

Summer Training at



**PlasmaGen Biosciences Pvt. Ltd.
(1st April 2019 – 31st May 2019)**

“How the Blood donation and safety program has evolved in last decade in India?”

By

Lajwanthi Sharma

Under the guidance of

Dr. Saurabh Kumar Banerjee

MBA in Pharmaceutical Management

2018-2020



Institute of Health Management Research, Jaipur

CERTIFICATE

This is to certify that **Lajwanthi Sharma** has undergone Summer Training at **Plasmagen Biosciences Pvt. Ltd.** from 1st April 2019 to 31st May 2019.

The candidate herself completed the project assigned to her in summer training. Her approach to project was sincere and proactive. This Summer Training is in partial fulfillment of the course requirement recommended for the award of MBA in Pharmaceutical Management.

I wish her success in all her future endeavors.



Dr. Saurabh Kumar Banerjee
Associate Professor
School of Pharmaceutical Management
IIHMR University, Jaipur



Dr. Sandeep Narula
Dean-in-charge and Associate Professor
School of Pharmaceutical Management
IIHMR University, Jaipur

CERTIFICATE OF INTERNSHIP

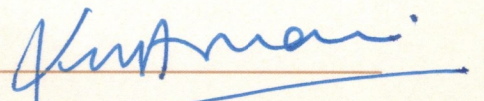
THIS CERTIFICATE IS PRESENTED TO

Ms. Lajwanthi Sharma C

In recognition to the valuable contribution towards the Marketing Research Project
in the field of Blood Plasma Products
on the topic

**“HOW THE BLOOD DONATION AND SAFETY PROGRAM
HAS EVOLVED IN LAST DECADE IN INDIA?”**

April, 2019 - May, 2019



Dr. Ranjeet S. Ajmani
Chief Executive Officer



ACKNOWLEDGEMENT

“Successful passage and outcome of every work comes with dedication, determination and team work. All these turn futile in the absence of visionary guidance.”

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

I would like to express my heartiest thanks to **Dr. Ranjeet Ajmani (CEO) of PlasmaGen Biosciences Pvt. Ltd.** for granting me an opportunity to undergo summer training in their esteemed organization. The project on **“How the Blood donation & safety program has evolved in last decade in India?”** has been complied involving the hard work of many.

First of all I am highly thankful to my project guide **Mr. Awadhesh Nath Tiwari (Senior Manager) PlasmaGen Biosciences** who took lot of pain to supervise this project work. Their guidance, advice, timely suggestion, explicit decision, attention had been privilege for me. I have no words to express my heavy debt of gratitude to them for their encouragement and relevant criticism time to time.

Furthermore, completion of this project was not possible without the valuable suggestions of my faculty mentor **Dr. Saurabh Kumar Banerjee** whose guidance helped me a lot during project.

I would like to express my special gratitude and thanks to **Ms. Aarthi GR (HR Manager) of PlasmaGen Biosciences** for mailing me time to time and keeping me updated with all the latest updates and instruction on behalf of the company.

Last but not the least from the bottom of my heart I wish to thank my parents, friends for their kind co-operation and encouragement which helped me in completion of this project. My thanks and appreciations also go to my colleague in developing the project and people who have willingly helped me out with their abilities.

LAJWANTHI SHARMA

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EXECUTIVE SUMMARY

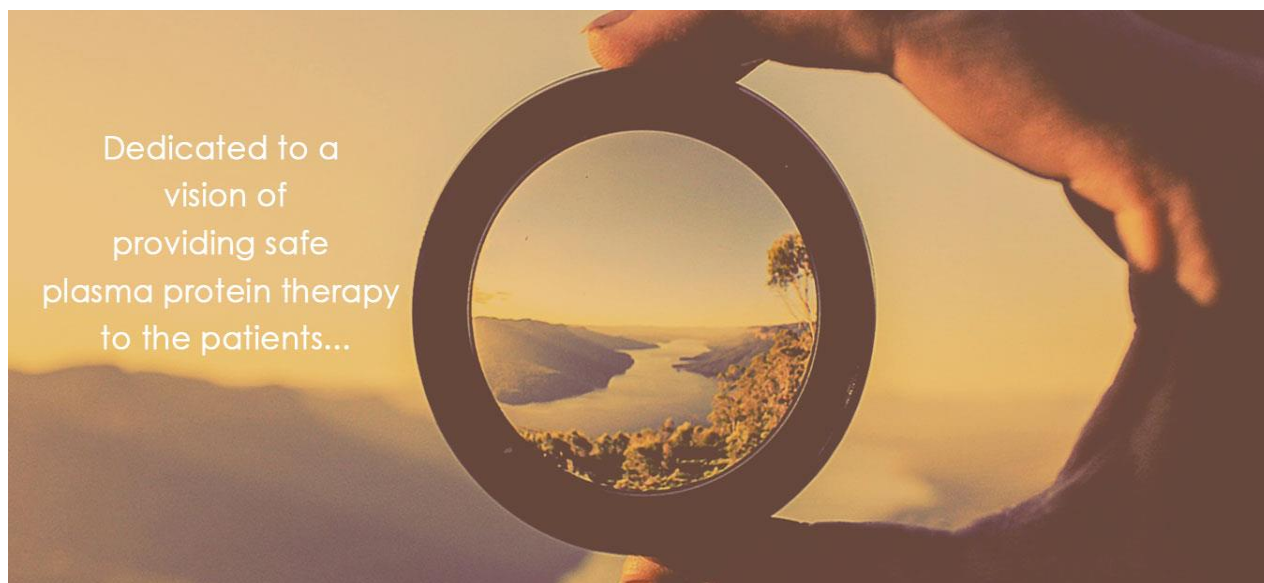
Blood is a Connective tissue that courses through veins and made of liquid (plasma 52-62%) and cell components (RBC 38-48%, WBC<1% and platelets<1%). It's volume is 5-6 L in males and 4-5 L in females and is Slightly basic, with a pH of ~ 7.4. It's Colour fluctuates from brilliant to dull red and has salty metallic taste. Transportation, Regulation and Protection are its principle work. It is an indispensable medicinal services asset routinely utilized in an expansive scope of emergency clinic systems. It is likewise potential vector for destructive and once in a while deadly, contaminations ailments, for example, HIV, HBV, HCV. Consistently, a large number of individuals are presented to avoidable, hazardous dangers through the transfusion of risky blood.

Plasma is a complex mixture of over 700 proteins and other substances which are crucial for the smooth running of our bodies. It is quite simply a lifesaving resource that benefits thousands of people every day. As a largest single component of blood, plasma makes up of about 55 percent of total blood volume. It's clear, straw coloured liquid, mostly made up of water, in which platelets, red and white cells are carried. It provides a 'storage area' for fluids for the body, helping maintain blood pressure as well as cooling and warming the body.

Blood Donation is Collecting, Testing, Preparing and Storing blood and blood components. The main purpose is to ensure an adequate supply of blood for accidents victims, surgery, medical research and diseases. Types of blood donation are Homologous Donation, Directed Donation, Replacement Donation and Autologous Donation. The main reason to donate a blood is because there is no substitute, 1 donation = 3 person, every 3 seconds it is required and it is a gift of life to other person.

The main purpose of my project was to identify the surplus plasma available, blood banks connected to sell the surplus plasma to the companies. The developed technologies used, screening protocols followed and infections encountered by the blood banks. Even the source of blood collection, nature of blood banks, types of blood bags preferred, blood bank into componentization these are few common things from which the quality and quantity data can be analysed.

ORGANIZATION PROFILE



Dedicated to a
vision of
providing safe
plasma protein therapy
to the patients...

SOURCE: <http://www.plasmagen.in/>

PlasmaGen Biosciences is an Indian Bio-pharmaceutical association practicing solely in Plasma Protein Therapy.

Headquartered in Bangalore-India, PlasmaGen has been bending over backward in the space of Plasma item Industry and has turned into an Imperative one stop goal for the medicinal crew for the greater part of the plasma items need. We have a bushel of plasma items and the most stretched out scope of immunoglobulins in India taking into account the necessities of different domains viz. Haematology, Oncology, Immunology, Paediatrics, Rheumatology, Dermatology and Neurology.

South Asian Association for Regional Co-task (SAARC) incorporates 8 nations; India, Afghanistan, Bangladesh, Bhutan, Maldives, Nepal, Pakistan and Sri Lanka, these nations share geological closeness and political plan as well as offer numerous normal social concerns-Healthcare, Education, Economic Infrastructure and some more. SAARC district share comparative difficulties with regards to mindfulness, openness, accessibility and reasonableness of safe plasma items due to the constrained reliable supply of safe plasma and low plasma fractionation limit.

We in this manner seek after a dream of introducing the Plasma Protein industry in SAARC district and attempt to give a broad grouping of safe plasma items to enhance the personal satisfaction of patients. This is a stage progressing in the direction of tending to the contemporary idea of territorial independence.

PlasmaGen Biosciences, having a specialty and mastery in the universe of plasma item treatments; additionally works intimately with the administration on different plasma strategies and hemovigilance, which can be broadened and utilized for development of this industry in whole SAARC locale.

MISSION

- Provide a wide range of safe plasma products to patients, in India and SAARC (South Asian Association for Regional Cooperation) region, on consistent basis.
- Create strategic partnership to enable the global market accessible to India and SAARC region.
- Develop a consortium of stakeholders involved in Plasma Protein Therapy to optimize the use of surplus unutilized plasma for India and SAARC region.
- Pave the road for achieving self-sufficiency in Plasma Protein Therapy in India and SAARC region.
- Work in close association with regulatory agencies and collaborate with research institutions to change the landscape of Plasma Protein Industry in India.

VISION

To achieve global recognition and trust, as an Indian plasma product company, dedicated towards improving the health and quality of life of patients in India and SAARC (South Asian Association for Regional Cooperation) region.

VALUES

- ❖ **LEADERSHIP** - Courage & Passion
- ❖ **RESPECT & INTEGRITY** - Transparent Work Environment
- ❖ **QUALITY** - Reflection Of Our Excellence
- ❖ **SOCIAL RESPONSIBILITY** - People & Environment
- ❖ **HARMONY** - Work-Life Balance
- ❖ **CUSTOMER SATISFACTION** - Exceeded Expectation

‘PLASMAGEN’ PRODUCTS

- Plasma Glob
- Albu Max
- Plasma Rho – D I.V
- Plasma Rab – I.M
- Plasma Hep
- Ver Bumin

PROBLEM STATEMENT

The project has been undertaken to study the present scenario of blood banks and the challenges in making India self sufficient in the field of blood plasma.

Blood segments treatment is profitable as far as expanding the compelling accessibility of blood units and lessening the transfusion – related dangers. One unit of blood can be isolated into parts and made accessible to various patients by transfusing reasonable segments. It is regularly accepted that more, if not all, of the blood ought to be fractionated. Be that as it may, the procedure of componentizing expands the accessibility of blood items to the detriment of expanded expenses of holding, preparing and wastage at a blood donation center.

OBJECTIVE

❖ Main Objective

- To analyse How the blood donation and safety program has evolved in last decade in India?

❖ Sub Objective

- To analyse the source of blood collection and frequency of voluntary blood collection.
- To analyse the types of blood bags and method of storage preferred by blood banks.
- To analyse the various screening protocol preferred and infections encountered by various blood banks.
- To analyse the pattern of utilization of whole blood/its components and blood bank involved in componentization.
- To analyse the availability of surplus plasma and its usage at various blood bank.
- To analyse the requirements of formation of a consortium between blood bank and plasma fractionation company.

RESEARCH METHODOLOGY

RESEARCH DESIGN: Descriptive Research.

SAMPLING

- **Study Area:** Bengaluru, Mumbai, Chandigarh and Kolkata.
- **Method:** Convenient Sampling.
- **Sample Size:** 124 Blood Banks.
- **Study Time:** 1st April - 31st May 2019.

TARGET POPULATION: Medical Officer & In-charge of Blood Bank.

DATA COLLECTION

- **Approach:** Both Quantitative and Qualitative data.
- **Tool:** Structured Questionnaire (both Open & Closed Ended)
- **Method:** Survey Method.
- **Technique:** Face to face interview.

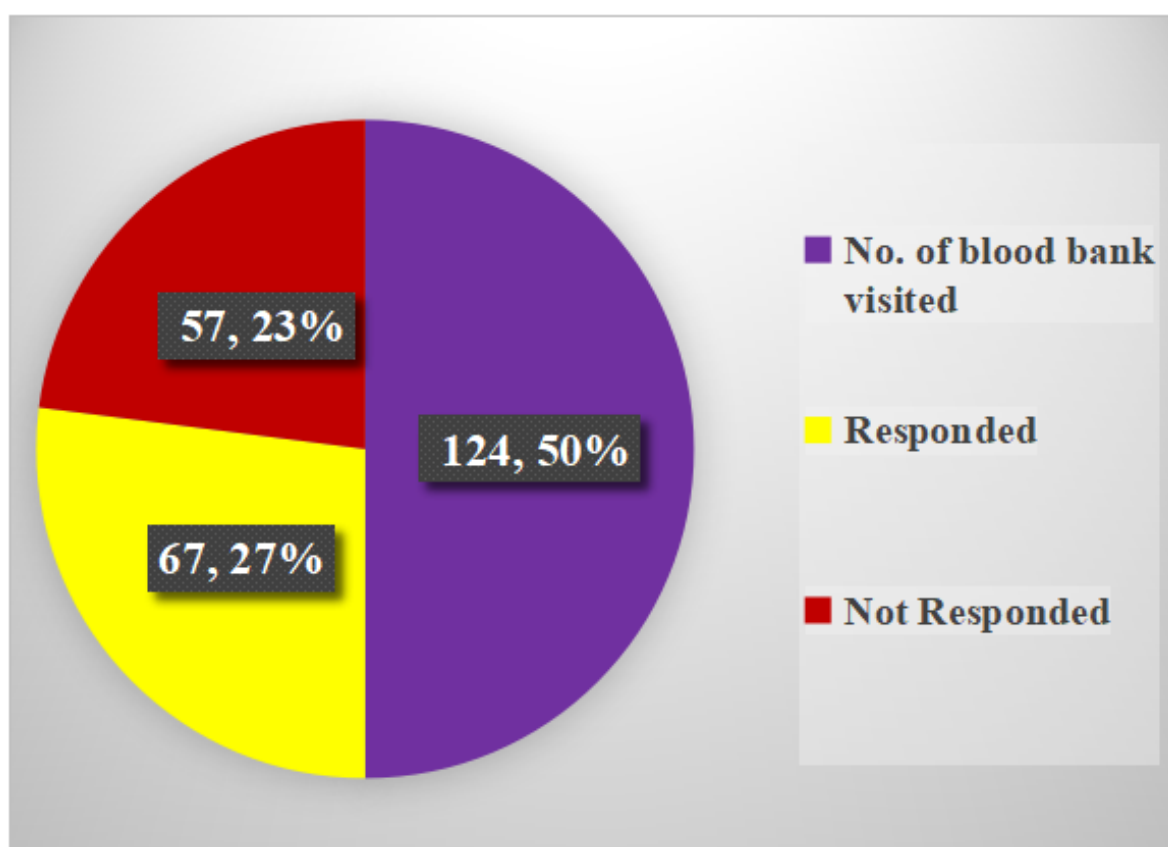
DATA MANAGEMENT

- **Data Processing:** Manual compilation of the data collected through questionnaire.
- **Data Entry:** MS Excel spread sheets.
- **Data Representation & Analysis:** MS Excel used for graphical representation and for analysing the data.

DATA ANALYSIS

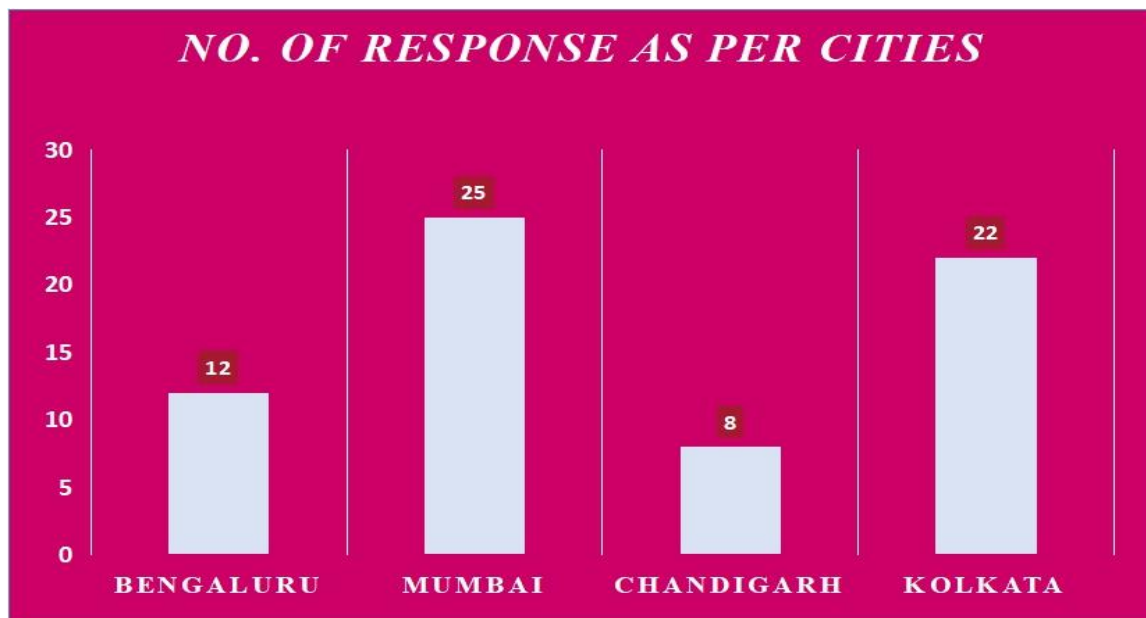
- ❖ The Analysis of data is done separately for each question.

TOTAL NO. OF BLOOD BANK VISITED AND RESPONDED



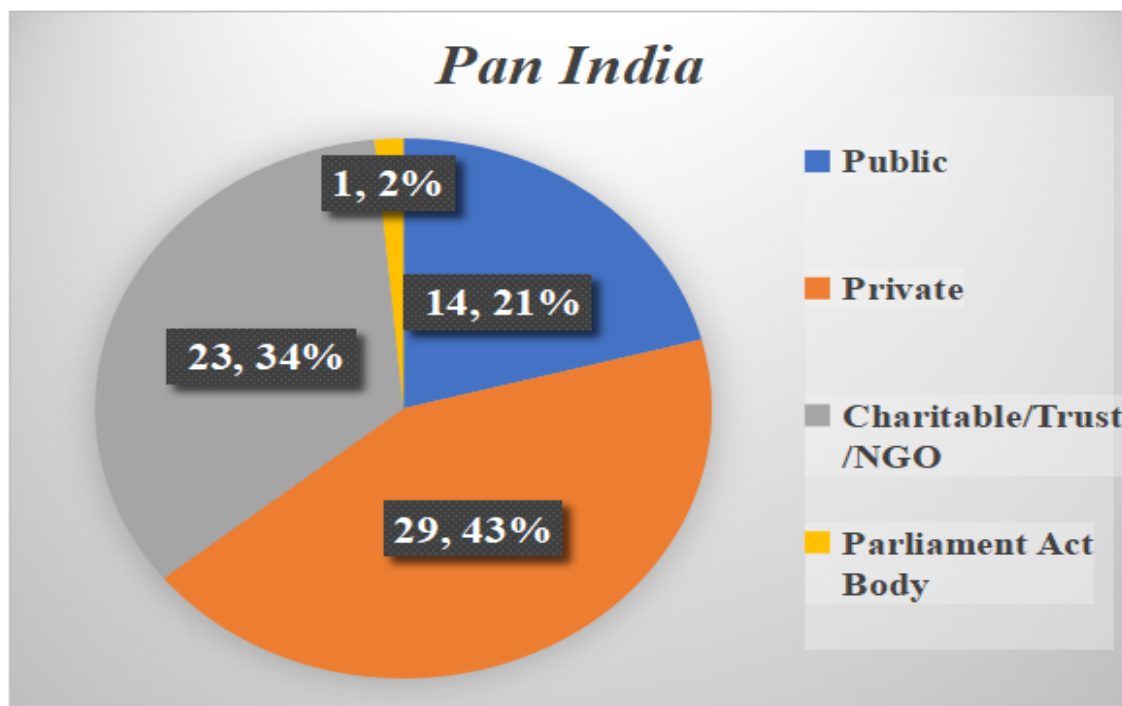
Total 124 blood banks were visited out of which 67 responded and 57 did not respond.

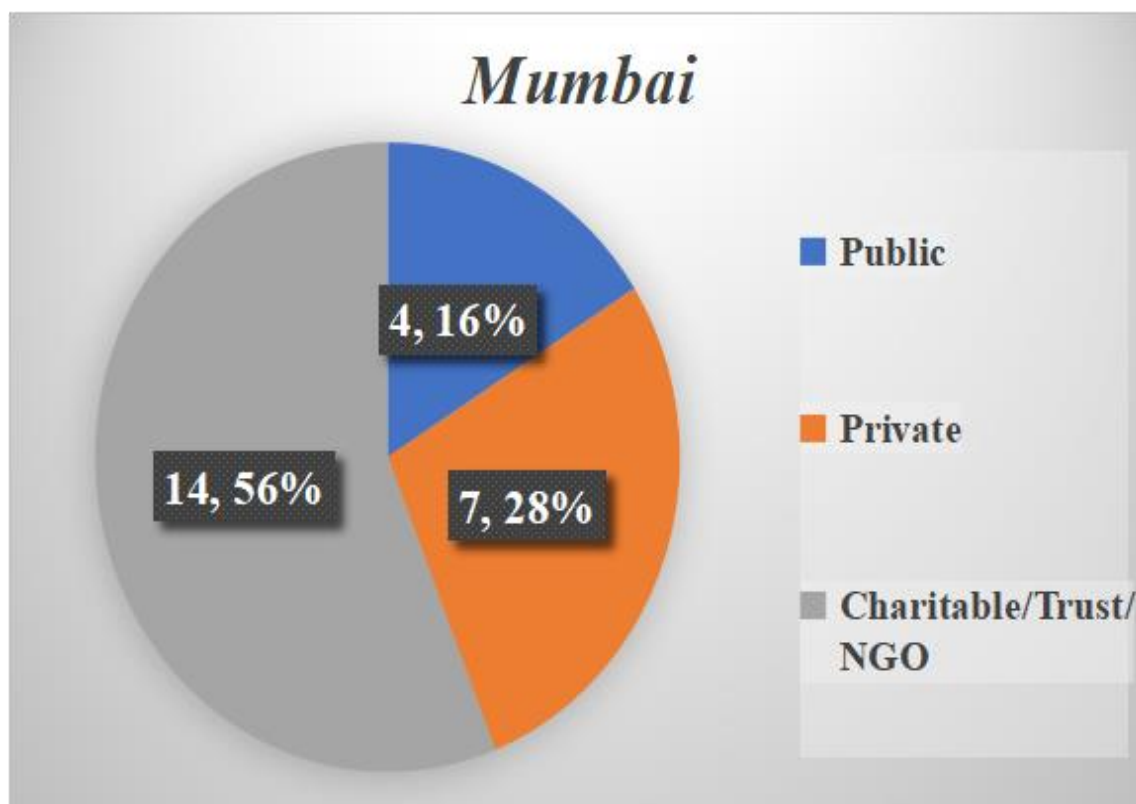
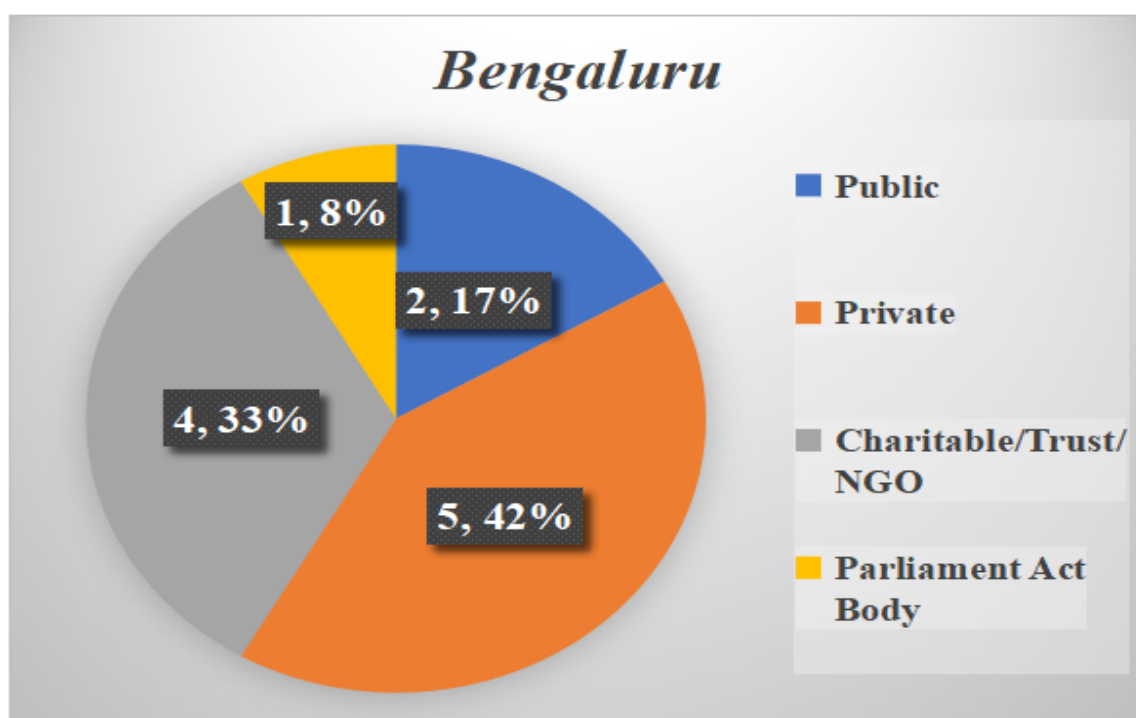
NO. OF RESPONSE AS PER CITIES

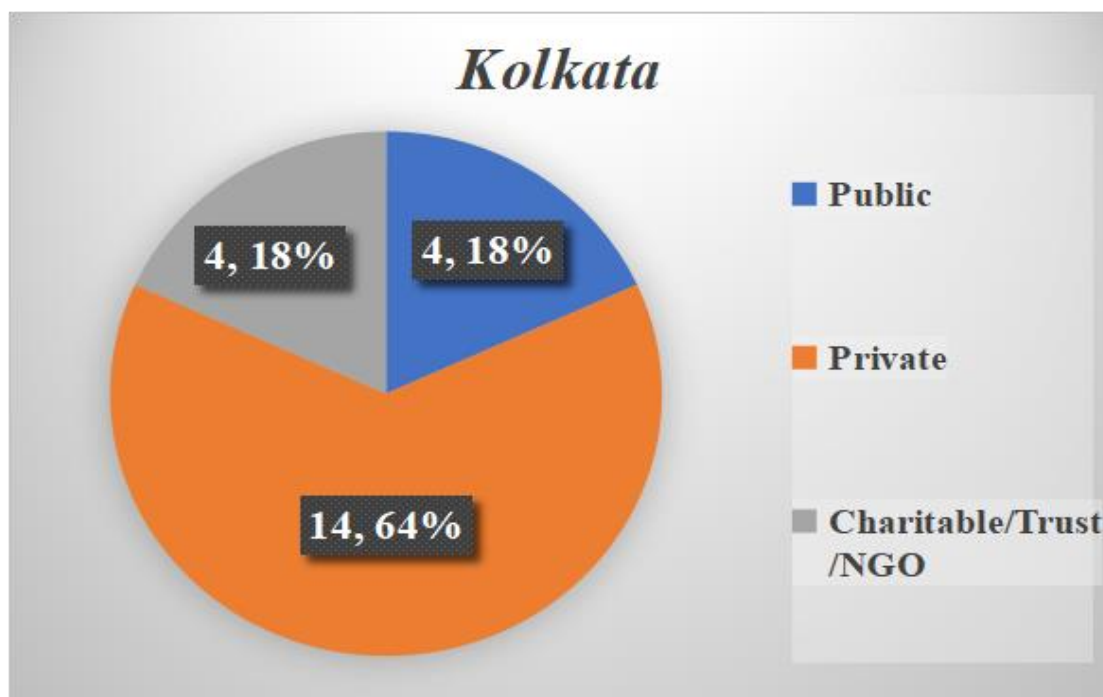
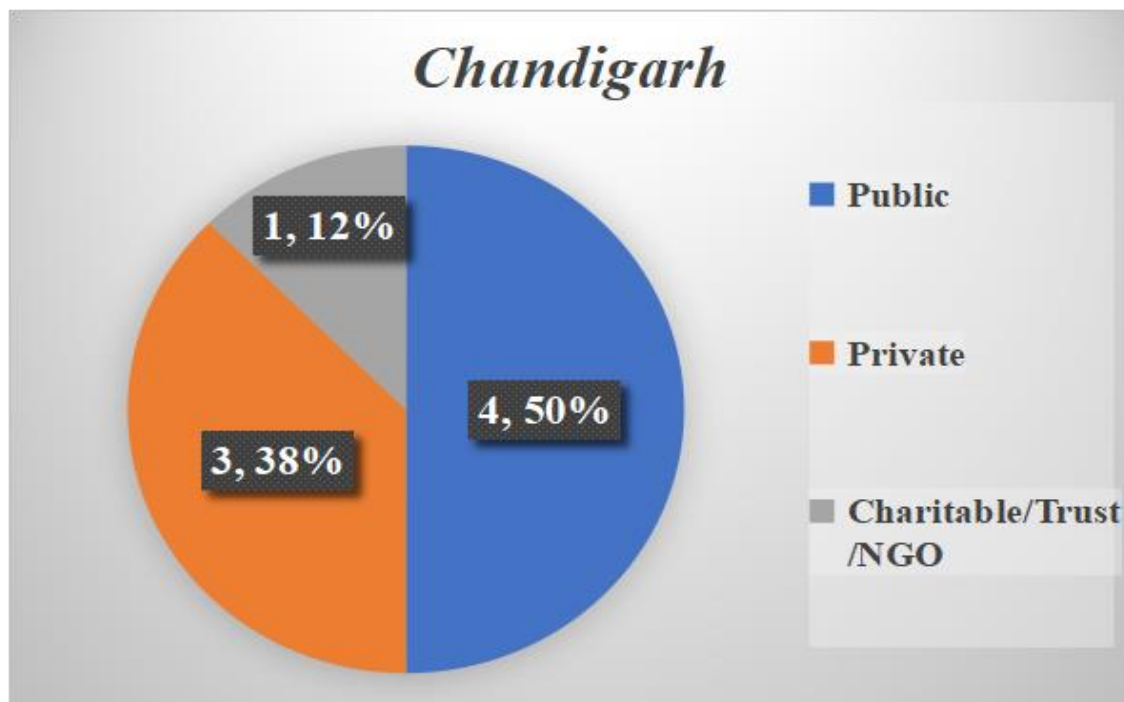


Out of 67 respondents, 25 from Mumbai, 22 from Kolkata, 12 from Bengaluru and 8 from Chandigarh blood banks surveyed had responded & shared their information.

