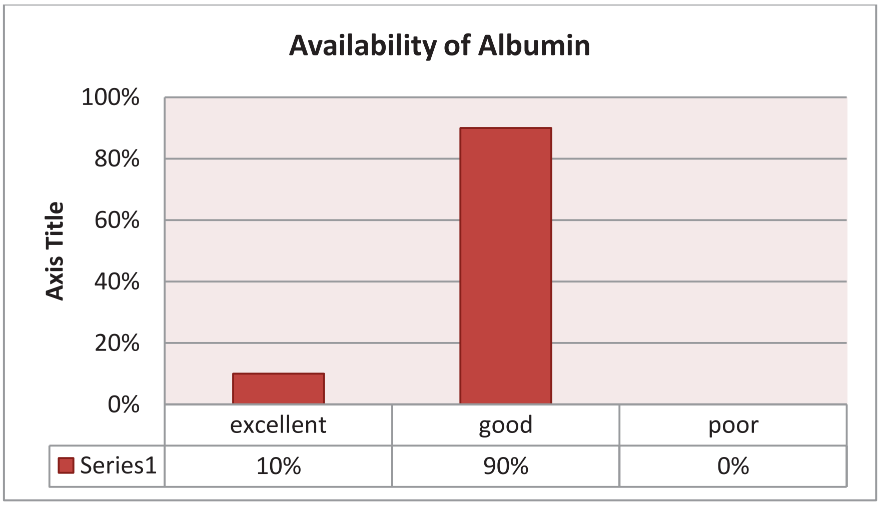


Figure 21.shows how doctors feel about the availability of the product.

3. BRAND PREFERRED:

75% doctors prefer Albure l(reliance product),21% prefer claris and4% prefer using albundac.

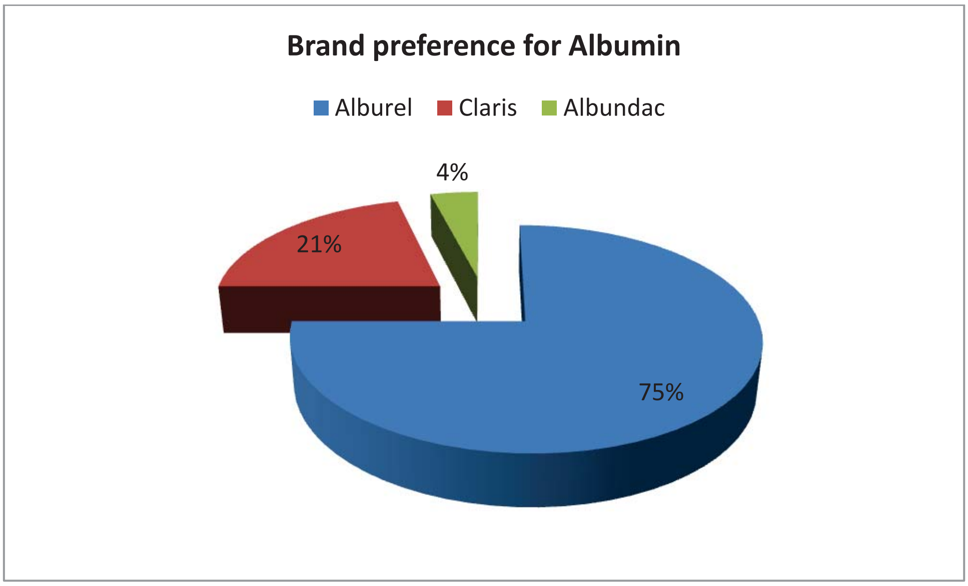


Figure 22.shows different brand preferences for Albumin.

4. REASON FOR BRAND PREFERENCE:

4.77% of the doctors prefer this brand due to the better product while rest uses it due to availability (23%).

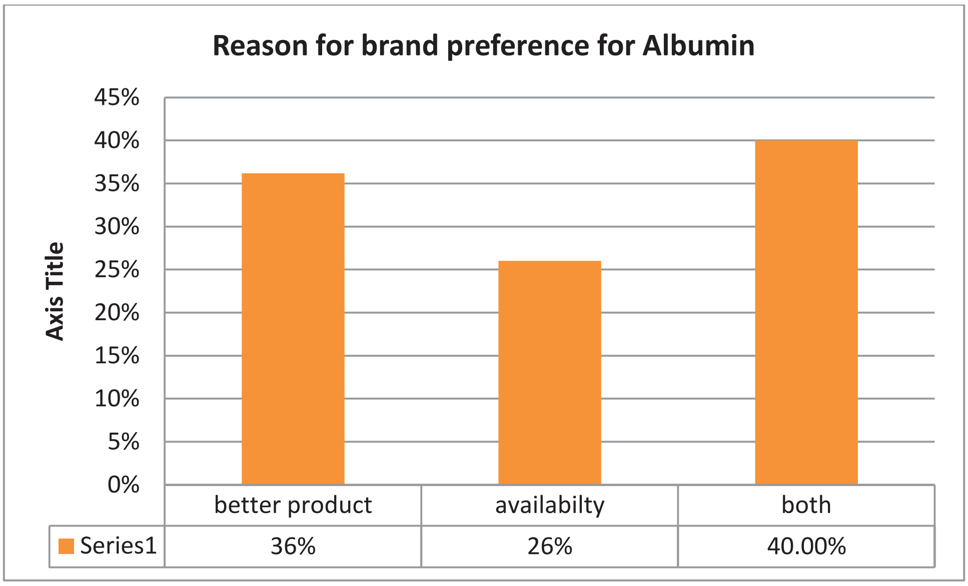


Figure 23. Shows why doctors prefer a particular brand.

5. **CONSUMPTION PATTERN:**

Around 38.5% doctors prescribe less than 10 vials per month while 62% prescribe 10 to 20 vials per month

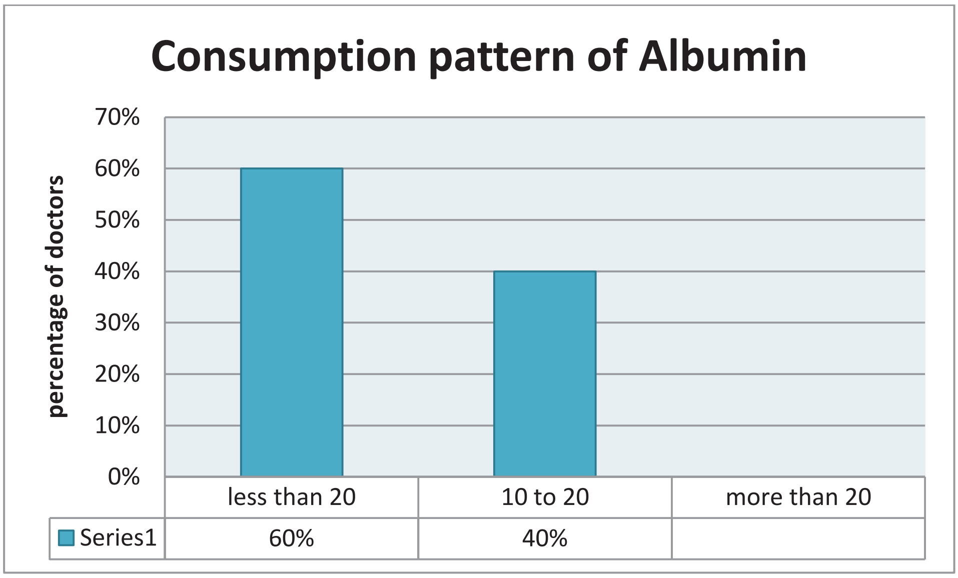


Figure 24.shows the consumption pattern of the brand.

6. **PLASMA SOURCE AS A CRITERIA WHILE SELECTING A PRODUCT:**

Doctors consider plasma as very important criterion for selection of a product (68% very critical and 32% critical).

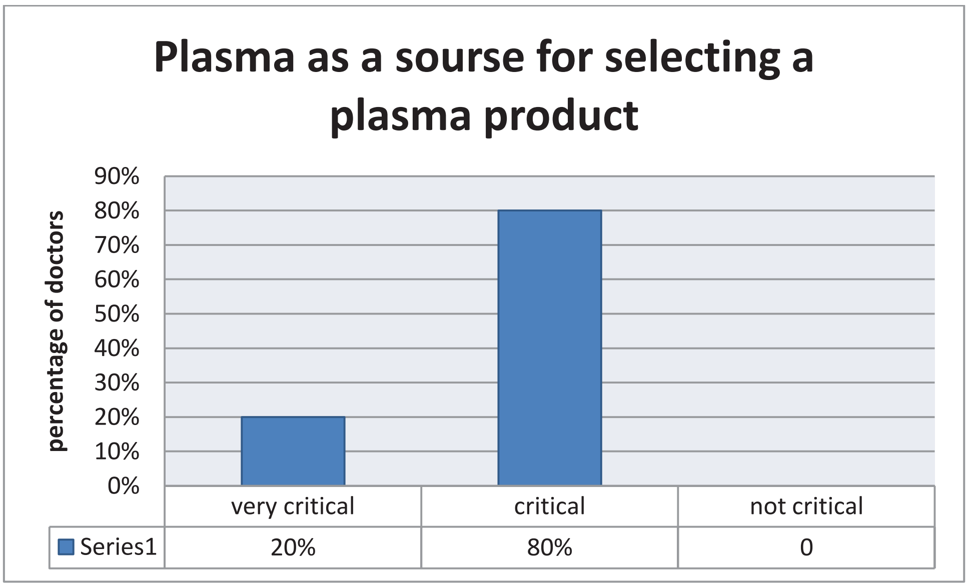


Figure 25.shows the criticality of plasma product while selecting a product.

7. **SATISFACTION WITH THE PRODUCT**:

It was observed that38% doctors said that are very satisfied with the product while 62% said they are satisfied with the product.

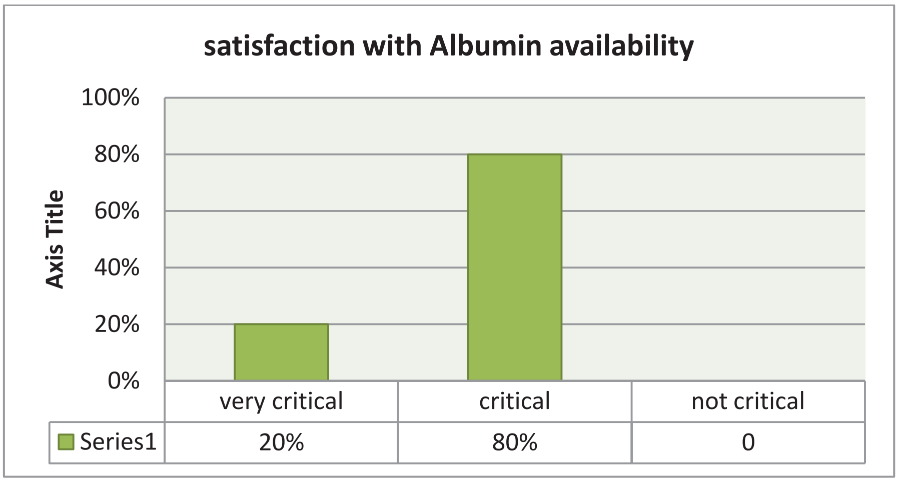


Figure 26.shows criticality of source of plasma as a criterion for selection of the product.

8. **PRICING:**

Around 90% doctors consider the product to be expensive for the patients while 10% of them considered it affordable.

