Summer Training at

PlasmaGen Biosciences Pvt. Ltd.
(April 16- June 4, 2012)

Plasma Product Therapy & Blood Banking Scenario

By
Abhijeet Gaje

Under the guidance of
Brig. (Dr.) S.K. Puri

Post Graduate Diploma in Pharmaceutical Management
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Jaipur
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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 Mr. Abhijeet G Gaje from Institute of Health Management Research, Jaipur has undergone Summer Training at Plasmagen Biosciences Pvt. Ltd., Bangalore from 16th April, 2012 to 04th June, 2012.

The candidate himself carried out the project. His approach to the study has been sincere, scientific and analytical. This summer training is partial fulfillment of the course requirement is recommended for the award of Post Graduate Diploma in Pharmaceutical Management.

I wish him success in all his future endeavors.

Dr. P.R. Sodani
Dean (Academic and Students Affairs)
IIHMR, Jaipur

Dr. S. K. Puri
Advisor, Former Dean
IIHMR, Jaipur

ACKNOWLEDGEMENT

I wish to take this opportunity to convey my sincere gratitude to all those who has helped me in the successful completion of this project.

My heartiest thanks to Dr. Amit Jha and Mr. Nipun Garg our guide for carrying out the project, without whose constant guidance, co-operation & encouragement my entire project would have remained a distant dream.

I am extremely grateful to my college mentor, Brig. Dr. S K Puri for his support during and after the project.

I am also extremely thankful to Mr. Dalbir Singh, the placement coordinator of our institute who being a very generous and kind hearted man had never been miser in sharing valuable advices and experiences with me & had been very instrumental in choosing my course of action throughout the project.

My heartiest thanks to Plasmagen team for mailing us from time to time and keeping us updated with all the latest updates and instructions on behalf of the company.

Finally my sincere acknowledgements to all the doctors who gave me time in the midst of their busy schedule and helped me pursue this otherwise impossible project.

Last but not the least I thank all my friends who helped me in some way or other during this project.

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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 we all know that 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 defence 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 favourable place to do business in since the option of minimization of production costs doesn’t hold over here

However the purpose of our 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 my market survey on doctors of reputed hospitals throughout the western & central region of Maharashtra, India (Kalyan, Thane, Dombivli, Bhiwandi, Ahmednagar, Aurangabad, Dhule & Nasik) I seeked to determine the demand, the consumption pattern, personal preferences and quality & availability of currently available blood & plasma brands in this region of the country.

From all the responses I collected from the doctors it was evident that availability and quality of plasma products are not very satisfactory at these places. 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 favourite 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 I have gathered during my field-work. The intentions are to depict a close reflection of the Plasma market scenario in this 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 Lifesciences 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 1,00,000 litres of Plasma collection & having an employee strength of 150 people, they are all set to embark into the plasma market by themselves. Their action mainly includes 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 & mouldings 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:

- Biologicals, Plasma products
- Hormonal Therapy
- Recombinant Therapeutics
- Sterile anti infective
- Oncology
- Antibiotics lyophilised
- Anaesthetics
- Endocrinal Steroids
- Cardiovascular drugs
- Nutritional Supplements

PROBLEM STATEMENT

For an aspiring company to do business in protein therapy, the 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 are all 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, which was troubling us, is the lack of awareness since it is new to the market and there is little awareness among doctors & patients alike regarding its uses & implementation.

Some of the other concerns would include :

- Ever rising cost of plasma.
- Poor worldwide harmonization of regulatory issues
- Import Limitations.
- 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 an in depth market survey on the plasma market I seek to determine the demand, the consumption pattern, personal preferences and quality & availability of currently available blood & plasma brands in the given region of India which will hopefully come handy when embarking on new business propositions in the plasma market.

OBJECTIVE OF THE STUDY

To study the prescribing behaviour of doctors towards the plasma products in the region of Thane, Kalyan, Bhiwandi, Ahmedngar, Aurangabad, Dhule & Nasik.

RESEARCH METHODOLOGY

The project was all about conducting a survey on the prescribing patterns of doctors regarding plasma products. This data was recorded, analysed and interpreted within the scope of the given objectives.

1. **AREA**
   Thane, Kalyan, Dombivli, Bhiwandi, Ahmednagar, Aurangabad, Dhule & Nasik

2. **RESEARCH DESIGN**
   The research design put to use is the descriptive design as all the study was pre planned and rigid.

3. **SAMPLING**
   Judgemental and simple random sampling is used for this study.Judgemental because the specialities of doctors were pre defined and simple random because doctors were surveyed as and when they were available.

TARGET POPULATION

The target population were the doctors of both the corporate as well as the government hospitals of the given areas.

The main specialities of doctors interviewed were-

- IVIG- neurologists, haematologists, paediatrics, intensivists
- Hepatitis b immunoglobulin- paediatrics, neonatologists, gynaecologists
- Albumin- physicians, paediatrics, intensivists
- Anti d ig - gynaecologists
- Anti rabies ig - physicians, internal medicine
- Tetanus hyper ig - physicians, paediatricians, gynaecologists, internal medicine
- Fibrin sealants- neurosurgeons, cosmetologists, cardiologists
- Factor VII and VIII- haematologists
- Fibrinogen- haematologist, cardiac surgeons
- Thrombin and anti thrombin III- cardiologists

The sample size was 114 (different for each product on the basis of usage and popularity of the product.)

4. DATA COLLECTION

TOOL-

Structured questionnaire comprising of both closed and open ended questions was used which was provided by the organisation.

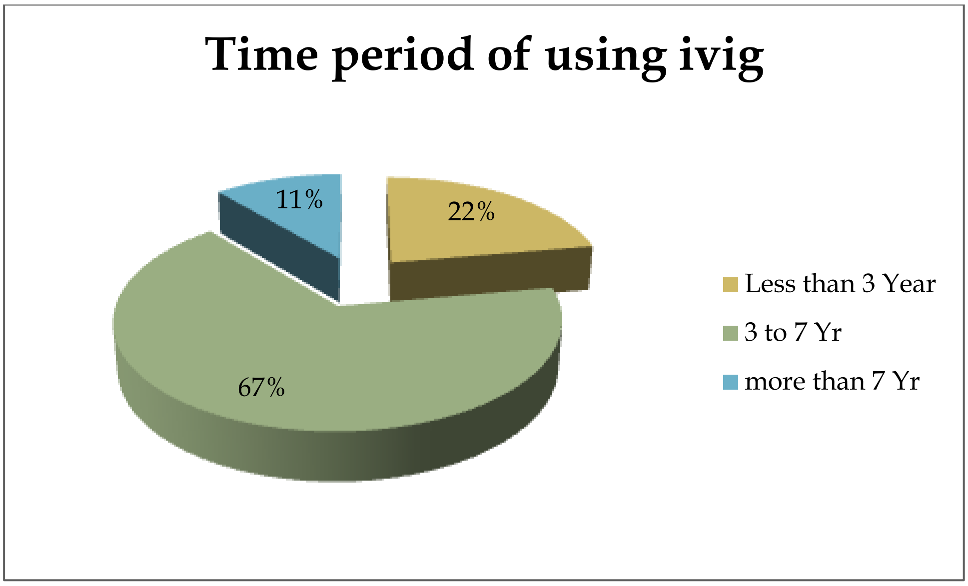
TECHNIQUE-

Face to face interview of the doctors was conducted.

DATA ANALYSIS FOR IVIG

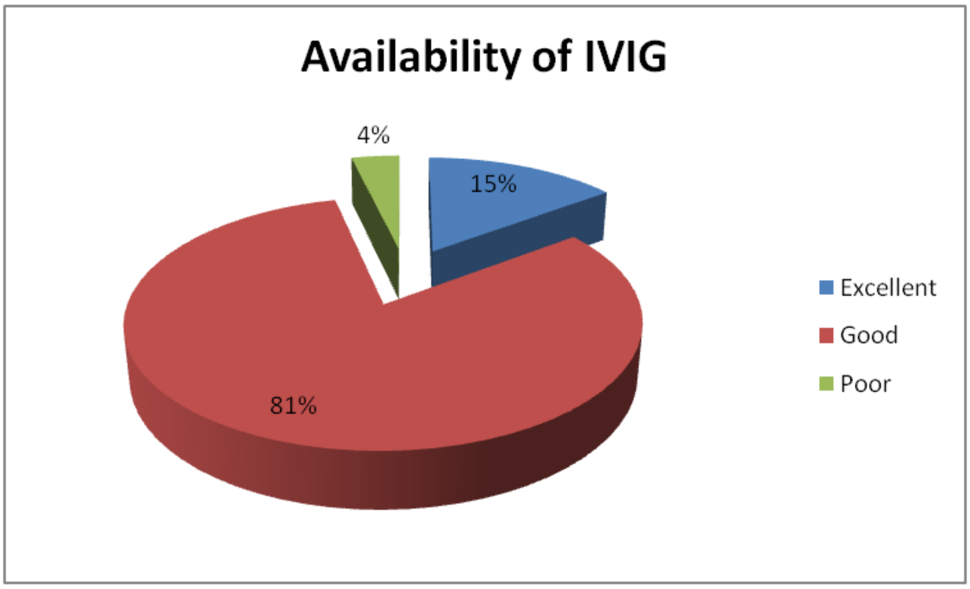
For survey on IVIG, 27 doctors were questioned in the various parts of the territory given.

Q1. YEARS OF PRESCRIBING WISE BREAK UP OF DOCTORS



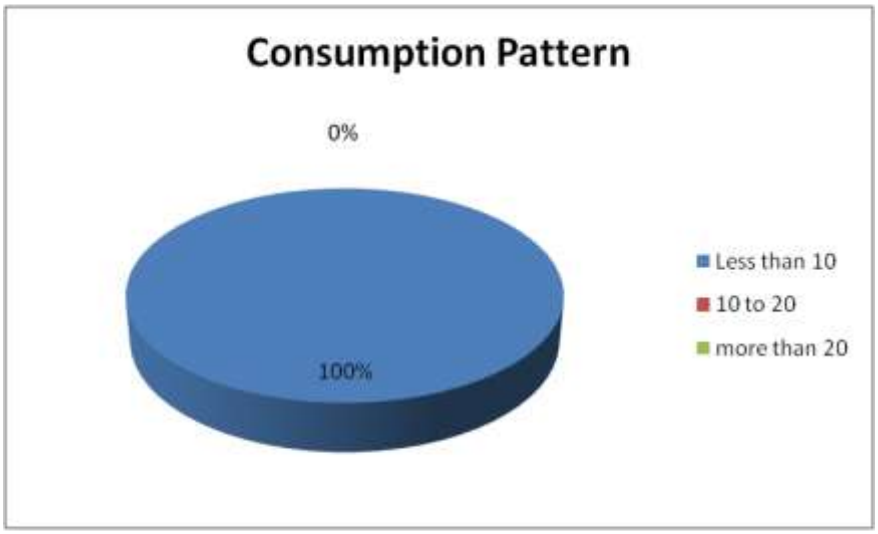
- ➢ This data suggests that maximum (67%) of doctors who prescribe IVIG are using it mostly from 3 to 4 years.

Q2. AVAILABILITY OF THE PRODUCT HAS BEEN........



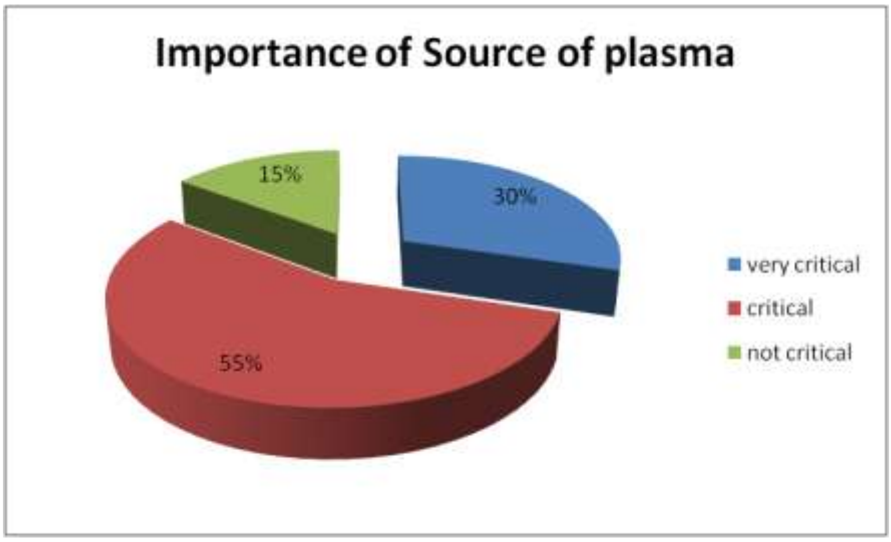
- ➢ The data suggests that there is good availability (81%) of IVIG to the doctors, and very few doctors (4%) are unsatisfied with the supply of IVIG

Q5. GENERAL CONSUMPTION PATTERN



- 100% of the doctors use IVIG on less than 10 patients per month.
- This suggests that the demand is not very high.