Q.1 NATURE OF THE BLOOD BANK

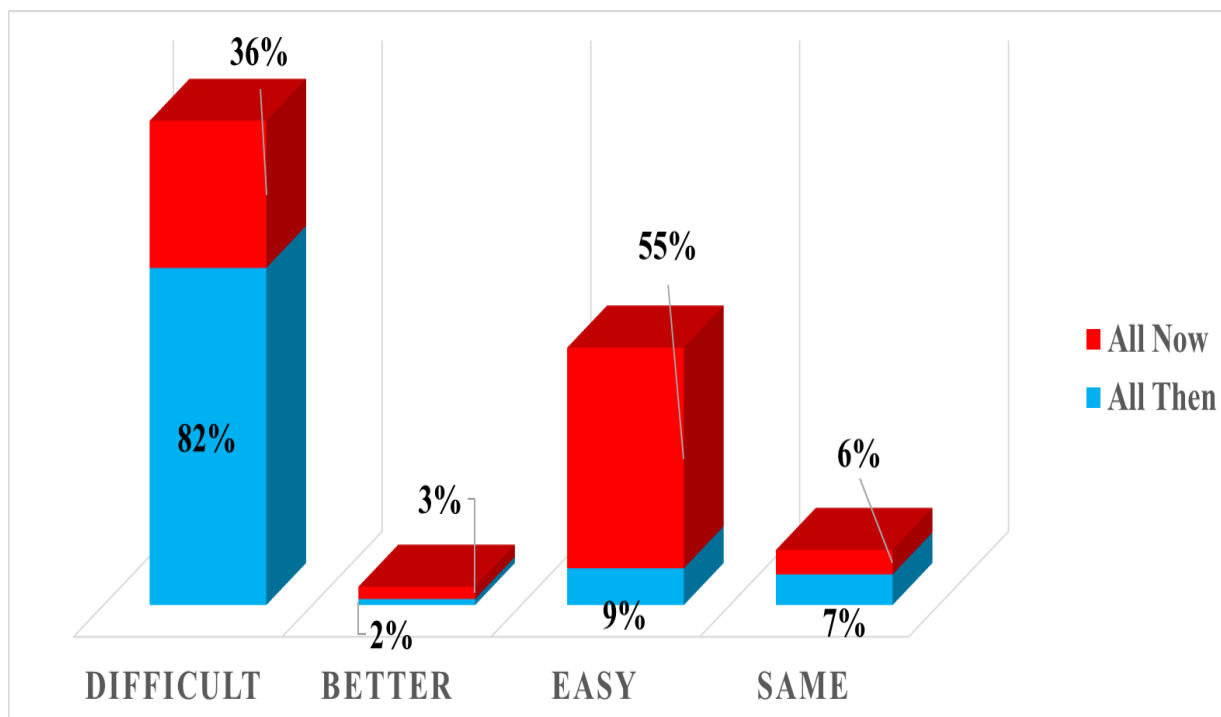






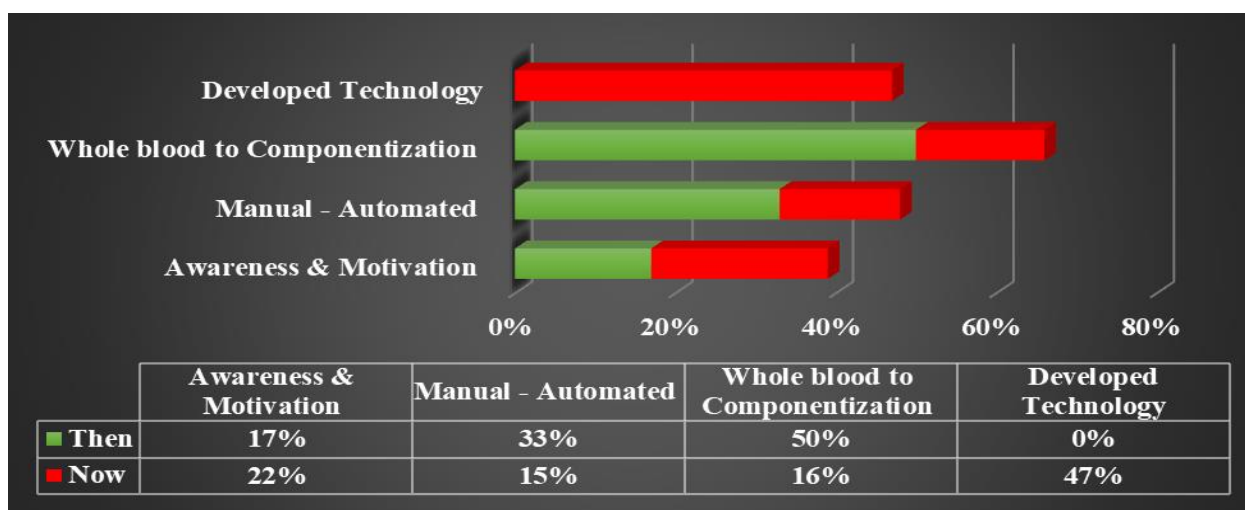
This graph suggest that as 43% Private blood bank are in majority and can be focused more for the collection of plasma as there safety, hygiene and quality are better when compared with Public and Charitable blood banks.

Q.2 COMPARATIVE LICENSE RENEWAL PROCESS (PAN INDIA)



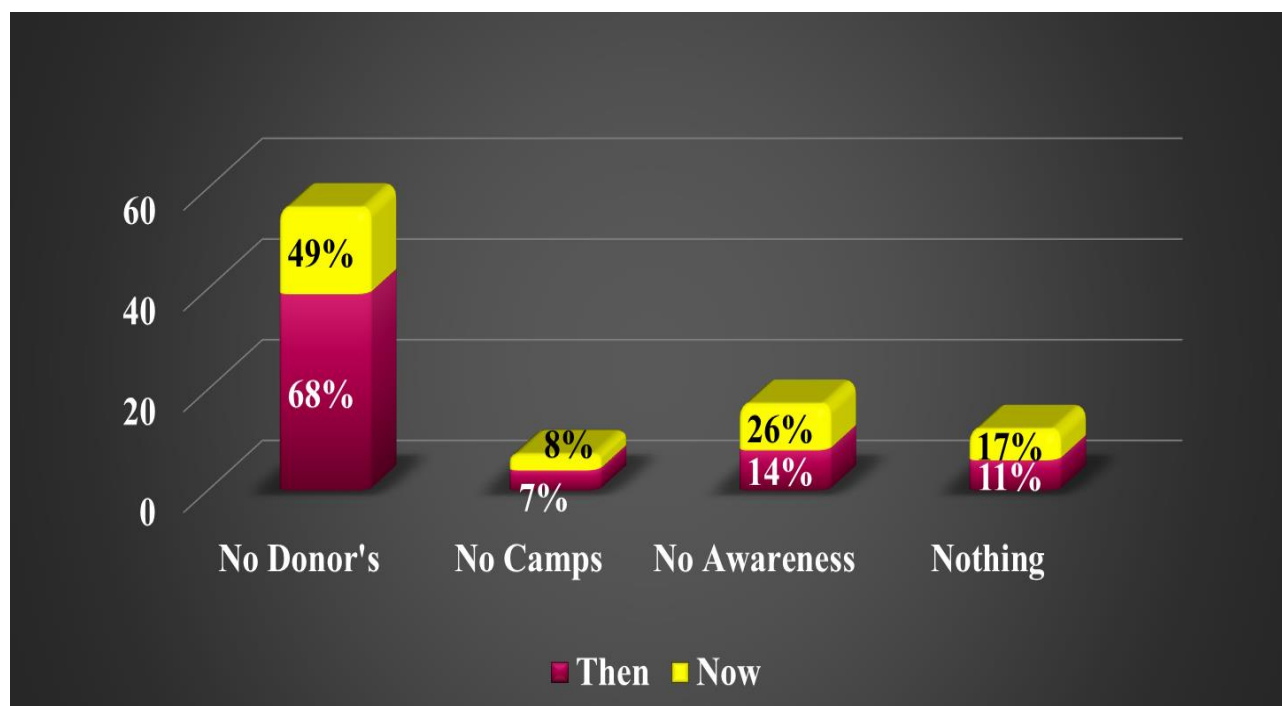
This graph represents the license renewal process have become more easier when compared to last decade because it has become an online process which is less time consuming when compared to manual process.

Q.3 COMPARING GOOD THINGS WITNESSED (PAN INDIA)



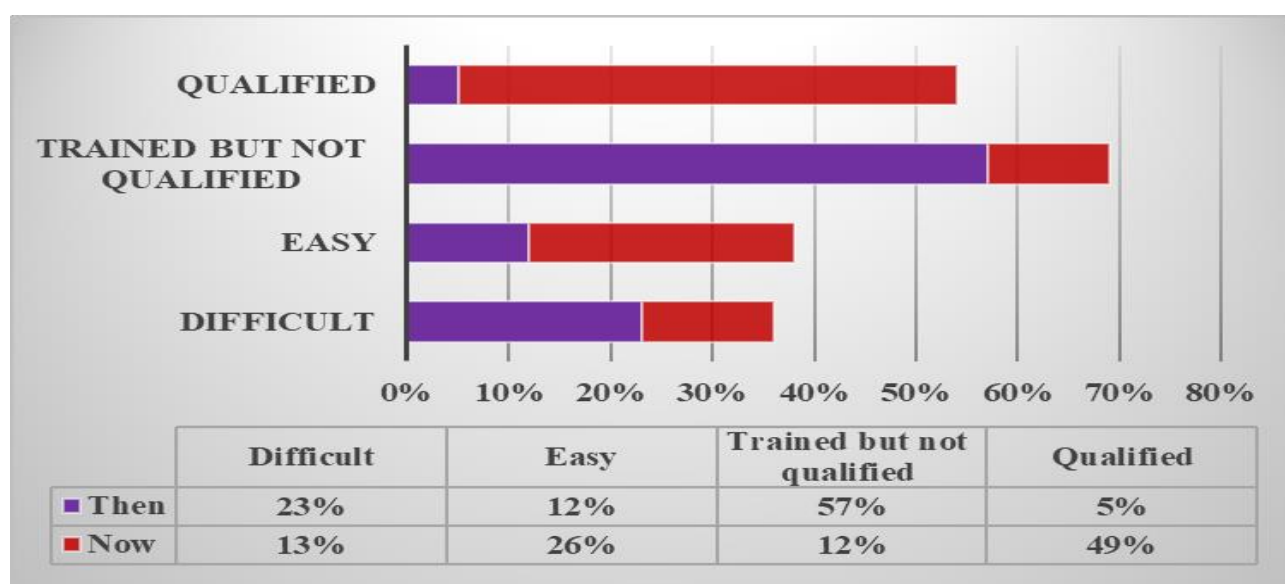
This graph represents that 47% of the blood banks have adopted developed technologies like software development for data entry, NAT and Chemiluminescence which detects the TTI (Transfusion Transmitted Infection) in the blood which provide more safe blood with minimal error and 16% of blood bank have moved from whole blood to componentization.

Q.4 CHALLENGES FACED BY BLOOD BANK (PAN INDIA)



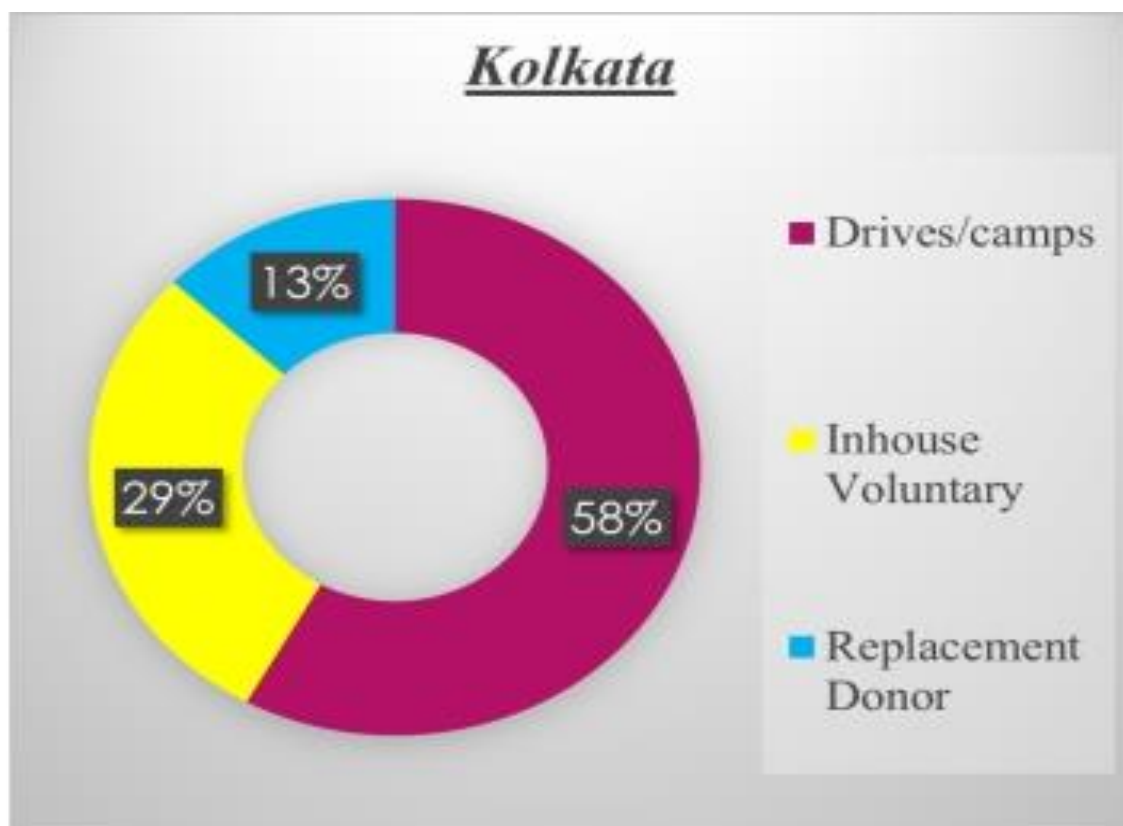
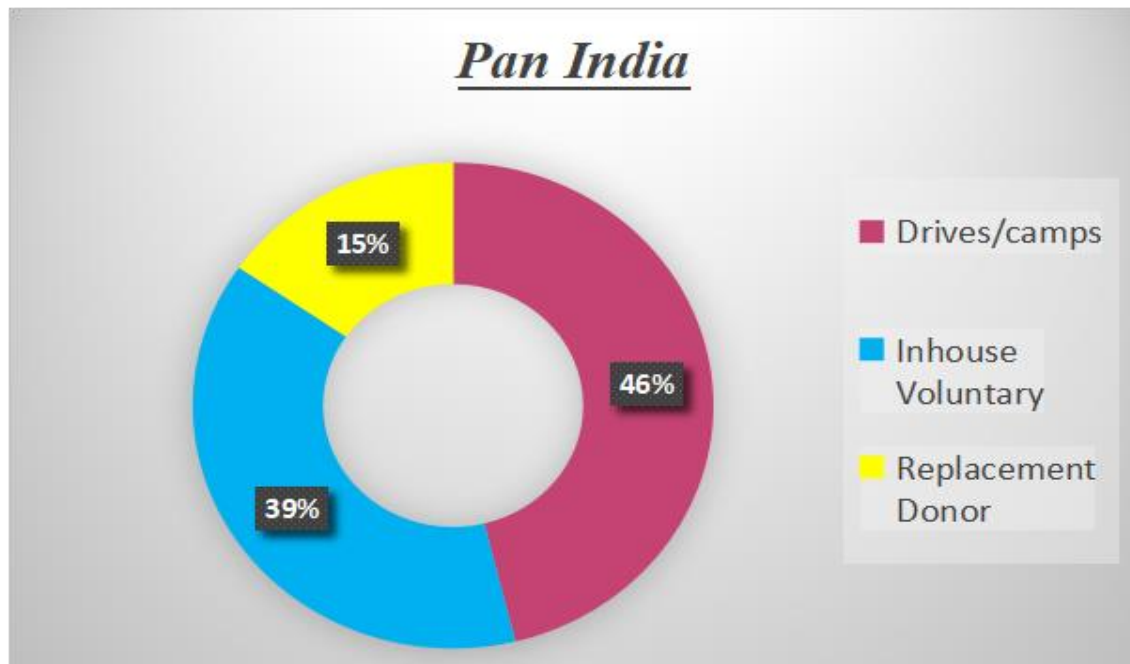
This graph represents the foremost challenges faced by the blood banks were 49% said no donor's were available due to lack of awareness whereas, 17% blood banks said that they don't face such challenges.

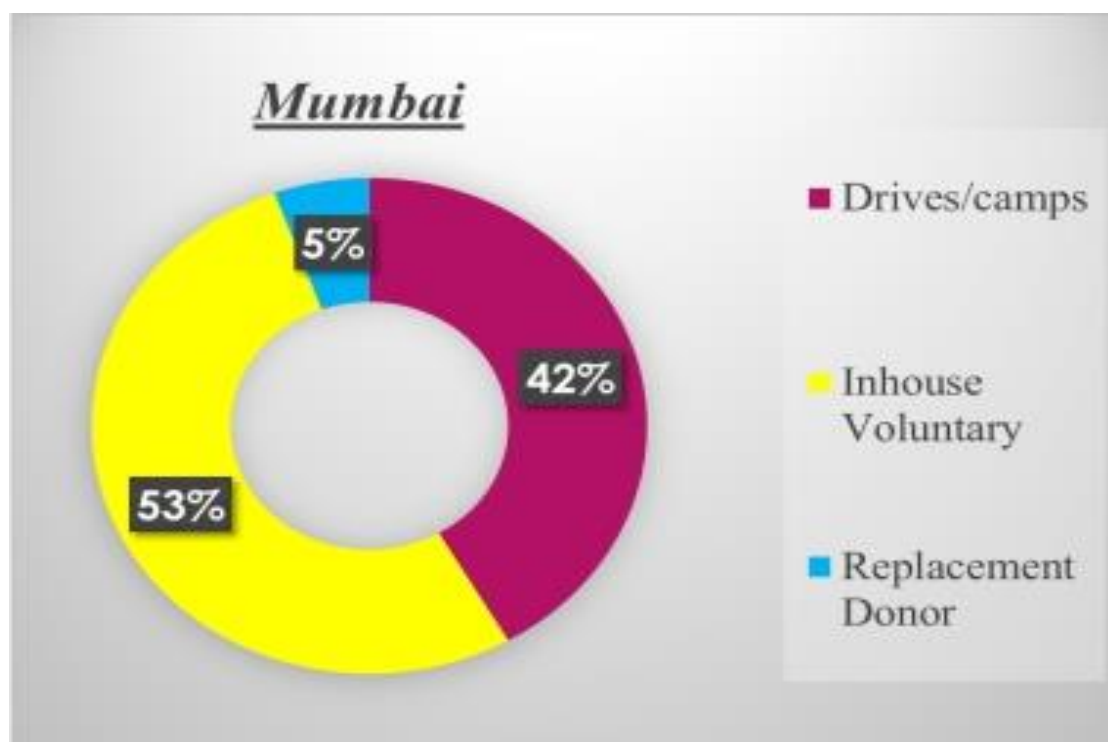
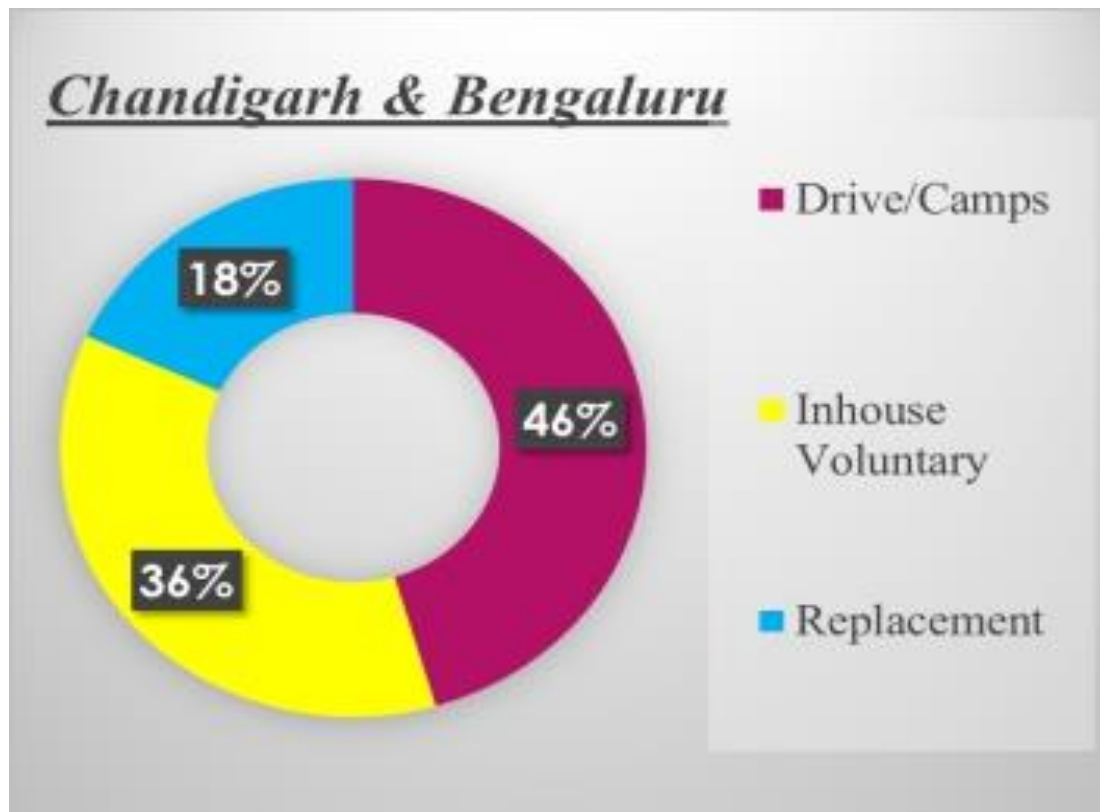
Q.5 GETTING TRAINED QUALIFIED PEOPLE (PAN INDIA)



This graph represents that qualified people are increased from 5% to 49% and trained but not qualified are decreased from 57% to 12% which indicates that it is easy to find qualified people due to the specific course available by the institutions.

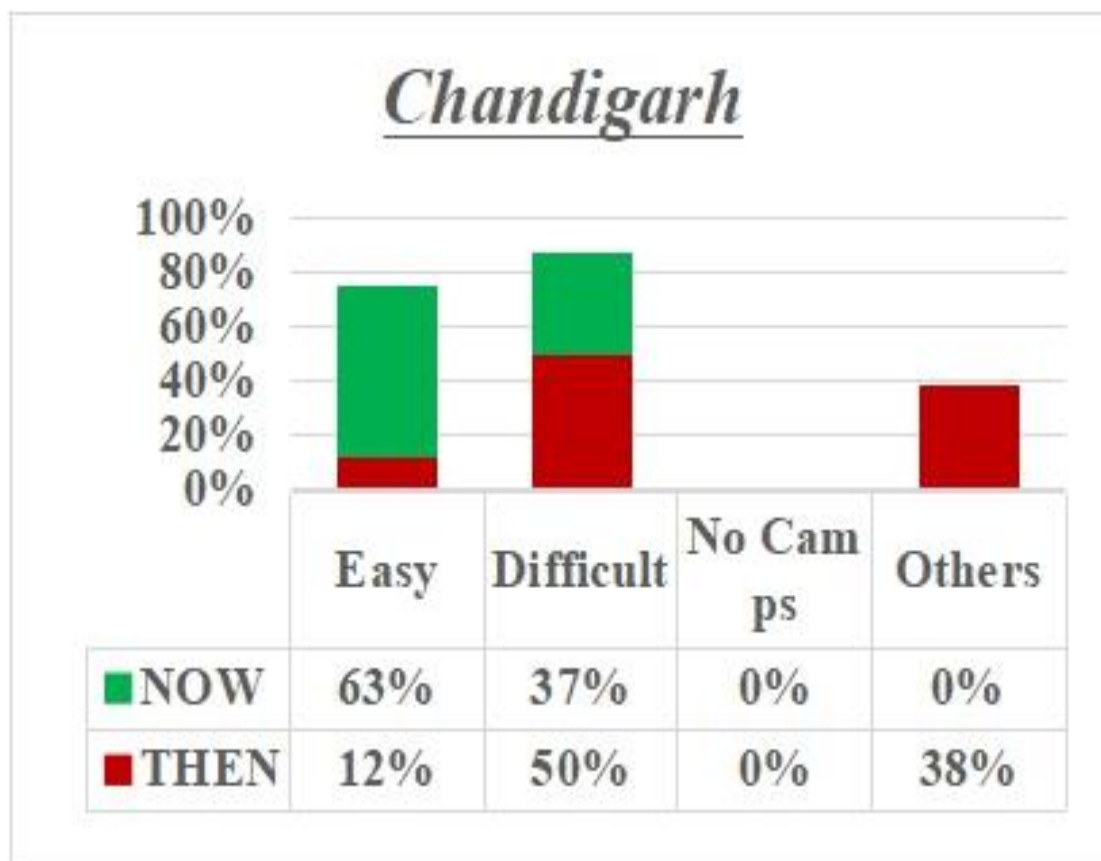
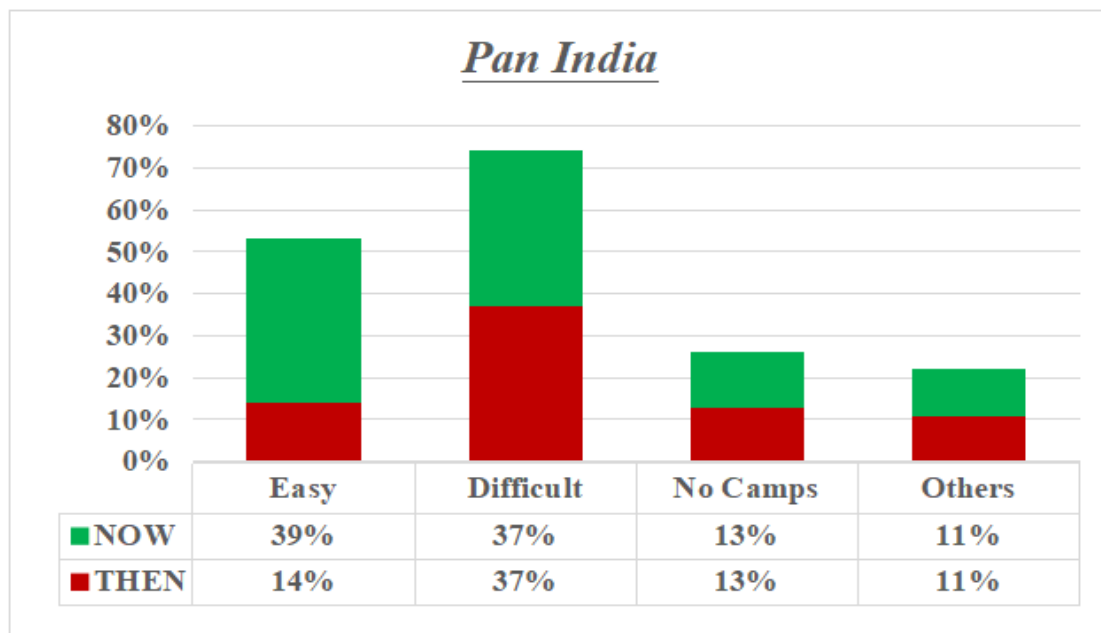
Q.6 SOURCE OF BLOOD COLLECTION



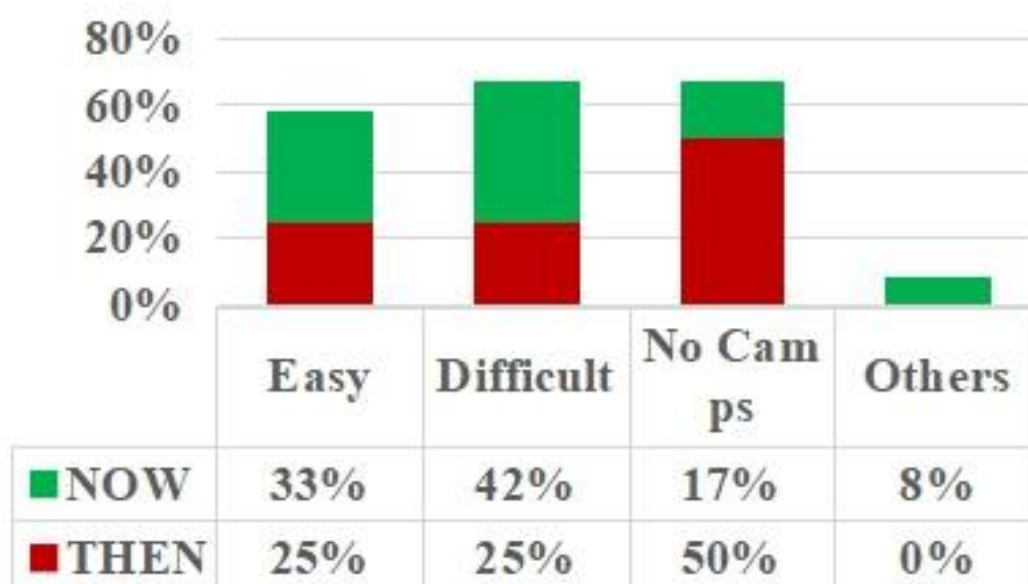


This graph represents the main source of blood collection is through camps i.e 46% which indicates that more awareness, motivation, blood safety have been created among the donors but replacement donors are still in process.