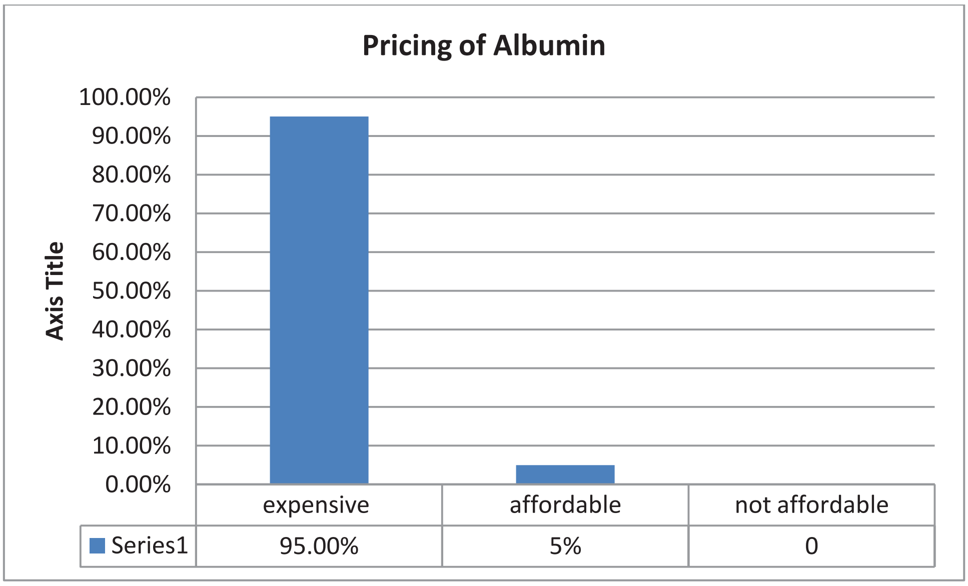


Figure 27.shows pricing of Albumin.

9. CRITERIA FOR SELECTION:

,22.2% of doctors trust a brand by the quality of the product,60% consider the company's name and safety profile while 15% considered both the factors i.e. product quality and company profile as a criteria for trusting the drug. Around 3% doctors also considered the long term relationship with the company as a criterion for the prescription of the drug.

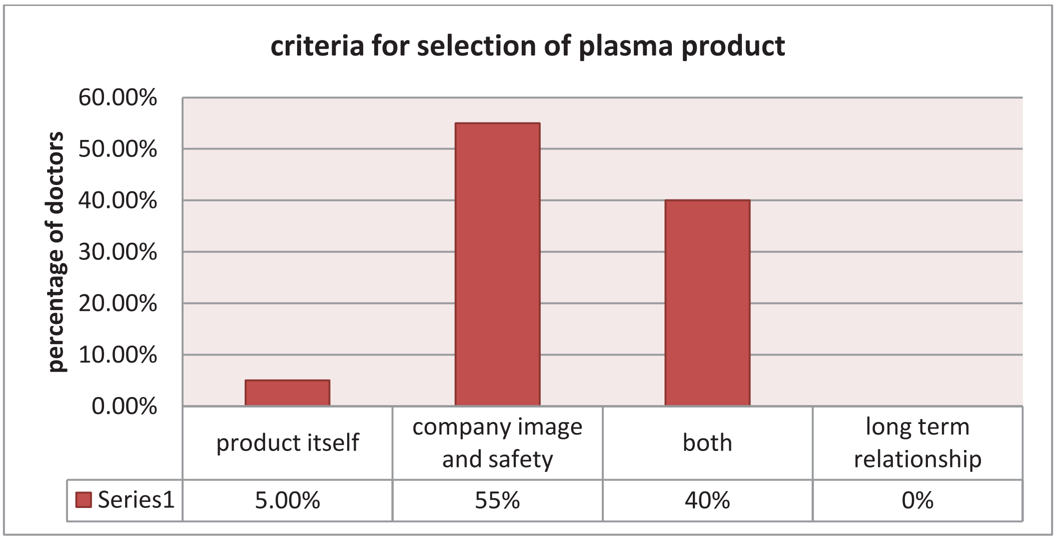


Figure 28.shows why doctors prefer a particular brand.

RESPONSE PROFILE OF ANTI D

Total no. of respondents: 49

1. **USAGE OF THE ANTI D**:

According to our study, none of the doctors were less than 3 years experienced, 38% doctors have been using this product for 3 to 7 years and 62% have been using it for more than 7 years.

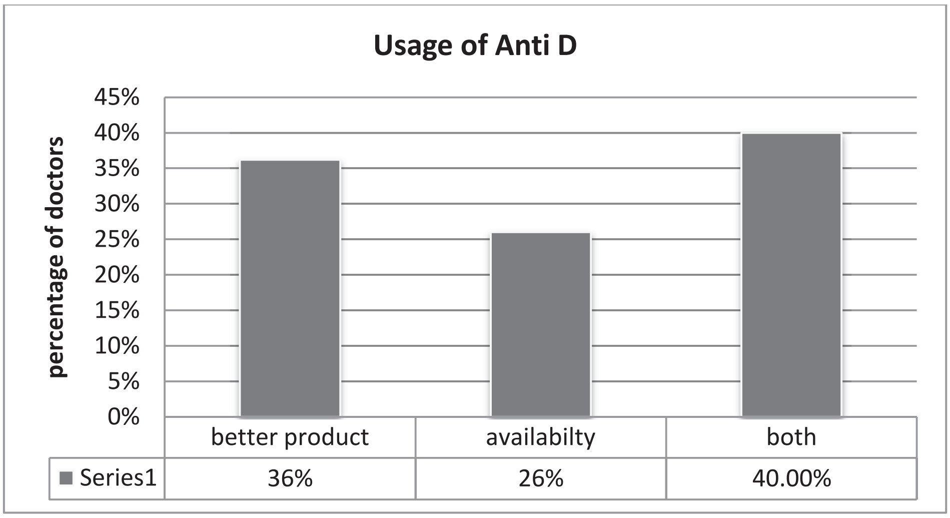


Figure 29.shows the number of years doctors have been using this product.

2. **AVAILABILTIY OF ANTI D**:

Availability of the product is found to be good as 15% doctors said that the availability has been excellent while 85% said it has been good. This shows that overall the availability has been good.

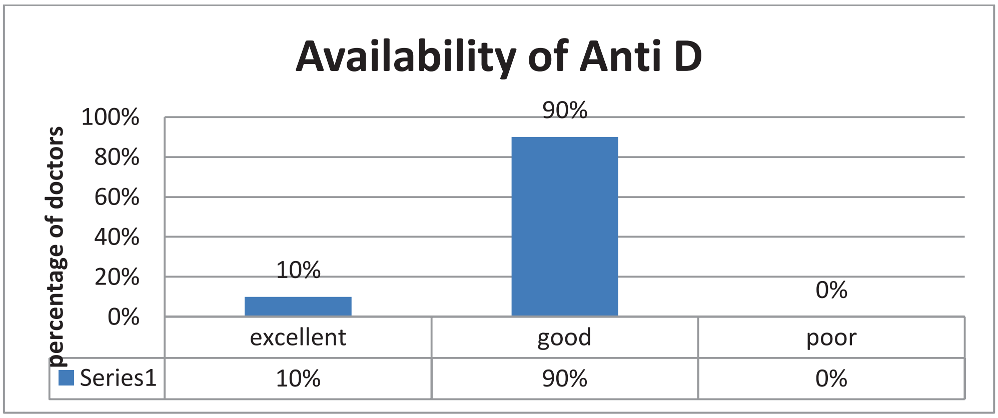


Figure 30.shows the availability of Anti D.

3. PREFERRED BRAND:

All the doctors preferred Rhogam as their product of choice which is a product of Johnson and Johnson.

Table 1.shows that all the doctors prescribed only rhogam.

Dr Kamna Nagpal	rhogam
Dr Seema	rhogam
Dr Nirlap	rhogam
Dr jeetender	rhogam
Dr Harleen Rohowal	rhogam
Dr Shweta cheema	rhogam
Dr Vandana bhatia	rhogam
Dr Usha	rhogam
Dr Anita mahendru	rhogam
Dr Anita Pal	rhogam
Dr Kumud Bala Gupta	rhogam
Dr Manoj Gupta	rhogam
Dr Kushala Pathania	rhogam
Dr Bishan Dhiman	rhogam
Dr Suman Thakur	rhogam
Dr Anupa Sood	rhogam
Dr Rajiv Sood	rhogam
Dr Rita Mittal	rhogam
Dr Rohini Rao	rhogam
Dr Rama Thakur	rhogam
DR Keshav	rhogam
Dr Mamta Mahajan	rhogam
Dr Monika Sharma	rhogam
Dr Kamlesh Sharma	rhogam
Dr RK Baria	rhogam
Dr Llait Mahajan	rhogam
Dr Renu Malan	rhogam
Dr Rinkle Gupta	rhogam
Dr Monica Gureh	rhogam
Dr Smita	rhogam
Dr Arohi	rhogam
Dr Kaveri Gupta	rhogam
Dr Anju Huria	rhogam
Dr Poonam Goel	rhogam
Dr alka Sehgal	rhogam
Dr Reeti Mehra	rhogam
Dr Bharti Goel	rhogam
Dr Dilpreet Kaur Pandher	rhogam
Dr Manjeet Kaur Reohi	rhogam
Dr Khushpreet Kaur	rhogam
Dr Paramjit Kaur	rhogam
Dr Manjit Kaur	rhogam
Dr Surinder Kumari	rhogam
Dr Parneet Kaur	rhogam
Dr Balwinder Kaur	rhogam
Dr Ruby Bhatia	rhogam
Dr Gurdeep Kaur	rhogam
Dr Manpreet Kaur	rhogam

Source: reporting format of Anti D given by the organization

4. CONSUMPTION PATTERN:

9.2% doctors prescribe less than 10 vials per month, 80% prescribe 10 to 20 vials a month while only 10% prescribe more than 20 vials per month.

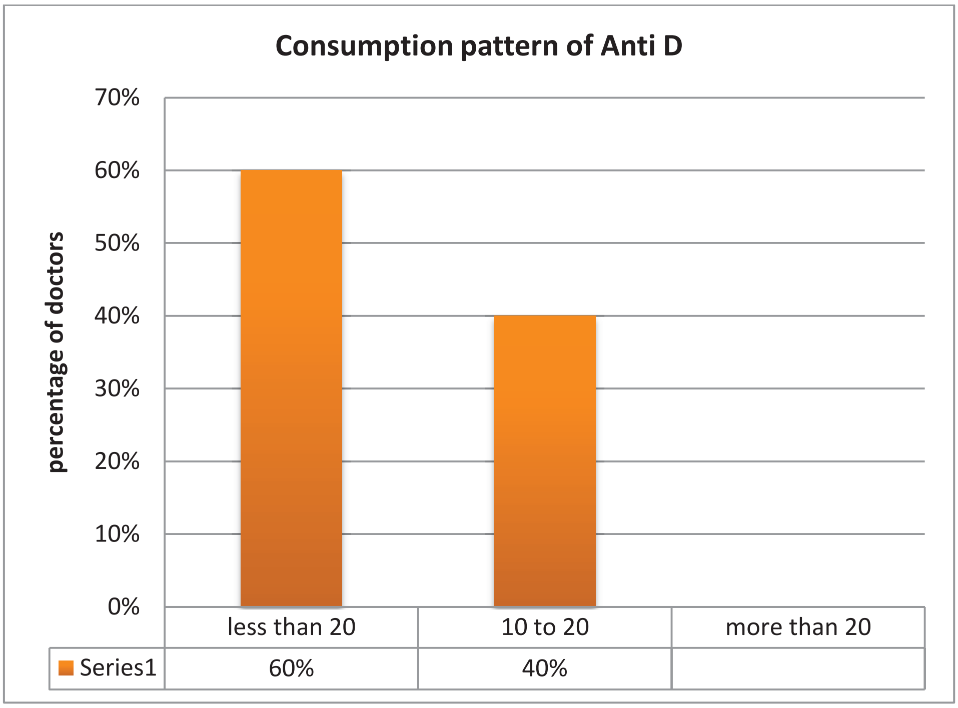


Figure 31.shows the consumption pattern of the doctors.

5. PLASMA AS SELECTION CRITERION:

Plasma is considered as a very important criterion for the prescription of a particular product. Around 35% doctors considered it very critical while 65% considered it critical criterion for selection of the product.