Q6. IS SOURCE OF PLASMA AN IMPORTANT CRITERION IN SELECTION OF THE PRODUCT?

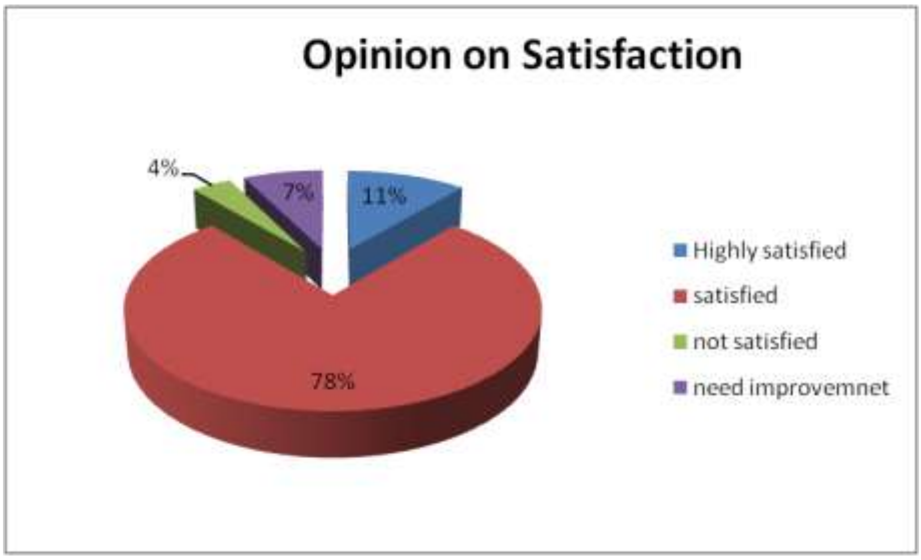


- 30% doctors consider the source of plasma very critical and 55% doctors consider the source of plasma critical criteria for selection of product and 15% doctors think that its not critical for them as companies do follow stringent norms while producing the products.

Q7. SAFETY ISSUES?

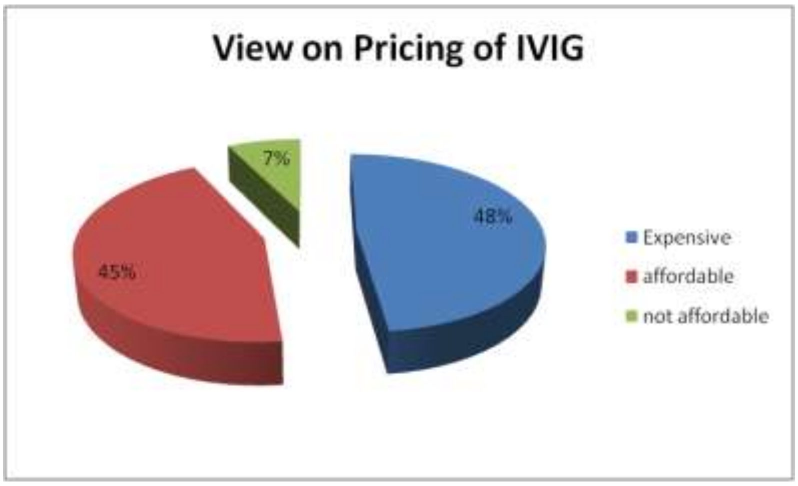
- 85% of the doctors surveyed never had a bad experience regarding the safety of the product and say that the companies manufacturing these products are well reputed and approved so chances of safety issues are rare.
- Few doctors (15%) experienced anaphylaxis on patients after administration, hypersensitivity and elevated body temperature.

Q8. SATISFACTION LEVEL



The quality of the product available is highly satisfactory for the doctors as 11% doctors are highly satisfied and the rest 78% are satisfied.7% doctors recommend improvement in the product.

Q9. PRICING

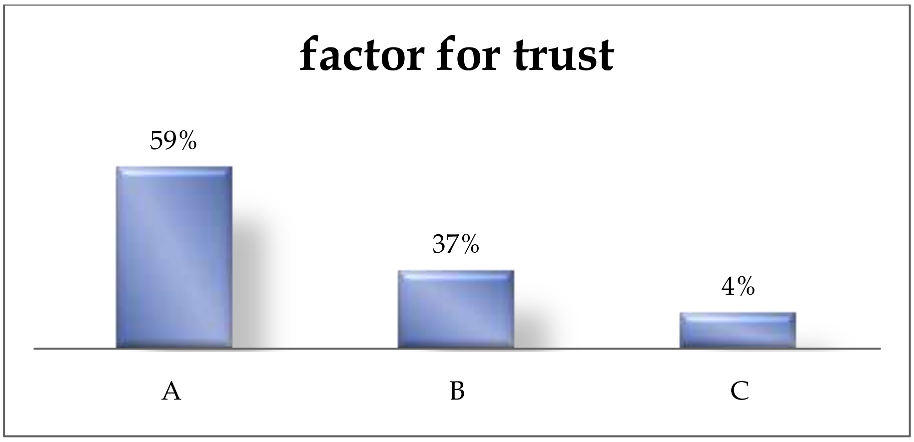


- The data suggests that pricing is still an issue with the patients as 48% doctors believe that the product is expensive for the patients and another 07% believe that the product is not affordable but because of the urgency and life saving nature of the drug, the patient manages to buy the product.

Q10. AWARENESS PROGRAM

As 26 out of 27 doctors believe that there is need of awareness program required either for the doctor or the patient, companies must organize awareness programs for the concerned population.

Q11. HOW DO YOU TRUST A BRAND?



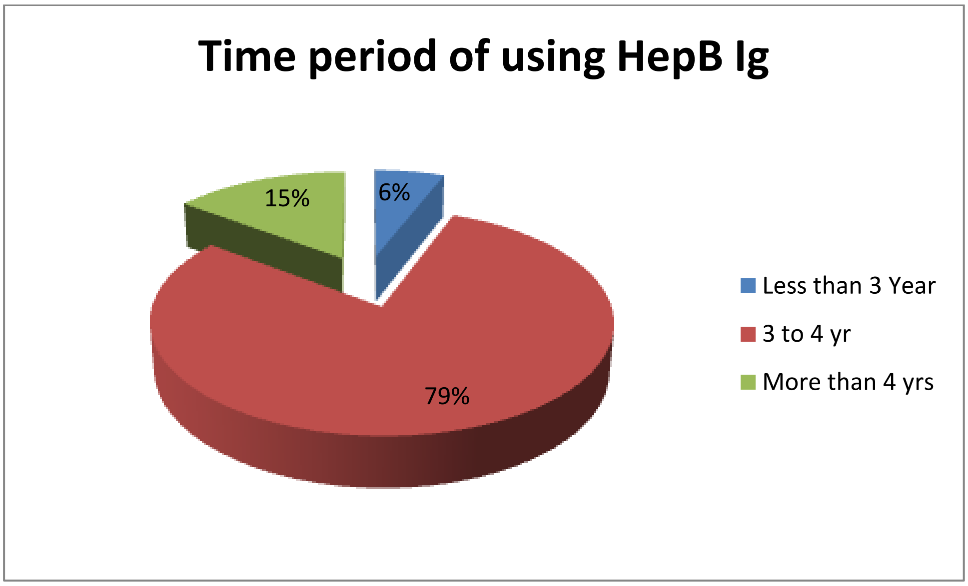
A- Product itself
B- Company’s image/safety records
C- Long term relationship

- More than half (59%) doctors believe in the brand because of the product itself.
- 37% develop trust on the basis of the company i.e. safety records of their products.
- Rest 4% is influenced more by the long term relationship they share with the company or the product.

DATA ANALYSIS FOR HEPATITIS B IMMUNOGLOBULIN

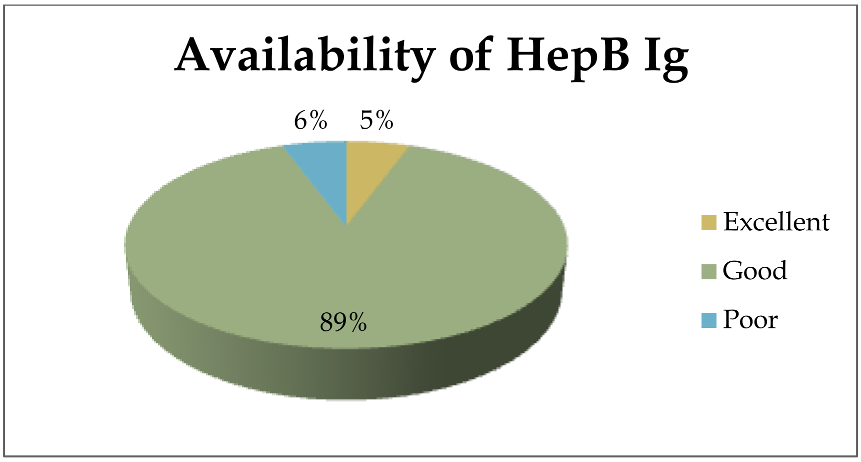
For survey on hepatitis b immunoglobulin, 29 doctors were interviewed from different parts of the territory.

Q1. YEARS OF PRESCRIBING WISE BREAKUP



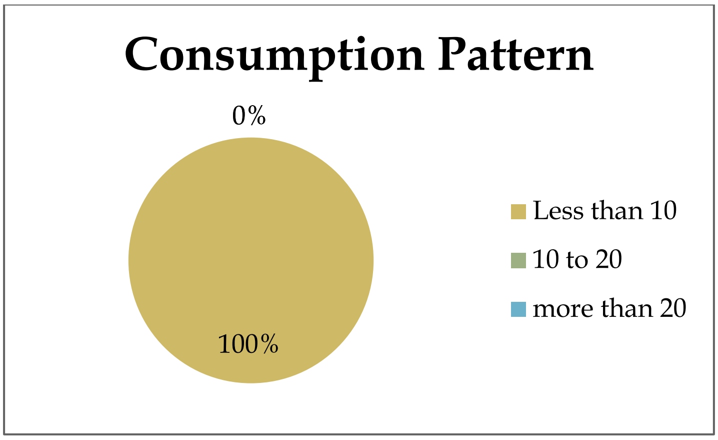
- 79% doctors use HepB Ig product from 3 to 4 years , 15 doctors use from more than 4 years.
- Only 6% doctors use from less than 3 years these doctors can be targeted for marketing as they are new in prescribing the product.

Q2. AVAILABILITY OF THE PRODUCT HAS BEEN...



- This data suggests that the reach of the product is good as most doctors have said good availability and 6% have said excellent availability.

Q4. GENERAL CONSUMPTION PATTERN



- The demand of the product is not very high according to the data collected through the study as no doctor prescribes the product more than 10 units per month.