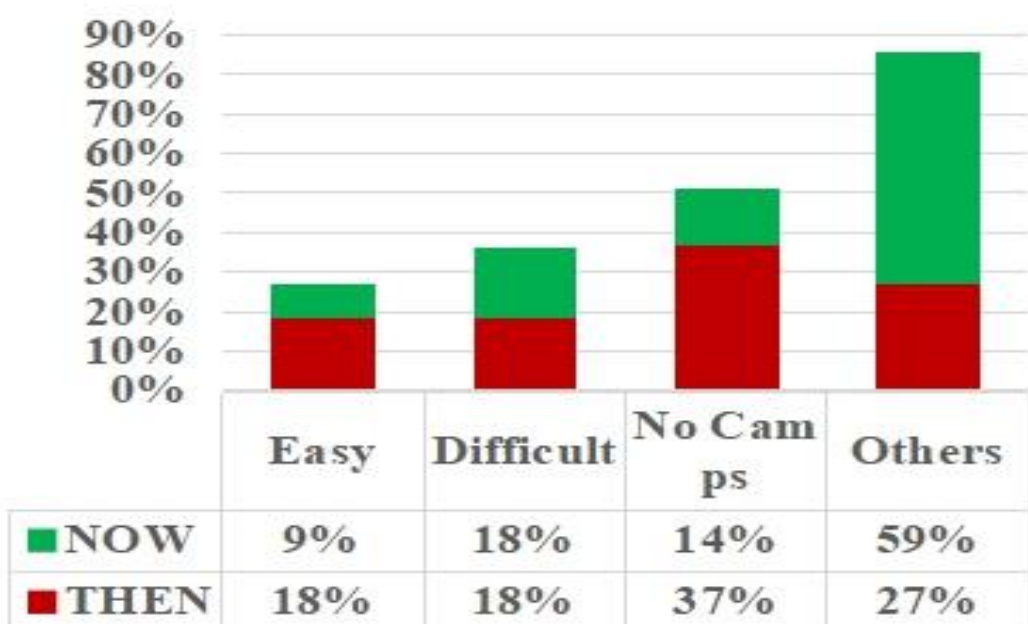
Q.I CONDUCT DRIVES/CAMPS

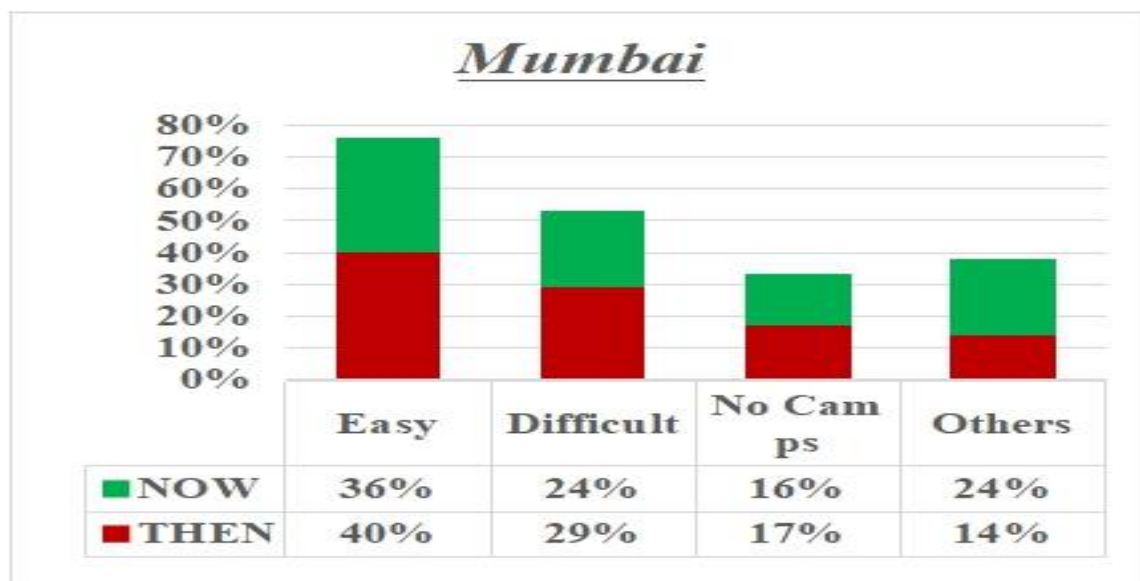


Bengaluru



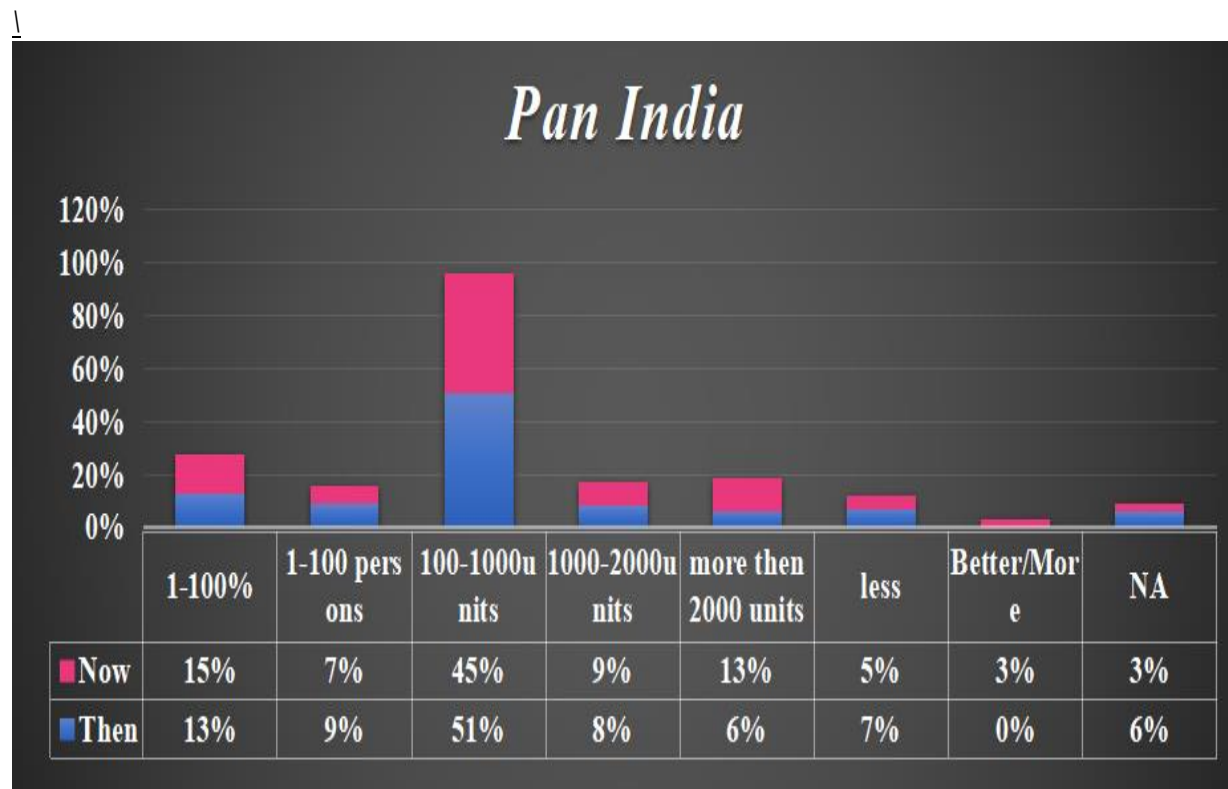
Kolkata



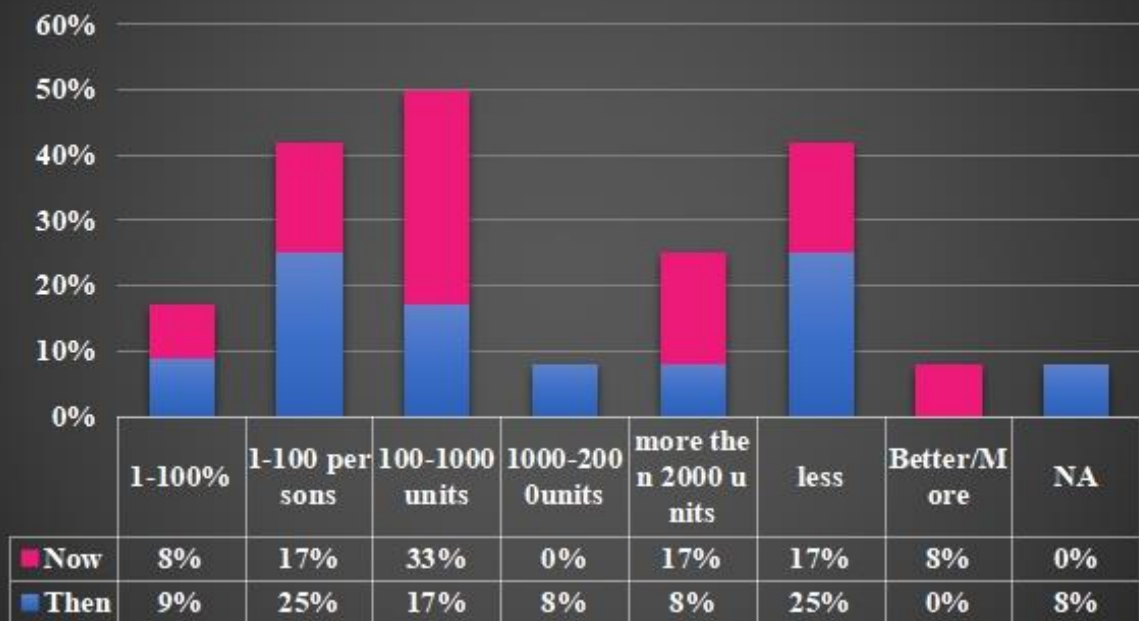


This graph represents conducting camps is become more easier from 14% to 39% but still there is some difficulty due to lack of awareness, motivation and knowledge about the significance of blood donation and safety among the rural areas.

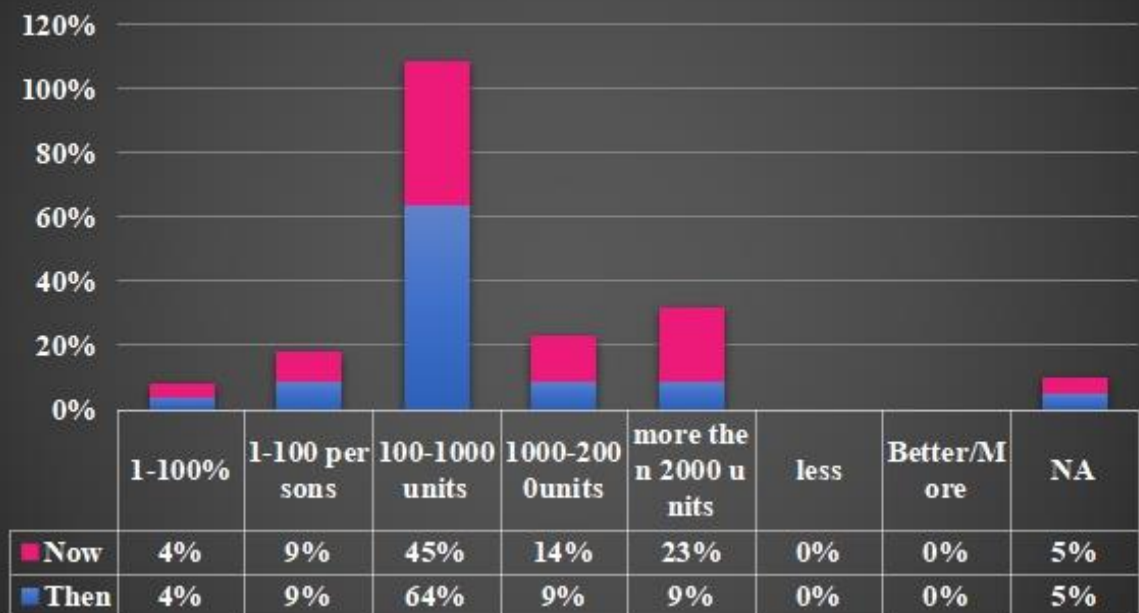
Q.II FREQUENCY OF VOLUNTARY BLOOD COLLECTION

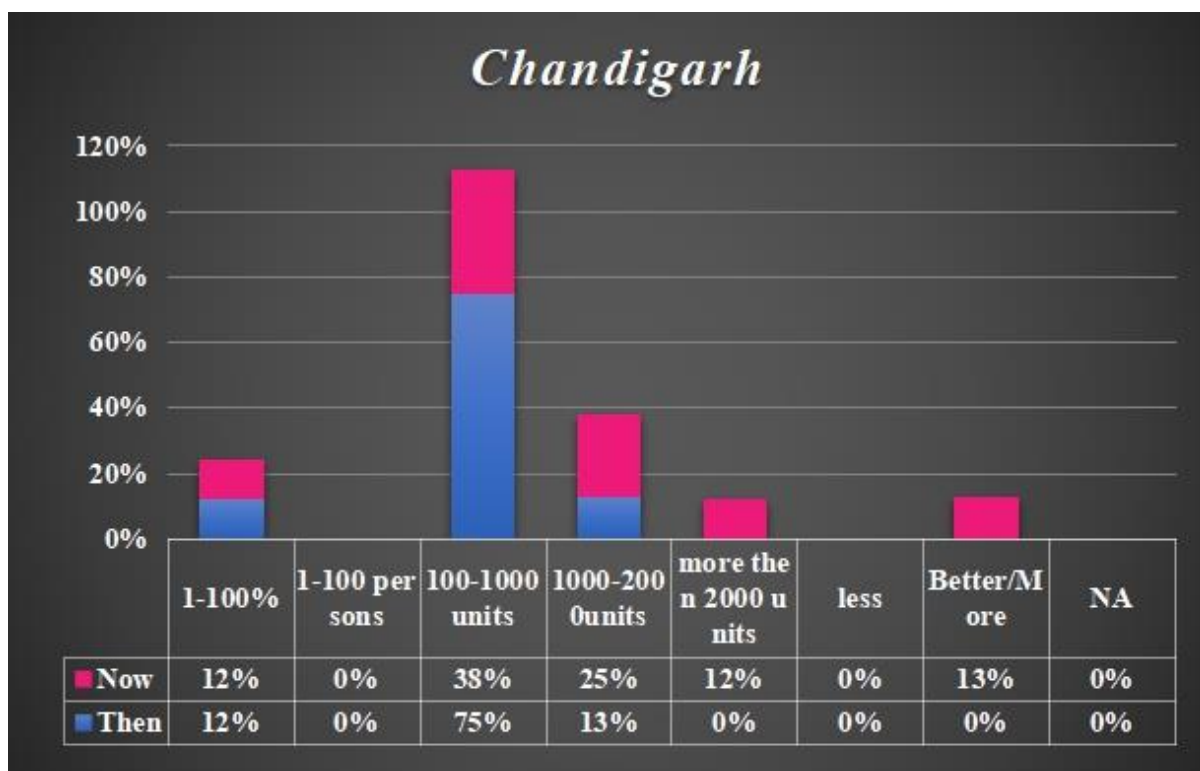
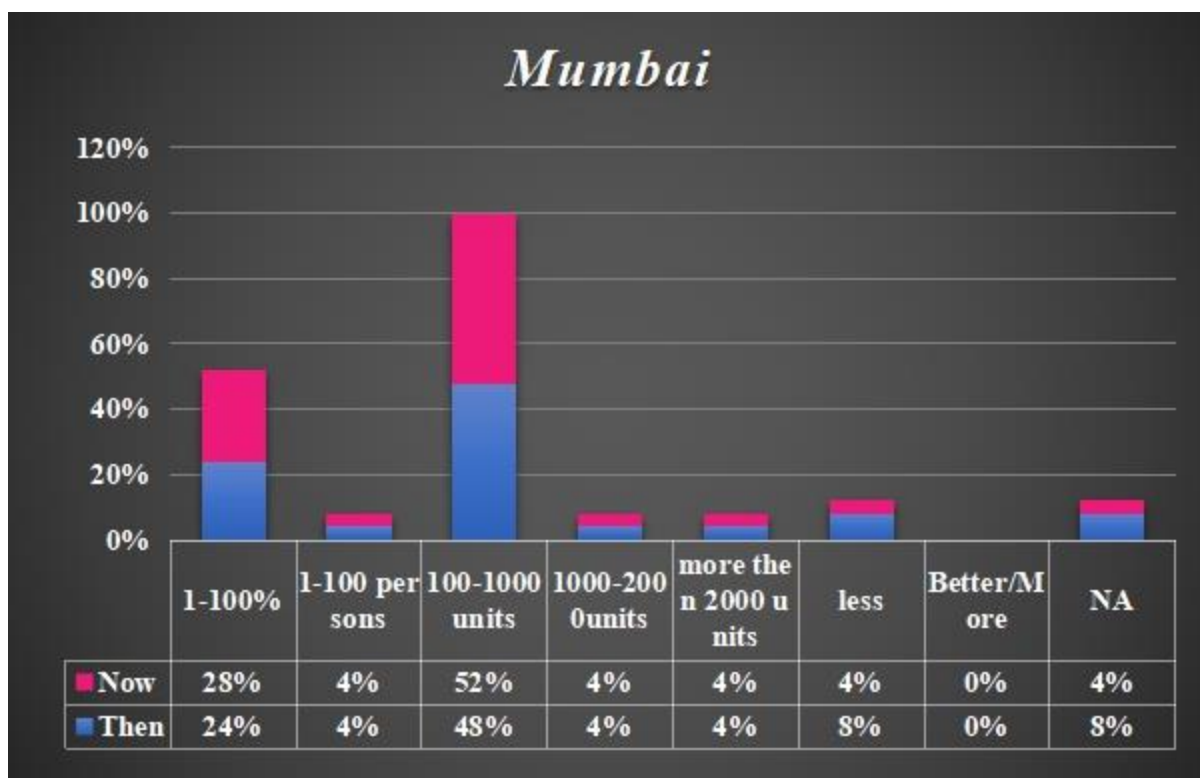


Bengaluru



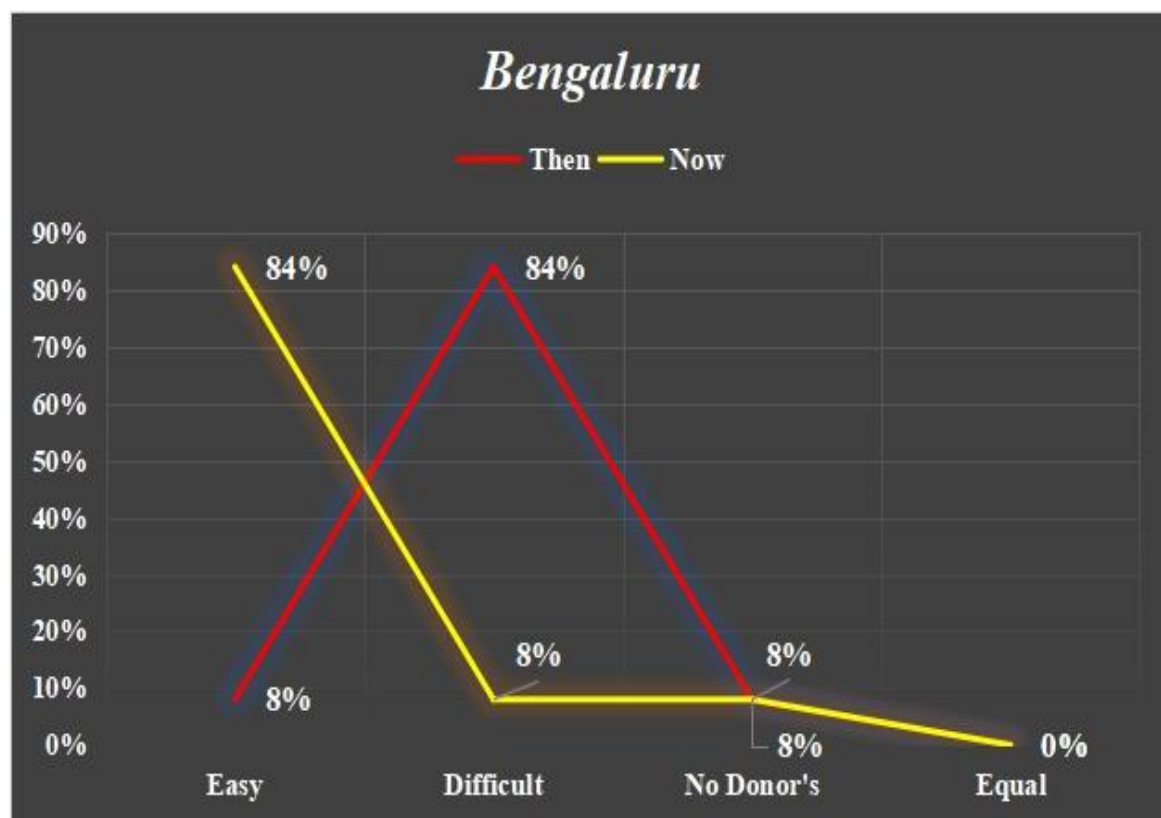
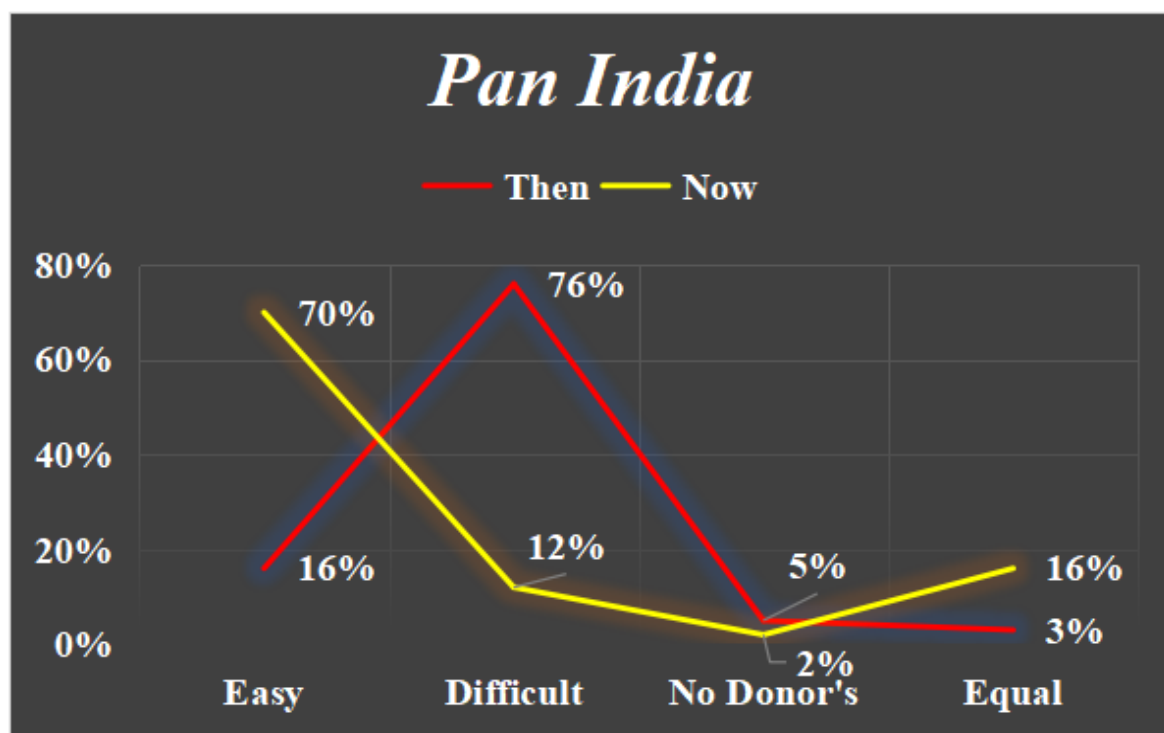
Kolkata

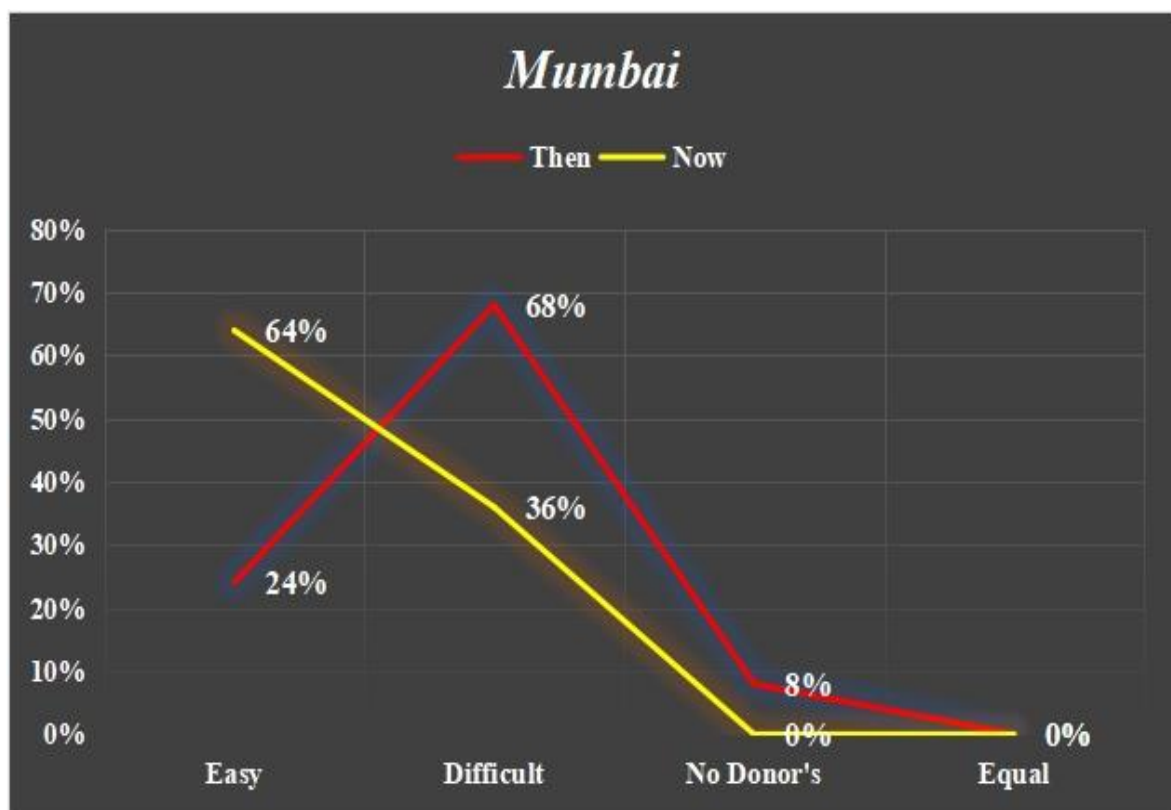
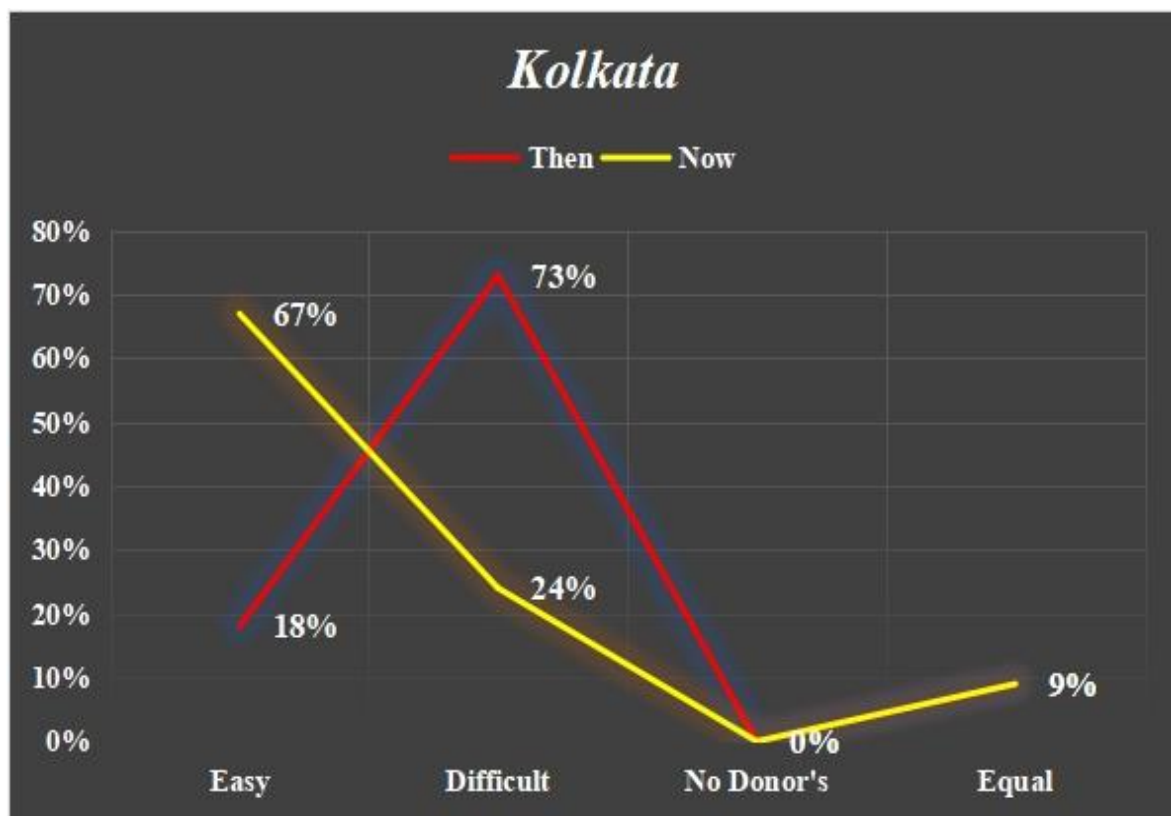


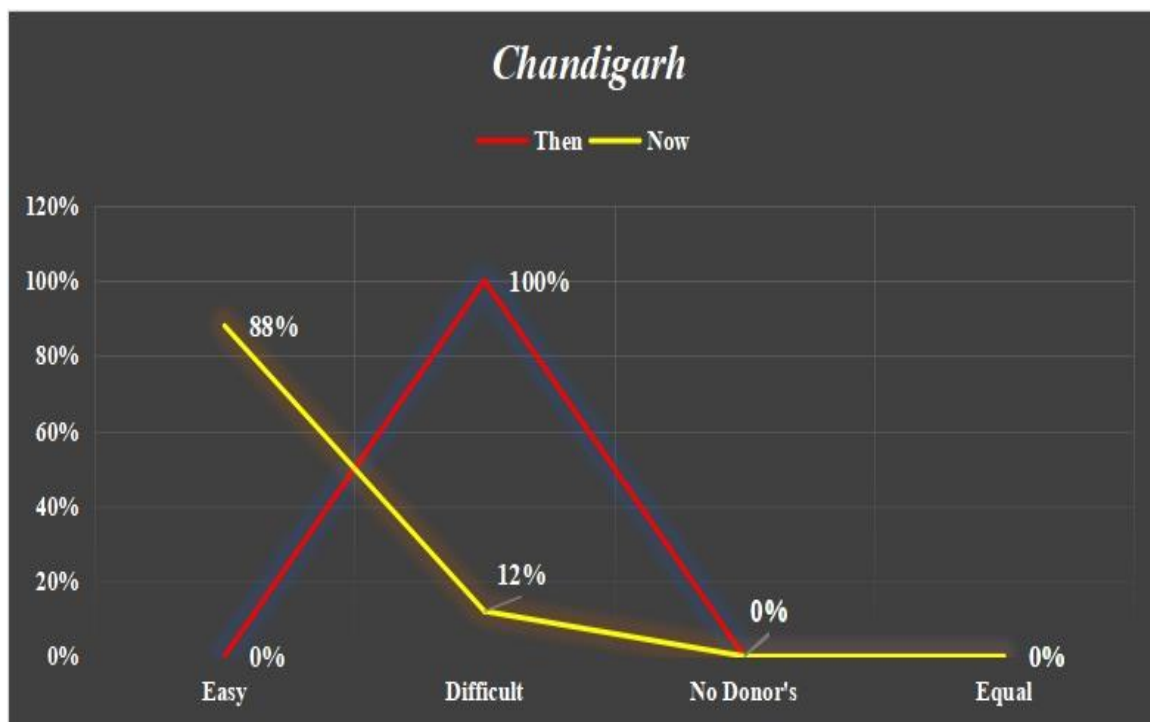


This graph represents the voluntary blood collection ranging from 100 – 1000 units is decreased from 51% to 49% blood bank and this decreased voluntary collection of blood is increased to more than 2000 units.