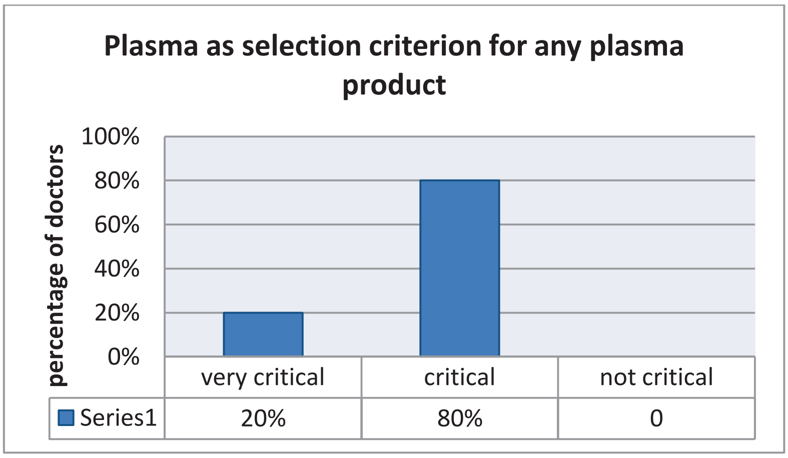


Figure 32.shows the criticality of the product..

6. **SATISFACTION WITH THE BRAND**:

Doctors are found to be satisfied with the product they are using currently. This can be proved as 75% doctors said they are satisfied while 25% said they are highly satisfied.

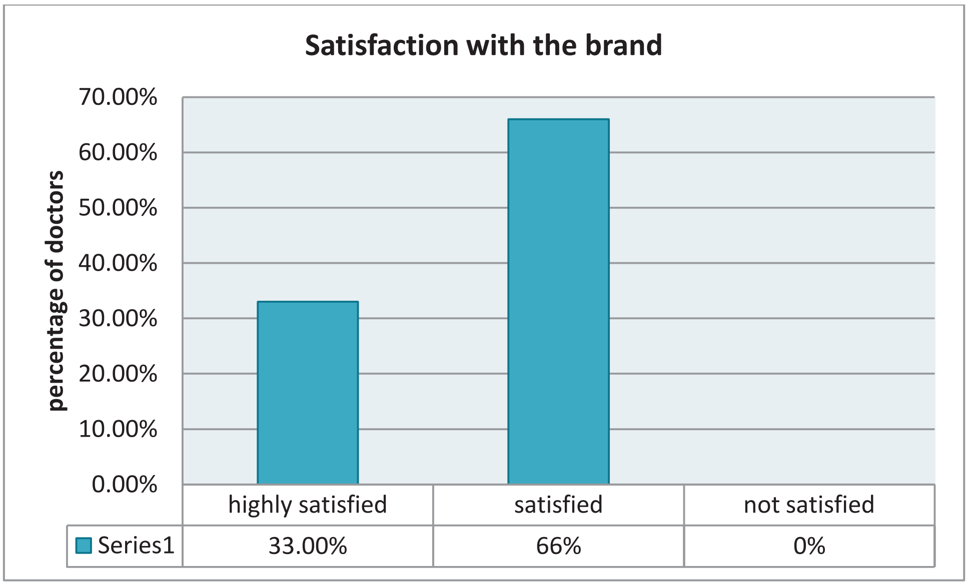


Figure 33.shows the satisfaction level of the doctors with the brand.

7. **PRICING**:

61.2% doctors feel Anti D is expensive while rest 38% feels it is affordable to the patient.

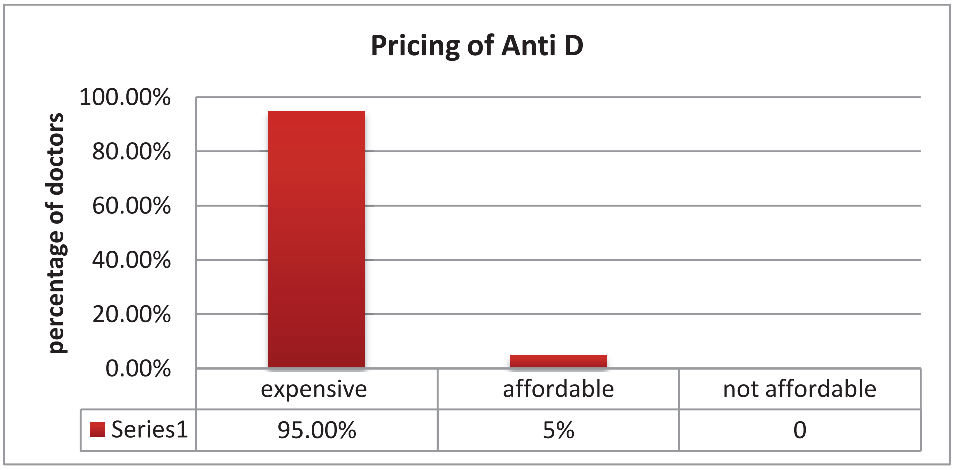


Figure 34. Shows pricing of Anti D

8. CRITERIA FOR SELECTION OF BRAND:

15% trust a brand with reference to the product itself ,63.2% takes into account company's profile and product safety while rest 18.3% consider both the factors while using a particular product.

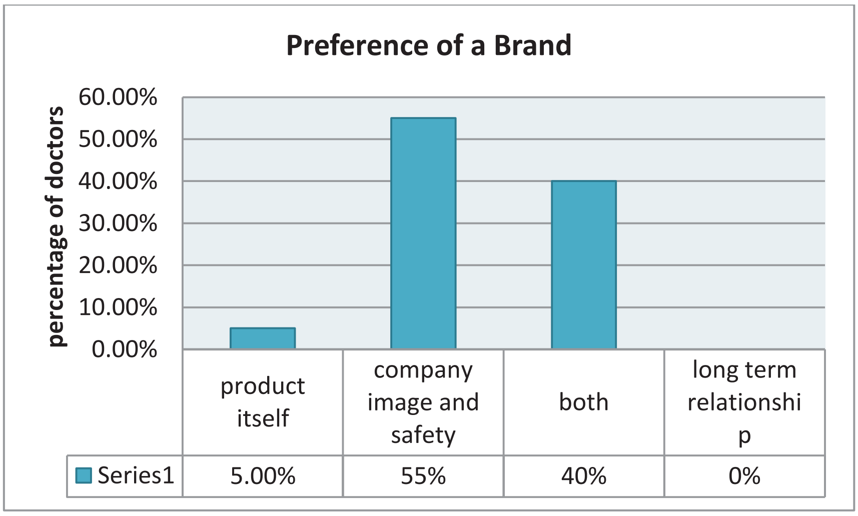


Figure 35.shows why doctor prefer a particular brand.

RESPONSE PROFILE OF ANTI RABIES IMMUNOGLOBULIN

Total no. of respondents: 58

1. **USAGE OF THE ANTI RABIES Ig**:

Out of all the doctors I studied , around 5% doctors have been using anti rabies for less than 3 years, 60% doctors have been using it for 3 to 7 years and 35% have been using it for more than 7 years.

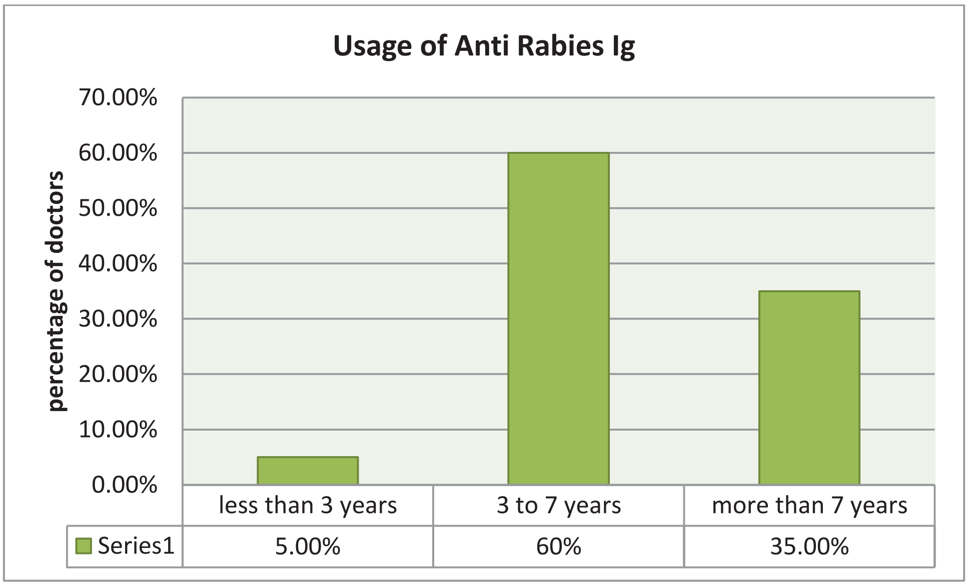


Figure 36.shows for how many years doctors have been using the product.

2. **AVAILABILTY OF THE PRODUCT:**Around 90% doctors believe that availability of the product have been good while 10% believe its excellent. Therefore we can say that availability of the product have been good.

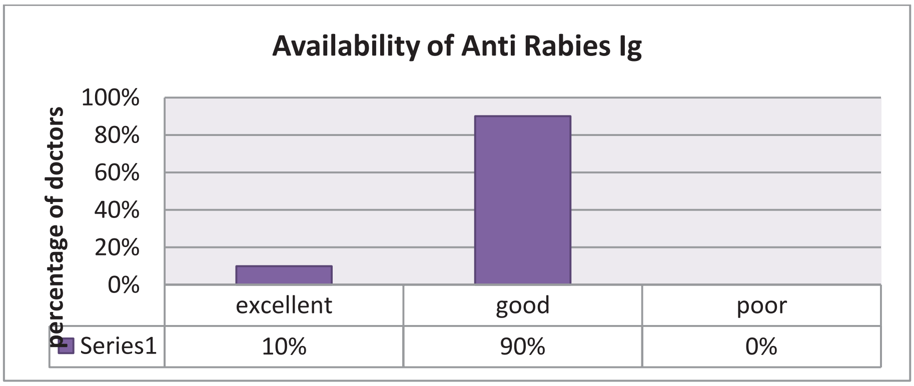


Figure 37.shows the availability of the Anti Rabies Ig

3. BRAND PREFERRED:

Around 40% doctors prefer using Kamrab as their main brand, 35%% prefer Berirab while other 25% use Rabivax and Rabipur .

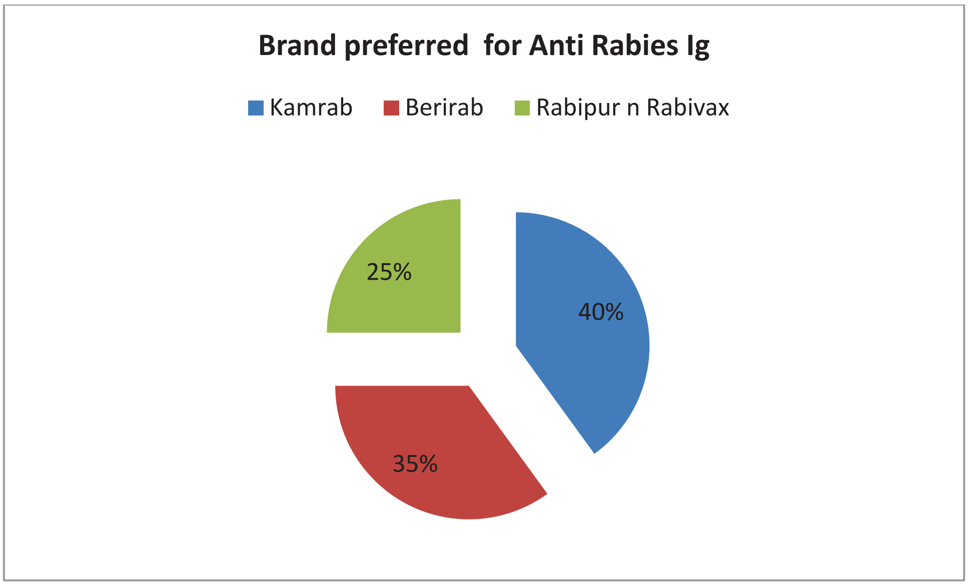
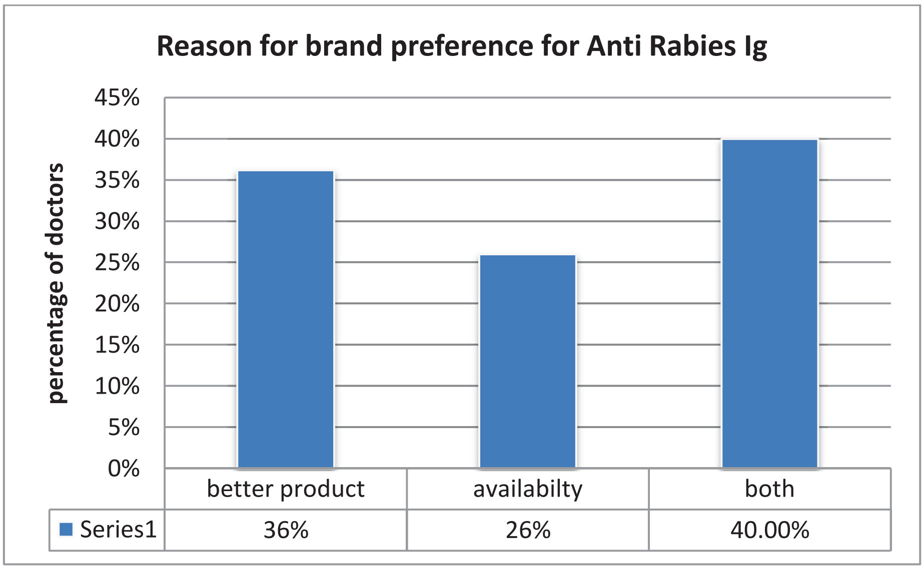


Figure 38.shows the preference pattern of the brands.