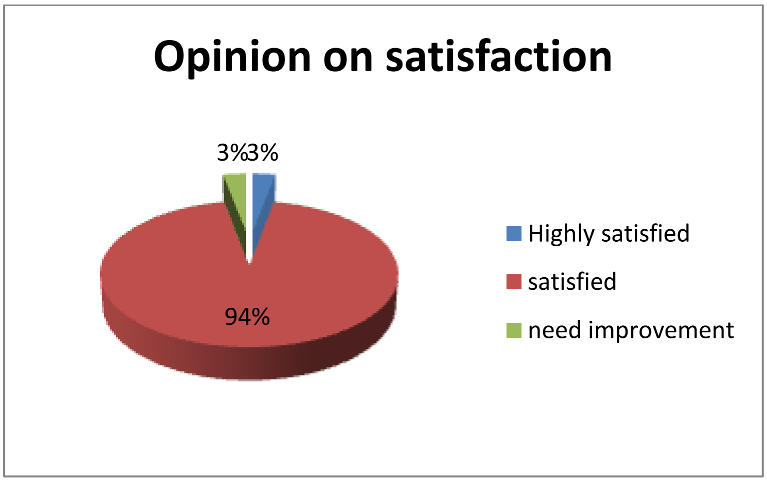
Q6. IS SOURCE OF PLASMA AN IMPORTANT CRITERION IN SELECTION OF THE PRODUCT??

As 26 out of 34 doctors i.e. 76.47% doctors consider the source of plasma an important criteria for selection of the product, companies producing Hep B Ig must very stringently follow the quality norms while procuring the surplus plasma.

Q7. SAFETY ISSUES..??

Out of the 34 doctors interviewed, only three faced problems with HepB Ig product thus it suggests that very few safety issues have come across by doctors.

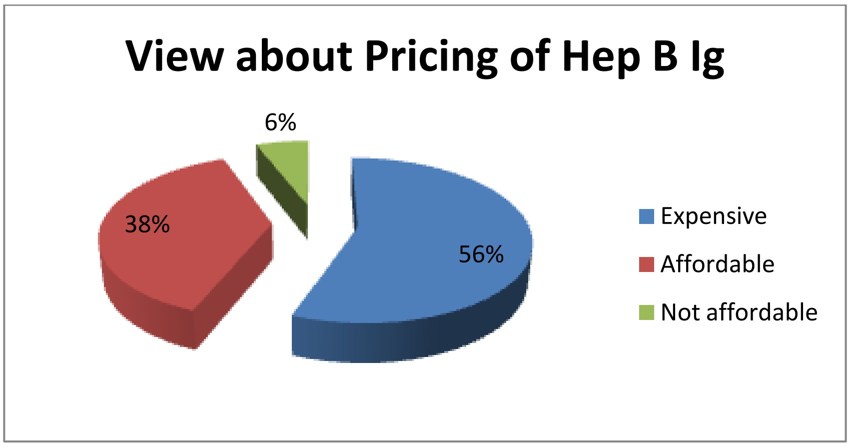
Q8. SATISFACTION LEVEL



- The doctors seem to be quiet content with the quality of the products as 94% are satisfied.

- But only 6% said that they are highly satisfied with the quality which indicates scope of improvement.

Q9. PRICING

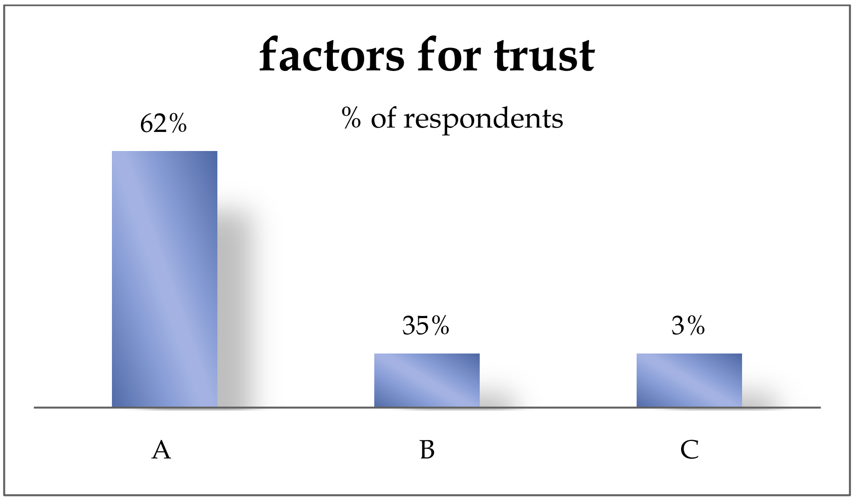


- 38% of the doctors feel that the pricing is right and the drug is affordable as it is a one time treatment and only a single vial is required.
- Still 56% doctors say that the medicine is expensive and it is a life saving medicine, so they arrange it somehow.

Q10. AWARENESS PROGRAM

- As 32 out of 34 doctors interviewed felt the need of awareness program either for themselves or for the patients about hep b ig, so awareness programmes must be arranged by the companies manufacturing Hep B Ig

Q11. HOW DO YOU TRUST A BRAND



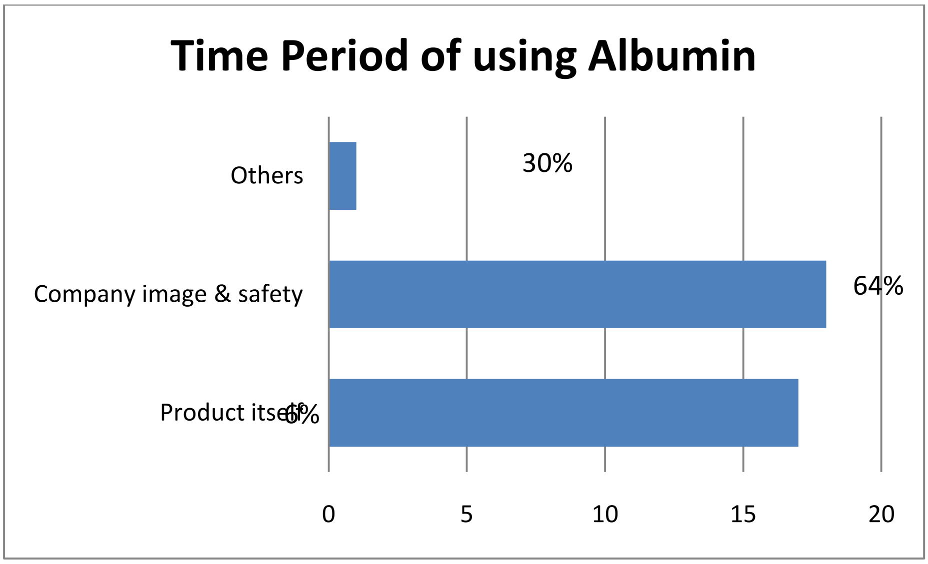
A- Product itself
B- Company’s image/safety records
C- Other factors

- 62% of the doctors develop trust on a brand of hep b ig on the basis of the product, its effectiveness and safety.
- 35% trust on the basis of company’ s name and the relation which they share respectively.

DATA ANALYSIS FOR ALBUMIN

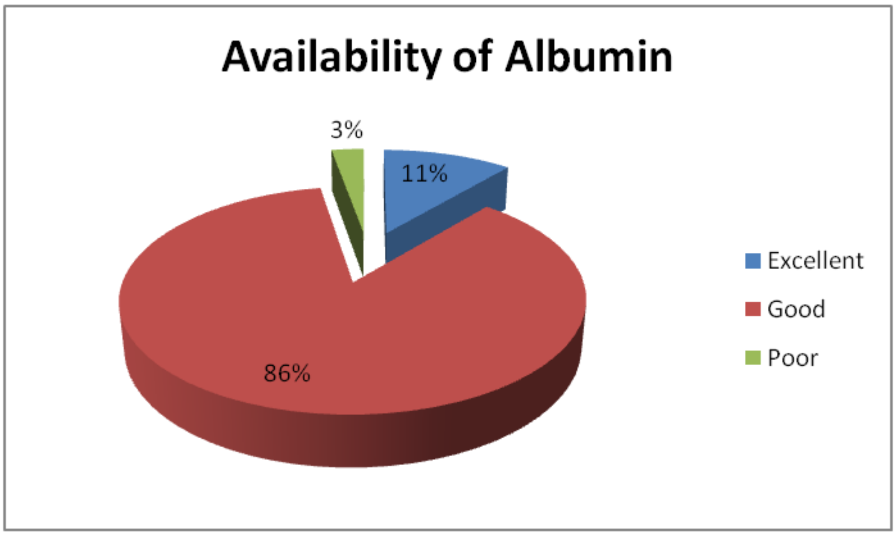
For survey on ALBUMIN, 36 doctors were interviewed from different parts of the territory.

Q1. YEARS OF PRESCRIBING WISE BREAKUP-



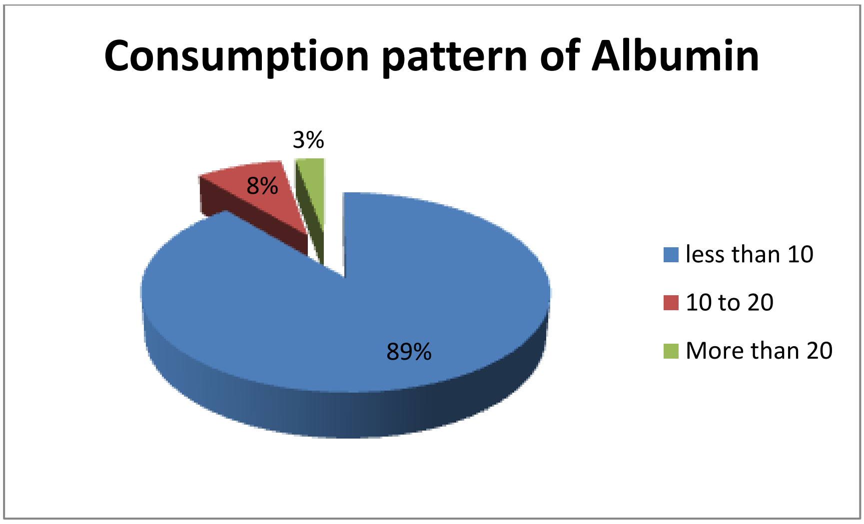
- These values suggests that most of the doctors are prescribing albumin from between 3 to 7 years and only 7% doctors are prescribing from more than 7 years.

Q2. AVAILABILITY



- According to 86% of the doctors, the product is easily available but still has some loop holes in supply of albumin as only 6% of the doctors say that the availability is excellent & 3% say its poor.

Q5. GENERAL CONSUMPTION PATTERN



- Major chunk of the doctors (89%) prescribe not more than 10 vials per month.
- 8% doctors have patients such that 10 to 20 vials are required and these were mainly the intensivists and paediatrics.
- Only 3% doctors require more than 20 vials per month.

Q6. IS SOURCE OF PLASMA AN IMPORTANT CRITERION IN SELECTION OF THE PRODUCT??

Majority of doctors consider source of plasma as important criteria. Only 4 out of 36 doctors do not consider the source of plasma as an important criterion for selection of the product as they believe that the companies manufacturing such products follow stringent safety precautions and tests.

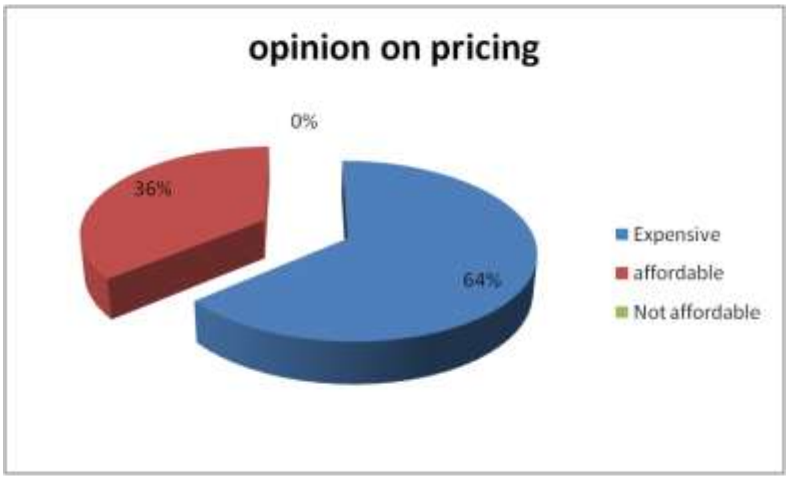
Q7. SAFETY ISSUES..??

Out of the 36 doctors interviewed 27hane not faced any problems with brands available. That shows majority of doctors are satisfied regarding quality of products.

Q8. SATISFACTION LEVEL

- The quality and performance of the brands available can be considered satisfactory as 94% doctors were satisfied & 3% highly satisfied.