Q.III AVAILABILITY OF DONOR'S

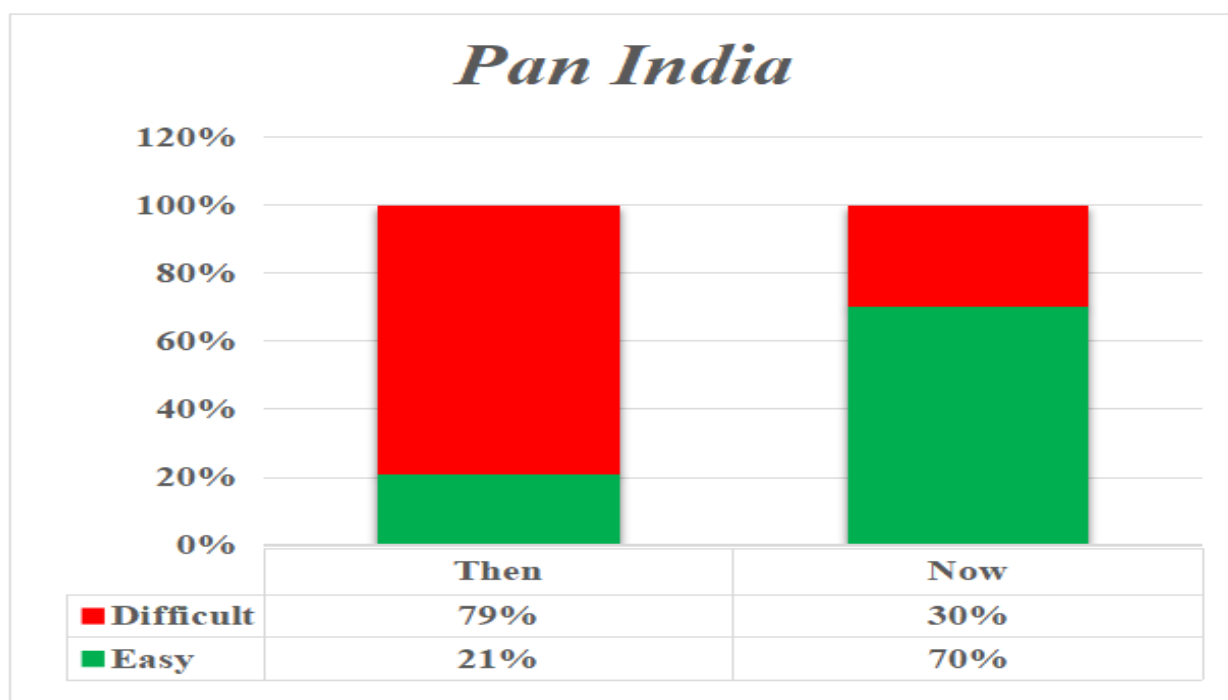




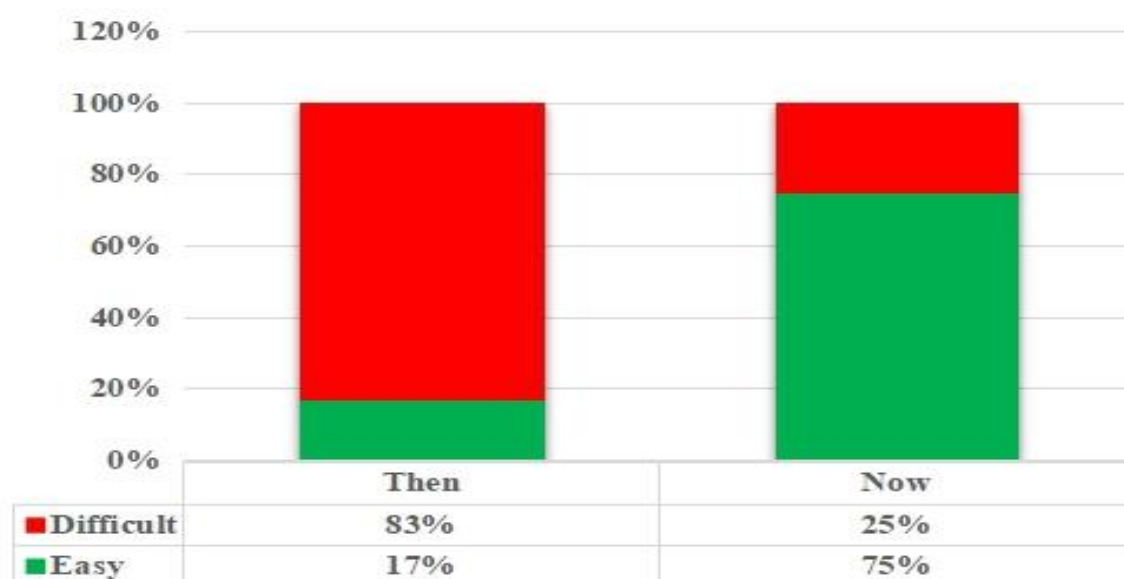


This graph represents the availability of donor's blood is easy as it is increased from 16% to 70% and difficulty is reduced from 76% to 12% which indicates that still few people are scared and not aware about blood donation but some are educated and aware about it.

Q.IV COLLECTION OF BLOOD EASY OR DIFFICULT

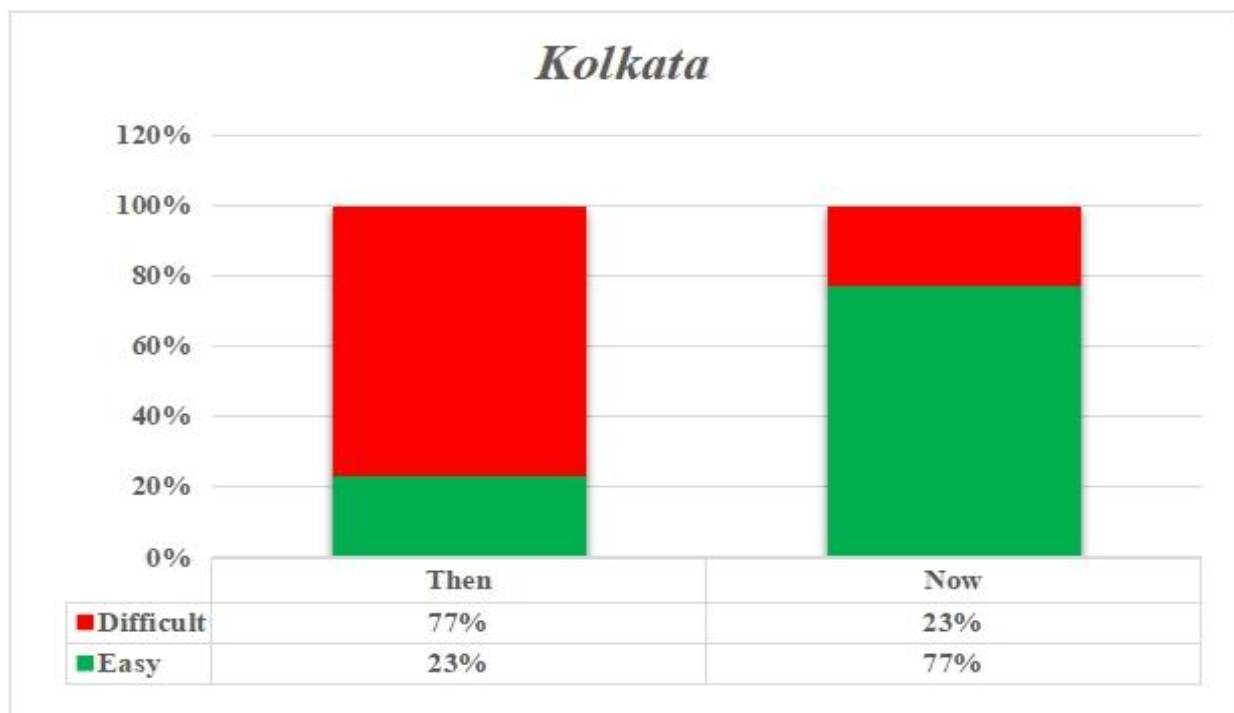
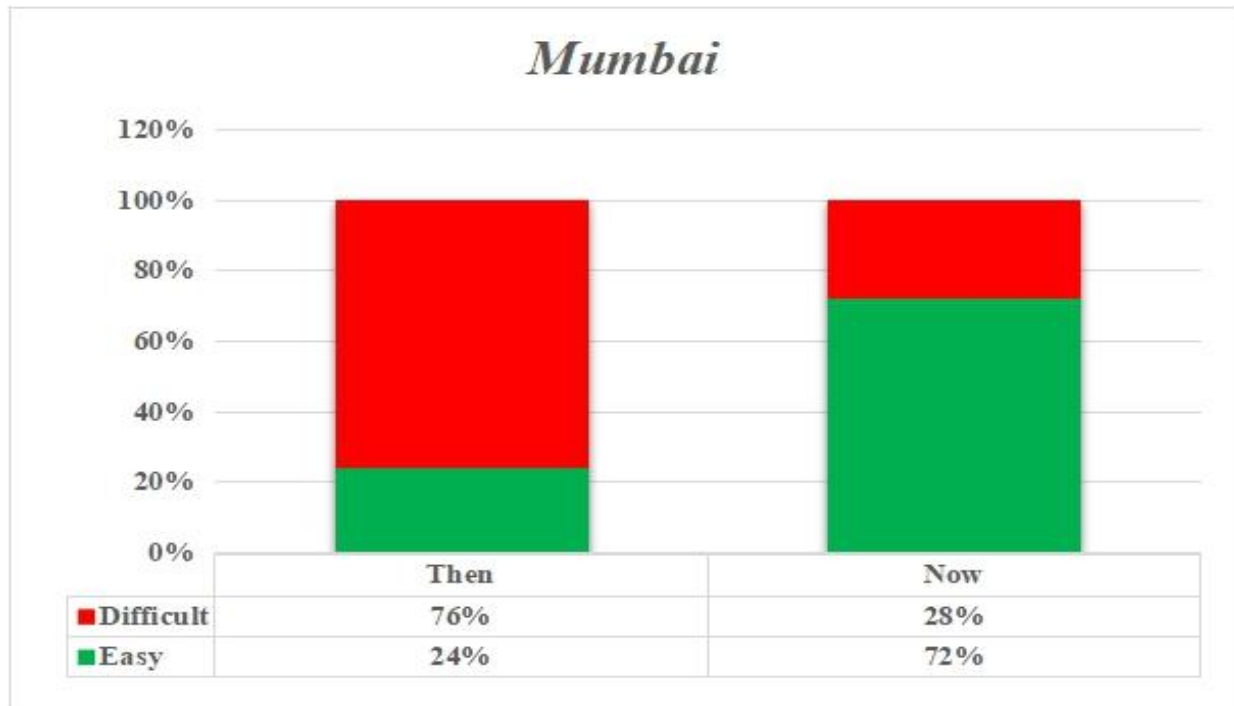


Bengaluru



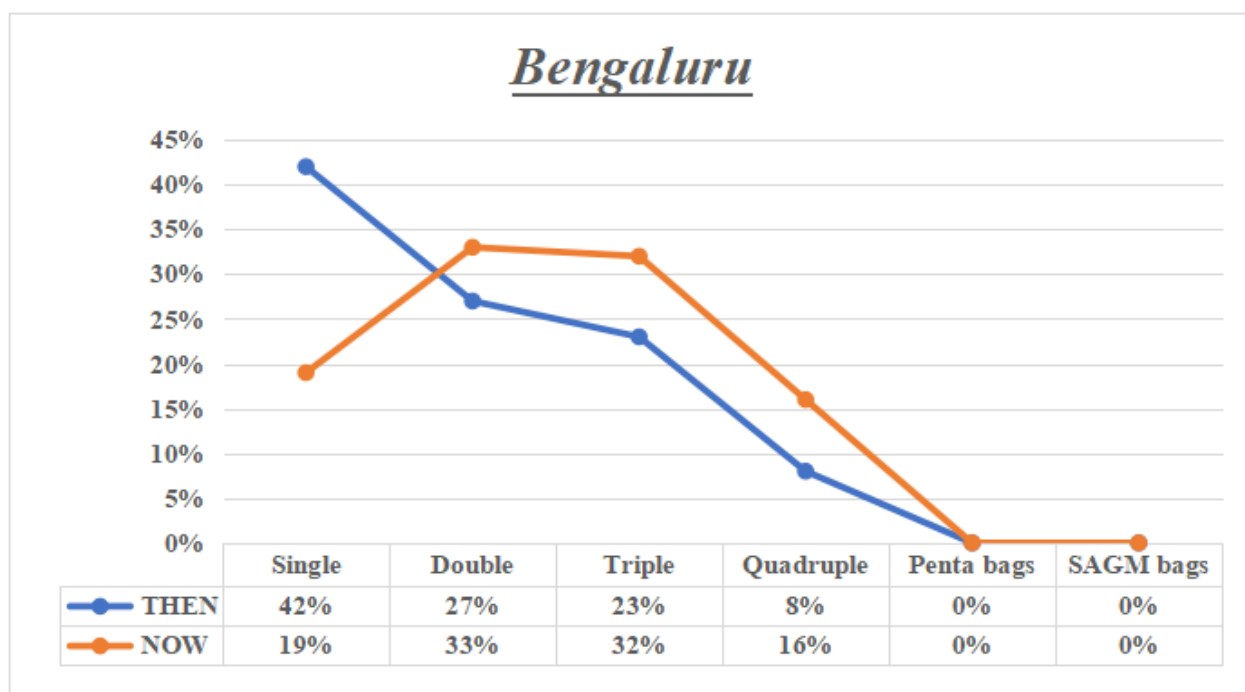
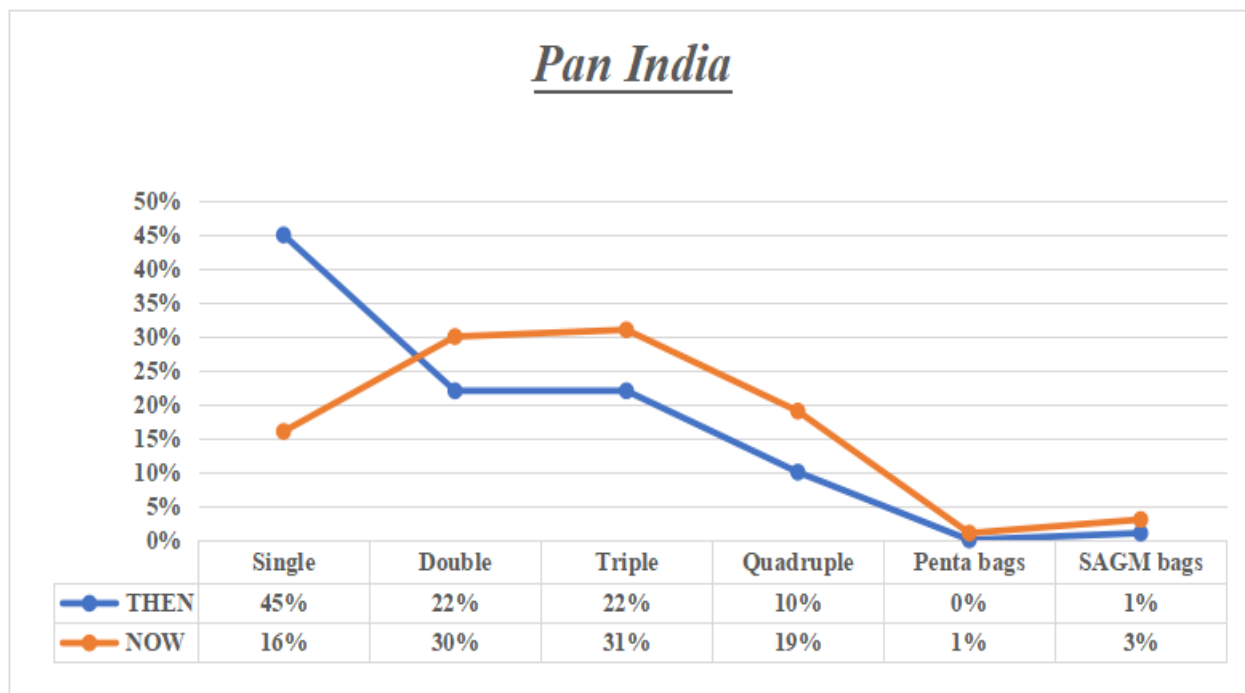
Chandigarh



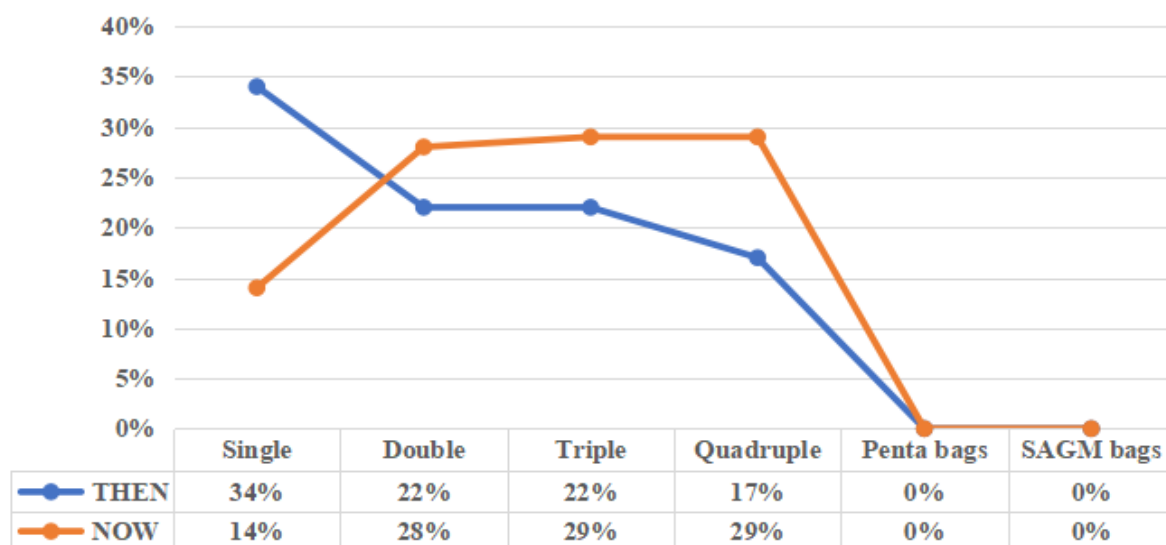


This graph represents the collection of blood is easy as it is increased from 21% to 70% and difficulty is reduced from 79% to 30% due to availability of donor's and developed technologies used.

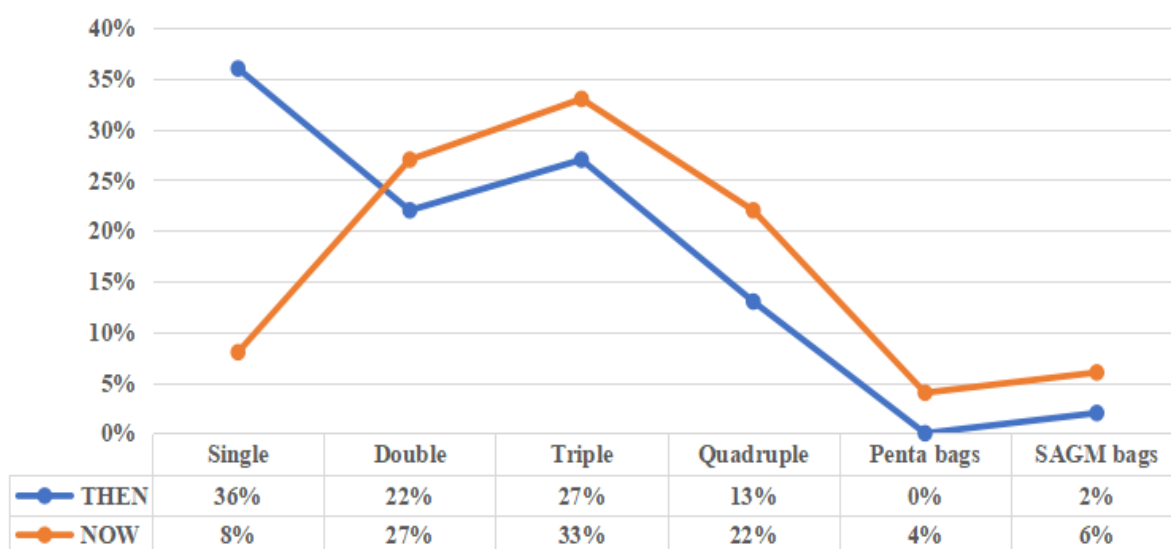
Q.V TYPES OF BLOOD BAGS PREFERRED BY BLOOD BANKS

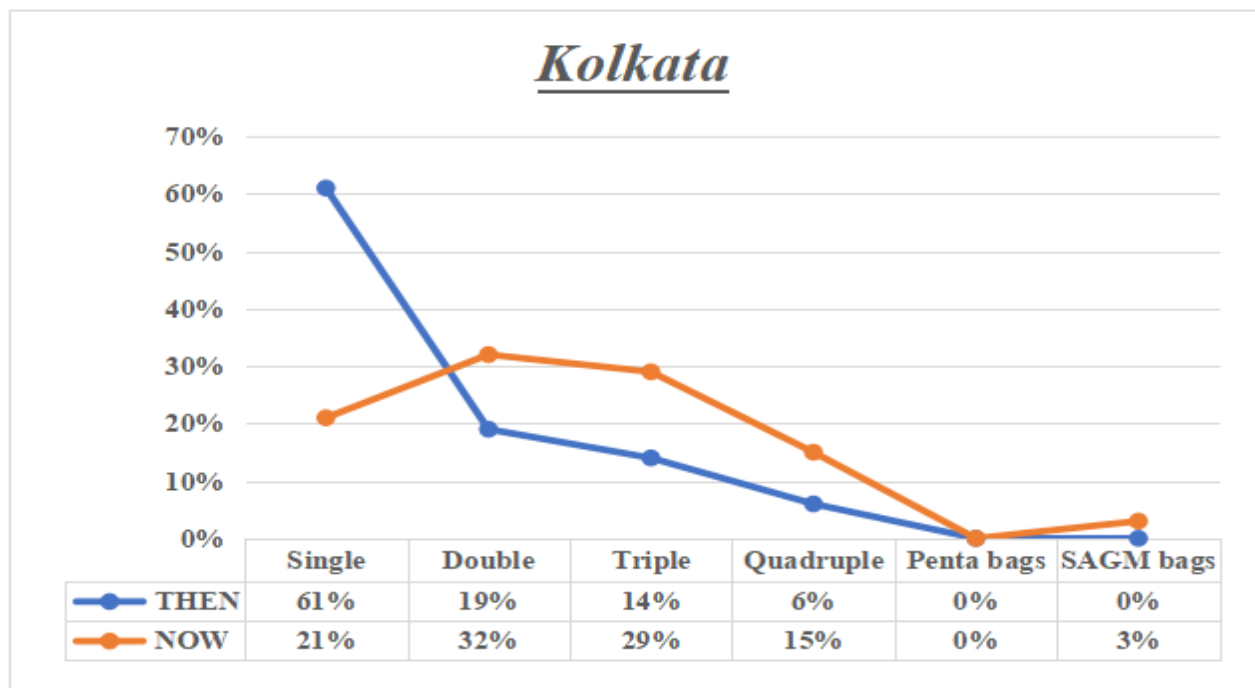


Chandigarh



Mumbai

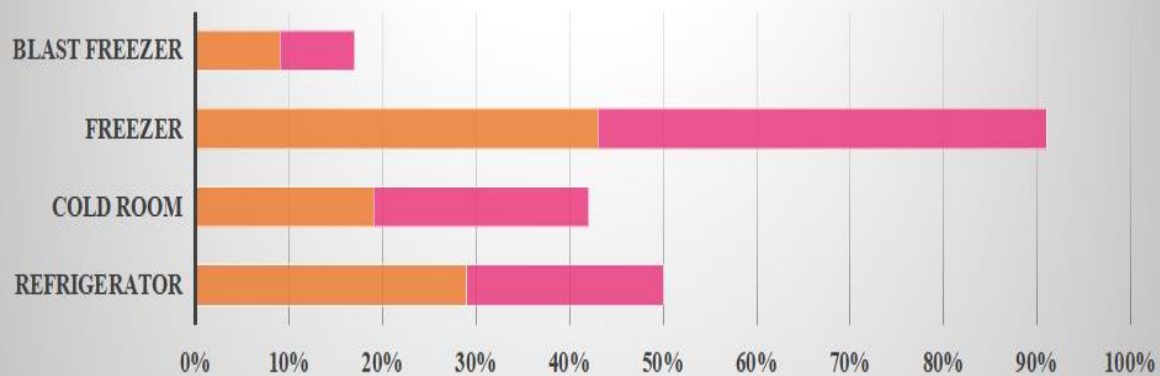




This graph represents the most preferred blood bags by the blood bank are double and triple, which indicates that most of the blood banks have moved from whole blood to componentization and 3% blood banks use SAGM bags which also indicates the most preferred bag as it has increases shelf life of components when compared to normal blood bags.

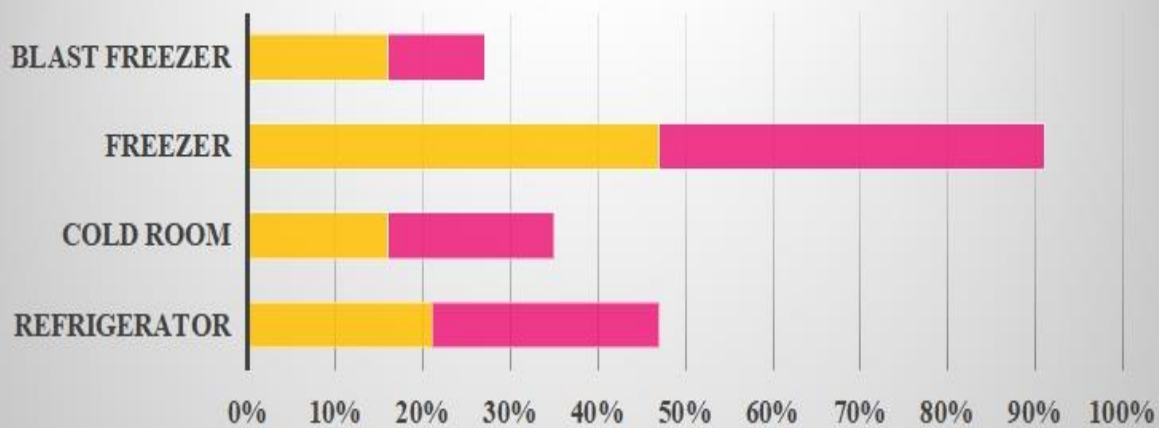
Q.VI METHOD OF STORAGE

Pan India



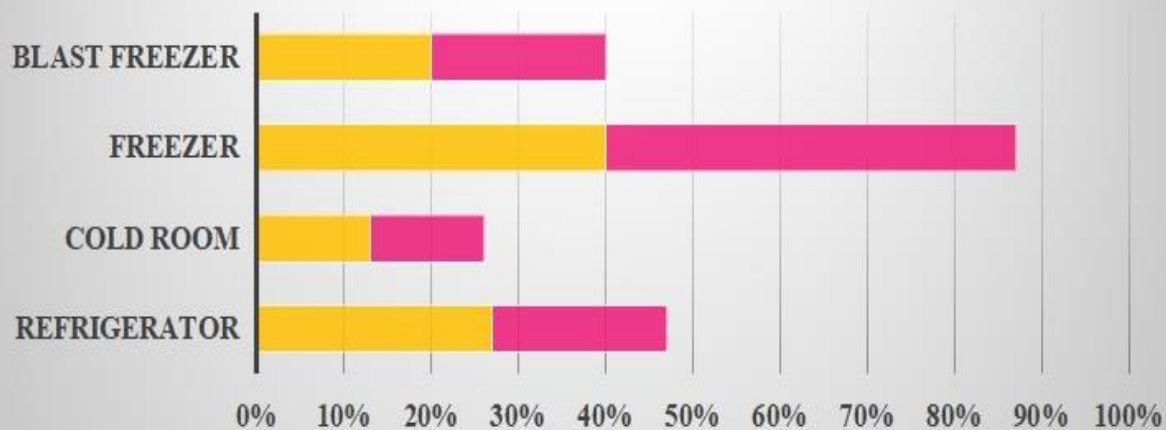
	Refrigerator	Cold Room	Freezer	Blast Freezer
THEN	29%	19%	43%	9%
NOW	21%	23%	48%	8%

Bengaluru



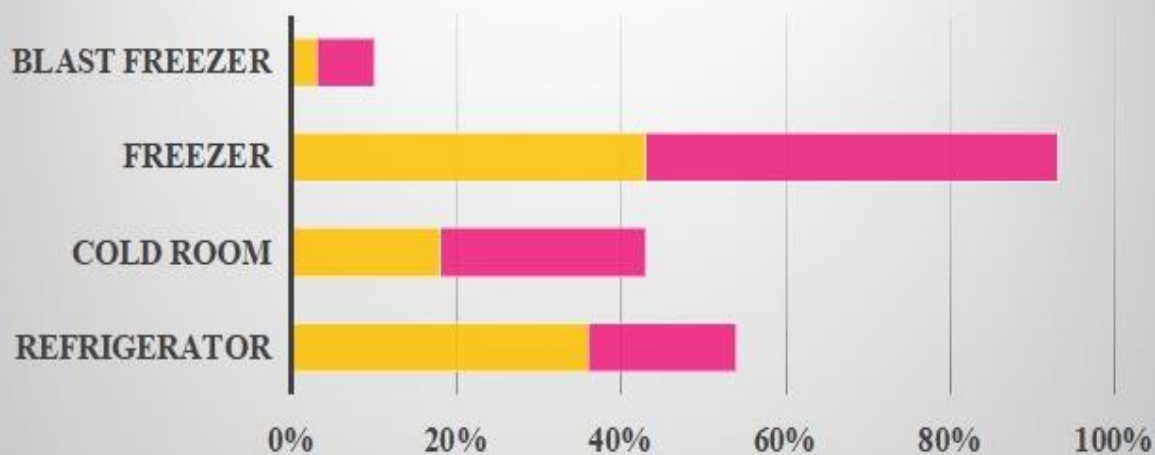
	Refrigerator	Cold Room	Freezer	Blast Freezer
THEN	21%	16%	47%	16%
NOW	26%	19%	44%	11%

Chandigarh

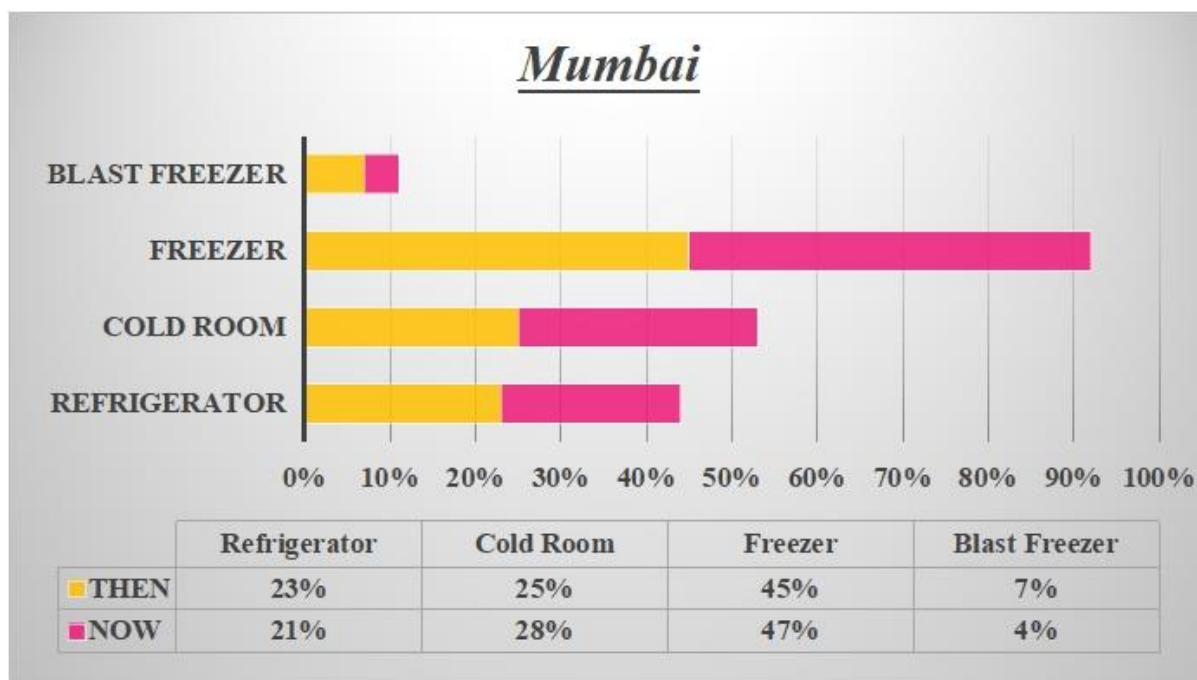


	Refrigerator	Cold Room	Freezer	Blast Freezer
THEN	27%	13%	40%	20%
NOW	20%	13%	47%	20%