4. REASON FOR BRAND PREFERENCE:

Around 36.2% doctors prefer using this brand due to better product availability, 26% doctors prefer it due to better quality of the product while rest40% prefer a particular brand due to both ,quality as well as availability



.

Figure 39.shows why doctors prefer a particular brand.

5. CONSUMPTION PATTERN:

Consumption pattern for 60% doctors is less than 10 vials per month while 40% prescribe 10 to 20 vials per month.

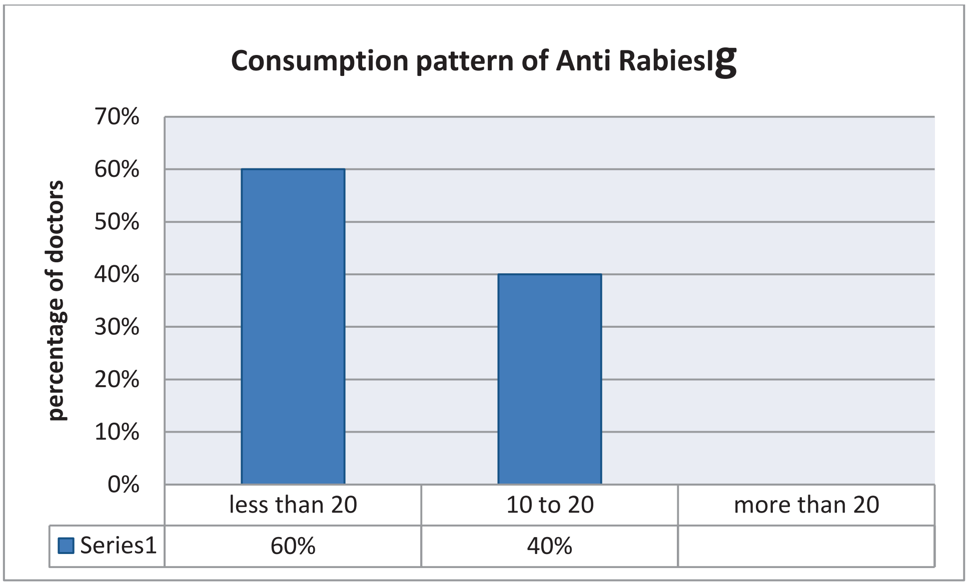


Figure 40.shows the consumption pattern of the product.

6. PLASMA SOURCE AS A CRITERION FOR SELECTING A PRODUCT:

The doctors consider plasma as a very important criterion for selection of a particular drug. This can be proved by taking into account the data which shows that 80% doctors consider it critical while 20% consider it very critical.

Figure 41.show the criticality of the source of plasma in the selection of brand

7. SATISFACTION WITH THE PRODUCT:

66% doctors are satisfied while 34% doctors are very satisfied with the product. This shows that almost all the doctors are highly satisfied with the product available.

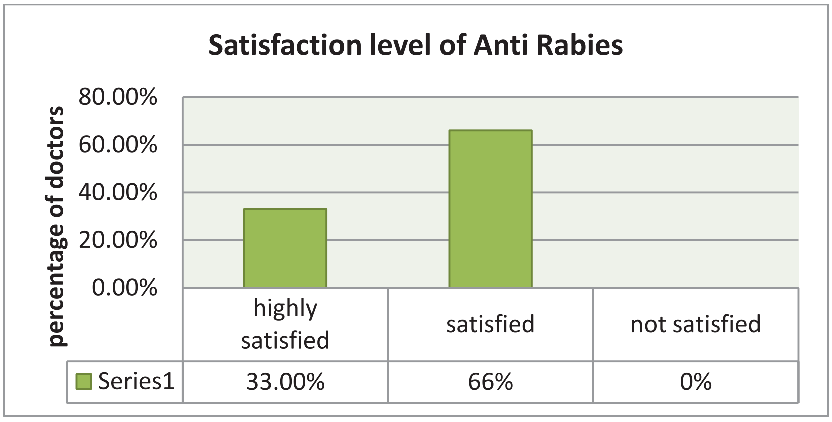


Figure 42.shows the satisfaction level of doctors with the brands available.

8. PRICING:

Around 95% of the doctors consider the product to be expensive while 5% believe that it is affordable.

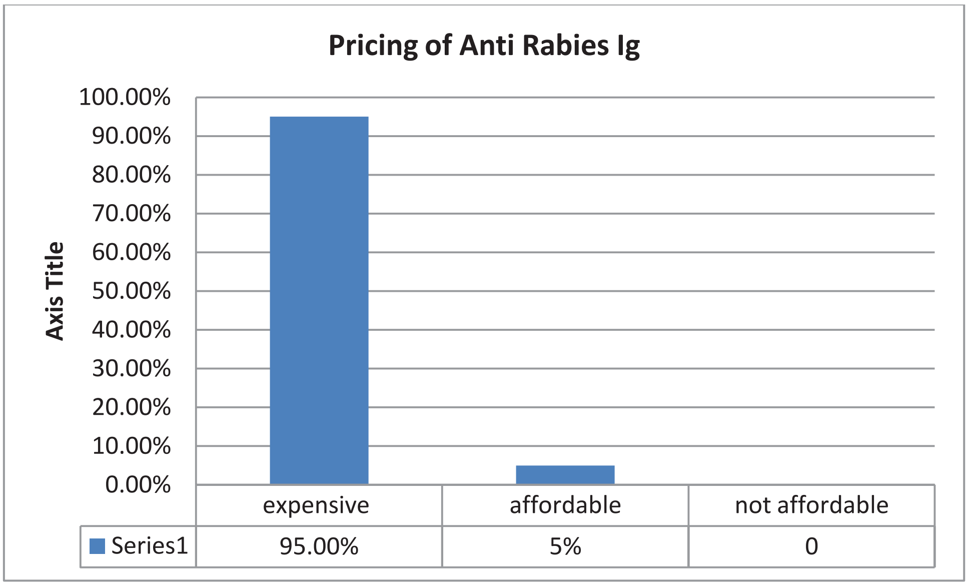


Figure 43.shows pricing of Anti Rabies Ig.

9. CRITERIA WHILE PRESCRIBING A PRODUCT:

It is observed that 5% doctors prescribe a drug due to better quality while other 55% prescribe considering company image and safety profile while other 40% consider both the factors for prescription.

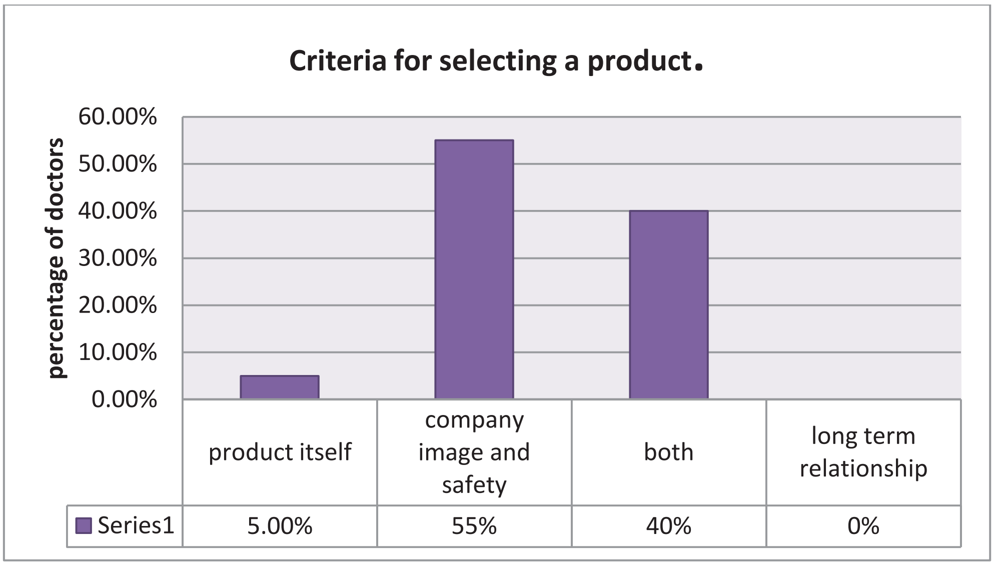


Figure 44.shows why doctors prefer a particular brand.

FINDINGS:

IVIg:

- 17.1% doctors were using IVIg for less than 3 years, 48.5% have been using IVIg for 3 to 7 years and rest 34.2% has been using it for more than 7 years.
- All the doctors are quite satisfied with the product they are using, which can be verified as 41.4% doctors found the availability excellent and rest 58.4% found it good enough.
- Most of the doctors do not prefer any particular brand but the one who do prefer reliance (34/70).
- It was observed that73% of doctors preferred a particular brand due to better product,13% preferred a brand due to the availability of the product while 11.5% doctors preferred a brand due to both the product itself and the availability of the product.
- 79.2% doctors were prescribing less than 10 vials per month of IVIg while 21.4% prescribed 10 to 20 vials per month.
- All the doctors considered plasma as one of the most important criteria for selection of the product (71.9%- very critical and 27.1%- critical).

- Most of the doctors said that there is no safety issue as such for using IVIg except for maintenance and slow iv requirement.
- It was observed that doctors are completely satisfied with the product they are using as 54.2% doctors said that they are highly satisfied while 45% doctors said they are satisfied with the product.
- All the doctors consider the product expensive.
- All doctors think that blood and plasma products awareness programs should be conducted to make people aware of their use.
- 81.4% doctors prescribed a particular product because of company image and safety profile while 16% took both product itself and company image into consideration.4% doctors said they prescribed a drug due to long term relationship with the company.

- It was found that 65% doctors believed that cost is the main concern regarding prescription of these drugs while rest of them said that their use may cause some anaphylactic risks and shock which needs to be taken care of.

HEPATITIS B IMMUNOGLOBULIN:

- It was observed that out of all the doctors using hepatitis B immunoglobulin, 22.5% doctors have been using it for less than 3 years,45% have been using it for last 3 to 7 years and 32.5% have been using it for more than 7 years.
- Around 80% of doctors of doctors considered the availability of the product good while rest 20% considered it excellent around 60% doctors prescribed less than 10 vials per month while rest 40% prescribed around 10 to 20 vials per month.
- It was observed that of all the brands available 80% of the doctors prefer ENG rex as their product while 13% prefer Bevac and rest prefer Elhep.
- 58% doctors prefer a particular product due to better quality of the product while 20% preferred it due to availability and rest 20% preferred a particular brand due to both quality and availability.
- IT was found that 75% of the doctors considered plasma as critical criteria for selection of the product while 25% considered it as very critical criteria.
- 63% doctors were satisfied with the present product they are using while rest 37% was highly satisfied with the product available.
- Almost all doctors considered the product expensive for the patients.
- Almost all the doctors felt that awareness program regarding blood and plasma products should be conducted to make people aware of its use.
- It was found that 70% of the doctors prescribe a particular drug taking into account company's name and safety records of the drug while13% prescribe it due to the product itself and other 17% keep in mind both the factors i.e product itself and company image.