Q9. PRICING

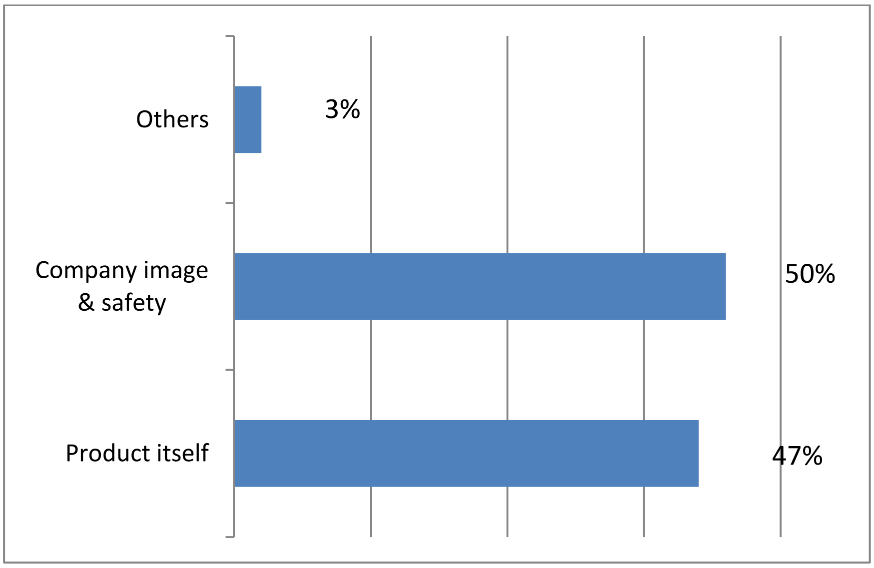


- 64% of the doctors find albumin affordable, 36% say that it is expensive and the rest no doctor has said that it is not affordable.

Q10. AWARENESS PROGRAM

- Out of 36, only four doctor feels that there is no need for awareness programs for doctors or patients about the product.

Q11. HOW DO YOU TRUST A BRAND

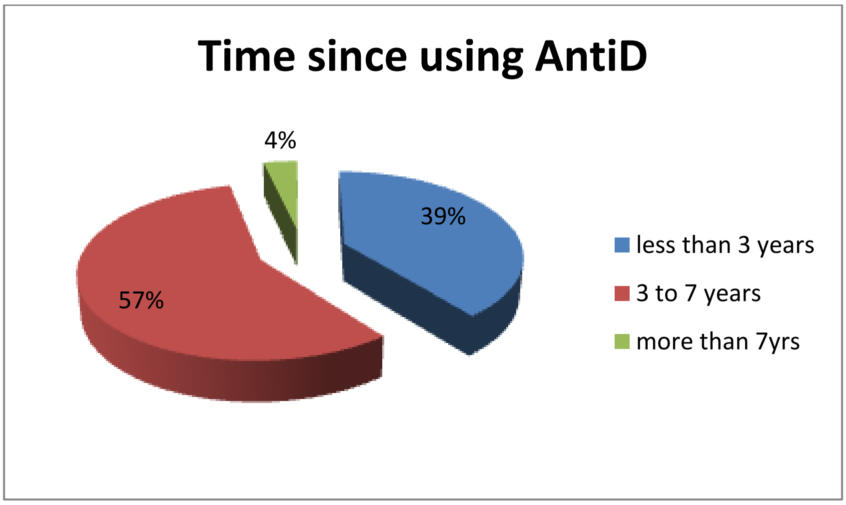


- Maximum chunk of the doctors (50%) trust a brand on the basis of the products safety record and company's image.
- 47% say that their trust is based upon the product itself
- 3% of the doctors had other factors to trust of brand.

DATA ANALYSIS FOR ANTI D IMMUNOGLOBULIN

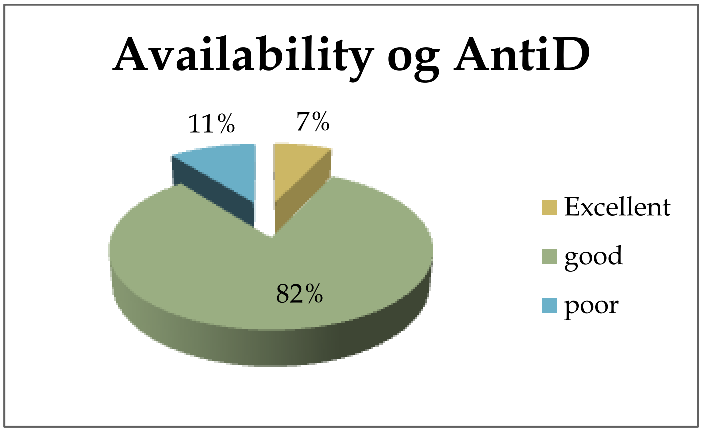
For survey on ANTI D IMMUNOGLOBULIN, 28 doctors were interviewed from different parts of the territory.

Q1. YEARS OF PRESCRIBING WISE BREAKUP-



- This data suggests that majority of doctors (57%) are using Anti D from less than 3 years and only 4% are using sice more than 7 years.

Q2. AVAILABILITY OF THE PRODUCT



- 82% of the doctors feel that the availability of anti d is good and the rest 7% say availability is excellent. That means only 11% doctors can be targeted with proper uninterrupted supply of he product.

Q5. GENERAL CONSUMPTION PATTERN

Among 28 doctors interviewed, none of them prescribe this product more than 10 times a month. (Generally the answer used to be between 2 or 3 times a month)

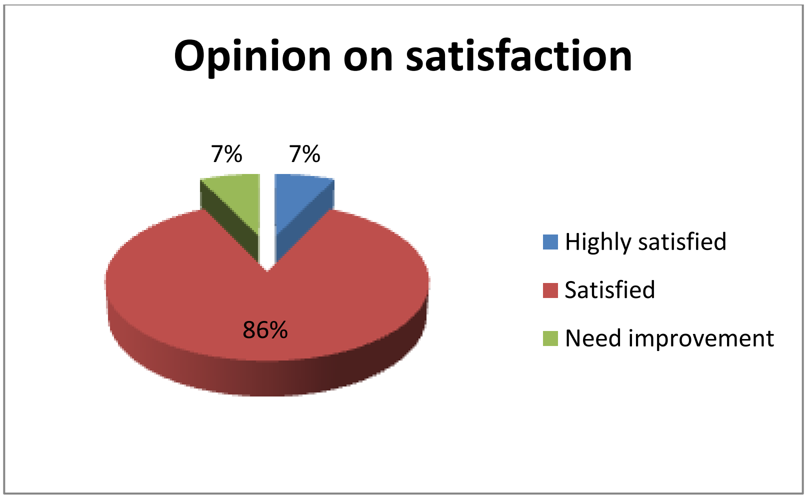
Q6. IS SOURCE OF PLASMA AN IMPORTANT CRITERION IN SELECTION OF THE PRODUCT??

- 12 out of 28 doctors consider the source of plasma an important criterion for selection of the product saying that a bad product might affect the health of the baby.
- Majority of doctors 46% consider ir very critical as it deals with the life of a baby.
- 3 of them believe that the companies manufacturing such products follow stringent safety precautions and tests so we are not more concerned baout it.

Q7. SAFETY ISSUES

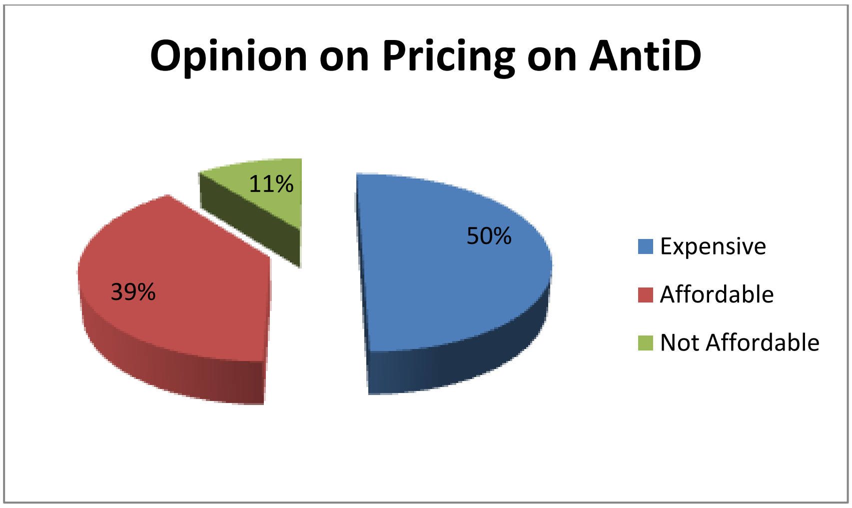
- Only 3 of the doctors interviewed faced minor problem with the product and majority of them seemed quite comfortable with the usage of the product.

Q8. SATISFACTION LEVEL



- Majority of the prescribers of AntiD are quite satisfied with the quality of the products available in the market.

Q9. PRICING

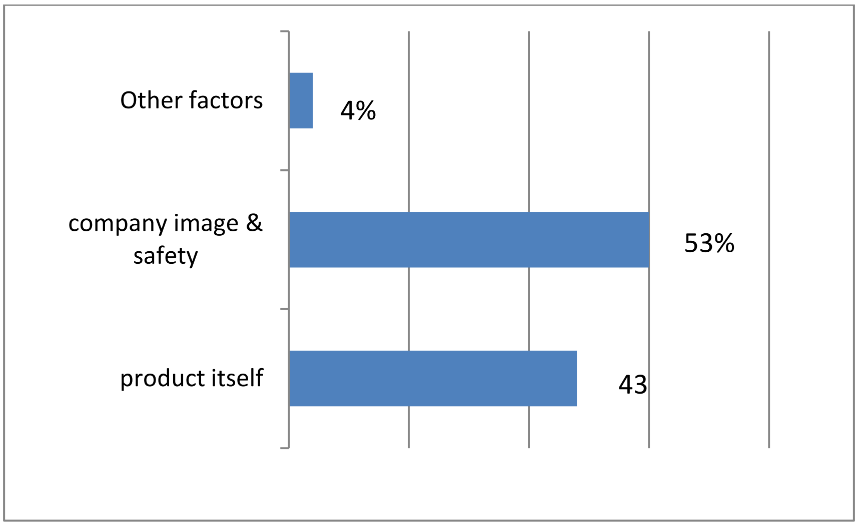


- ➢ Most of the doctors (50%) found the product to be expensive but still patients mange & end up buying the product as it is related to a new life to be born.

Q10. AWARENESS PROGRAM

Majority of doctors feel that there is a requirement for awareness about the product as the product is used in very delicate and critical conditions.

