

Web Experience to enable more Periodic Blood Donations in India to tackle the current shortage of blood.

B.Des Design Project 2

Report by :

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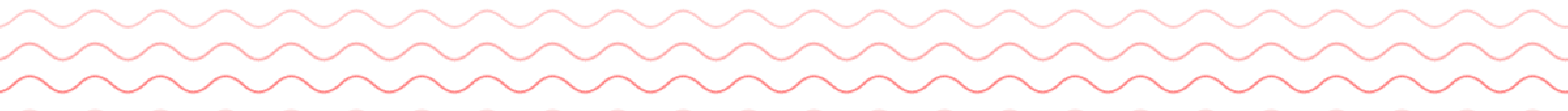
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Declaration

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Approval

The B.Des Design Project - 2 titled " " by Anagha Aneesh, Roll Number 18U130004 is approved, in partial fulfillment of the Bachelor in Design Degree at the IDC School of Design, Indian Institute of Technology, Bombay.

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1. Abstract

India is currently experiencing a blood scarcity due to a lack of voluntary donors and a reduction in the frequency of regular donors, who are concerned about the safety of visiting a facility and donating blood following the Pandemic. A significant portion of the adult population is unaware of the need and seriousness of the problem and frequently succumbs to misunderstandings, resulting in no donation. By studying the common trends and demographics of periodic donors, as well as the level of awareness that people have in this sector, this project aims to better understand how to address the country's high demand for blood and low supply, as well as identify motivations that could help the situation.

The primary objective of the study would be to devise how to bring in more first-time donors and encourage repeated donations to tackle the current shortage of blood in the country. Two types of studies, both qualitative and quantitative, were conducted. The findings from the study were mapped out and overlapped with the findings from existing literature to derive major conclusions.

Based on these conclusions, the final output was created which is a webspace that unifies existing platforms to provide a transparent experience for all user groups while making the general public aware of the necessity and benefits, clearing misconceptions, motivating and guiding the donors, and finally allowing the donation facilities to provide better outreach and experience to the donors. Evaluation criteria were also devised and planned for the future.

2. Introduction

Donating blood was one of the main checkpoints that I had set for my 18th birthday as I would finally be eligible for donation. Or so I thought. The day I happily went to a blood bank for the first time, I was sent back as my hemoglobin levels were lower than the limit a healthy donor must satisfy. Though I felt let down, my family was secretly happy as they were not in favor of my donation even though they did not outright express any objection. As they were kept in the dark about what usually happens during donation and how the body can handle losing a pint of blood they were very skeptical. This got me thinking and I realized that I had never met a blood donor in my life. Even though most of my family members were healthy, they never volunteered to donate as they had never come across anyone in urgent need of blood that made an impact on their outlook on the situation nor were they aware of the seriousness of the unavailability of blood in the country. To further add to this thought, I came across an article which had stressed on how the pandemic had majorly impacted the situation as even the periodic donors started having concerns about their safety during donation that they also decided to take a pause for around a year. This kickstarted this project with the aim of identifying the major hindrances and discovering methods to overcome them to ensure a safe and smooth donation process while reassuring and motivating the eligible non-donors to come forward as the process is beneficial at a personal level as well.

Considering the surface level research that I had done in the problem of not having consistent recurring donors or those that were aimed at easing the non-donors into this new world. Similarly, the outreach by the donation facilities were found to be very poor as people are often ignorant and don't usually notice something they don't want to see until it makes an impact. Efforts have been made on spreading awareness but most were futile as they either overloaded the general public with information or were made in such a way that they can't be accessed until someone goes looking for it. Through this project I aim at thoroughly studying these factors that affect donation and come to a solution that enables a better donation scenario in the country.

2.1 OBJECTIVES

- To study the motivations that lead to donation.
- To study and understand the grievances faced by the donation facilities.
- To understand and develop the type of approach required to encourage the young public to donate blood.
- To help motivate the potential periodic donors to engage in consistent recurring donations.

3. Background

3.1 THE BLOOD DONATION SCENARIO IN INDIA

Blood Donation is the procedure during which a person voluntarily has blood drawn that is later used for transfusions when needed. It is performed under the supervision of blood banks or hospitals. The unavailability of blood donors, which is a global issue that hinders the demand for blood from being satisfied as a result of an aging population and greater life expectancy, is something that needs to be addressed at the community level.

Currently, in India, 50 million units of blood are required per year but only 25 million are available. There is an urgent need for the country to build a sustainable voluntary blood donation program in urban and rural areas. Blood shortages are also caused by a lack of communication and connectivity among blood banks, resulting in inefficient demand and supply management in terms of blood safety and availability. Underutilization and loss of blood occur when blood and its components are not properly processed and stored separately, especially in rural blood banks. India's blood transfusion system has always been inaccessible and inefficient because it is not accorded the requisite priority in the country's health agenda. There is a lack of coherence and commitment towards a focused regulatory framework around blood safety and accessibility and investment in blood transfusion infrastructure.

3.2 THE IMPACT OF COVID-19

Meanwhile, inequities in access to and availability of blood have become extremely problematic due to the COVID-19 pandemic. The acute blood shortage crisis has only further compounded in rural and semi-urban areas. In the past year, voluntary blood donations have drastically reduced due to the cancellation of mass blood drives and poor donor turnout contributing to fears surrounding the coronavirus and resultant lockdowns. The COVID-19 pandemic has highlighted the reality that blood is fundamental to any healthcare system, even when healthcare capacity and priority switch to the pandemic response.