ALBUMIN

- Of all the doctors studied, 22%doctors have been using this product for less than 3 years, 44.4% have been using it for 3 to 7 years and other 35.18% have been using it for more than 7 years.
- Availability of the product is excellent according to 15% doctors, good for 83.
- Most of the doctors prefer using Alburel (reliance).
- 4.77% of the doctors prefer this brand due to the better product while rest uses it due to availability (23%).
- Most of the doctors consider albumin safe enough while some consider the factors like safety to patients, hypersensitivity to product and certain allergic reactions as some of the safety issues.
- It was observed that almost all the doctors were satisfied with the product available which can be verified with the fact that around 38% doctors said that are very satisfied with the product while 62% said they are satisfied with the product.

ANTI D IMMUNOGLOBULIN

- Availability of the product is found to be good as 15% doctors said that the availability has been excellent while 85% said it has been good. This shows that overall the availability has been good.
- All the doctors preferred Rhogam as their product of choice which is a product of Johnson and Johnson.
- 85% doctors prefer this brand due to the quality of the product and also due to availability of the product, taking both the factors into account.

- 9.2% doctors prescribe less than 10 vials per month, 80% prescribe 10 to 20 vials a month while only 10% prescribe more than 20 vials per month.
- 15% trust a brand with reference to the product itself ,63.2% takes into account company’s profile and product safety while rest 18.3% consider both the factors while using a particular product.

ANTI RABIES IMMUNOGLOBULIN

- Around 40% doctors prefer using Kamrab as their main brand,35%% prefer Berirab while other 25% use Rabivax and Rabipur .
- Around 36.2% doctors prefer using this brand due to better product availability, 26% doctors prefer it due to better quality of the product while rest40% prefer a particular brand due to both ,quality as well as availability
- Consumption pattern for 60% doctors is less than 10 vials per month while 40% prescribe 10 to 20 vials per month.
- Around 95% of the doctors consider the product to be expensive while 5% believe that it is affordable.
- Almost all the doctors believe that there should be some awareness programs for patients and paramedical staff to make people aware of blood and plasma products.
- It is observed that 5% doctors prescribe a drug due to better quality while other 55% prescribe considering company image and safety profile while other 40% consider both the factors for prescription.

RECOMMENDATIONS:

1. As Availability of few Plasma Products is not excellent, and majority of plasma products are used mainly on the basis of availability, the company should try to make this product readily available in the market.

2. The companies can follow competitive pricing, as it has been found by the analysis, that these products are expensive but the major concern for doctors is quality and availability.

3. The doctors want Plasma products of high quality. Therefore the company can highlight on the quality of their products, purification method and safety record part to increase their sales.

4. The doctors are not very well aware about the usage of these products, therefore the company should also focus on increasing the awareness about the usage of these products by incorporating awareness programs on these plasma products.

5. Many doctors were not aware of any brand of Plasma Product by PlasmaGen Biosciences,So the company should try to increase their products awareness by increasing their sales team and by making frequent visits to the doctors.

PART 2

BLOOD BANKING SCENE IN INDIA

EXECUTIVE SUMMARY

Whole blood is a living tissue that circulates though the heart, arteries, veins and capillaries carrying nourishment, electrolytes, hormones, vitamins, antibodies, heat and oxygen to the body's tissues. It is a vital healthcare resource routinely used in a broad range of hospital procedures. Blood is also a potential vector for harmful, and sometimes fatal, infectious diseases such as HIV, HBV, and HCV. Every year, millions of people are exposed to avoidable, life-threatening risks through the transfusion of unsafe blood.

Blood transfusion is an essential part of modern health care. Used appropriately, transfusion can save life and improve health. However, it always carries potential risks for the recipient and should be prescribed only for conditions with significant potential for morbidity and mortality that cannot be prevented or managed effectively by other means such as use of haematinics in anaemia and that of crystalloids and colloids as volume expanders.

Even in conditions warranting use of blood, it can be optimally utilized by the use of specifically required components instead of whole blood

There is a huge gap between the requirement and availability of plasma components in India .Many a times when only components can serve the purpose, whole blood is given to the patient which leads to lots of wastage of the components which could have otherwise saved many lives. Therefore, a research was conducted in different blood banks and hospitals in The northern region of India to know how many blood banks are engaged in blood componentisation and the availability of surplus plasma which can be used for components.

PROBLEM STATEMENT

Blood component therapy is advantageous in terms of increasing the effective availability of blood units and reducing the transfusion-related risks. One unit of blood can be separated into components and made available to multiple patients by transfusing suitable components. It is often believed that most, if not all, of the blood should be fractionated. But the process of componentizing increases the availability of blood products at the expense of increased costs of holding, processing, and wastage at a blood bank.

OBJECTIVES OF THE STUDY

- ✓ To determine the number of blood banks involved in blood componentization.
- ✓ To know the amount of surplus plasma available with the blood banks which can be used for componentization

METHODOLOGY

- **RESEARCH DESIGN: DESCRIPTIVE RESEARCH DESIGN**

Research design is a total plan or strategy of a proposed research.

Research was conducted in four cities:

- Chandigarh
- Patiala
- Ambala
- Shimla
- Solan

DATA COLLECTION:

Structured Questionnaire was designed considering the various factors identified, so that the data collected would be in compliance with the information needed. (Copy Enclosed)

In-depth interviews were conducted to know the exact scenario in the blood banks.

- **SAMPLE DESIGN**

TARGET POPULATION:

During the market survey of the plasma market in these cities, the target population had been primarily the blood banks of all over the Chandigarh and Shimla region of India as directed by the company.

SAMPLE SIZE:

The sample size was 17(4 whole blood banks, 10 blood banks forming components).

SAMPLING TECHNIQUE:

Judgmental sampling method was used.

ANALYSIS AND FINDINGS

WHOLE BLOOD BANKS

Total number of blood banks visited dealing with whole blood is 4.Total analysis and findings of these blood banks are given below:

CRITERIA	GMSH 16	KAMLA NEHRU HOSPITAL	DEEN DAYAL UPADHYAY HOSPITAL	DISTT HOSPITAL,AMBALA
Status of hospital	Government	Government	Private	Government
License no.	NA	NA	NA	NA
No. Of blood banks per month	3 to 4	4 to 5	3 to 4	3 to 4
Total blood collection	3600-4000	3600	2500	2500
Ratio of 450 and 350 ml bags	70:30	Only 450 ml bags	50:50	60:40
Blood bag company	Polymed	Mitra	Mitra	Terumo pempol
Voluntary blood collection	80%	90%	90%	100%

TABLE. Gives the entire analysis of whole blood banks.

FINDINGS OF WHOLE BLOOD BANKS:

1. a**) GMSH 16-**This is a government hospital and blood bank.

   b) **Deen Dayal Hospital,Mohali**-This is a privately handled blood bank.

   c)**Distt Hospital,Ambala**-This is a govt hospital.

   d**) Kamla Nehru Hospital**- This is a govt hospital.

2. License number and validity was not provided by the blood banks as they considered this confidential.

3. a)**GMSH 16**-They have permission to carry out blood donation camps. They organise around 3 to 4 camps per month.

b) **Deen Dayal Hospital**-They have permission to carry out blood donation camps. They organise 4 to 5 camps a month.

c) **Distt Hospital ,Ambala**-They have permission to carry out blood donation camps. They organise around 3 to 4 camps a month.

d) **Kamla Nehru Hospital**- They have permission to carry out blood donation camps. They organise around 3 to 4 camps a month.

4.a)**GMSH 16**-Total blood collection is around 3600 to 4000 per year.

b)**Deen Dayal Hospital**-Total blood collection is around 2500 per year.

c)**Distt Hospital,Ambala**-total blood collection around 2500 per year.

d) **Kamla Nehru Hospital**-Total blood collection around 3600 per year.

5.a)**GMSH 16-**Around 60 to 70 % of blood is packed in 450 ml bag while 30% in 350 ml bags.

b)**Deen Dayal Hospital**-They have 50% 450 ml bags and other 50% 350ml bags.

c)**Distt Hospital**- They have 60% 450 ml bags and other 40% 350ml bags.

d) **Kamla Nehru Hospital**-They produce only 450 ml bags.

6.a) **GMSH 16**-They use bags from polymed.

b) **Deen Dayal Hospital**-They use bags from mitra industries.

c) **Distt Hospital**-They use bags from Terumo pempol.

d) **Kamla Nehru Hospital**- They use bags from mitra industries.

7.a) **GMSH 16**- Total voluntary blood collection is 80%.

b) **Deen Dayal Hospital**- Total voluntary blood collection is 90%

c) **Distt Hospital**-- Total voluntary blood collection is 100%.

d) **Kamla Nehru Hospital**- Total voluntary blood collection is 90%

BLOOD BANKS DEALING WITH COMPNONENTS OF BLOOD

There are ten blood banks which are presently dealing with blood components in Chandigarh,Patiala,Ambala,Shimla and Solan.

Q1.Around 70 % blood banks are government owned hospitals and banks, 20% are privately owned while 10% are charitable blood banks.

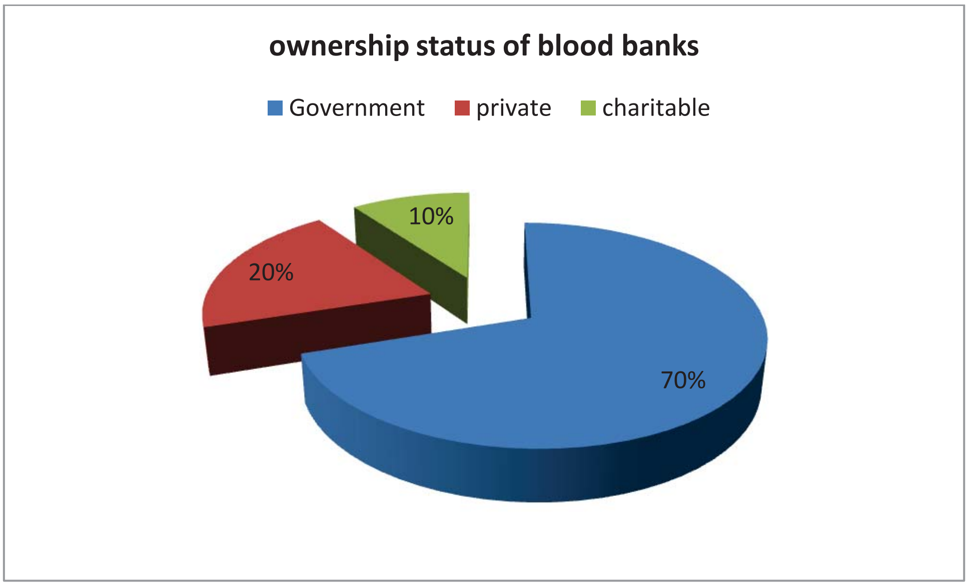


Figure1.shows the ownership status of the blood bank.

Q2.None of the blood banks was ready to give this information as it was considered confidential.

Q3.All the hospitals and blood banks have the permission to organise blood donation camps. Out of all these around 40% carry organise 5 to 6 camps per month,20% carry 3 to 4 camps per month,20% carry 2 to 3 camps per month,10% carry 4 to 5 camps while rest 10% carry around 10 camps a month.