Kolkata

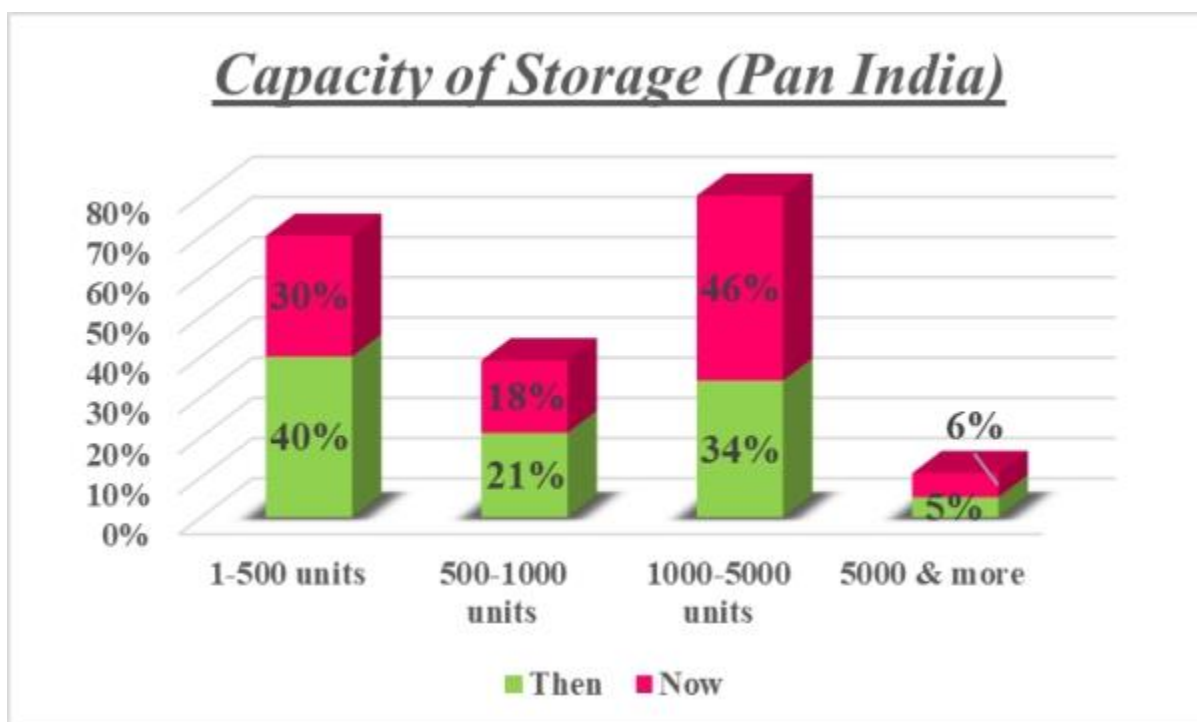


	Refrigerator	Cold Room	Freezer	Blast Freezer
THEN	36%	18%	43%	3%
NOW	18%	25%	50%	7%



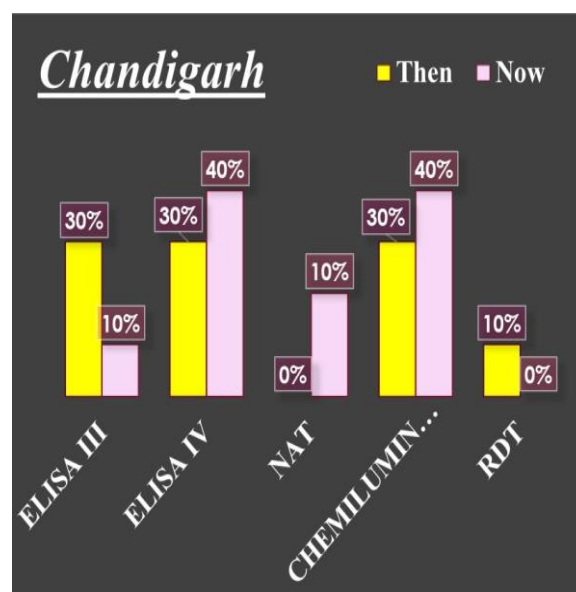
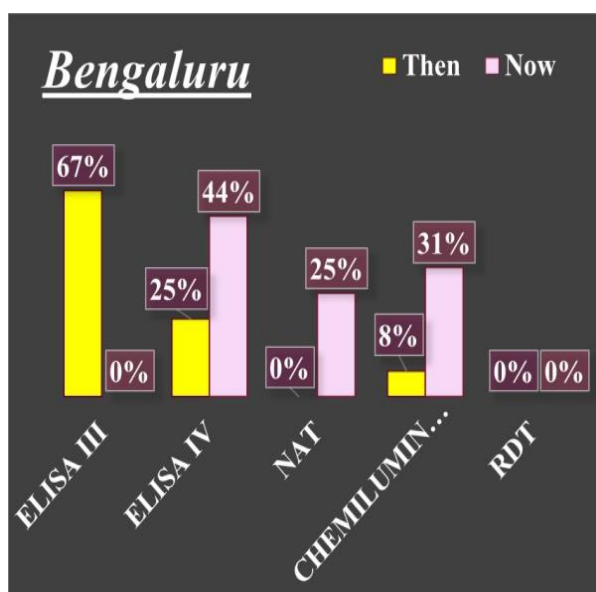
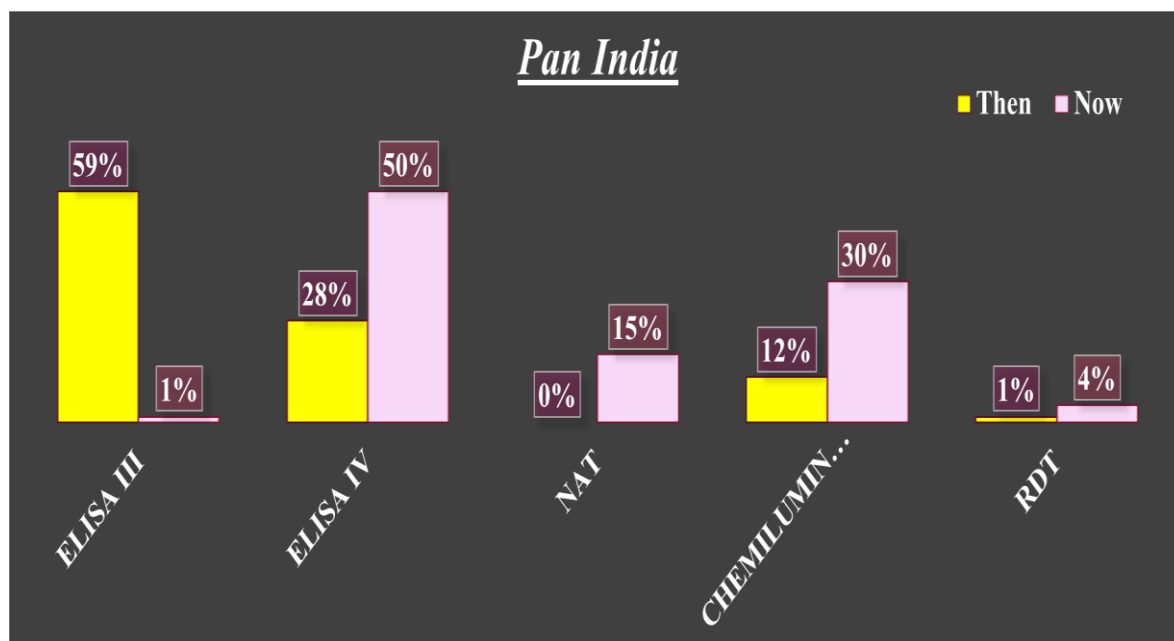
This graph represents that freezer is preferred the most as method of storage by the blood banks but around 8% blood banks still use blast freezer for storage and 23% blood banks have cold room which means these blood banks can be preferred for collection of plasma due to there storage method used.

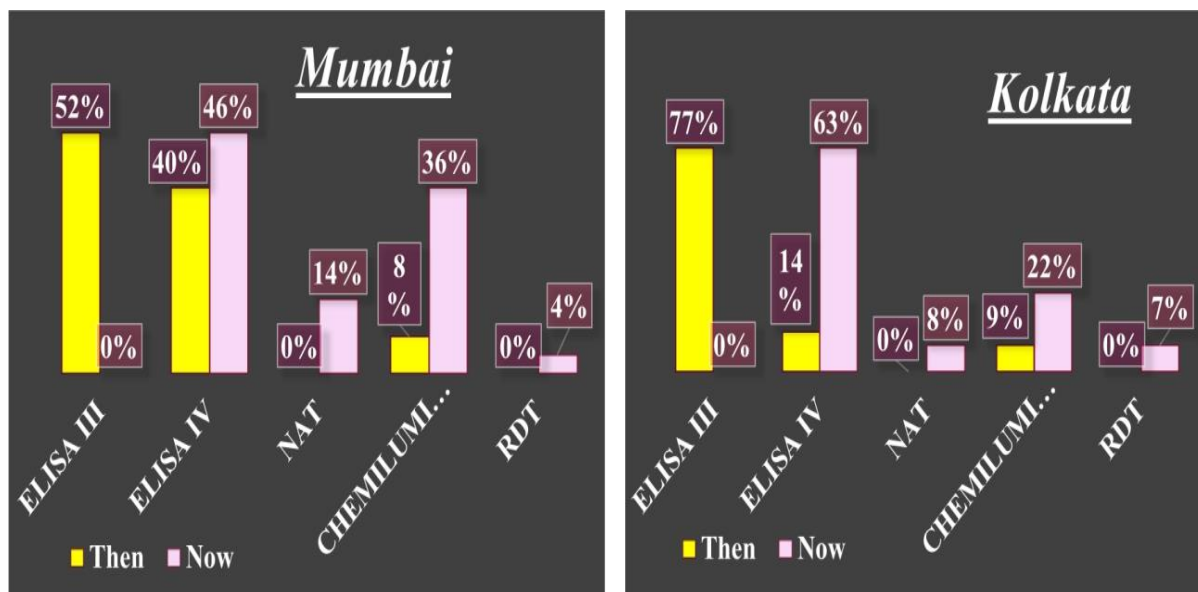
Q.VII CAPACITY OF STORAGE (PAN INDIA)



This graph represents the capacity of storage ranging from 1000 – 5000 units is increased from 34% to 46% and around 6% blood bank have 5000 and more capacity of storage which indicates that these blood banks can be preferred for collection of plasma as there capacity of storage is more so availability of plasma will be more.

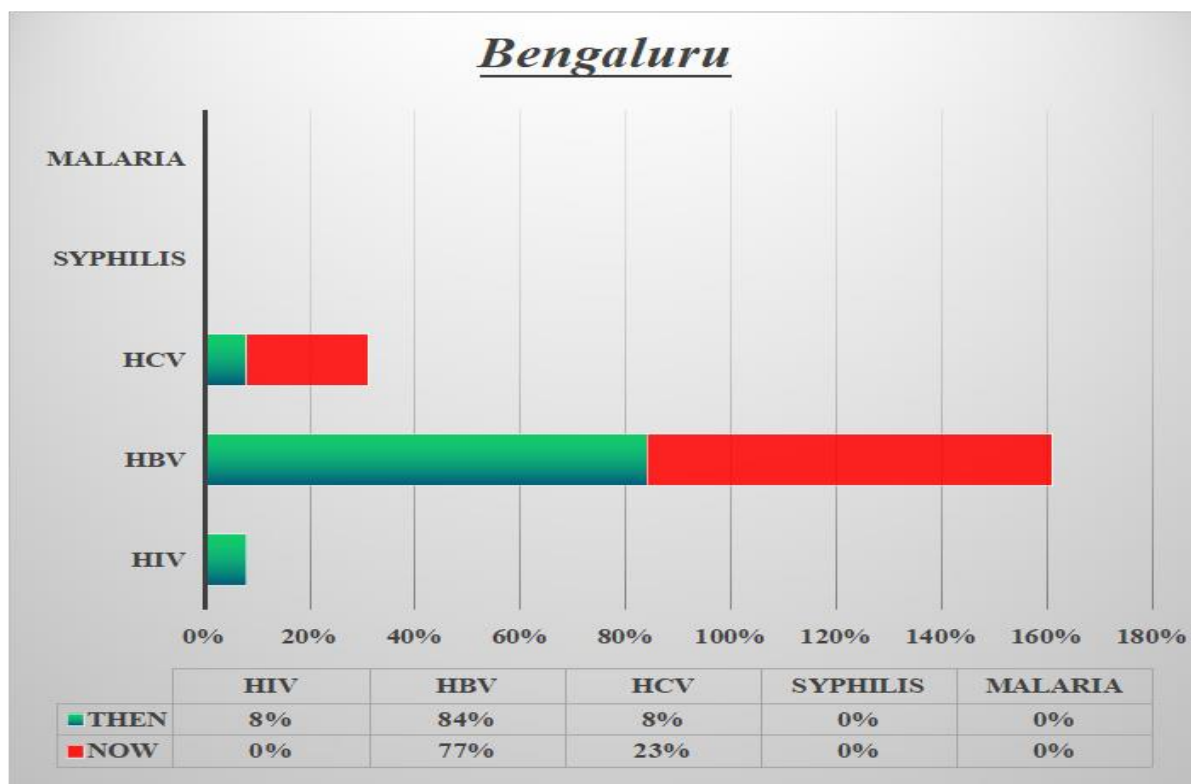
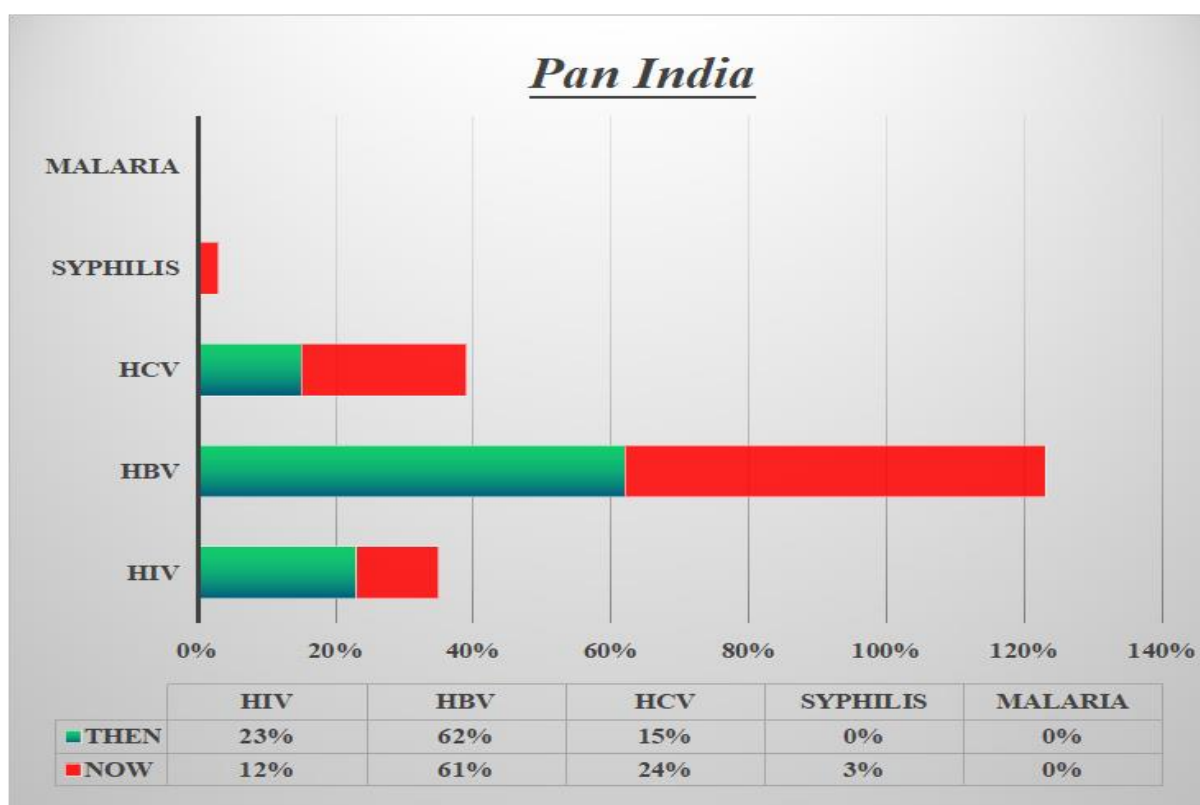
Q.VIII PREFERRED SCREENING PROTOCOL



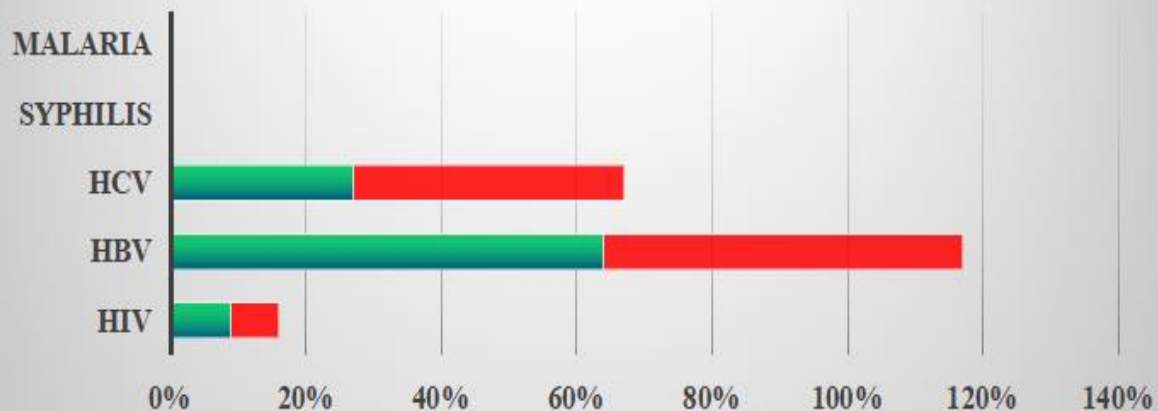


This graph represents that 50% of the blood banks prefer ELISA IV as a screening protocol, 30% blood bank prefer Chemiluminescence and 15% blood bank prefer NAT. This indicates that these blood banks can be preferred for collection of plasma which will produce safety and quality of the plasma due to the screening protocol followed by them.

Q.IX INFECTIONS ENCOUNTERED BY BLOOD BANKS

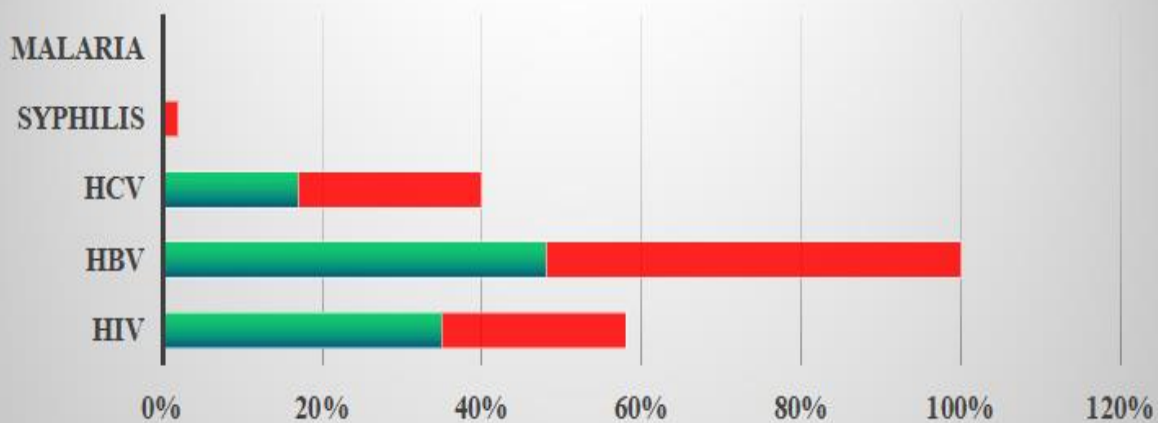


Chandigarh

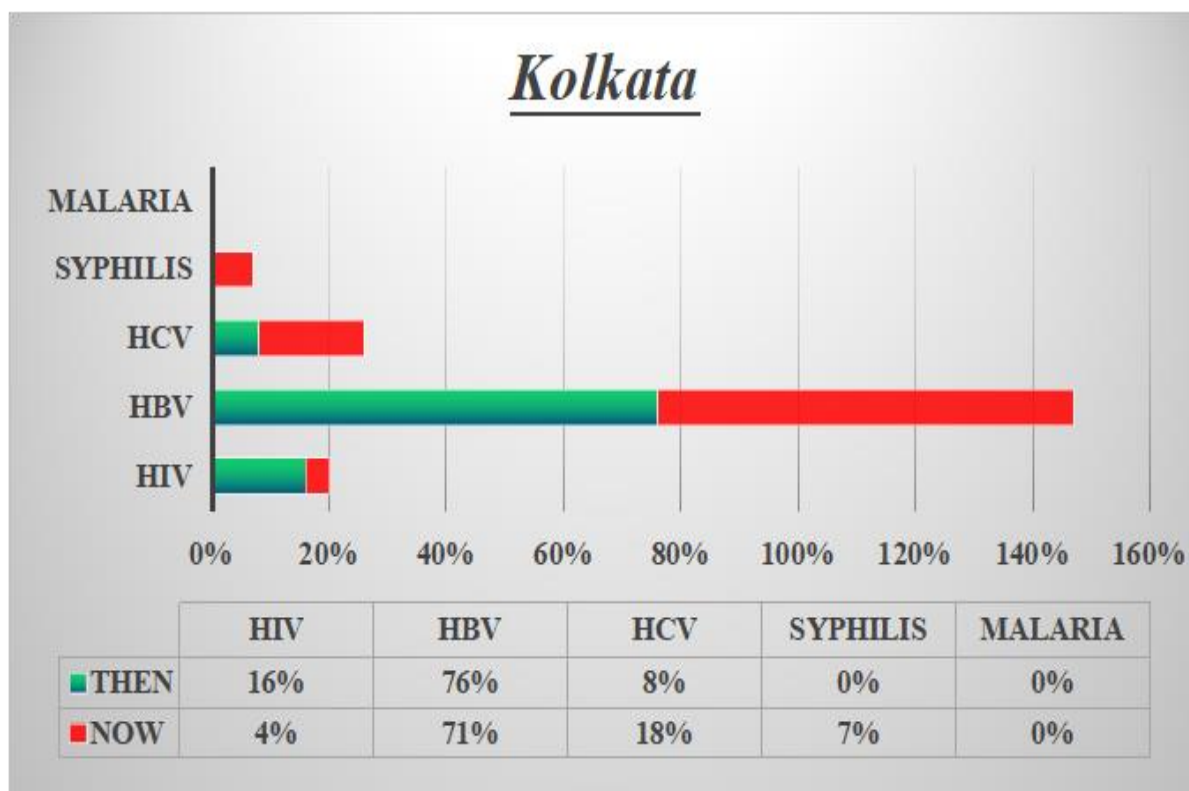


	HIV	HBV	HCV	SYPHILIS	MALARIA
THEN	9%	64%	27%	0%	0%
NOW	7%	53%	40%	0%	0%

Mumbai

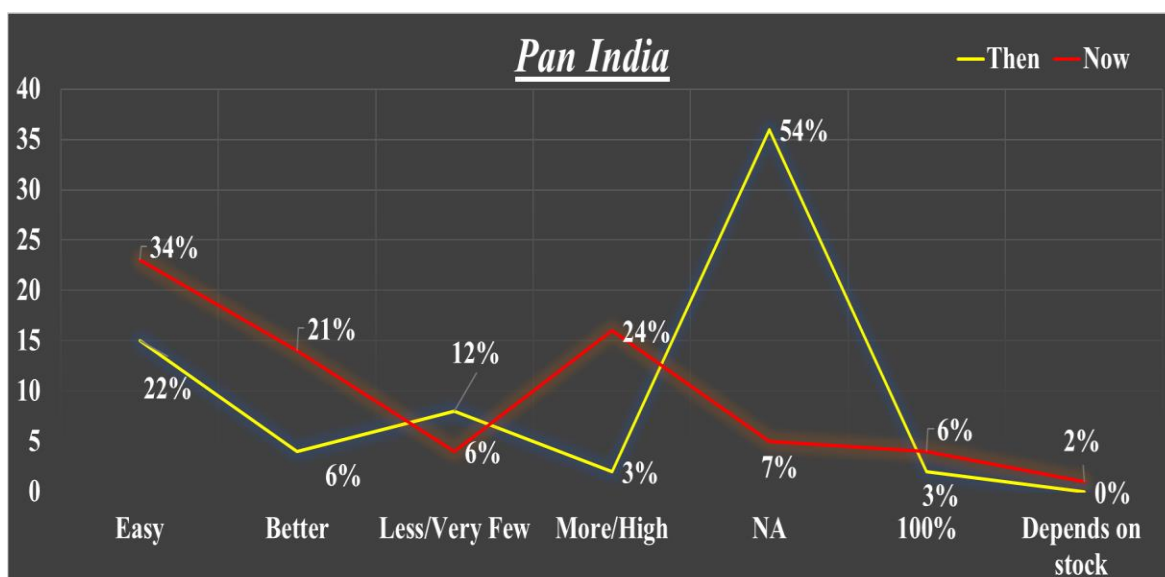


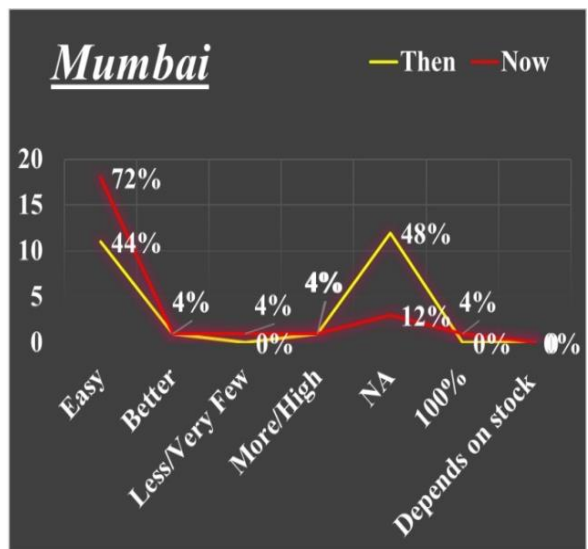
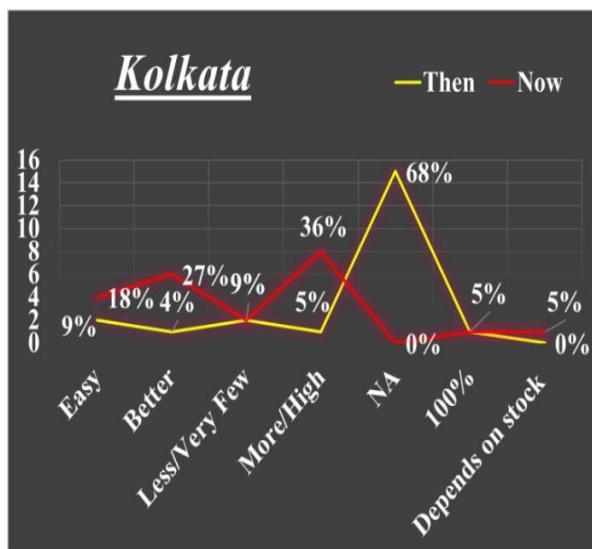
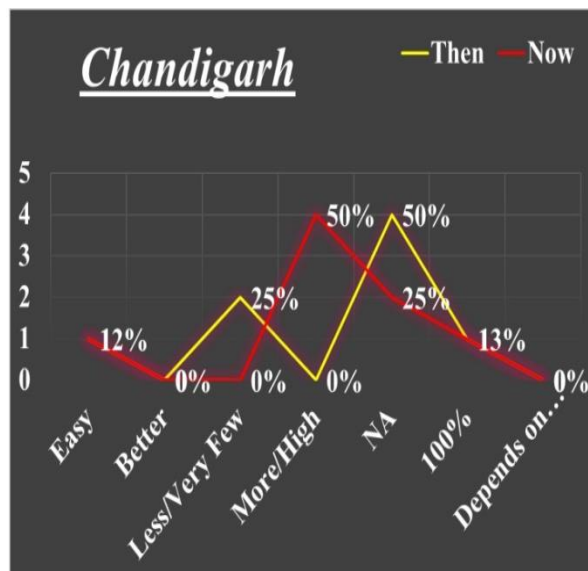
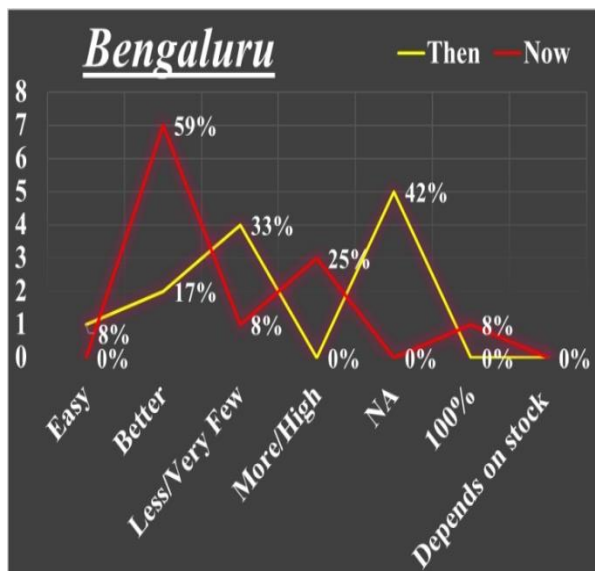
	HIV	HBV	HCV	SYPHILIS	MALARIA
THEN	35%	48%	17%	0%	0%
NOW	23%	52%	23%	2%	0%



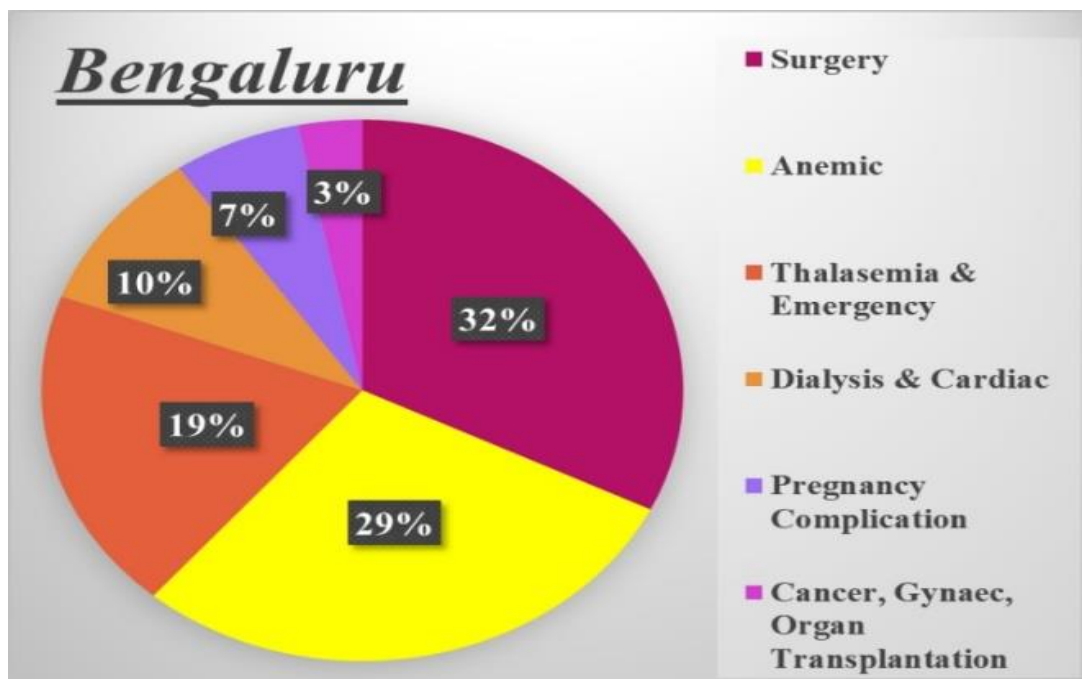
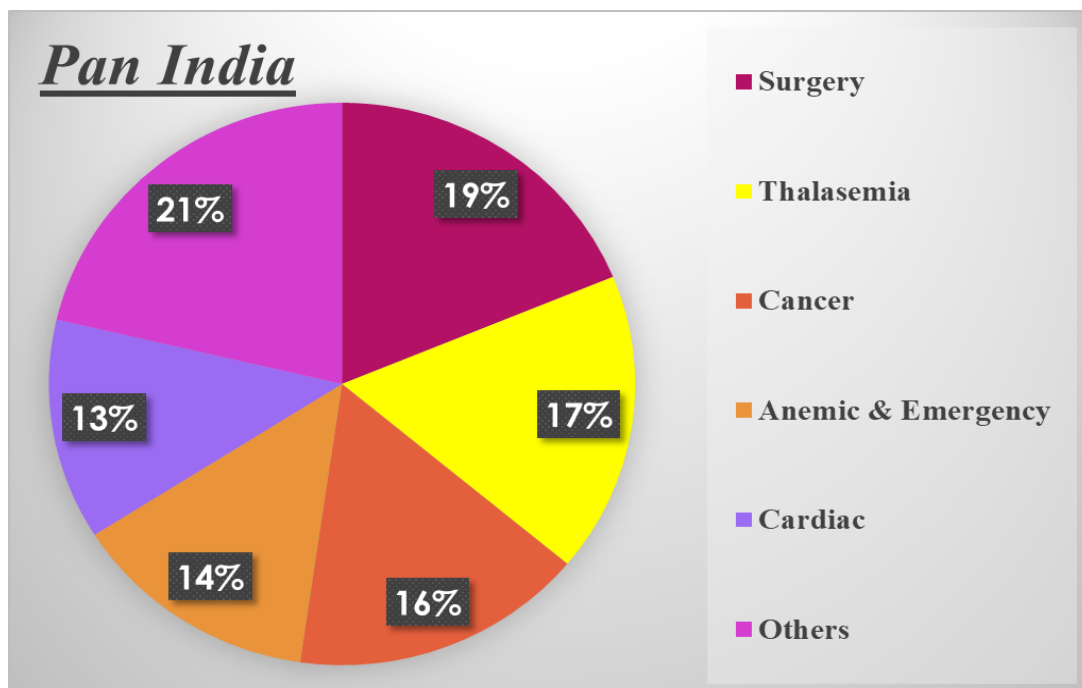
This graph represents that around 61% of blood banks have encountered HBV infection which indicates that this infection is detected the most, but the HIV infection is reduced from 23% to 12% that means the awareness is increased regarding the criteria for donation and very few around 3% blood banks have encountered Syphilis in Kolkata and Mumbai only.