Q11. HOW DO YOU TRUST A BRAND

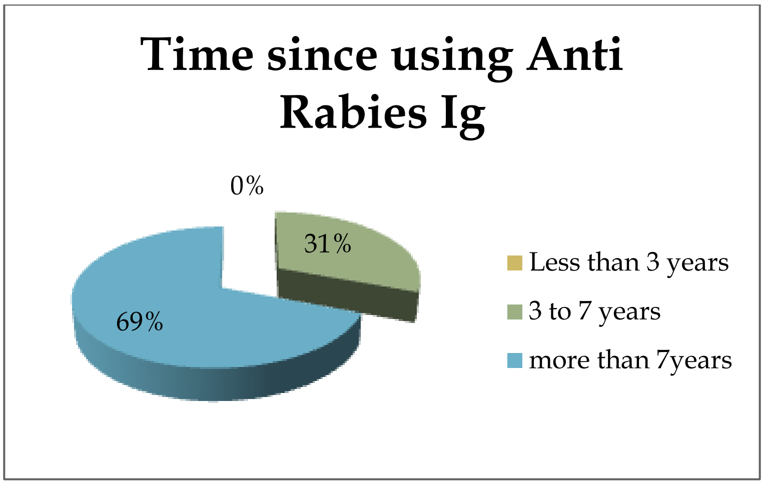


- ➢ 43% doctors develop trust on a brand on the basis of the product itself.
- ➢ 53% doctors develop trust on a brand on the basis of image of the company & safety records

DATA ANALYSIS FOR ANTI RABIES IMMUNOGLOBULIN

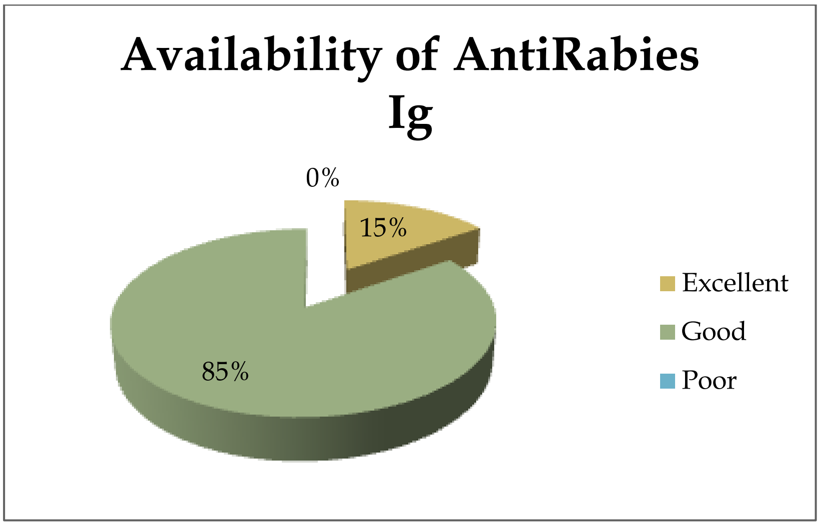
For survey on ANTI RABIES IMMUNOGLOBULIN, 13 doctors were interviewed from different parts of the territory.

Q1. YEARS OF PRESCRIBING WISE BREAKUP-



- ➢ Majority of doctors 69% are using it from more than 7 years & 31% from 3 to 7 years.

Q2. AVAILABILITY



- ➢ Most of doctors 85% said that he availability of product is good & 15% said that its excellent. Thus implies that availability is very good for antirabies Ig.

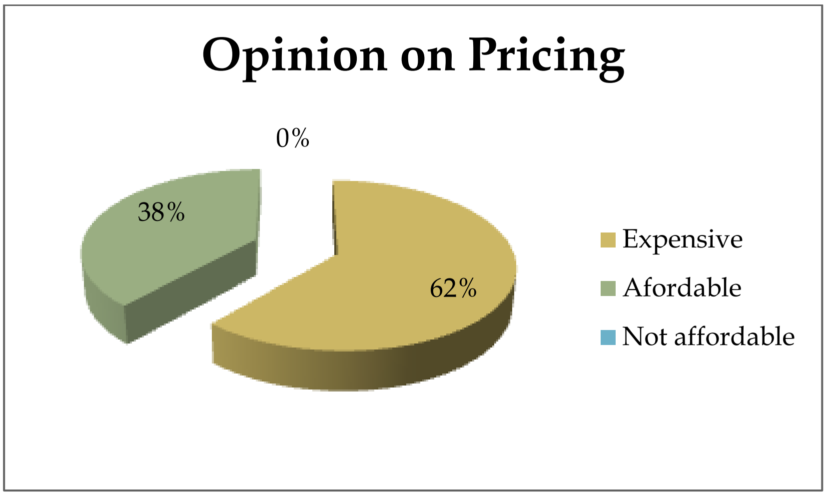
Q5. CONSUMPTION PATTERN

- Most of the doctors prescribe below 10 units per month.
- None of the doctor prescribe more than 20 units & only one doctor prescribed between 10 to 20units of products per monthdoctors use this immunoglobulin more than 10 times a month.

Q8. SATISFACTION LEVEL

- Most of the doctors are satisfied with the product.

Q9. PRICING



- An alarming 62% of the doctors feel that anti rabies ig is expensive.
- Rest 38% find the drug affordable

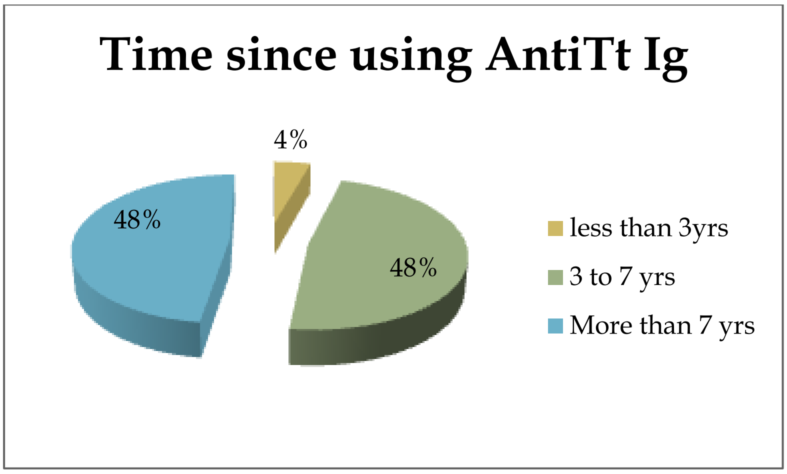
Q11. HOW DO YOU TRUST A BRAND

- 46% doctors said that their trust towards brand is developed due to product itself and 54% said that due to company's image & safety records of the product

DATA ANALYSIS OF TETANUS HYPER IMMUNOGLOBULIN

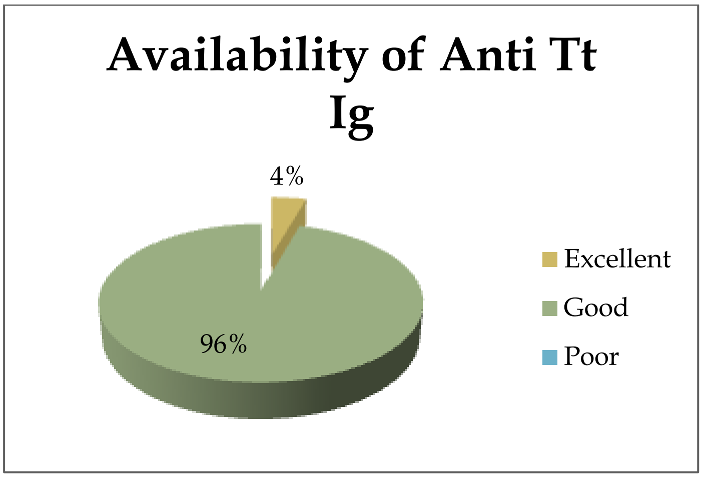
For survey on ANTI RABIES IMMUNOGLOBULIN, 23 doctors were interviewed from different parts of the territory.

Q1. YEARS OF PRESCRIBING WISE BREAKUP-

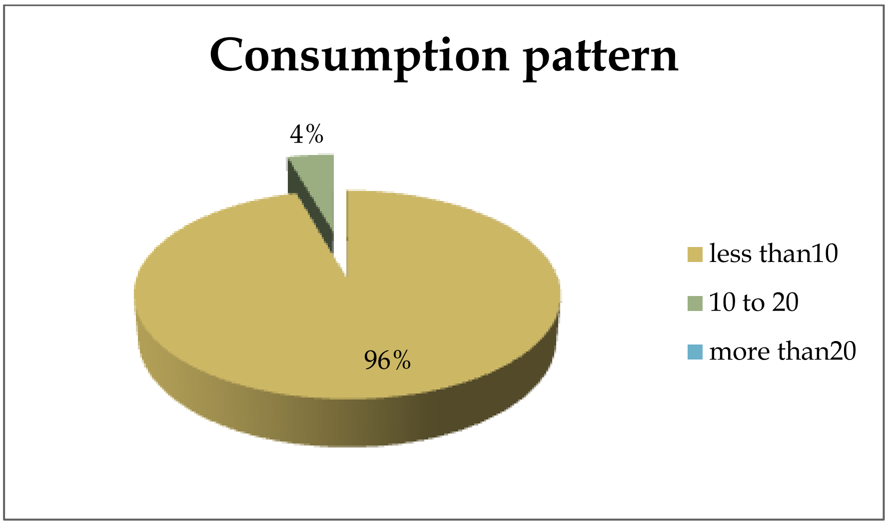


- The percentage of doctors prescribing Tt Hyper Ig from between 3 to 7 years and more than 7 years is 48% each.
- Only 4% are prescribing from less than 3 years

Q2. AVAILABILITY

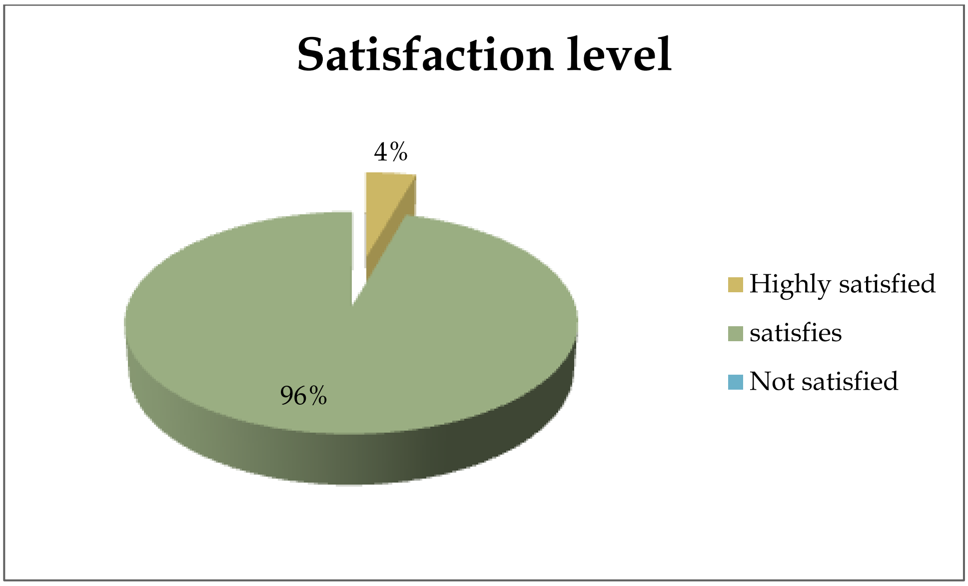


Q5. GENERAL CONSUMPTION PATTERN



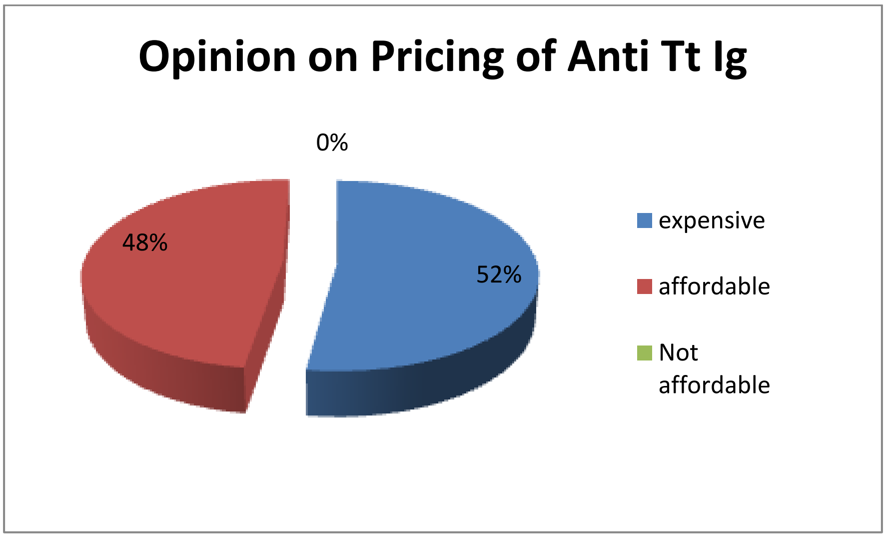
96% of the doctors prescribe tetanus immunoglobulin less than 10 times a month, i.e. the demand of the product is relatively low.