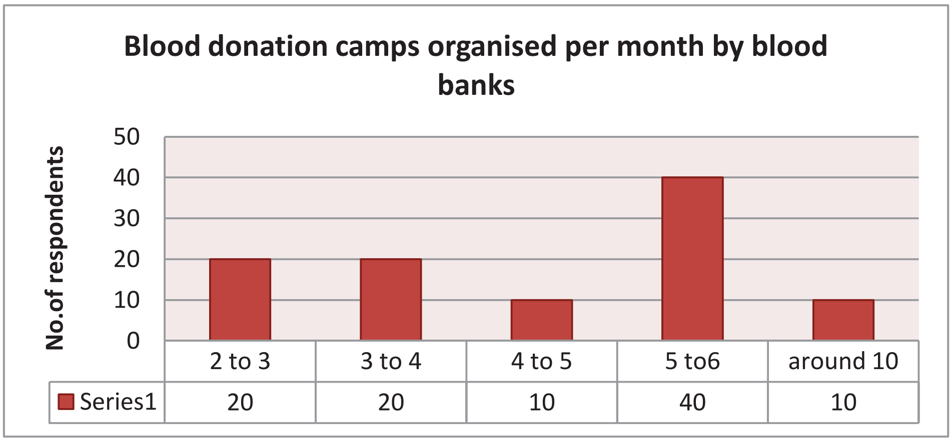


Figure 2.gives the number of blood donation camps organised by a hospital.

Q4. Around 70% blood banks have the authority to prepare all the components i.e. packed RBCs,platelets,plasma and cryoprecipitate.10% have the authority to prepare only plasma,10% only platelets and 10% only packed RBCs, plasma and platelets .

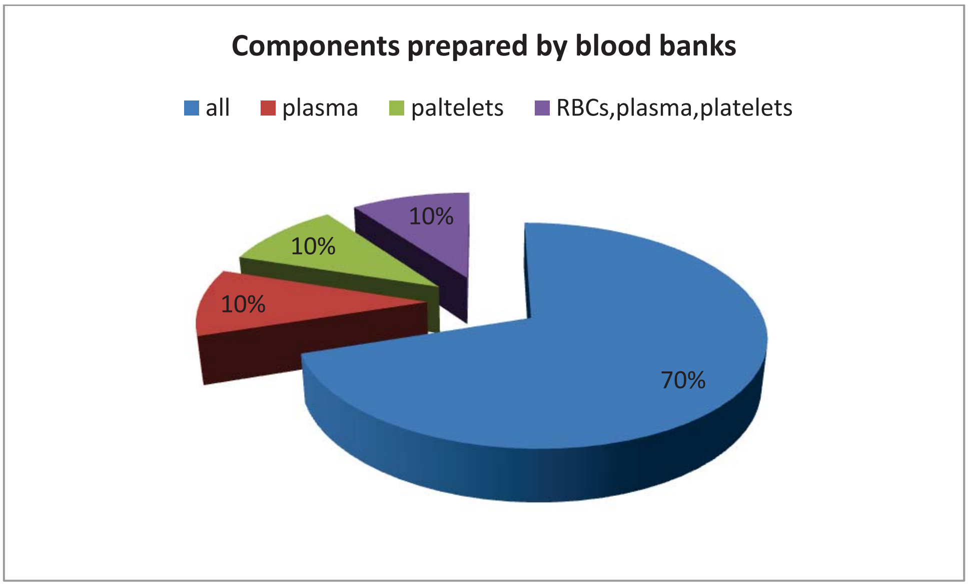
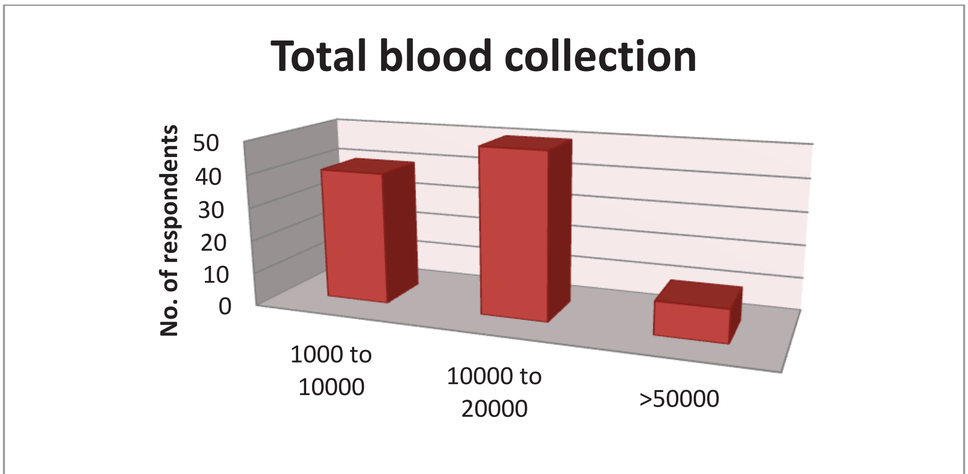


Figure 3.gives the number of components different hospitals prepare.

Q5. 40% blood banks collect total 1000 to 10000 units per year, 50% has the total collection between 10000 to 20000 while only 10% collect more than 50,000 units per year.



	1000 to 10000	10000 to 20000	>50000
Series1	40	50	10

Figure 4.gives the total blood collection of a hospital.

Q6.Around 70% of the total blood banks prepare the 450ml and 350 ml blood bags in the ratio 3:2,20% in the ratio 1:1 while only 10% prepare in the ratio 7:3.Most of them prepare the single, double, triple and quadruple bag in the ratio 3:2:2:3 and few of them prepare it in the ratio 2:1:1:1.

Q7.All the blood banks use the bags from Terumo pempol.

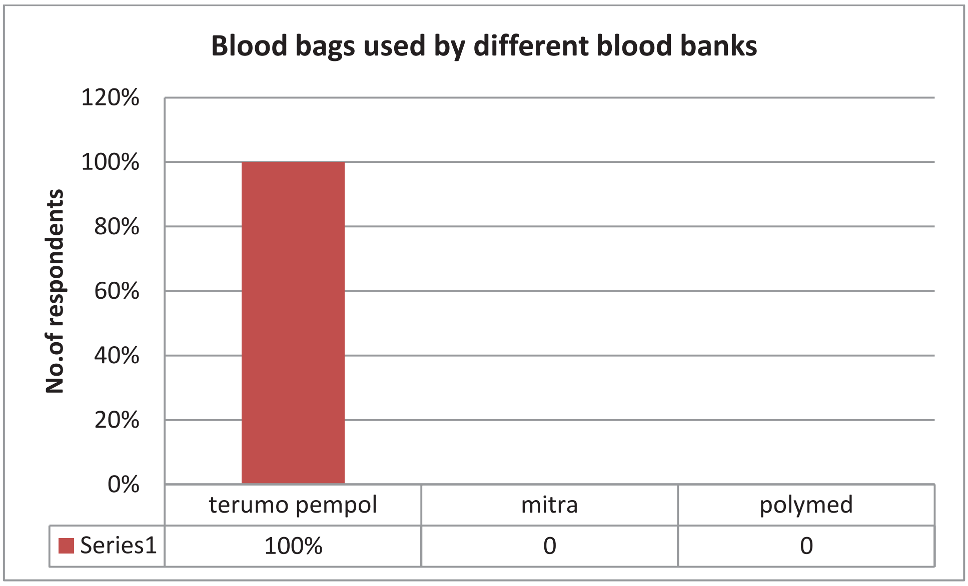


Figure 5.shows the brand of blood bags used by blood banks.

Q8.In case of 70% of the blood banks, total voluntary blood collection is 90% while in 30% it is 80 to 90%.

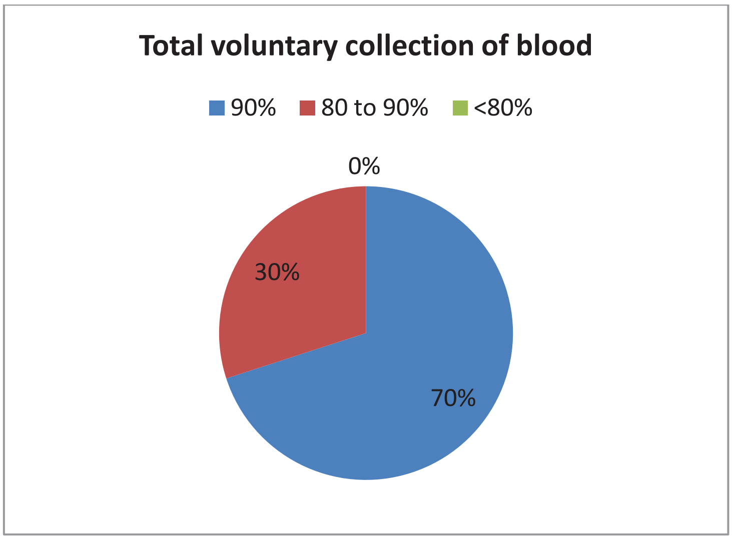


Figure 5.gives the total voluntary blood collection.

Q9. Around 80% of the blood banks prepare components of around 50 to 60% of the blood available while rest of them prepare components from around 30 to 40% of the blood available.

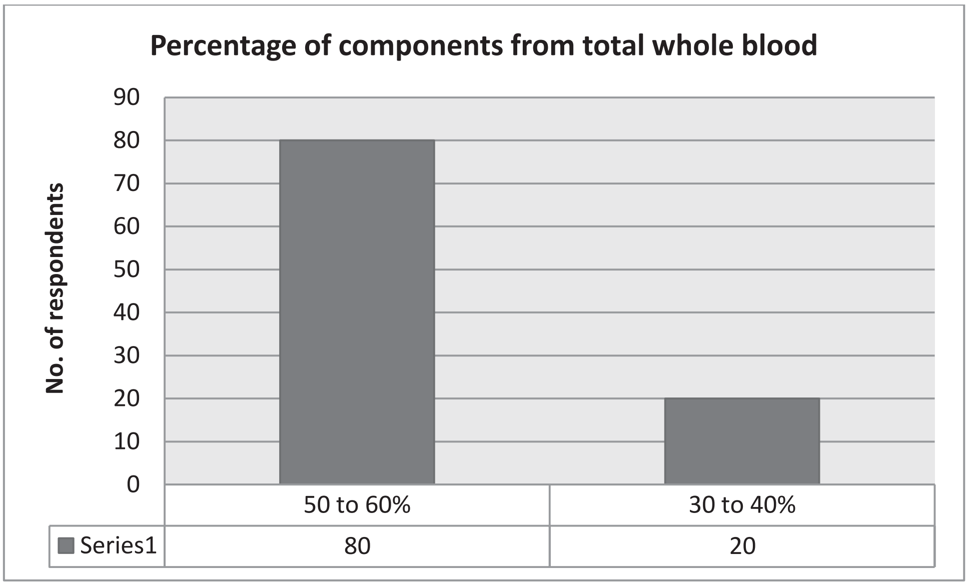


Figure 6.shows the amount of components prepared from total blood present.

Q10.Around 40% of the blood banks issue plasma components to 40 to 50% of the total patients, 30% to 30 to 40% of the total patients while rest 30% issue to 20% of the patients.

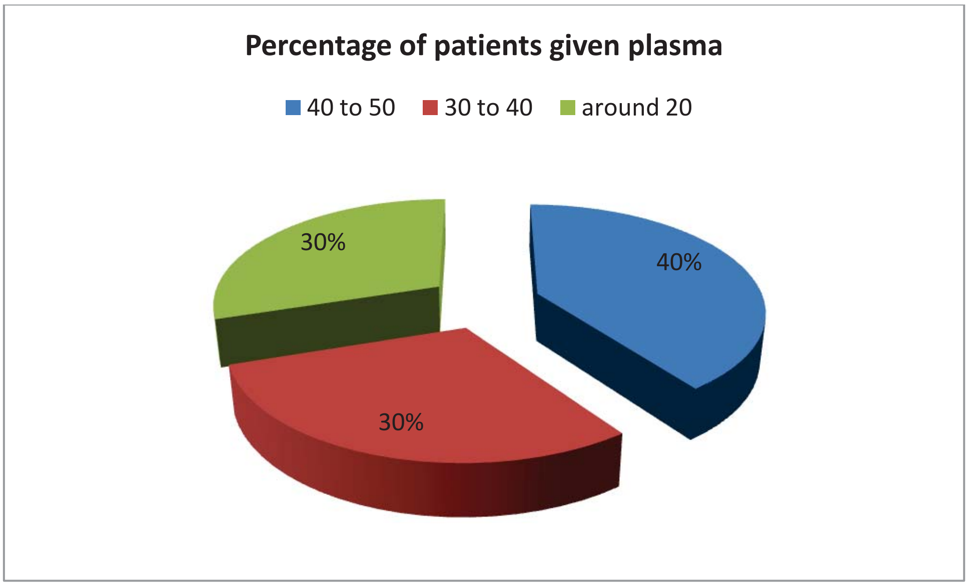


Figure 7.gives the percentage of blood banks involved in componentization by hospitals.