Q.X AVAILABILITY OF BLOOD COMPONENTS TO PATIENTS

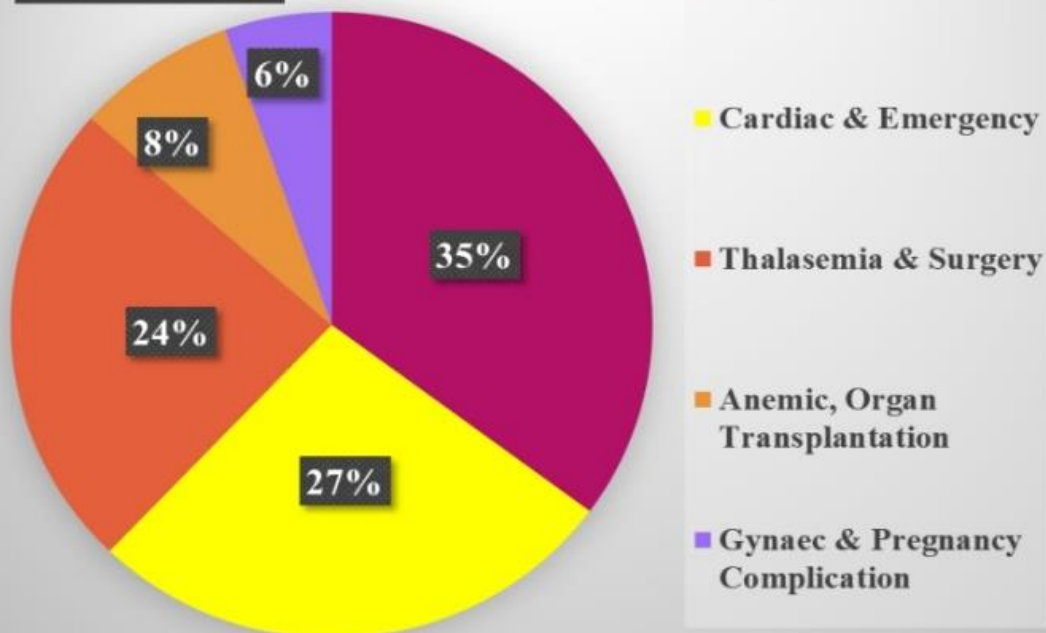




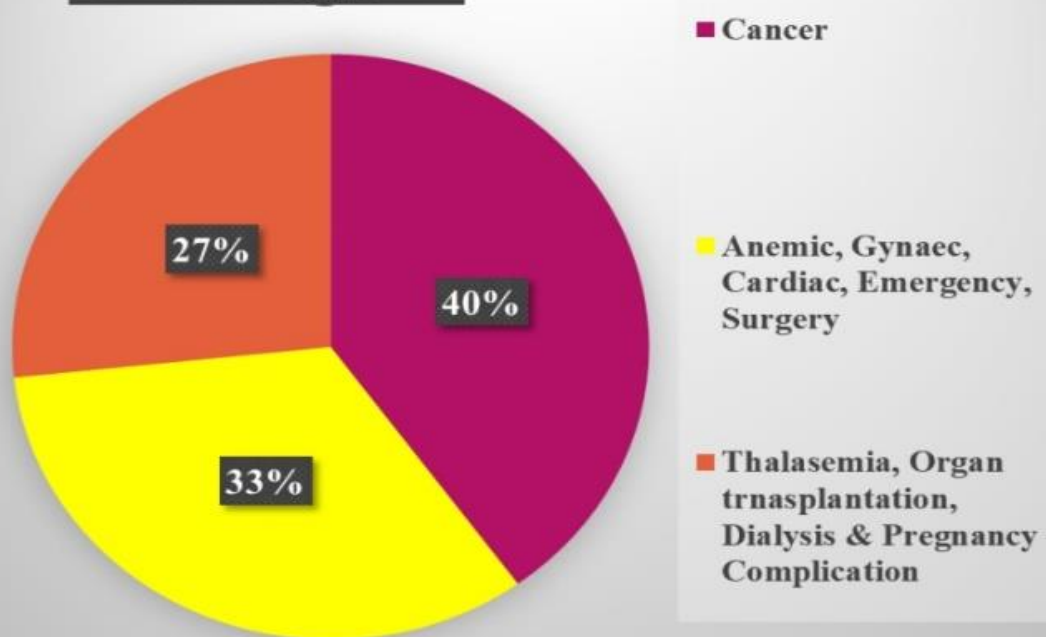
This graph represents the availability of blood components to patients by the blood bank, non – availability is reduced from 54% to 7% which indicates that these blood bank have moved from whole blood to componentization, whereas, 34% blood bank said its easily available and 24% blood bank said highly available.

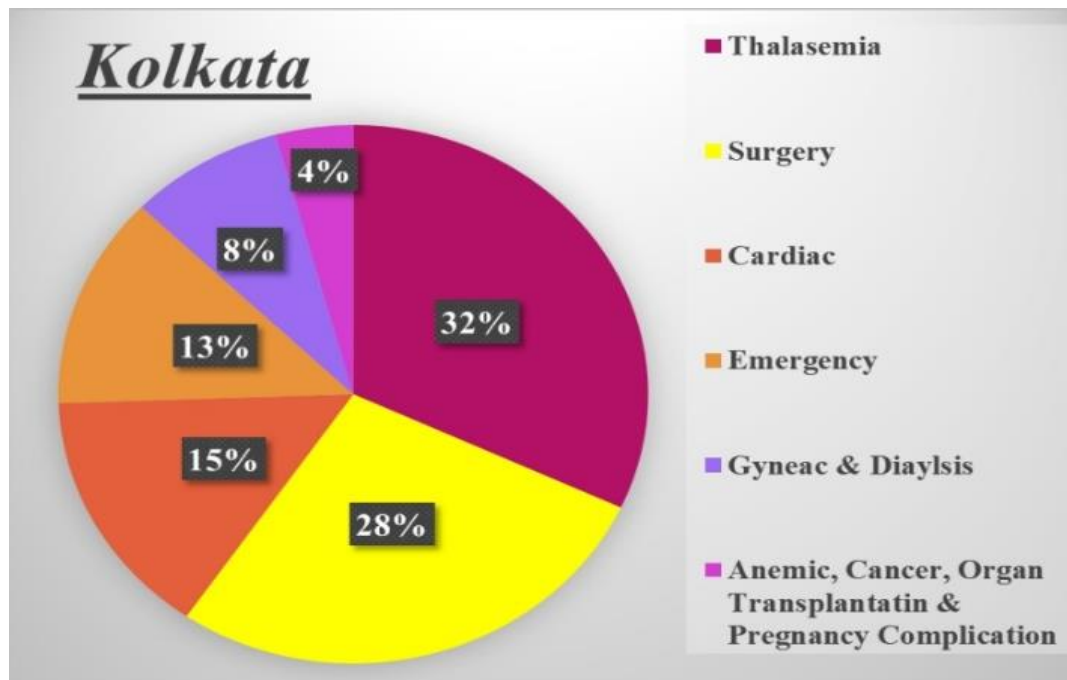
Q.7 UTILIZATION OF WHOLE BLOOD/ITS COMPONENTS

Mumbai



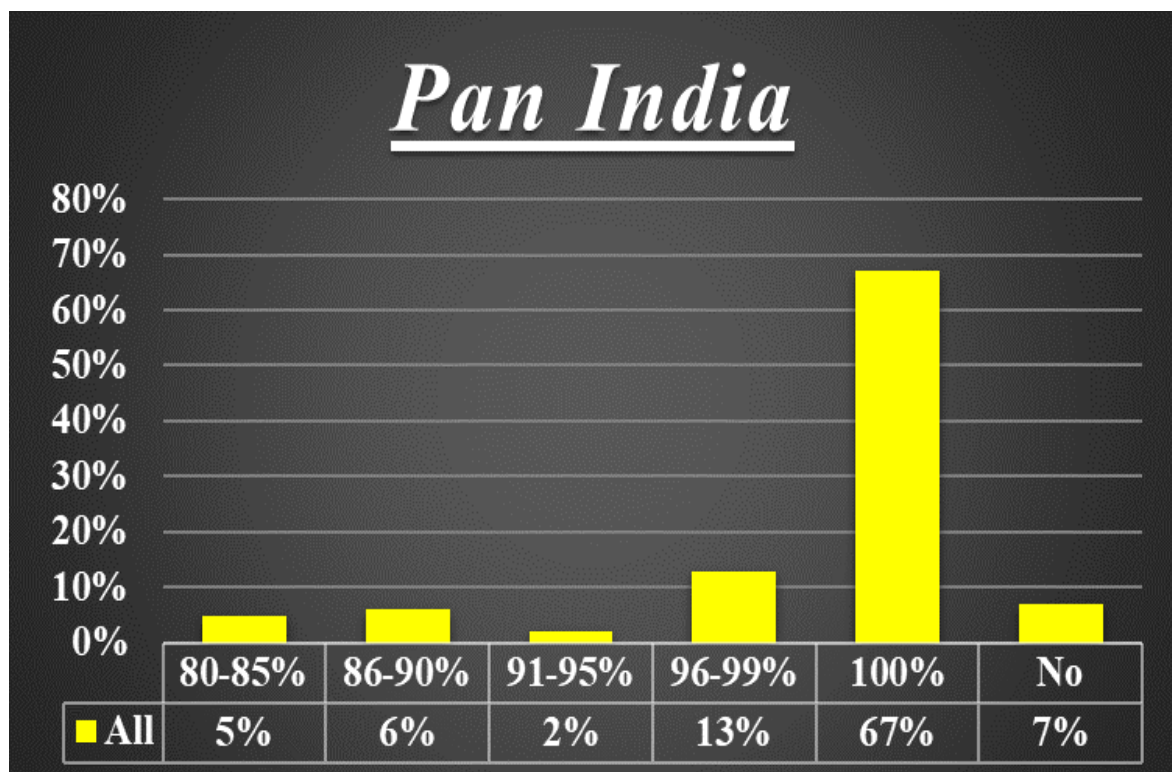
Chandigarh



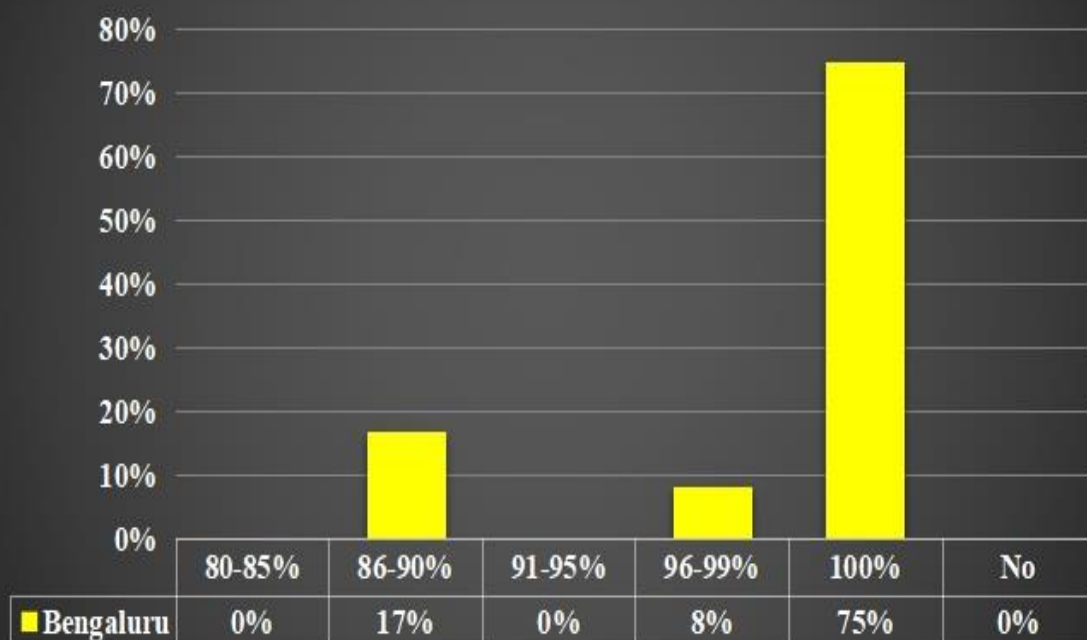


This graph represents the maximum utilization of blood and its components by the patients is in Surgery 19%, Thalassemia 17%, Cancer 16%, Anemic and Emergency 14%, Cardiac 13% which indicates that these patients may require blood anytime, anywhere therefore, blood donation should be increased to save lives on time.

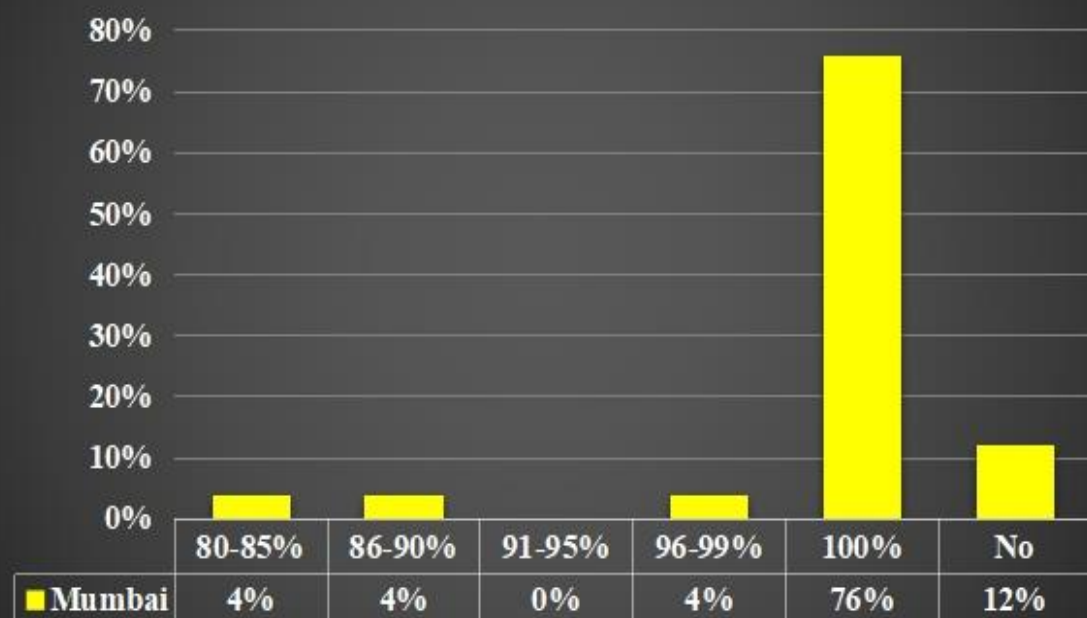
Q. 8. NO. OF BLOOD BANK DOING COMPONENTIZATION OF BLOOD

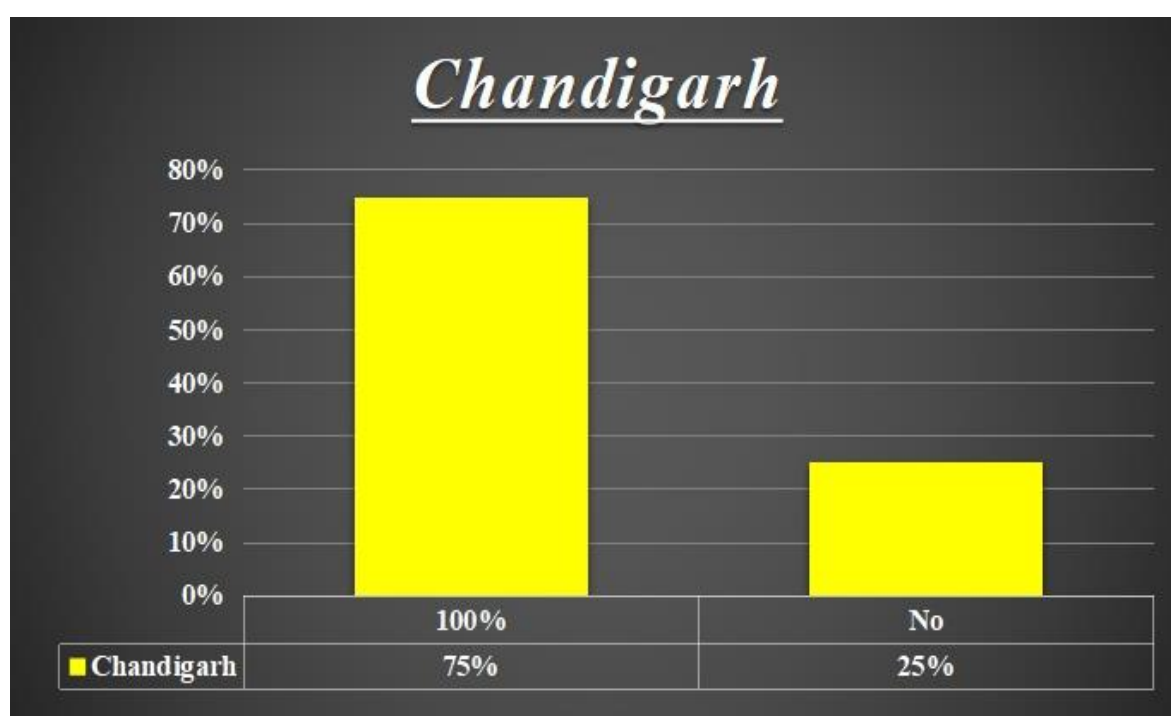
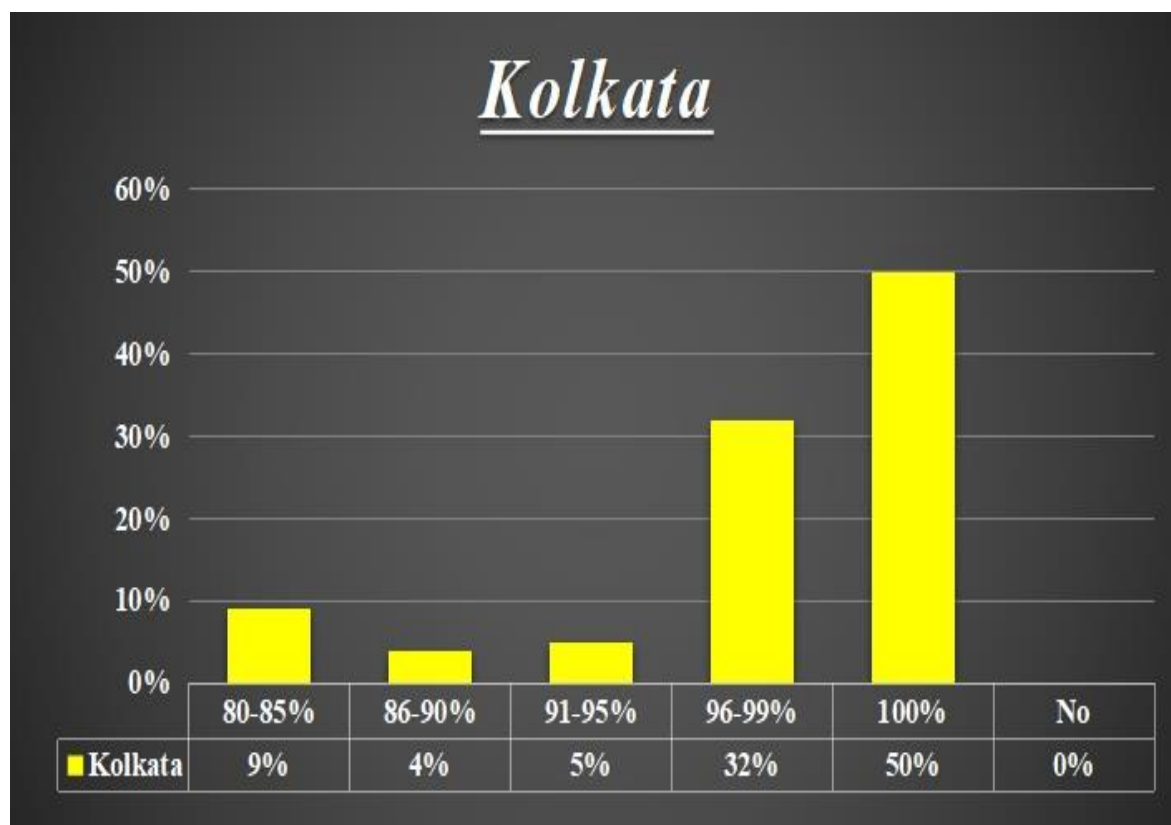


Bengaluru

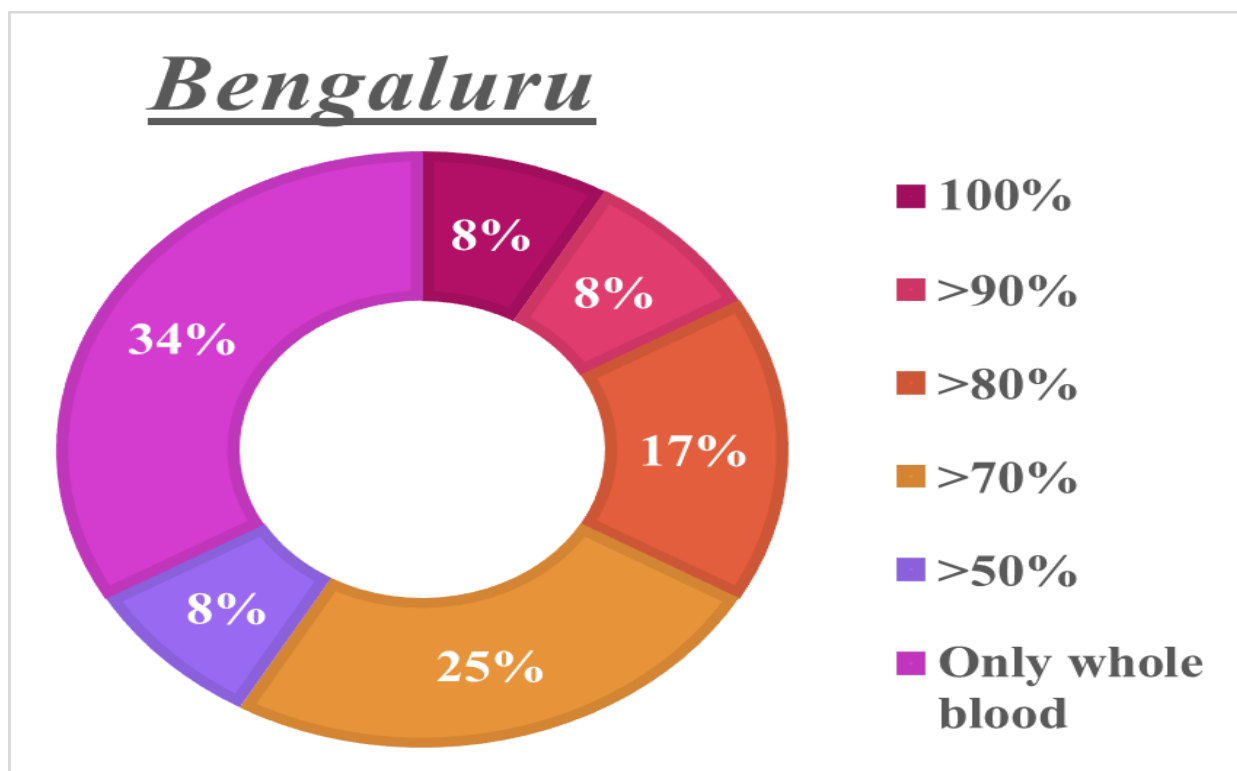
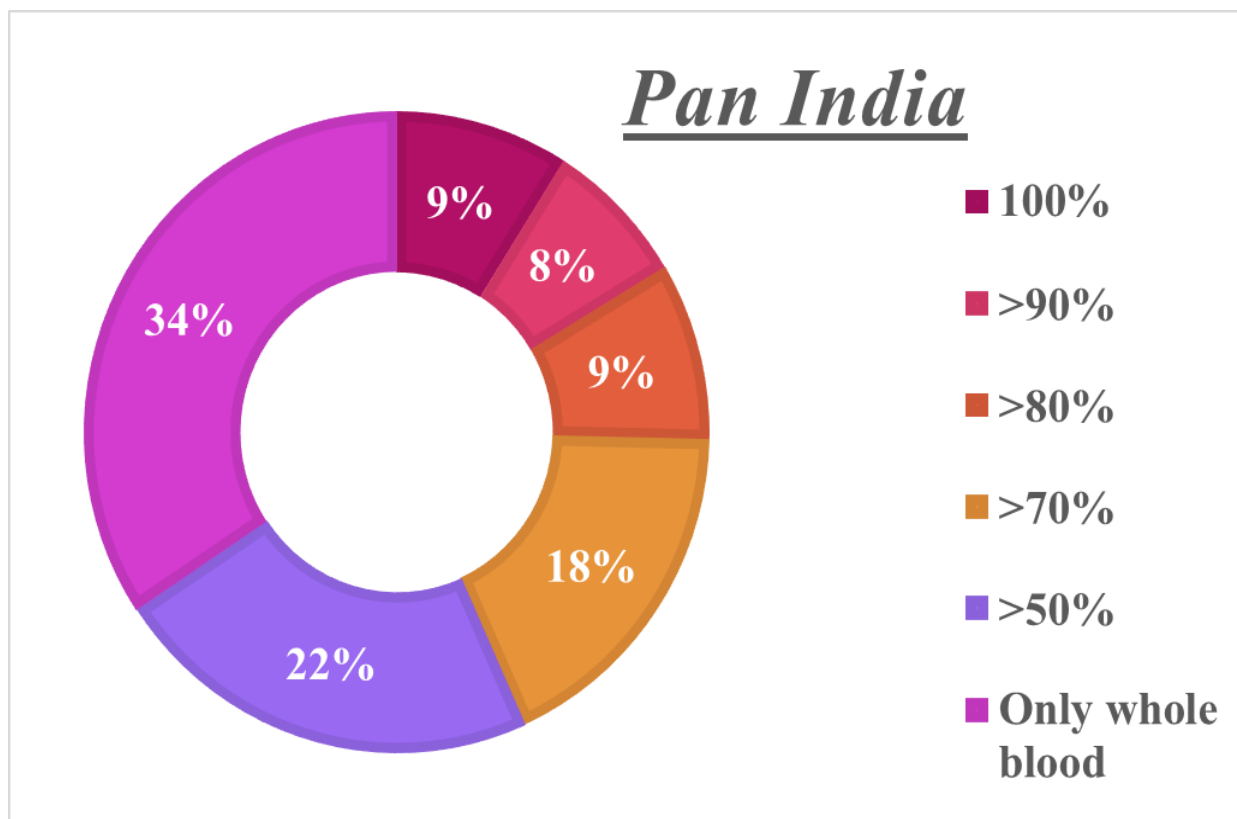


Mumbai

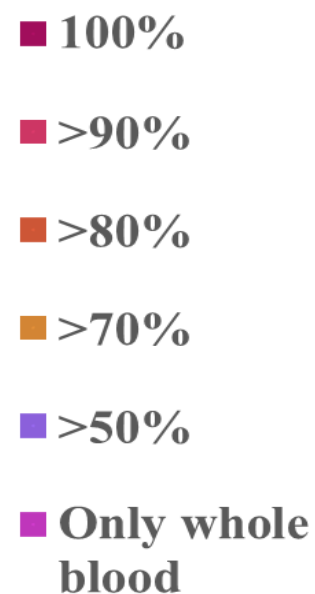
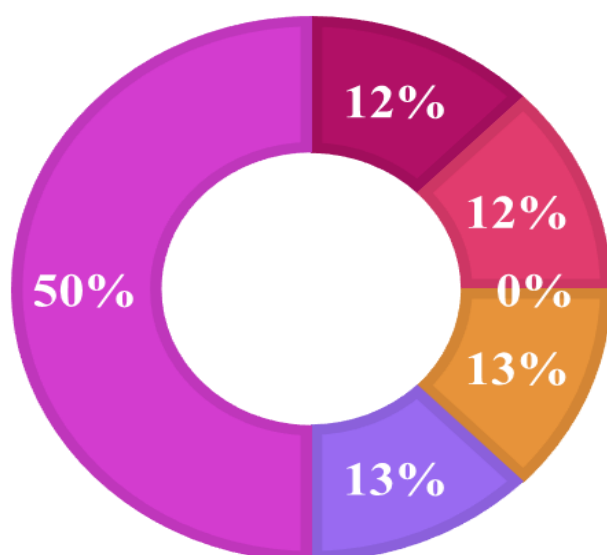




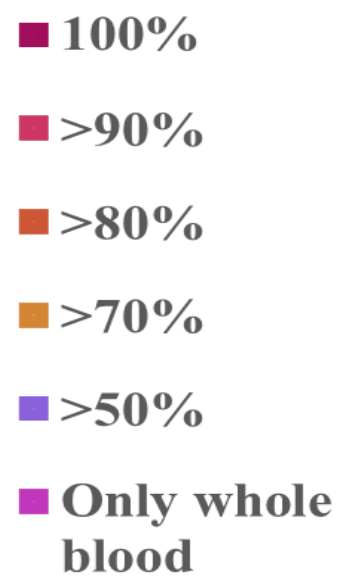
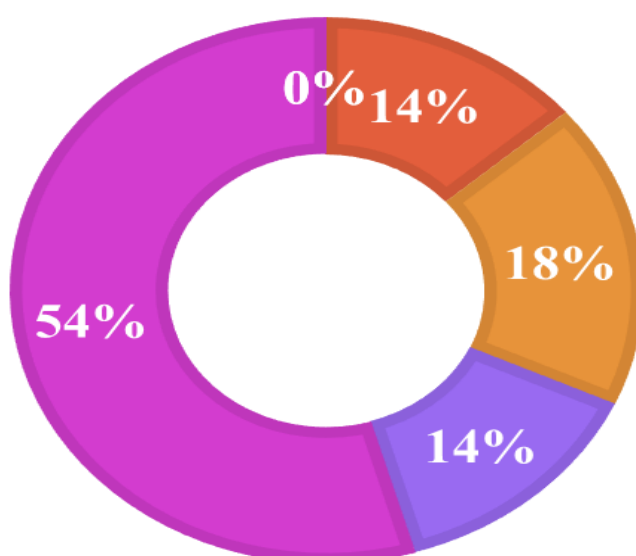
This graph represents, around 67% blood bank said they are into 100% componentization of blood which indicates that these blood bank can be preferred the most, 13% said they are 96 – 99% due to the demand by doctors for whole blood but only 7% blood bank said they are not into componentization due to lack infrastructure and financial issues.