Q8. SATISFACTION LEVEL



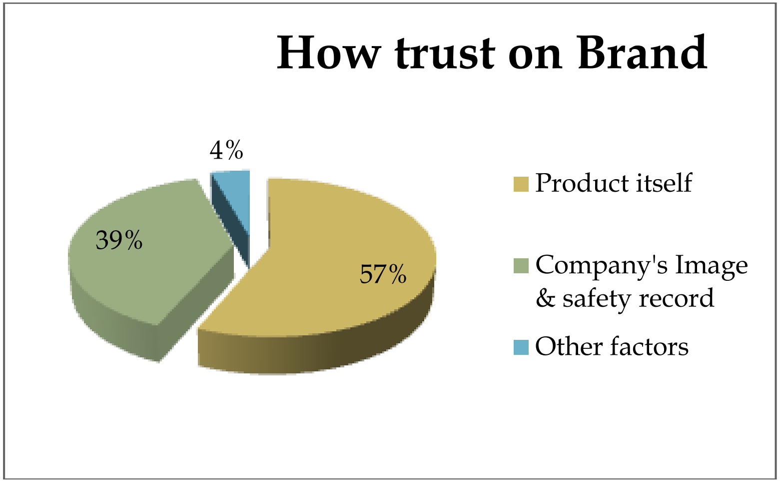
- Most of the doctors are satisfied with the product.

Q9. PRICING



- ➢ An alarming 52% of the doctors feel that Anti Tt Ig is expensive.
- ➢ Rest 48% find the drug affordable

Q11. HOW DO YOU TRUST A BRAND



- ➢ 46% doctors said that their trust towards brand is developed due to product itself and 54% said that due to company's image & safety records of the product

RECOMMENDATIONS AND CONCLUSION

With the data collected at the time of the project, now we have a clear understanding of the market position of the company and the loop holes in the demand and supply of the product.

Reliance is undoubtedly the market leader in this segment due to their low pricing and extensive availability.

Bharat serum stands out as the second best or the market challenger in the current market scenario.

But plasmagen also has the opportunity to cover the untapped market and the share of doctors who are currently not prescribing any particular brand by improvising on its market reach.

Also plasmagen will have to do extensive marketing so as to establish the brand and create awareness about the company and its products available.

Also, the company must expand its research and development laboratories and come up with a wider product mix.

Sales team of company should make extra efforts to make the product known to each and every doctor by conducting campaigning.

Still some of the doctors are having doubt about the safety issue of these products and some are even not aware what should be the safety issues to be followed for these products so each and every doctor must be made 100% clear about the safety issues of these products through awareness different programmes.

Promotional activities, educational events and awareness programmes need to be conducted at regular intervals.

Some market surveys should be continued by the company to actually know the market scenario and keep themselves up-dated with their competitors and strategy followed by them.

Company should try to meet the current unmet needs of the population and provide people more economical products with best services and should try to fill the voids in terms of:

- ✓ Awareness,
- ✓ Non-availability and
- ✓ Pricing issues

LEARNINGS:

- During my summer internship, I got to actually experience how to get information even in adverse conditions.
- I also got to know the importance of skills and knowledge and how important it is to create the right combination of the skills to get success in any project.
- Relationships of company's representative with the doctors and chemists is very important and how medical representatives interact to achieve their targets for the growth of the companies.
- Last but not the least, during any project a feeling of trust must be created among the target population before getting any information from them.

BLOOD BANKS AND BLOOD TRANSFUSION SERVICE

In India, blood collection, storage and issue of blood for transfusion are done mainly in the blood banks attached to hospitals, run mostly by the state and central governments. Voluntary agencies and private blood banks also carry out significant proportions of blood banking activities. There are a total of 2465 licensed blood banks in India. Out of them, about 55% are from public sector, 25% are from non government organizations (NGO), 8% blood banks are managed by Indian Red Cross Society and rest are from corporate and profit making sector.

Though the voluntary donations are increasing (45% in 2002 to 53% in 2008) this is very common in hospital based government and private blood banks leading to all sort of malpractices. Many blood banks show replacement donations as voluntary donations on record. It is difficult to track later.

In India, the ratio of use of blood components to whole blood is 15:85, while globally it is 90:10. This shows how poorly equipped we are. Many blood banks in India still not equipped to make components. They also try to malign the one those who separate components attaching religious values. Most of the blood banks issue whole blood. Even majority doctors prescribe whole blood, without understanding advancement in transfusion medicine. As a result they contribute to shortage of blood in the country and also overburden the patient unnecessarily causing harm at times. Blood Transfusion reactions are common in whole blood transfusions.

A well organised Blood Transfusion Service (BTS) is a vital component of any health care delivery system. An integrated strategy for Blood Safety is required for elimination of transfusion transmitted infections and for provision of safe and adequate blood transfusion services to the people. The main component of an integrated strategy include collection of blood only from voluntary, non-remunerated blood donors, screening for all transfusion transmitted infections and reduction of unnecessary transfusion.

The Blood Transfusion Service in the country is highly decentralised and lacks many vital resources like manpower, adequate infrastructure and financial base. The main issue, which plagues blood banking system in the country, is fragmented management. The standards vary from State to State, cities to cities and centre to centre in the same city. In spite of hospital based system, many large hospitals and nursing homes do not have their own blood banks and this has led to proliferation of stand-alone private blood banks.

The blood component production/availability and utilisation is extremely limited. There is shortage of trained health-care professionals in the field of transfusion medicine.

For quality, safety and efficacy of blood and blood products, well-equipped blood centres with adequate infrastructure and trained manpower is an essential requirement. For effective clinical use of blood, it is necessary to train clinical staff. To attain maximum safety, the requirements of good manufacturing practices and implementation of quality system moving towards total quality management, have posed a challenge to the organisation and management of blood transfusion service.

Advantages of component therapy are:

- The recipient can be treated with only those blood components that are lacking, reducing the occurrence of adverse transfusion reactions;
- More than one patient can be treated with blood components derived from one donation;
- Therapeutic support for patients with special transfusion requirements can be provided, for example, plasma that often is not directly needed for transfusion can be used manufacturing of Factor VIII concentrate for Haemophilia A patients;
- Improved quality and functional capacity of each component when varied storage conditions and shelf lives were applied.

OBJECTIVES OF THE STUDY

- To evaluate the present scenario of blood banks and find out the gap between the demand and supply of plasma.
- To study the plasma storage facilities and blood componentization facilities in blood centres.
- To determine availability of surplus plasma with the blood banks.
- To study the consensus of blood centres on utilization of surplus plasma for fractionation.
- To study the consensus on formation of a consortium between blood bank and plasma fractionation company.

METHODOLOGY

➢ Research Design

The market survey undertaken is an example of a descriptive / quantitative research since the overall research design is rigid and pre-planned all throughout our study.

➢ Sampling

- Study area: Thane, Kalyan, Dombivli, Bhiwandi, Ahmmednagar, Aurangabad, Dhule & Nasik
- Method: Simple random sampling
- Sample size: 26 Blood banks

➢ Data collection

- Approach: Quantitative data collection
- Tool: Structured questionnaire
- Method: Survey method
- Technique: face to face interview

➢ Data Management

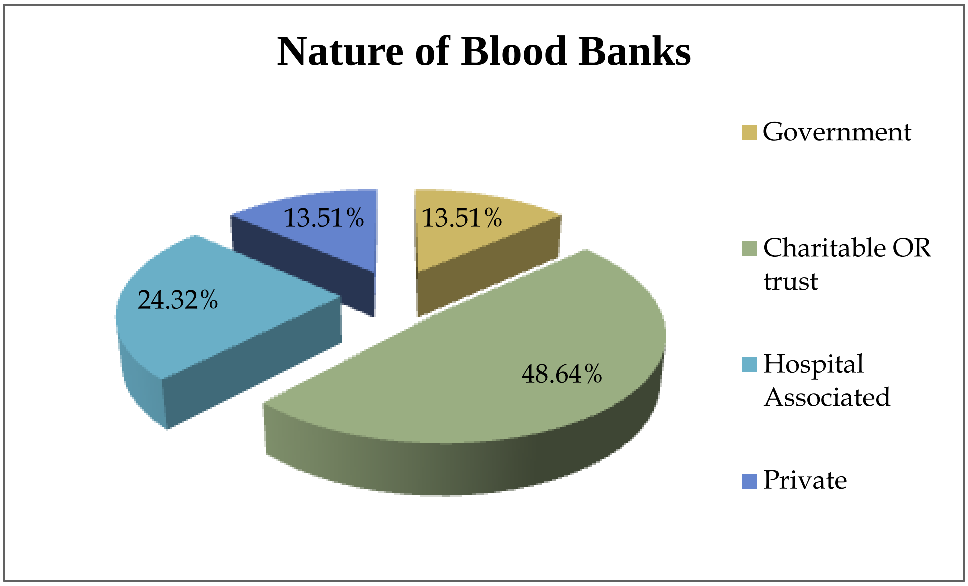
Information will be collected on questionnaire itself in field and then will be entered in the database.

- Data Processing: - Manual compilation of the data collected through questionnaire.
- Data entry: - MS word and MS excel spread sheets.
- Data Representation & Analysis: - MS excel used for graphical representation and for analyzing the data.

OBSERVATION, ANALYSIS AND INTERPRETATION

Nature of blood banks:

Type	**Government**	**Charitable**	**Hospital Associated**	**Private**	***TOTAL***
Number	5	18	9	5	37



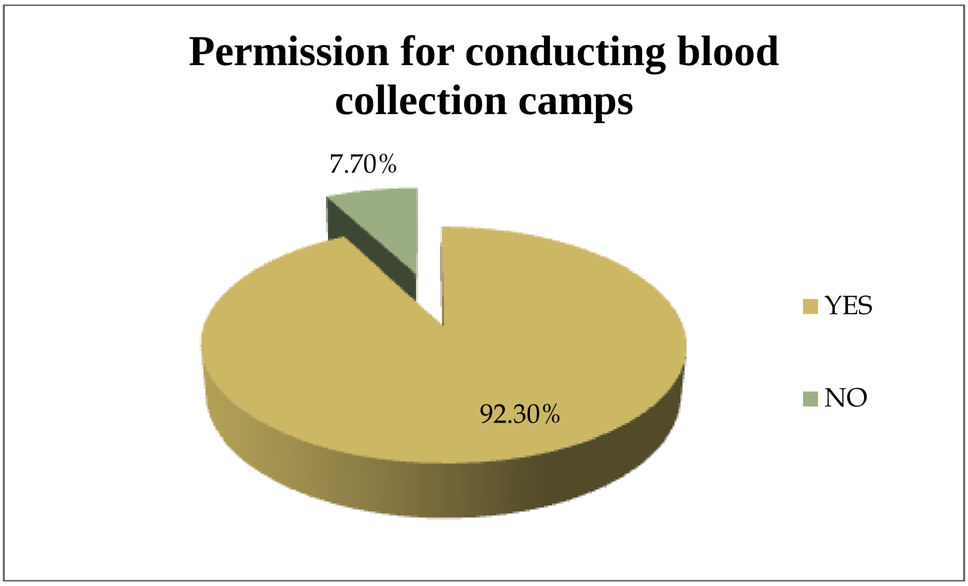
Source: Blood Bank Questionnaire question no.1

Sample size- 37 No. of Respondent-37

Interpretation: - In eight of the cities where study was done it is observed that 13.91% are government blood banks, 48.64% are charitable, 24.32% are hospital associated and 13.91% blood banks are private.