Q11.Around 60% of the blood banks uses ELISA IV for screening of plasma while rest 40% use ELISA III.

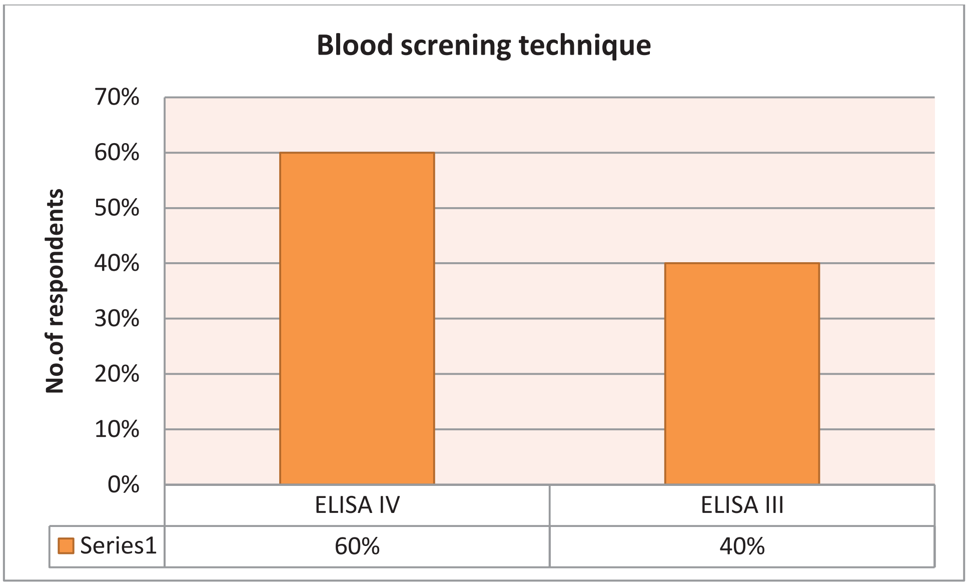


Figure 8.shows the method used for screening of plasma in blood banks.

Q13.Around 70% of the total blood banks store plasma in freezer while 30% use blast freezer for storage.

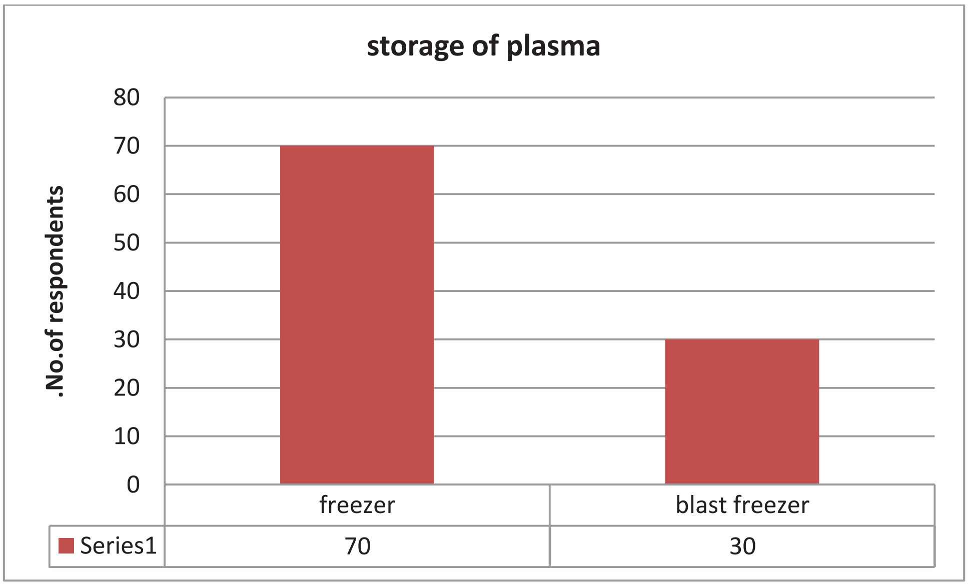


Figure 8.shows the mode of storage of plasma in different blood banks.

Q14.Around 70% of the total blood banks prepare cryoprecipitate .This cryoprecipitate is prepared according to the requirement by the doctors. Its quantity is not fixed.

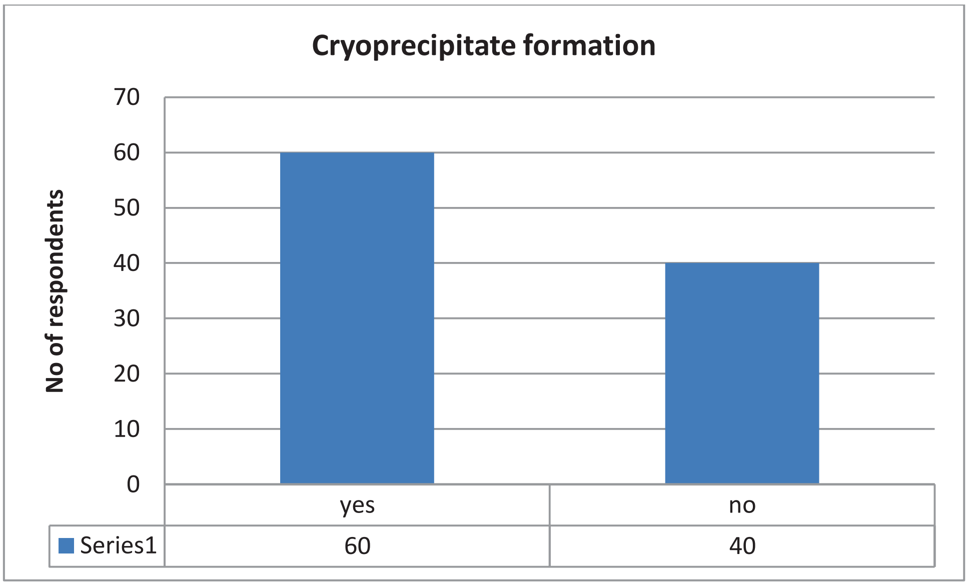


Figure 9.shows the number of hospitals involved in cryoprecipitate preparation.

Q15.Only 20% of the blood banks receives a request from hemophiliacs for blood. Rests don't get such patients.

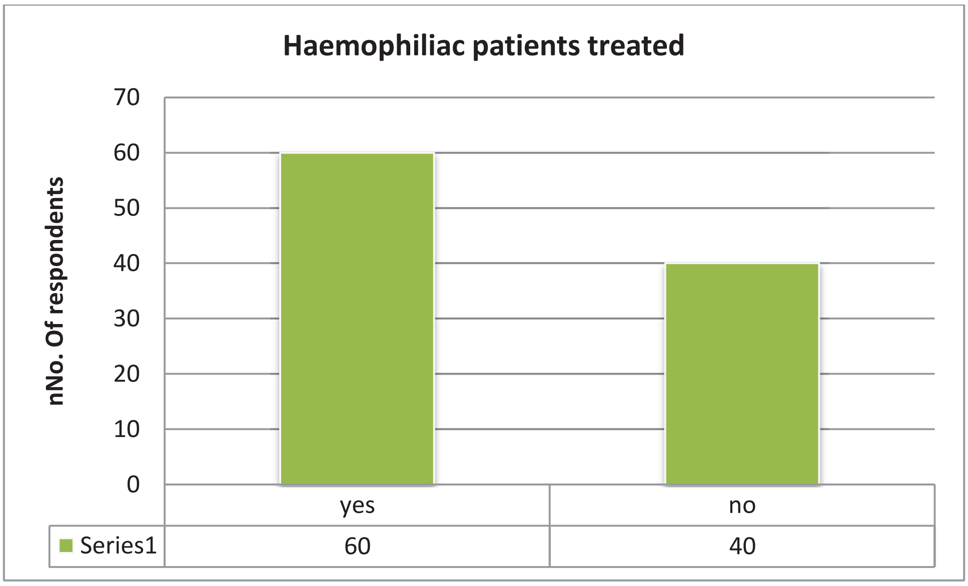


Figure 10.shows the number of hospitals involved in haemophilia treatment.

Q16.Around 40% have the capacity of storage of 1000 to 1500 units of plasma, 40% have the capacity of 500 units while 20% has the capacity of around 5000.

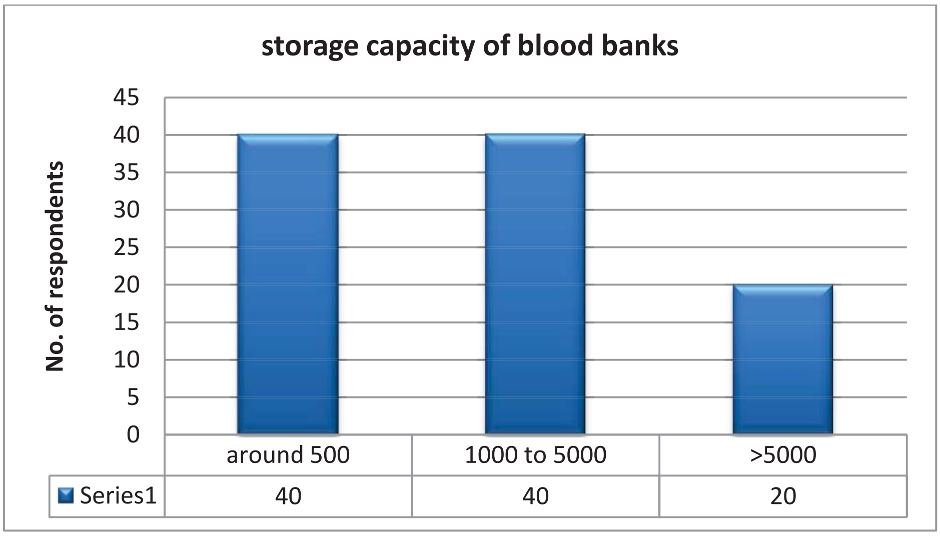


Figure 11. Gives the capacity of storage of plasma.

Q17.60% of the blood banks have the surplus plasma of less than 250,20% have between 250 and 500 while 20% has the surplus plasma of more than 500.