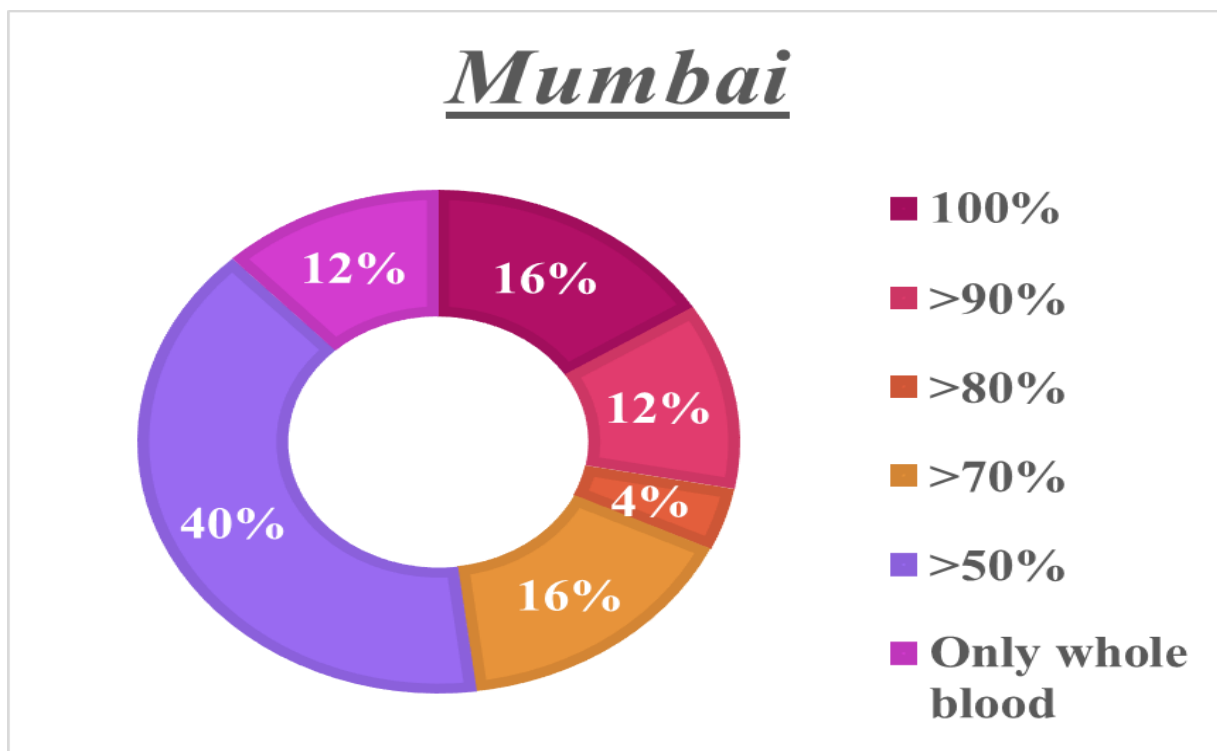
Q. 9 NO. OF BLOOD COMPONENTIZATION EARLIER

Chandigarh



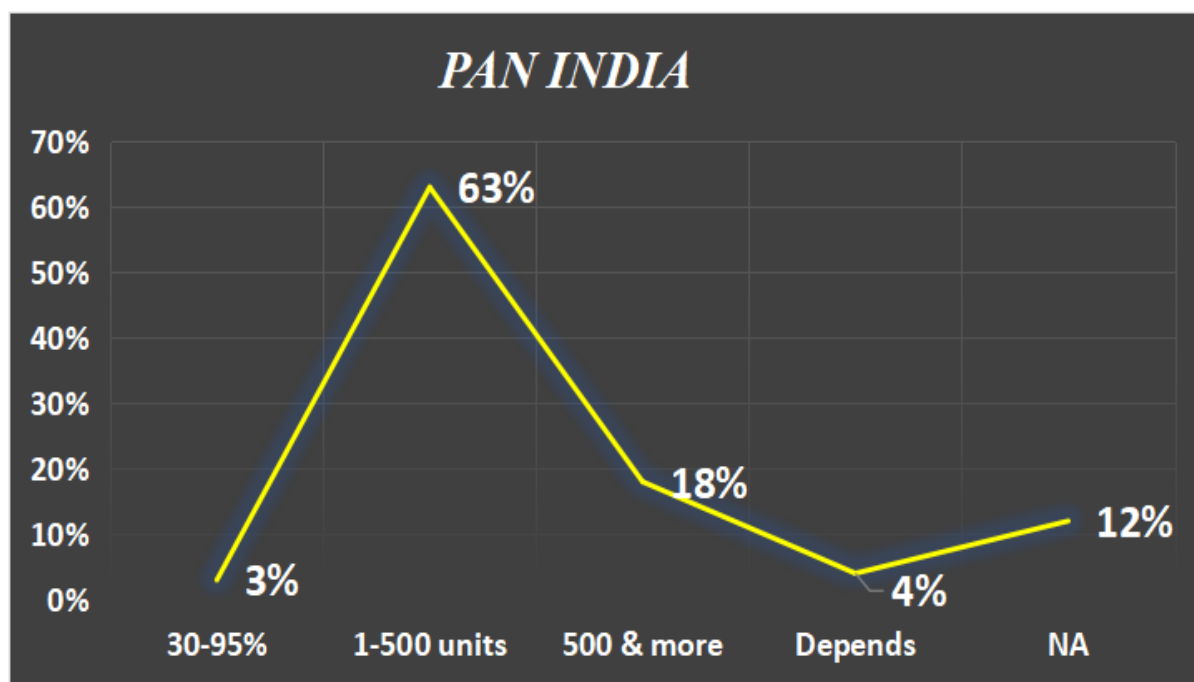
Kolkata

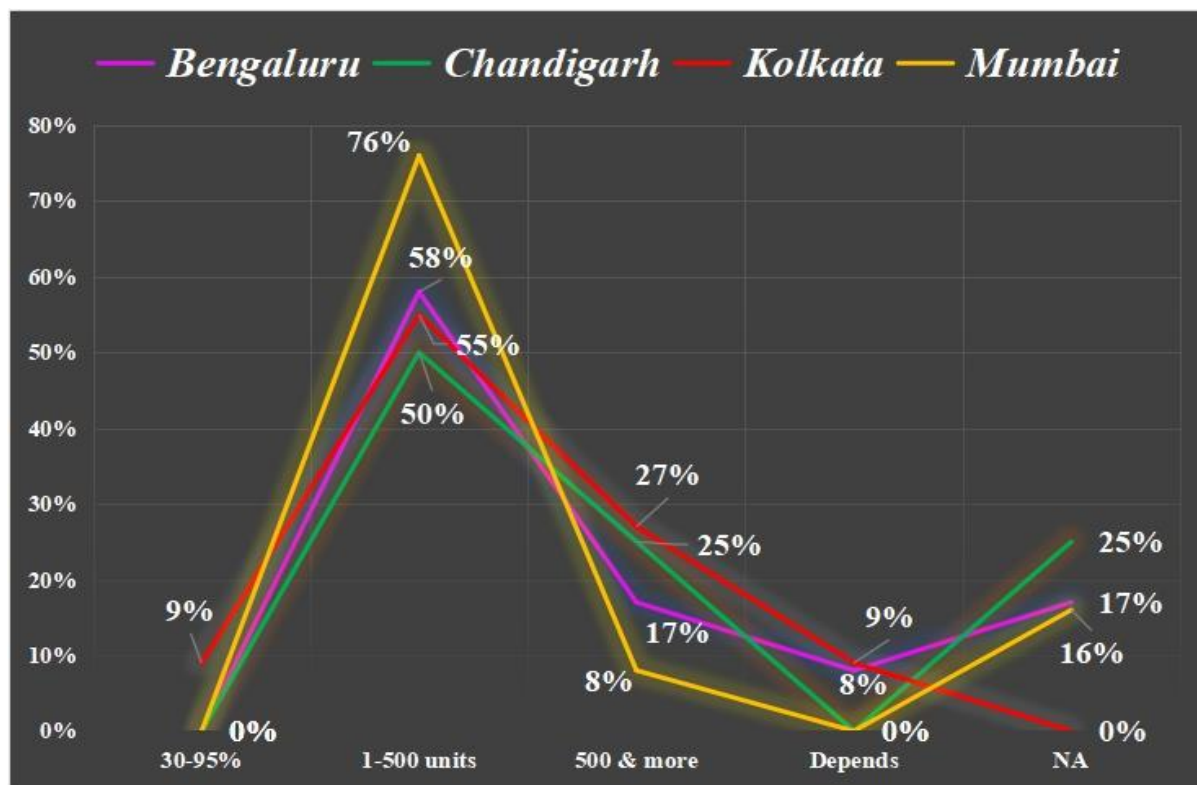




This graph represents the No. of blood componentization earlier, 9% blood bank said 100% which means that they are into componentization since many years. Therefore, these blood banks can be on our priority and 34% blood bank said only whole blood which indicates that these blood bank were not into componentization but have started for now.

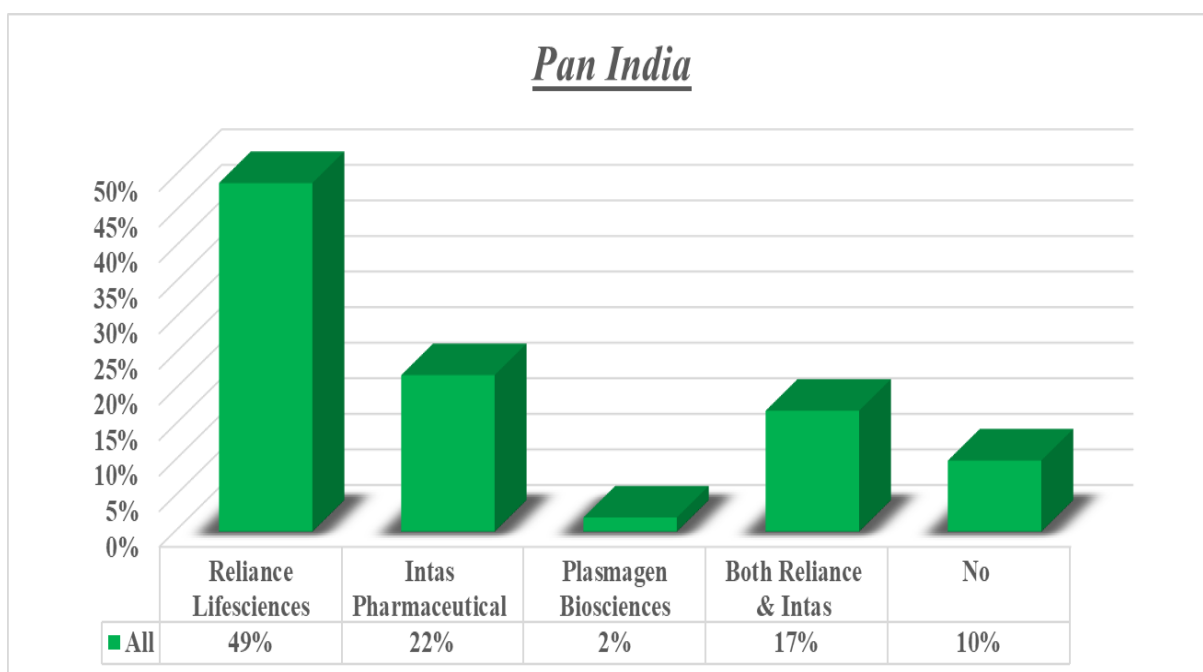
Q. 10. SURPLUS PLASMA AVAILABLE



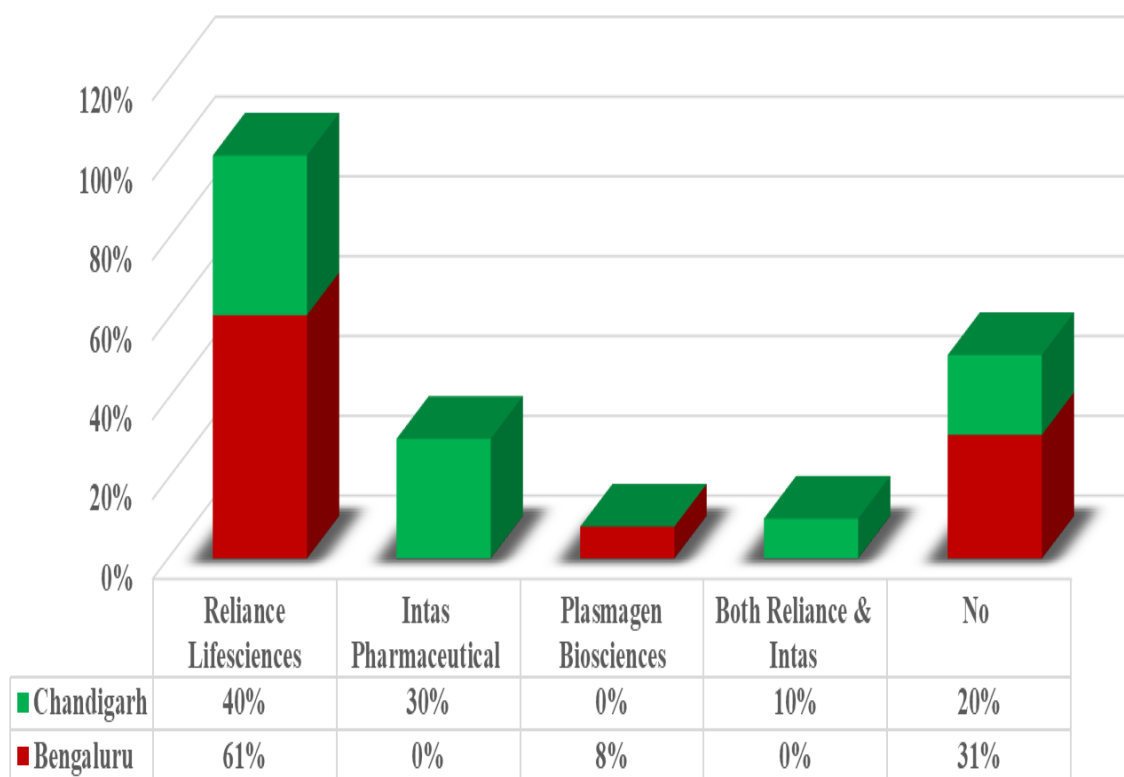


This graph represents that around 63% blood banks ranging from 1 – 500 units have surplus plasma available in monthly bases, around 8% blood bank said that they have 500 and more surplus plasma available in there blood bank, which indicates that these blood bank can be visited by the company for requirement of plasma to prepare plasma products.

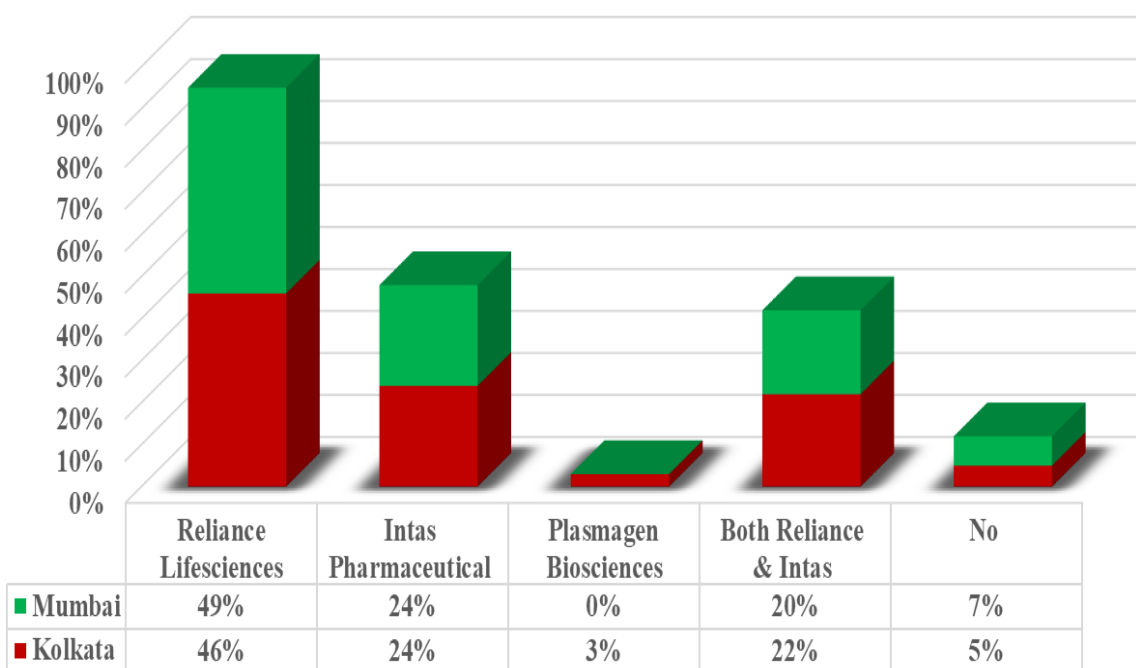
Q. 11. SURPLUS PLASMA SOLD TO FRACTIONATION COMPANIES



Bengaluru & Chandigarh

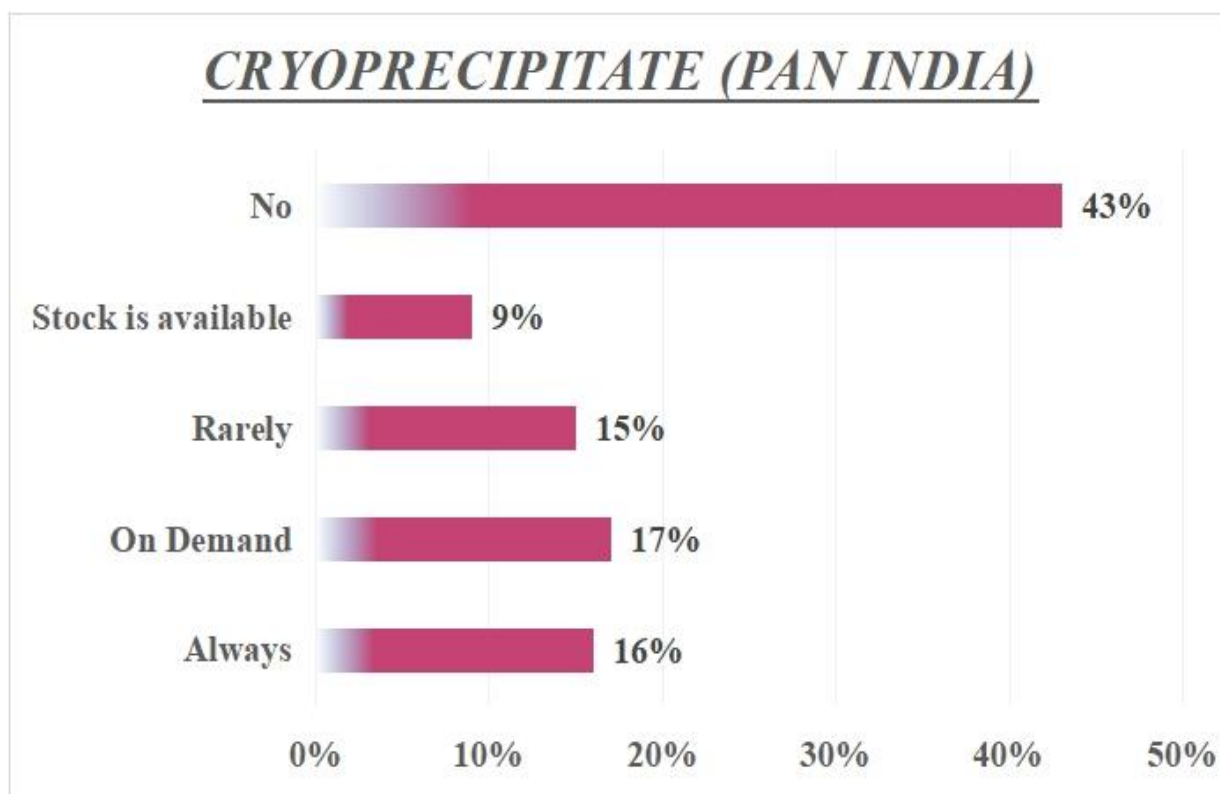


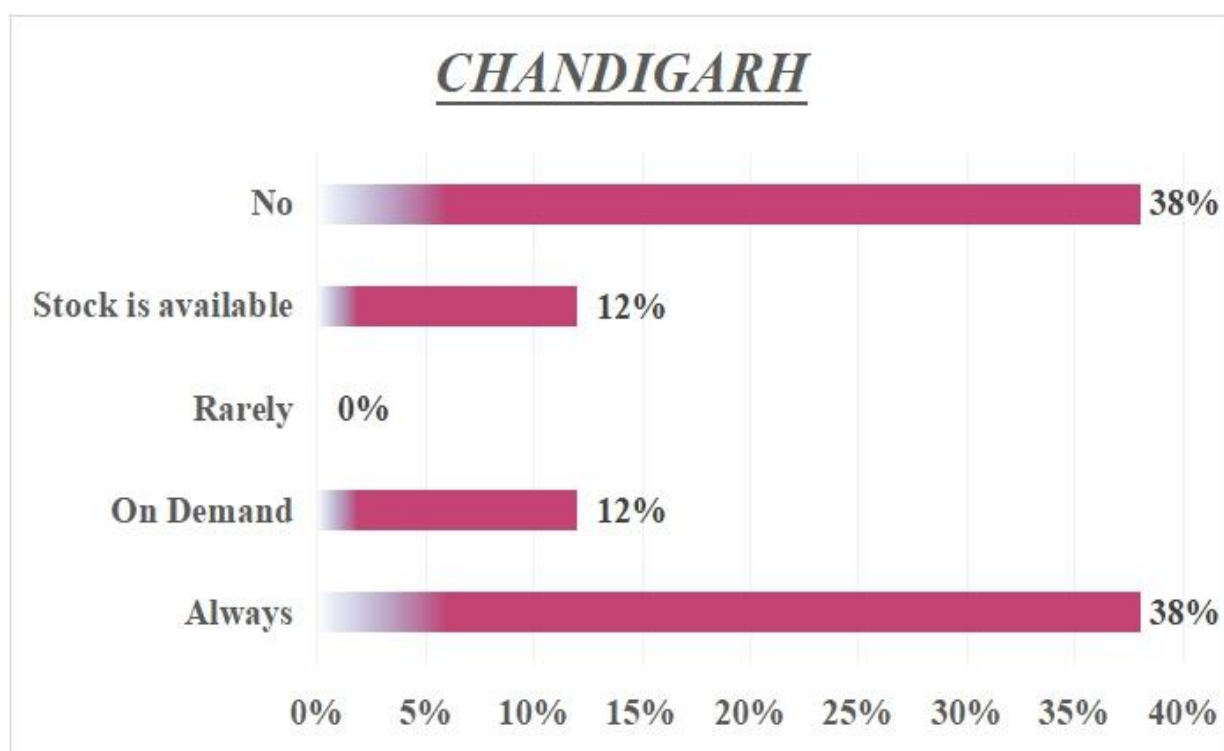
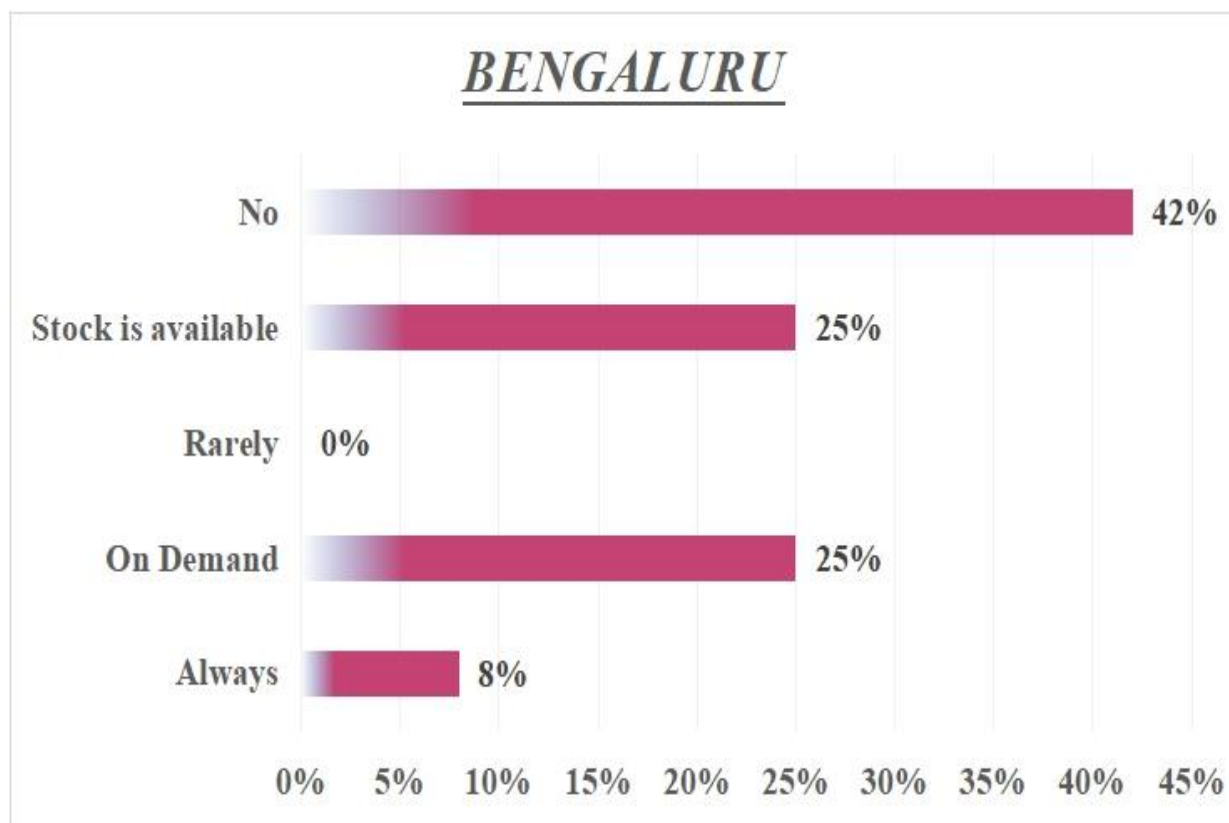
Kolkata & Mumbai

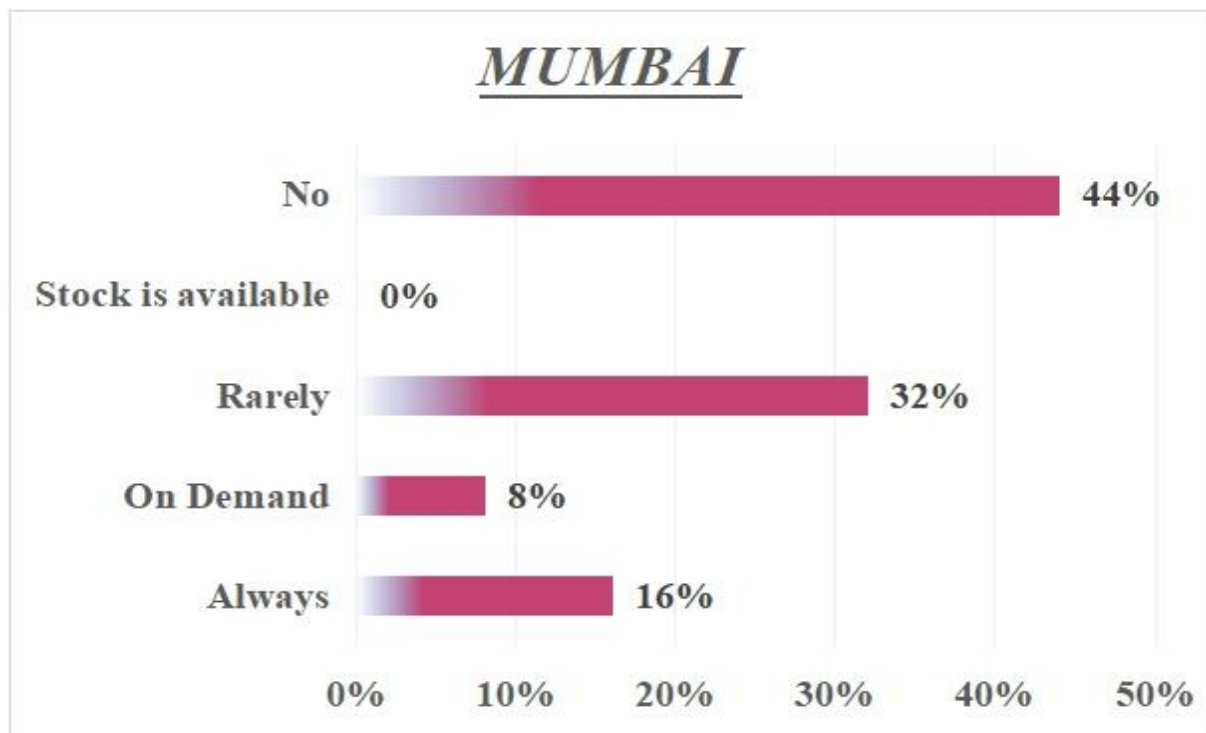
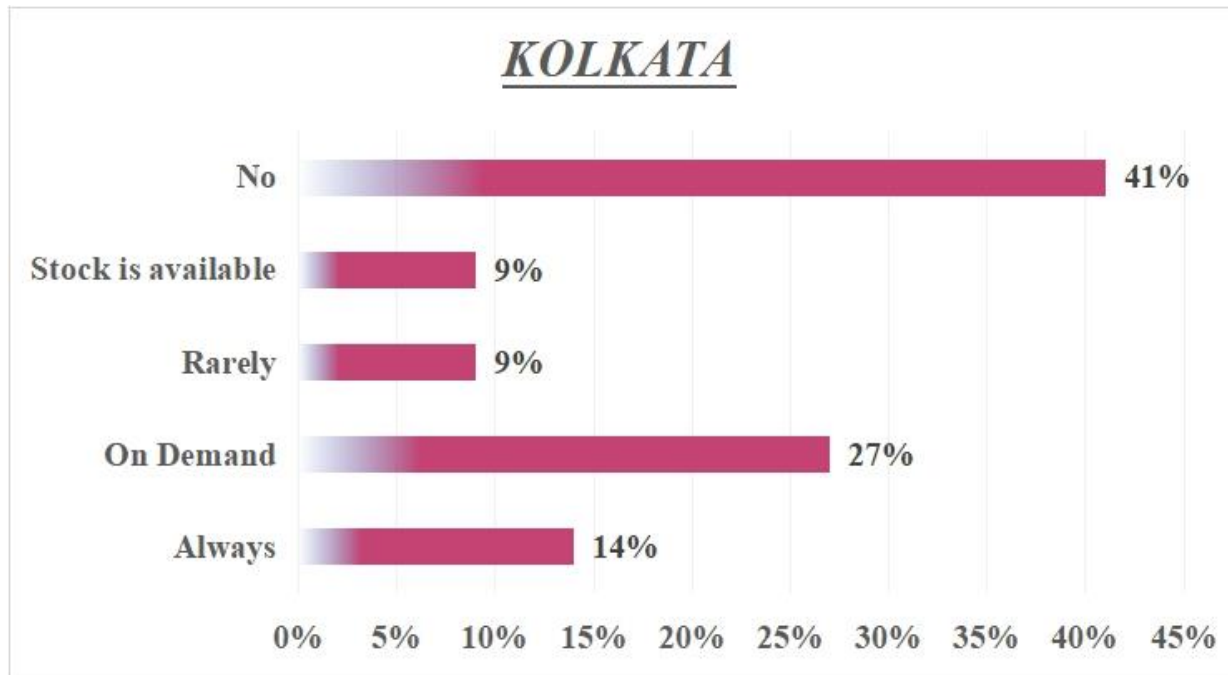


This graph represents, around 49% of blood banks sell their surplus plasma to Reliance Life Sciences and 22% blood bank sell it to Intas Pharmaceutical so, this indicates that these two companies are connected with these blood banks to collect surplus plasma but there are few blood banks who are planning to give surplus plasma to any of the companies. So, the main focus should be on these blood banks. It's better not to connect to those blood banks who sell it to both Reliance and Intas as they will be having only a few number of plasma to sell it to these companies.