Permission for blood banks to conduct blood collection camps:

Permitted	24
Not permitted	02
TOTAL	26



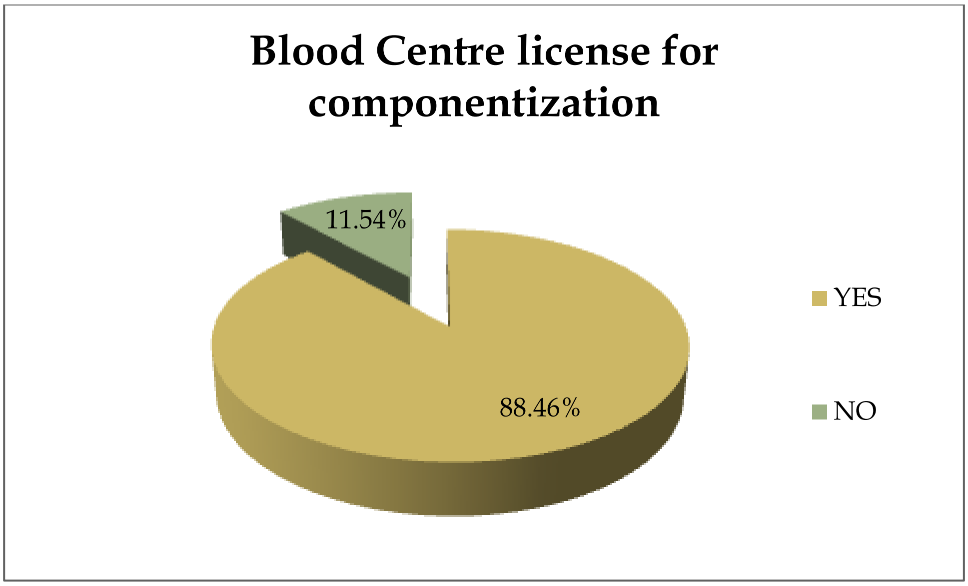
Source: Blood Bank Questionnaire question no.03

Sample size- 26   No. of Respondent-26

Interpretation: - 92.30% of blood banks are having permission to conduct blood collection camps and 7.70% are not having permission to conduct blood collection camps.

Blood Centre license for blood componentization:

License	No. Of blood banks
YES	23
NO	03
TOTAL	26



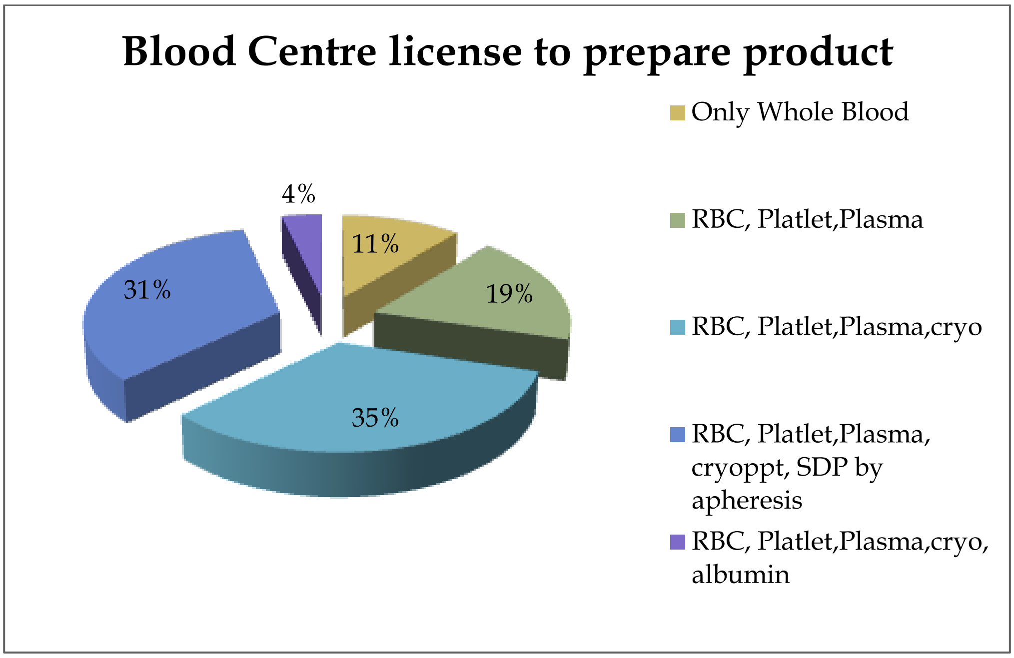
Source: Blood Bank Questionnaire question no.04

Sample size- 26   No. of Respondent-26

Interpretation: - 88.46% of blood banks have license for blood componentization and 11.54% blood banks don’t have license for the same.

Blood Components prepared in Blood Centres licensed for componentization:

Components Prepared	No of blood banks
Whole Blood	3
RBC, Platelet, Plasma	5
RBC, Platelet, Plasma, Cryoprecipitate	9
RBC, Platelet, Plasma, Cryoprecipitate, SDP by Apheresis	8
RBC, Platelet, Plasma, Cryoprecipitate, Albumin	1
TOTAL	**26**



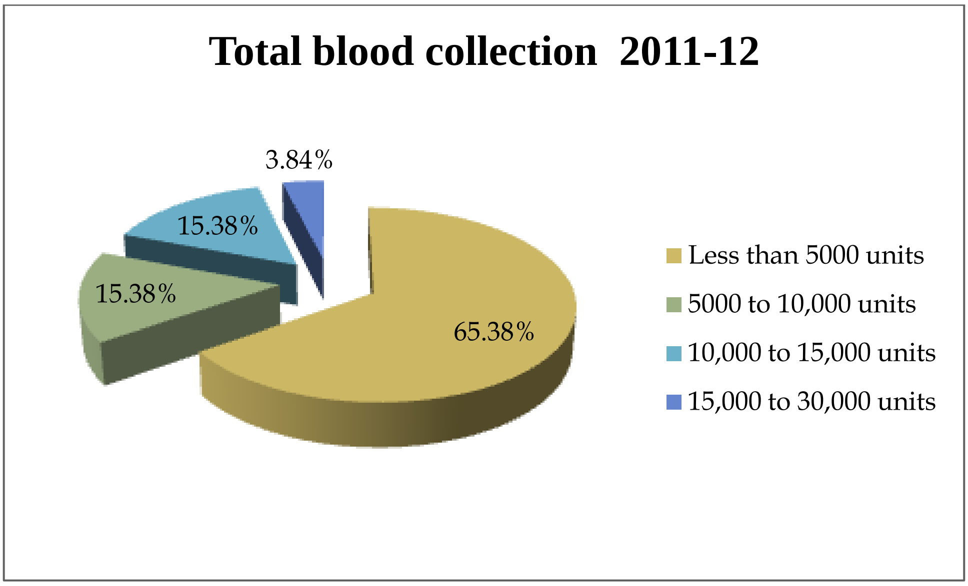
Source: Blood Bank Questionnaire question no.04

Sample size- 26 No. of Respondent-26

Interpretation:- Among total 88.46% of blood centres with license for componentization, 19% blood centres among them prepare Packed RBC's, Platelets, plasma. 35% blood centres prepare Packed RBC, Platelet, Plasma and Cryoprecipitate. 31% blood centres prepare Packed RBC, Platelet, Plasma, Cryoprecipitate, SDP by Apheresis and only 4% blood centres prepare Packed RBC, Platelet, Plasma, Cryoprecipitate, Albumin

Total blood collection for the year 2011-2012:

Units of blood collected	**No. of Blood centres**
Less than 5000	17
5000 to 10000	04
10000 to 15000	04
15000 to 30000	01
TOTAL	**26**



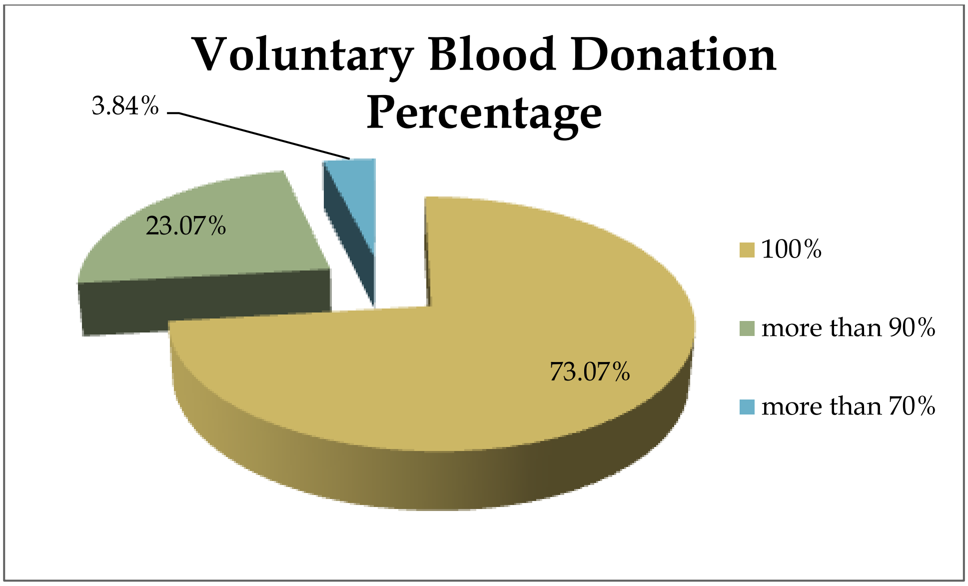
Source: Blood Bank Questionnaire question no.05

Sample size- 26 No. of Respondent-26

Interpretation: - In the year 2011-2012, 65.38% of blood banks collected less than 5000 blood units, 15.38% of blood banks collected 5000 to 10000 units of blood, 15.38% collected blood units in range between 10000 to 15000 units and only 3.84% of blood centres collected blood units in range between 15000 to 30000 units.

Voluntary blood collection:

Voluntary Blood Collection	No. of Blood Centres
100%	19
More than 90%	6
More than 70%	1
TOTAL	**26**



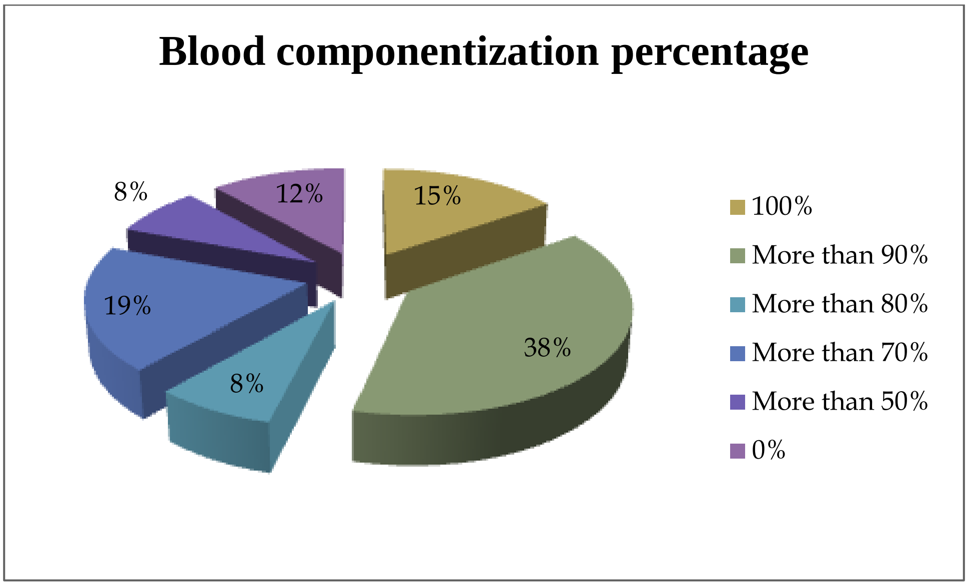
Source: Blood Bank Questionnaire question no.08

Sample size- 26   No. of Respondent-26

Interpretation:- In 22.22% of the blood banks 100% of blood collected through voluntary blood collection, in 38.88% of the blood banks >50%, in 16.66% of the blood banks <50%, in 16.66% of the blood banks >80% and in 5.55% of the blood banks >70% of blood collected through voluntary blood collection.