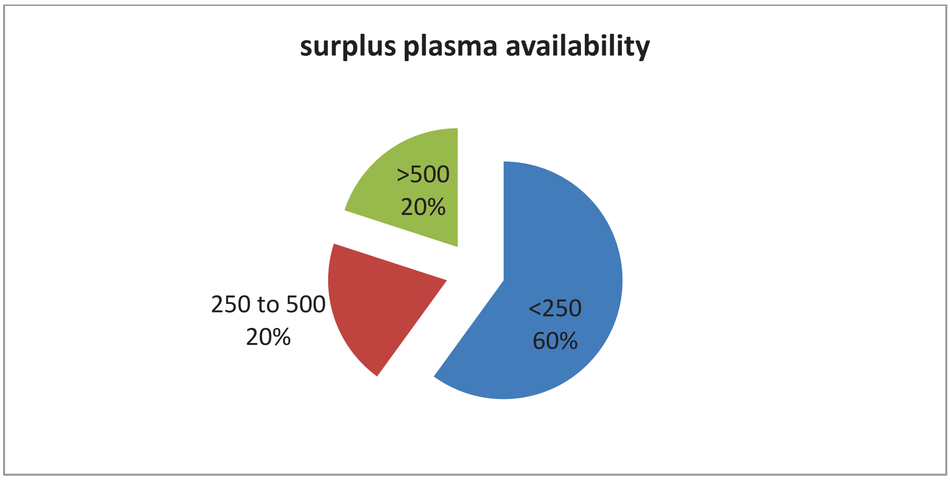
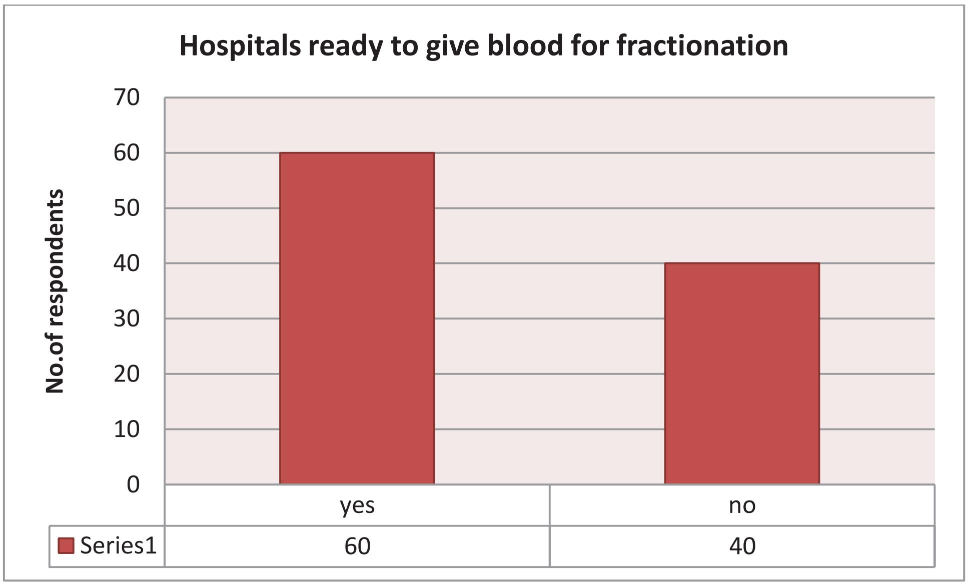


Figure 12.shows the surplus plasma available with the hospital.

Q18.All the blood banks are ready to form a consortium between blood banks and plasma companies would help in great deal.

Q19.All the blood banks and doctors agreed that surplus plasma available can be utilised for fractionation.

Q20.Around 60% of the total blood banks is ready to give plasma for fractionation.



FINDINGS:

1. Around 70 % blood banks are government owned hospitals and banks, 20% are privately owned while 10% are charitable blood banks.

2. None of the blood banks was ready to give this information.

3. All the hospitals and blood banks have the permission to organise blood donation camps. Out of all these around 40% carry organise 5 to 6 camps per month,20% carry 3 to 4 camps per month,20% carry 2 to 3 camps per month,10% carry 4 to 5 camps while rest 10% carry around 10 camps a month. More and more blood donation camps should be conducted to collect more blood.

4. Around 70% blood banks have the authority to prepare all the components i.e. packed RBCs, platelets, plasma and cryoprecipitate.10% have the authority to prepare only plasma,10% only platelets and 10% only packed RBCs, plasma and platelets.

5. 40% blood banks collect total 1000 to 10000 units per year, 50% has the total collection between 10000 to 20000 while only 10% collect more than 50,000 units per year.

6. Around 70% of the total blood banks prepare the 450ml and 350 ml blood bags in the ratio 3:2, 20% in the ratio 1:1 while only 10% prepare in the ratio 7:3.Most of them prepare the single, double, triple and quadruple bag in the ratio 3:2:2:3 and few of them prepare it in the ratio 2:1:1:1.

7. All the blood banks use the bags from Terumo pempol.

8. In case of 70% of the blood banks, total voluntary blood collection is 90% while in 30% it is 80 to 90%.

9. Around 80% of the blood banks prepare components of around 50 to 60% of the blood available while rest of them prepare components from around 30 to 40% of the blood available.

10. Around 40% of the blood banks issue plasma components to 40 to 50% of the total patients, 30% to 30 to 40% of the total patients while rest 30% issue to 20% of the patients.

11. Around 60% of the blood banks use ELISA IV for screening of plasma while rest 40% use ELISA III.

12. Hospitals considered this information confidential to be revealed.

13. Around 70% of the total blood banks store plasma in freezer while 30% use blast freezer for storage.

14. Around 70% of the total blood banks prepare cryoprecipitate .This cryoprecipitate is prepared according to the requirement by the doctors. Its quantity is not fixed.

15. Only 20% of the blood banks receive a request from hemophiliacs for blood. Rest don't get such patients.

16. Around 40% have the capacity of storage of 1000 to 1500 units of plasma, 40% have the capacity of 500 units while 20% has the capacity of around 5000.

17.60% of the blood banks have the surplus plasma of less than 250,20% have between 250 and 500 while 20% has the surplus plasma of more than 500.

18. All the blood banks felt that forming a consortium between blood banks and plasma companies would help in great deal.

19. All the blood banks and doctors felt that surplus plasma available can be utilized for fractionation.

20. Around 60% of the total blood banks is ready to give plasma for fractionation.

RECOMMENDATIONS:

1. There is a large amount of surplus plasma available at different blood banks which can be used for componentization. Hence appropriate measure should be taken to discourage such wastage of blood.
2. More awareness should be created about the uses of blood components.
3. Blood donation camps should be conducted regularly to encourage people to donate more and more blood.
4. Organization should buy surplus blood from the blood banks which are ready to sell it, to make components.

CONCLUSION:

There is a huge market for blood componentization which needs to be explored. The surplus plasma available can used by the company to make components and hence help the society.

ANNEXURE

QUESTIONAIRRE FOR PLASMA PRODUCTS

PlasmaGen Biosciences Pvt. Ltd.
No.160, KCI Chambers, 2nd Floor, 5th Main Road, Chamarajapet, Bangalore-560018.
Ph: + 91-80-42154535/36/37 Fax: + 91-80 - 421 545 38 Email : info@plasmagen.in

Name:…………………………………………………………………………………… ………………………………………………..

Address…………………………………………………………………………………… …………………………………………………

………………………………………………………………………………………………… …………………………………………………..

……………………………………………..

City ……………………………………………………..…………………………………….

Ph.No. ………………………………………. Mobile :………..……………………………………………………………….

Email: ………………………………………………………………………………………………… …………………………………………

1. How long you have been using ?

   a. Less than 3 yr, b. 3-7 yr, c. More than 7 yr.

2. Availability of product has been…

a. Excellent, b. Good, c. Poor.

3. Any specific brand you prefer

4. Is it because of ….

a. Better Product b. Availability c. Pricing d. Other ( )

5. What is general consumption pattern?

a. Less than 10, b. 10- 20, c. More than 20

6. Because it is a biologic “made out of human plasma”; would you consider source of plasma important criterion in selection of the product?

a. Very critical, b. Critical, c. Not critical.

7. Any safety issues for these products?

8. Your opinion on the quality of currently available brands?

a. Highly satisfied b. Satisfied c. Not satisfied d. Need improvement

9. Pricing of currently available brands?

a. Expensive, b. Affordable, c. Not Affordable.

10. Does any awareness program about blood/ plasma products is required for patients / doctors / paramedical staff?

a. Yes b. No.

11. How do you trust a brand of blood plasma product?

a. Product itself b. Company’s image / safety record

c. Long term relationship d. Any other factor ( )

12. What are the major issues in prescribing plasma products to the patients?

13. Any references, if you would like to give.

List of hospitals visited:

- Government multispecialty hospital 16 CHANDIGARH.
- Government medical college and hospital.
- Post graduate institute of medical education and research.
- Polyclinic 22
- Bhatia diabetic and heart center
- Anti rabies clinic
- Indira Gandhi medical college
- Kamla Nehru Hospital
- Deen Dayal Hospital
- Distt hospital Solan
- Navjeevan hospital Solan
- Malan clinic
- Distt hospital Ambala
- Leelawati hospital Ambala
- Government medical college and rajender hospital,Patiala

Questionnaire for blood banks:

PlasmaGen Biosciences Pvt. Ltd **No.160, KCI Chambers, 2nd Floor, 5th Main Road, Chamarajapet, Bangalore-560018. Ph: + 91-80-42154535/36/37 Fax: + 91-80 - 421 545 38 Email: info@plasmagen.in**

Name of Blood Bank ………

Name of Doctor ………

Address……
………
………………………………………………………………………………………

City…………………………………………………**State**……………………………………………….**Pin Code**……………………………….

Ph.No………………………………………………………………………………

Mobile………………………………………………………………...

Email ………

1. What is the nature of Blood Center?

(a) Govt (b) Charitable (c) Hospital Associated (d) Private/Stand Alone

2. Blood Center License Number and Validity of License?

………

3. Do you have permission to conduct blood collection drives/camps? If yes, how many drives/camps do you conduct?

………

4. Your Blood Center is having License to prepare

(a) Packed RBC's (b) Platelets (c) Plasma (d) Cryoprecipitate (e) …………………… (f) …………………….

5. Total Blood collection (Units) for the Year 2011-2012?

(a) <10000 (b) <15000 (c) <20000 (d) <25000 (e) <30000 (f) <35000 (g) <40000 (h) >40000 (i) >50000 (j) specific..........

6. Total Blood Collected in as percentage:

Blood Bag	Single Bag	Double Bag	Triple Bag	Quadruple Bag
450 ml				
350 ml				

7. Which Company Blood Bag is mostly used for blood collection?

(a) Terumo Pempol (b) Fenwal (c) HLL (d) Mitra Industries (f) specific……………………………………

8. What is the percentage of Voluntary Blood Collection?

(a) 100 (b) >90 (c) >80 (d) >70 (e) >50 (f) specific……………………

9. What is the percentage of blood componentization?

(a) 100 (b) >90 (c) >80 (d) >70 (e) >50 (f) specific……………………

10. What is the percentage of Issuance of plasma component to patients?

(a) 10 (b) <20 (c) <30 (d) <40 (e) <50 (f) specific……………..

11. Which protocol is followed for screening of Blood/Plasma?

Name of TTI	**ELISA (Generation)**	**NAT (Generation)**	**Chemiluminicense**
III	**IV**	**III**	**IV**
HIV			
HBV			
HCV			

12. How many cases individually recorded for all Transfusion-Transmissible Infections?

Year	**HIV**	**HBV**	**HCV**	**SYPHILIS**	**MALARIA**
2010-11					
2011-12					

13. How do you prepare and store Plasma?

(a) Blast Freezer (b) Cold Room (c) Freezer

14. Is cryoprecipitate component prepared? If Yes, what percentage?

(a) Yes (b) …………………….. % of Plasma (c) No

15. Do Hemophilic Patient's approach your blood center for Cryoprecipitate? If Yes, How many patients/Month?
(a) Yes (b) ……………………. Patients/Month (c) No
16. What is the maximum capacity for storage of plasma at your Blood Center?

(a) > 500 (b) > 1000 (c) > 2000 (d) > 3000 (e) > 5000 units (f) specific…………………..

17. What is the monthly average availability of surplus plasma units?

(a) > 250 (b) > 500 (c) > 1000 (d) > 2500 (e) Specific …………………………..
18. Do you think forming a consortium between blood banks and plasma Fractionation Company would help all concerned?
(a) Yes (b) No

19. Do you agree that Surplus plasma available with blood banks can be utilized for fractionation?

(a) Yes (b) No

20. Would your Blood Center like to give plasma for Fractionation?

(a) Yes (b) No
21. Details of Blood Center Staff:

Description	**No. of Persons**	**Name and Contact Details**
Administration		
Technical		
Non-Technical		

LIST OF BLOOD BANKS VISITED

- **G**ovt multispeciality hospital,Chandigarh
- Rotary blood bank society,sector 37,Chandigarh
- Indira Gandhi Medical College Hospital,Shimla
- Kamla Nehru Hospital,Shimla
- Deen Dayal Hospital,Shimla
- Civil Hospital,Mohali
- Fortis Healthcare , Mohali
- Govt medical college hospital, Chandigarh
- Post Graduate Institute of Medical Education Research(PGI)
- Red Cross Society Blood Bank,Sector 11,Chandigarh
- Blood Bank Society.Chandigarh
- Alchemist Hospital
- Lifeline Blood Bank
- Rajender Hospital
- Distt Hospital , Ambala
- MSMM Institute Of Medical Sciences and Research