Q.12. CRYOPRECIPITATE

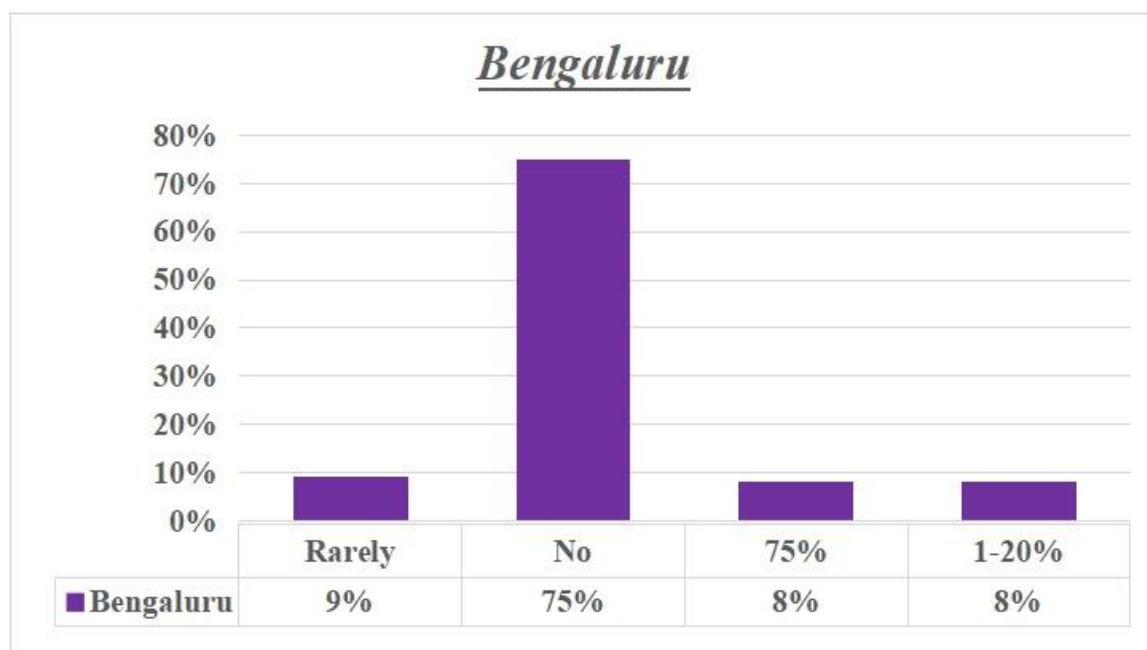
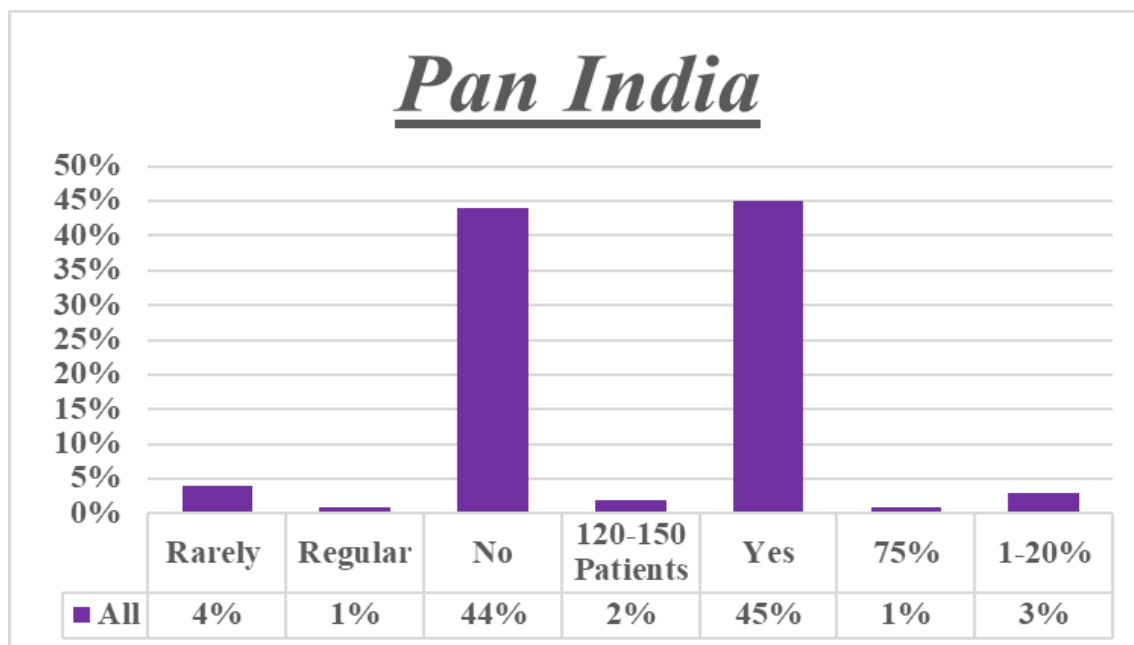




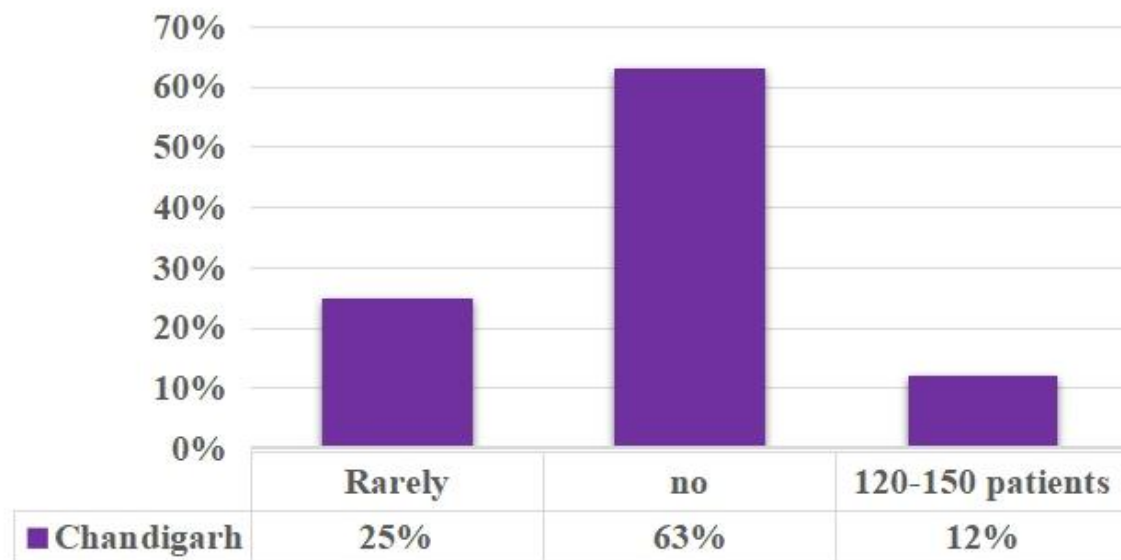


This graph represents around 43% of blood banks said that they don't prepare cryoprecipitate and 27% blood bank said that it is prepared only on demand, as the hemophilic patients directly approach to those centres where the treatment is given at free of cost.

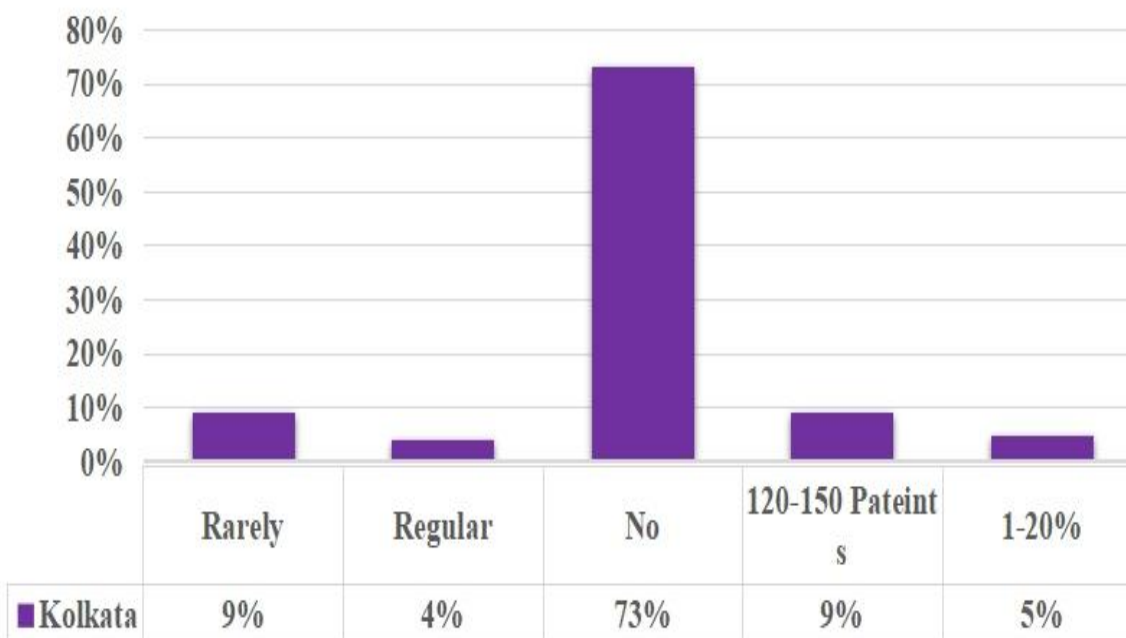
Q. 13. RATE OF HEMOPHILIC PATIENTS FOR CRYOPRECIPITATE

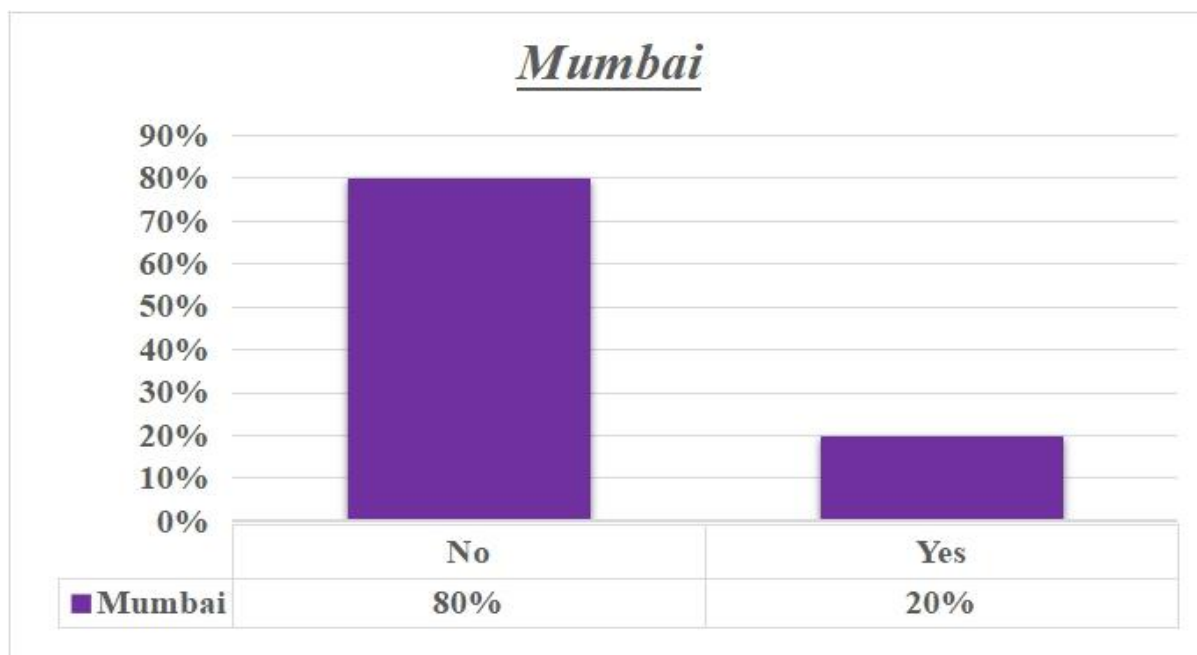


Chandigarh



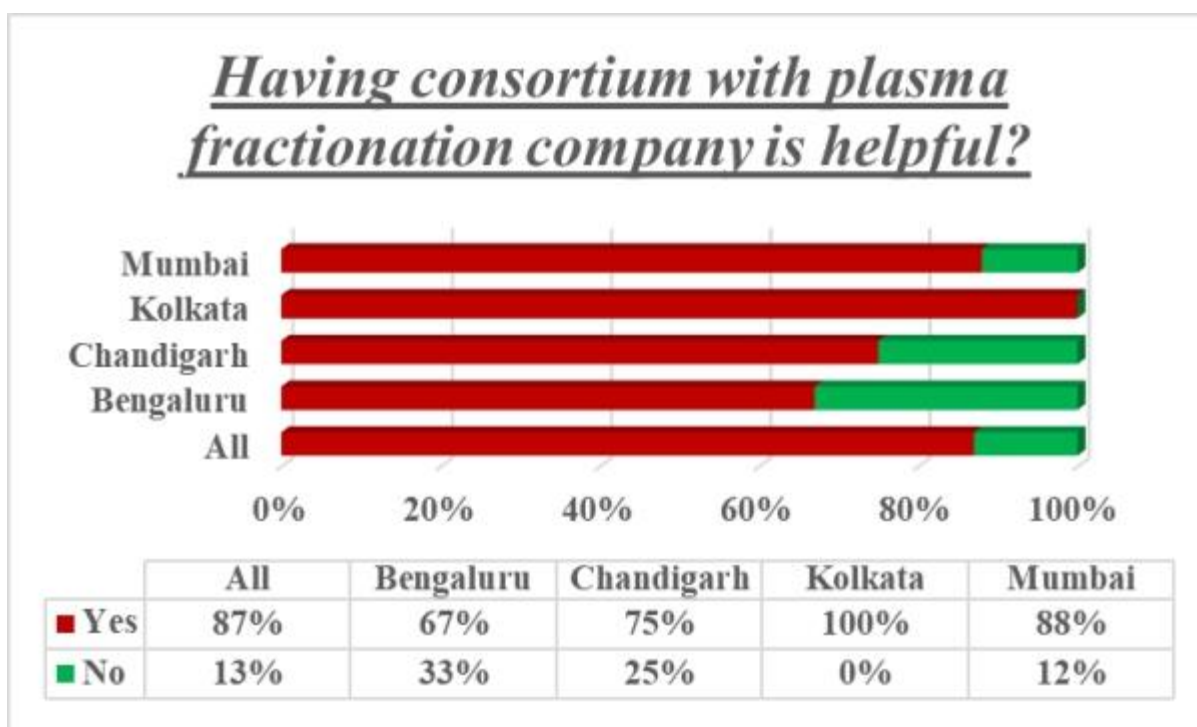
Kolkata





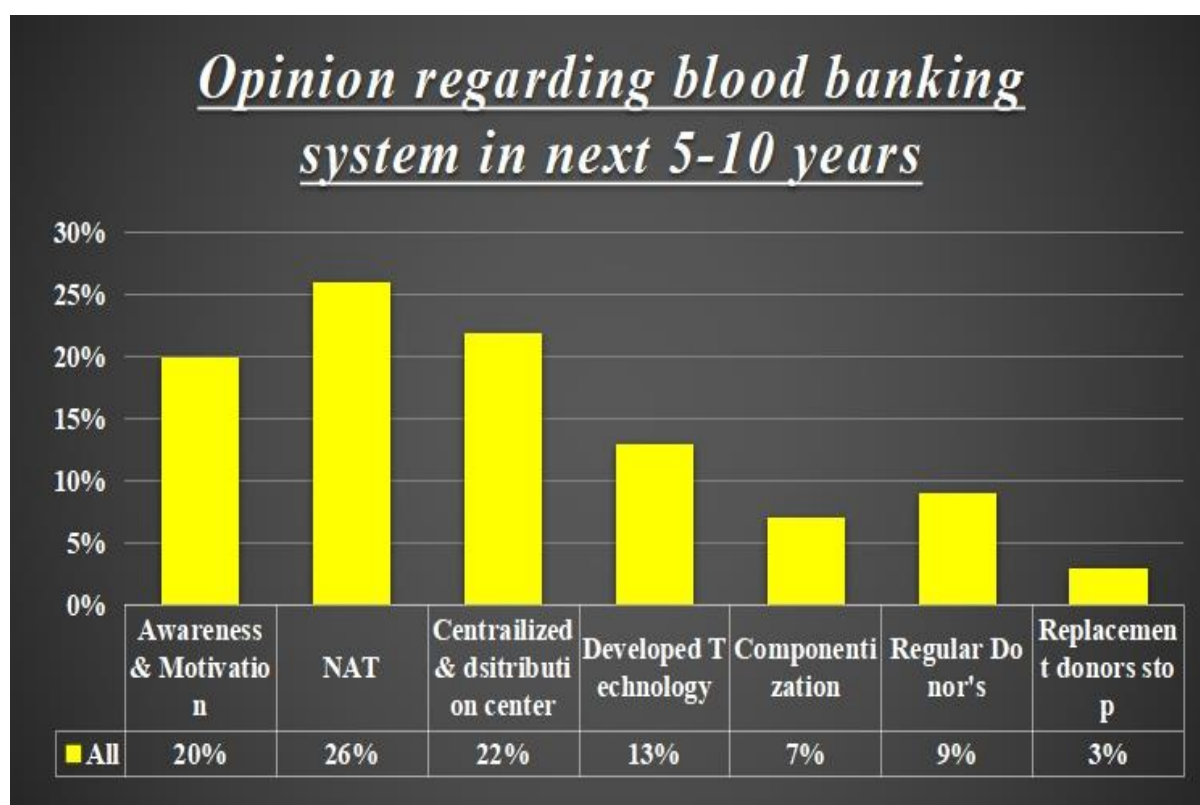
This graph represents the rate of hemophilic patients approach to blood bank for cryoprecipitate, around 45% of blood bank said yes and 44% of blood bank said no due to the availability of Albumin, Factor VIII etc for the treatment of haemophilia.

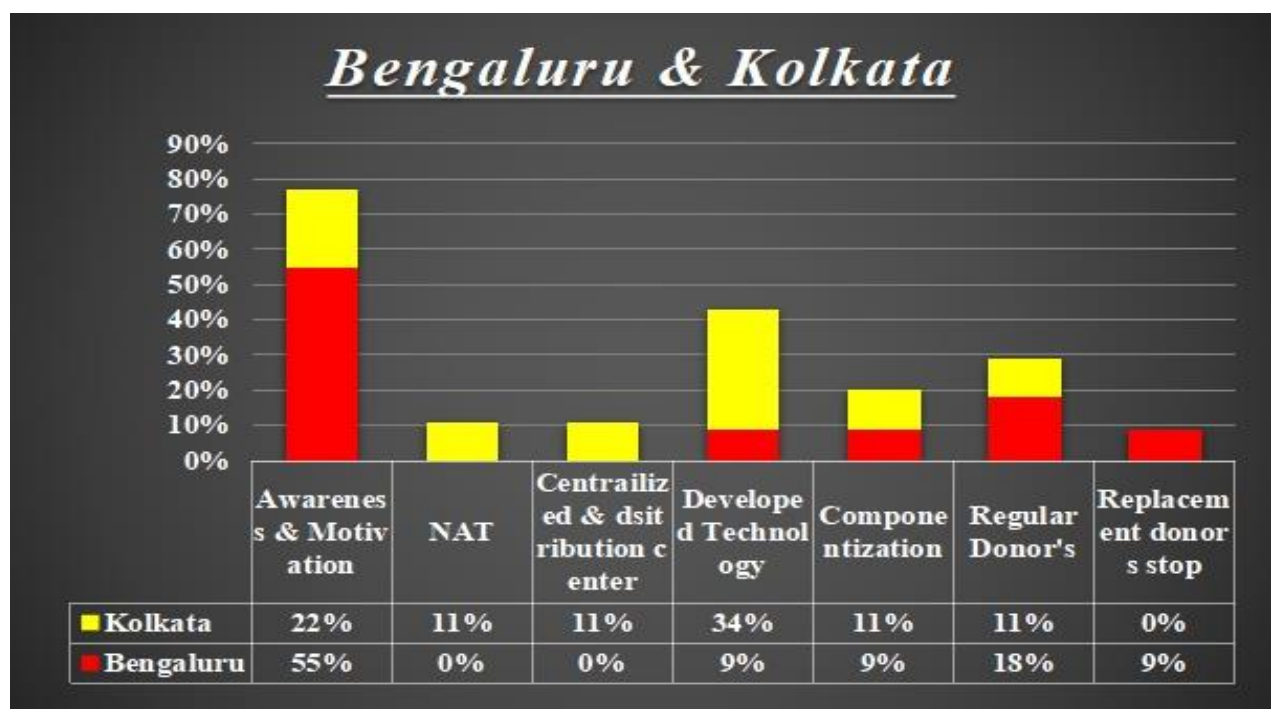
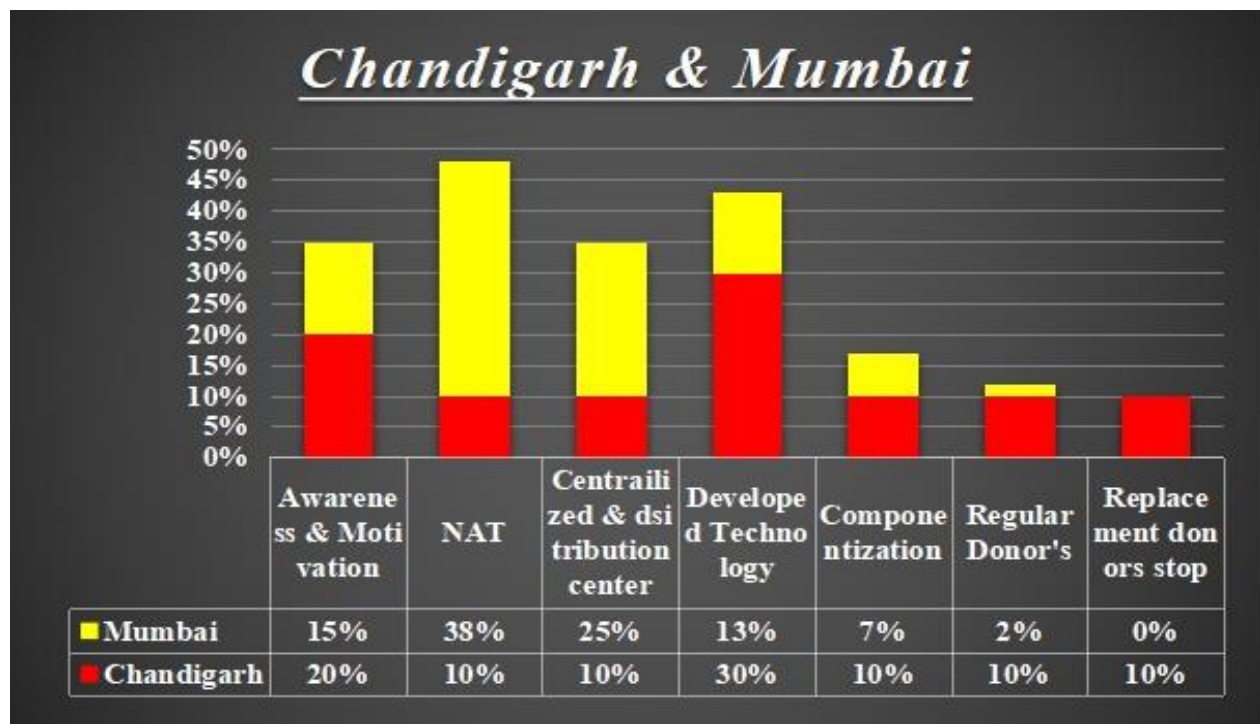
Q. 14. HAVING CONSORTIUM WITH PLASMA FRACTIONATION COMPANY IS HELPFUL?



This graph represents around 87% blood bank said yes that having consortium with plasma fractionation company is helpful, as the plasma won't be discarded or be wasted after the expiry, so these company collect plasma from them and prepare plasma products for the treatment. Very few 13% blood bank said no because some do not have excesses of plasma to give to the companies.

Q. 15. OPINION REGARDING BLOOD BANKING SYSTEM IN NEXT 5 – 10 YEARS





This graph represents that 26% of blood bank suggested for NAT, as this test is very helpful which can cover up the window period and give the assurance about the safety of the blood and its components, 22% blood bank said it should be centralized and distribution center, so that the donor's can donate to private blood banks also other than only preferring charitable or public blood banks.

OBSERVATION & FINDINGS

- As suggested earlier, private blood bank are in majority and getting plasma from these particular blood bank would be safe because of their quality, hygiene and qualified person to carry out the componentization process.
- The renewal process was difficult before due to the lengthy and manual process. Whereas, now the process is become more easier due to online facilities which is less time consuming.
- As 47% of blood bank have adopted developed technology like NAT, Chemiluminescence test which detects the infections like HIV, HBV, HCV in the blood and which will provide more safe blood with minimal errors, due to increased qualified people from 5% - 49% for evaluating of blood safety.
- 16% blood banks are moved from whole blood to componentization of blood because these blood banks must be our 1st priority to target for collecting plasma.
- The foremost challenges faced by blood banks whereas, 49% said no donor's available due to lack of awareness. Therefore, donation awareness, camps must be carried out to overcome the availability issues of the blood.
- More blood donation camps must be carried out because camps are the main source of blood collection and conducting camps is becoming easy when compared to last decade.
- As the blood banks are opting for double and triple blood bags, as they have moved from whole blood to componentization but freezers are used for storage of blood components.
- Maximum source of blood collection was mainly from drives/camps 46%, Inhouse Voluntary is 39% and Replacement is 15%.
- Maximum frequency of blood collection was between 100-1000 units as compared to present scenario.
- Blood is mostly utilized for Surgery, Thalasemia, Cancer & Anemic etc. Around 67% of blood bank are into componentization.
- Around 63% blood bank have surplus plasma available between 1-500 units and 18% blood bank have more then 500 units. They even agree for consortium, as it is helpful from discarding and wastage of plasma.

CONCLUSION

- Blood banks are the backbone of plasma industry, so there is a need for proper fund allocation from companies to blood banks.
- Most of the blood banks agree to give their plasma to fractionation companies.
- There is a huge market for blood componentization which needs to be explored.
- The surplus plasma available can be used by the company to make components and hence help the society.
- The infrastructure of few blood banks gives the assurance of safety, hygiene, quality and efficacy of the blood components.
- The environment and behavioural culture of the blood bank is satisfactory.

RECOMMENDATION

- Blood donation camps should be conducted regularly to encourage people to donate more and more blood.
- More awareness should be created about the uses of blood components.
- 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.
- Organization should buy surplus plasma from the blood banks which are ready to sell it to make which are ready to sell plasma products.
- As surplus plasma is needed by the industry for preparation of products. So, there should be a consortium between plasma fractionation company and the blood banks.
- Use of plasma for fractionation should come under the health implementation rules which is still lacking.
- There should be more voluntary participation, so availability of blood for preparation does not become an issue.
- Blood bank should have sufficient storage and preparing facility of fractionation.
- Voluntary blood collection may induce by frequent blood donation camp.

LEARNINGS

- During my summer internship, I got to actually experience how to get information even in adverse condition.
- I also got to know the importance of skills and knowledge and how important it is to create the right combination of skills to get success in any project.
- 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.
- As many companies are not into plasma products so, I got a platform to learn about blood and plasma products.
- I got an opportunity to learn more about the blood donation and its safety program involved.
- I got a brief idea about developed technologies involved in blood bank.
- I also got an insight of rules and regulations followed by blood bank.
- I got an opportunity to observe the blood componentization and its equipments.
- Due to the work culture of the organization, I was able to present my skills, knowledge and increase the ability of my thought process.

ANNEXURE

QUESTIONNAIRE FOR BLOOD BANKS

Project Title:-How the Blood donation and safety program has evolved in last decade in India?

Name of Blood Bank In charge:-_____

Blood Bank Name:-_____

City:-_____ **State:-**_____ **Year of Establishment:-**_____

Ph.No:-_____ **Mobile:-**_____

Email:-_____

1. Nature of the Blood Bank,

- | | |
|-------------------------|-------------------------|
| (a) Government | (b) Charitable |
| (c) Hospital Associated | (d) Private/Stand alone |

2. How was your experience while applying for license for the first time as compared to renewal now? Is process easier/difficult as compare to previous years,

- (a) Yes_____ (b) No_____

3. Good things that you have witnessed when you started the blood bank and now,

- (a) Then_____
- (b) Now_____

4. Challenges that you have faced then and now,

- (a) Then_____
- (b) Now_____

5. How easy was it to get trained qualified people to work in the blood bank,

- (a) Then_____
- (b) Now_____

6. Source of blood collection_____

Sl.no	ATTRIBUTES	THEN	NOW
I	Conduct drive/camp, easy/difficult		
II	Frequency of voluntary blood collection/month		
Iii	Availability of donors		
Iv	Collection of Blood was easy/difficult & its reason		
V	Blood bags used, a) Single b) Double c) Triple d) Quadruple		
Vi	Method of storage, a) blast freezer b) freezer c) cold room d) both a & b		
Vii	Capacity of storage		
viii	Protocol followed for screening, a) ELISA b) NAT c) Chemiluminescence		
ix	Number of TTI cases recorded, (HIV, HBV, HCV, SYPHLIS & MALARIA)		
x	Availability of Blood component for patients		

7. Suggest order of priority for utilization of Blood,

- (a) Cardiac patients (b) Emergency/Trauma (c) Surgery (d) Cancer
(e) Pregnancy Complication (f) organ transplantation (g) Others_____

8. Does your blood bank is doing componentization of blood?

- (a) Yes_____ %_____ (b) No_____

9. What was the percentage of Blood Componentization earlier,

- (a) 100% (b) >90% (c) >80% (d) >70% (e) >50% (f) specific_____

10. The monthly average availability of surplus plasma units,

- (a) >250 L/month (b) >500 L/month (c) >1000 L/month
(d) >2000 L/month (e) specific_____

11. Can surplus plasma be utilized for fractionation,

- (a) Yes_____ (b) No_____

12. Cryoprecipitate,

- (a) Yes_____ (b) No_____

13. Rate of Hemophilic Patient's approaching blood center for cryoprecipitate_____**14. Having consortium between blood banks and plasma Fractionation Company would be helpful,**

- (a) Yes_____ (b) No_____

15. Your opinion regarding blood banking system in next 5-10 years?