Blood componentization:

Componentization Percentage	No. of Blood Centres
100%	4
More than 90%	10
More than 80%	2
More than 70%	5
More than 50%	2
0%	3
TOTAL	**26**



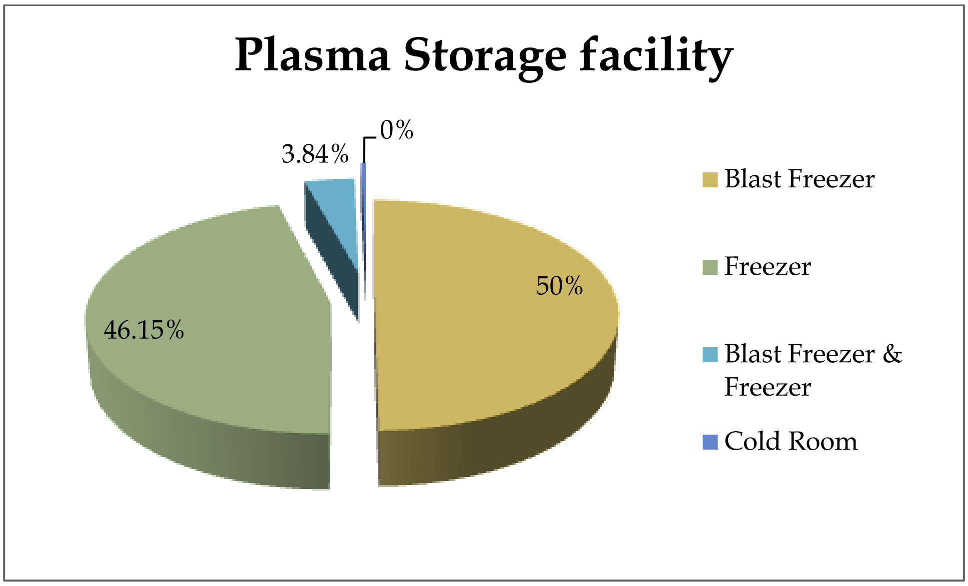
Source: Blood Bank Questionnaire question no.09

Sample size- 26   No. of Respondent-26

Interpretation: - 100% of blood componentization is done only in 15% of the blood banks , in 38% of the blood banks more than 90% blood componentization is done, in 8% of the blood banks more than 80% blood componentization is done, in 8% of the blood banks more than 50% of blood componentization is done. And 12% of blood banks do not componentize blood which implies that 12% of total blood banks in area under study collect only whole blood.

Storage of plasma:

Facility	No. of blood centres
Blast freezer	13
Freezer	12
Both blast freezer & freezer	1
Cold room	0
TOTAL	**26**



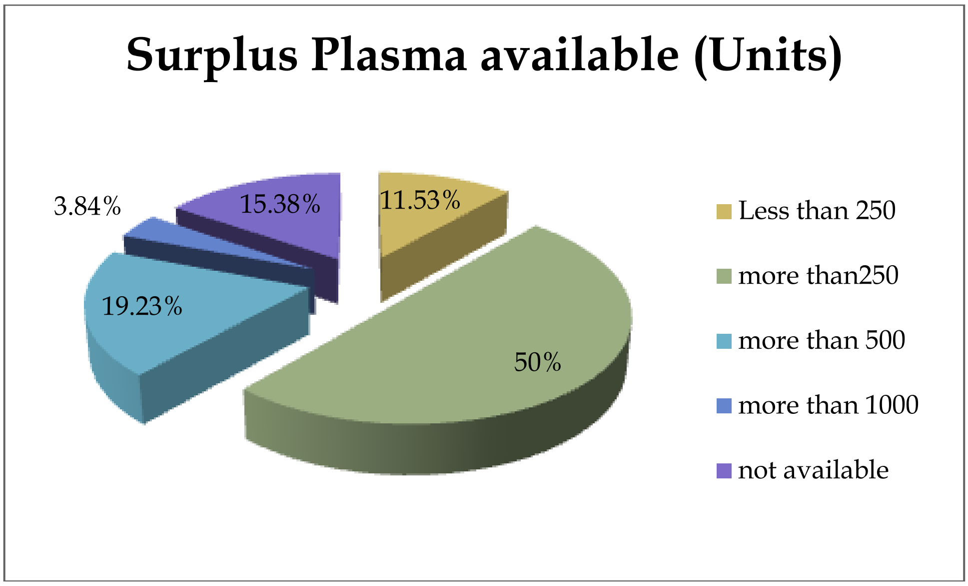
Source: Blood Bank Questionnaire question no.13

Sample size-26   No. of Respondent-26

Interpretation: - 50% 0f blood banks prepare & store plasma in blast freezer, 46.15% of blood banks prepare & store plasma in simple freezer and 3.84% blood banks use both blast freezer as well as simple freezers for preparation & storage of plasma. Cold room facility is not used in any blood bank for plasma storage.

Average availability of surplus plasma unit:

Surplus Plasma available	No. of Blood Centres
Less than 250	3
more than250	13
more than 500	5
more than 1000	1
Not available	4
TOTAL	**26**



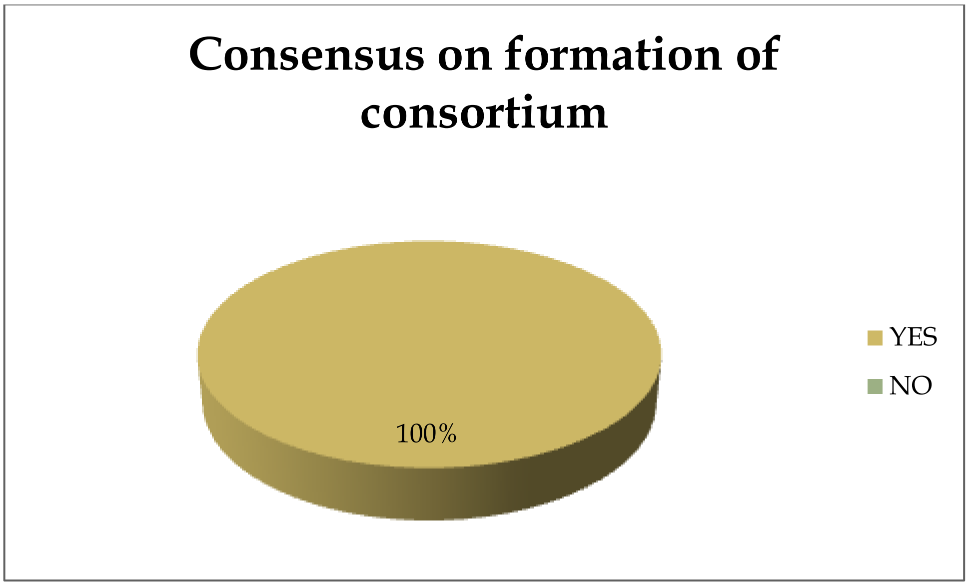
*Sample size-26 No. of Respondent-26 Source: Blood Bank
Questionnaire question no.17

Interpretation: - In 50% of blood banks >250 units of surplus plasma is available, in 11.53% blood banks <250 units of surplus plasma is available, in19.23% of blood banks >500 units, in 3.84% of blood banks >1000 units, in 15.83% of blood banks no surplus plasma is available as it is used totally.

*even if only in 23 blood centres componentization is done & in three blood centres only whole blood is collected still plasma is available with these three centres as it is supplied to them by other blood centres as per the need so sample size considered as 26.

Consensus on formation of a consortium between blood banks and plasma Fractionation Company:

Formation of Consortium	No. of blood centres
YES	26
NO	0
TOTAL	26



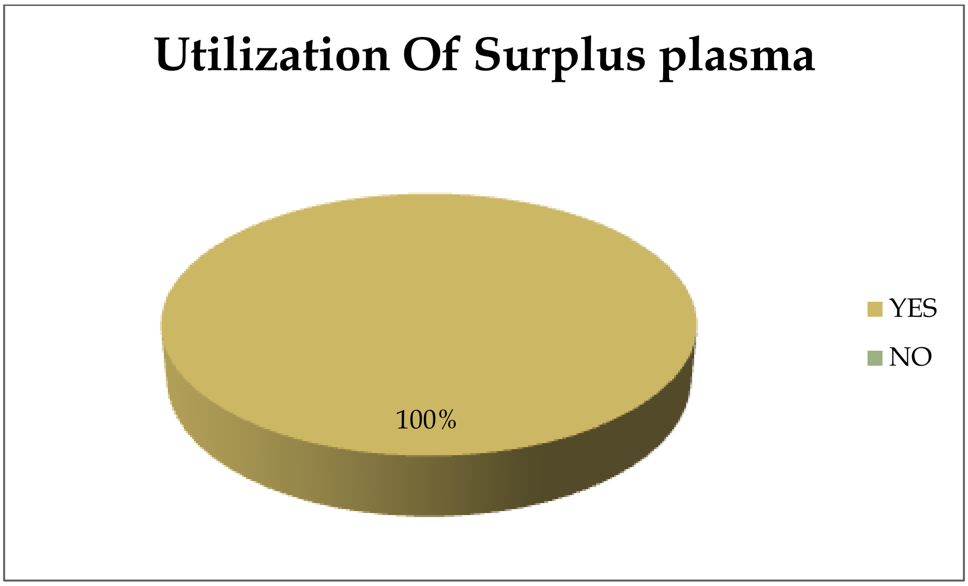
Source: Blood Bank Questionnaire question no.18

Sample size-26 No. of Respondent-26

Interpretation: - All blood banks said that forming a consortium between blood banks and plasma Fractionation Company would help all concern. Thus it indicates that in coming future the blood centres will readily supply the surplus plasma to the companies which will help for the growth of this industry.

Surplus plasma available with blood bank can be utilized for fractionation:

Utilization of Surplus Plasma	No. of Blood Centres
YES	26
NO	0
TOTAL	**26**



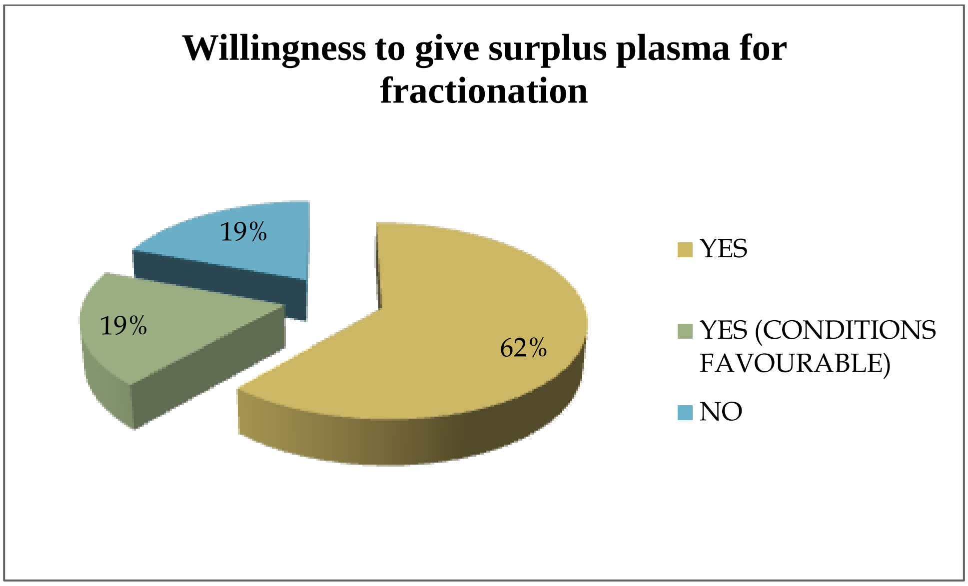
Source: Blood Bank Questionnaire question no.19

Sample size-26   No. of Respondent-26

Interpretation: - All Blood banks agree that Surplus plasma available with blood banks can be utilized for fractionation.

Blood centre's consensus to give plasma for fractionation to companies:

Plasma for Fractionation	NO. of blood centres
YES	16
YES (if conditions are favourable)	05
NO	05
TOTAL	**26**



Source: Blood Bank Questionnaire question no.20

Sample size-26 No. of Respondent-26

Interpretation: - 62% of blood banks are readily willing to give surplus plasma for fractionation where as 19% of blood banks are willing to give the plasma but under some terms & favourable conditions. And 19% of total blood centres do not want to give the surplus plasma.

CONCLUSION

Major blood banks in the area under study are operated under Charity or Trust and Hospitals

88.46% of blood banks in the area under survey do prepare plasma which can be utilized for fractionation.

As more than 90% blood donation is done voluntarily it has increased the chances of obtaining quality plasma from healthy donors as healthy persons donate blood frequently.

As 100% blood centres have positively responded for the consensus on formation of consortium between blood banks and Plasma Fractionation Company and also as 100% blood centres have agreed that surplus plasma can be utilised for the fractionation, it indicates that surplus plasma is readily available. It indicates that the plasma fractionation market has good potential in coming future.

ANNEXURE

1. QUESTIONAIRRE FOR DOCTORS:-

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

2. 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:……………………………………………………………………………………………

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

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

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?

TEST Protocol **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 Centre like to give plasma for Fractionation?

(a) Yes (b) No

21. Details of Blood Centre Staff:

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