According to the World Health Organization (WHO), a country's baseline blood availability criterion requires at least 1% of the population to donate blood. Currently, only 0.84 percent of India's population donates blood willingly, resulting in a blood shortage of nearly two million units. This project tries to discover the issues that are preventing India from accomplishing this goal, and devise methods to tackle them.

4. Secondary Research

4.1 THE ASPECTS OF DONATION

The first was the question of eligibility. It's easy to become a donor since any healthy adult between the ages of 18 and 65 could do so. Men can donate blood once every three months, while women can donate once every four months. Only a few health issues and certain body modifications prevent a person from being a donor. People in India are unaware of the personal health benefits as periodic donations are good for the heart and the liver and also help in managing weight. A pint of blood can also save up to three people. Most individuals believe that the procedure weakens the body and puts them in danger of infection, such as HIV.

The vast majority of people are unaware of the advantages of blood donation. Blood Donation requires you to keep your infections in check like signs of Anemia, Hepatitis A, and Hypertension. These often tend to go unnoticed. Up to 470 ml or 8-9% of total blood volume is drawn. Within 24 to 48 hours, the drawn volume of blood gets restored. The regeneration of blood occurs in the bone marrow by stem cells present inside the long bones of our body. The newly formed blood cells rejuvenate our system.

People sometimes have the idea that donating blood will weaken their bodies or make them sick. Similarly, individuals believe the procedure is excruciatingly unpleasant and that it would interfere

with their daily activities for a few days. Many women believe they are unable to donate blood. Some people believe they could catch diseases, such as the flu or even HIV. People also just assume that the process is not hygienic and that they are putting themselves at risk.

Fig is a flowchart of the process that I drew up from the information on the website of the American Red Cross. The major steps included Eligibility Check, Cleansing, Donation, and Resting, and the whole process was estimated to take around 30 minutes.

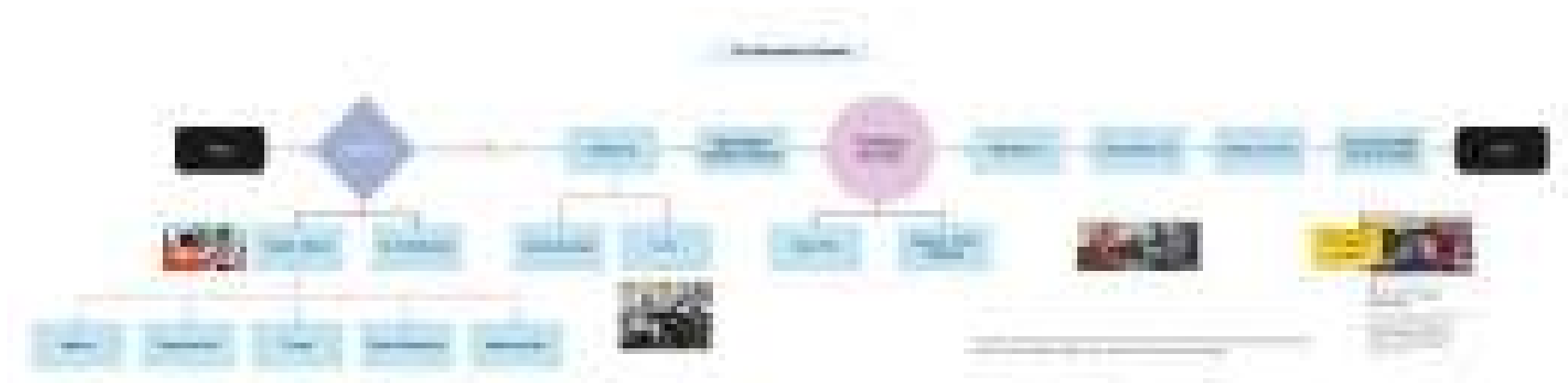


Fig 4.1. Donation Process according to the American Red Cross

Secondary Research

4.2 FLAWS IN THE SYSTEM

The blood transfusion system in India is unorganized and fragmented. More blood banks are frequently hailed as a vital solution to solve blood shortages. However, India does not require more blood banks because it already has an appropriate density of 2.2 blood banks per million people. To control demand-supply gaps, more blood units and improved coordination between blood banks are all that are required. Blood shortages are also caused by poor connectivity and communication among blood banks, which leads to inefficient demand and supply management in terms of blood safety and availability. Underutilization and loss of blood occur when blood and its components are not properly processed and stored separately, especially in rural blood banks.

Meanwhile, inequities in access to and availability of blood became particularly problematic because of the COVID-19 pandemic. The blood shortage crisis has only further compounded in rural and semi-urban areas. Within the past several months, voluntary blood donations have drastically reduced because of the cancellation of mass blood drives and poor donor turnout attributable to fears surrounding the coronavirus and resultant lockdowns.

The COVID-19 pandemic has delivered to the fore the very fact that even when the healthcare capacity and focus shifts towards pandemic response, blood remains foundational to any healthcare system.

A couple of research articles talked about the **Hub and Spoke Model** that helps small blood banks to be connected to a regional hub with advanced technologies to collect blood centrally which helps reduce blood wastage and ensures consistency in the safety and availability of blood.

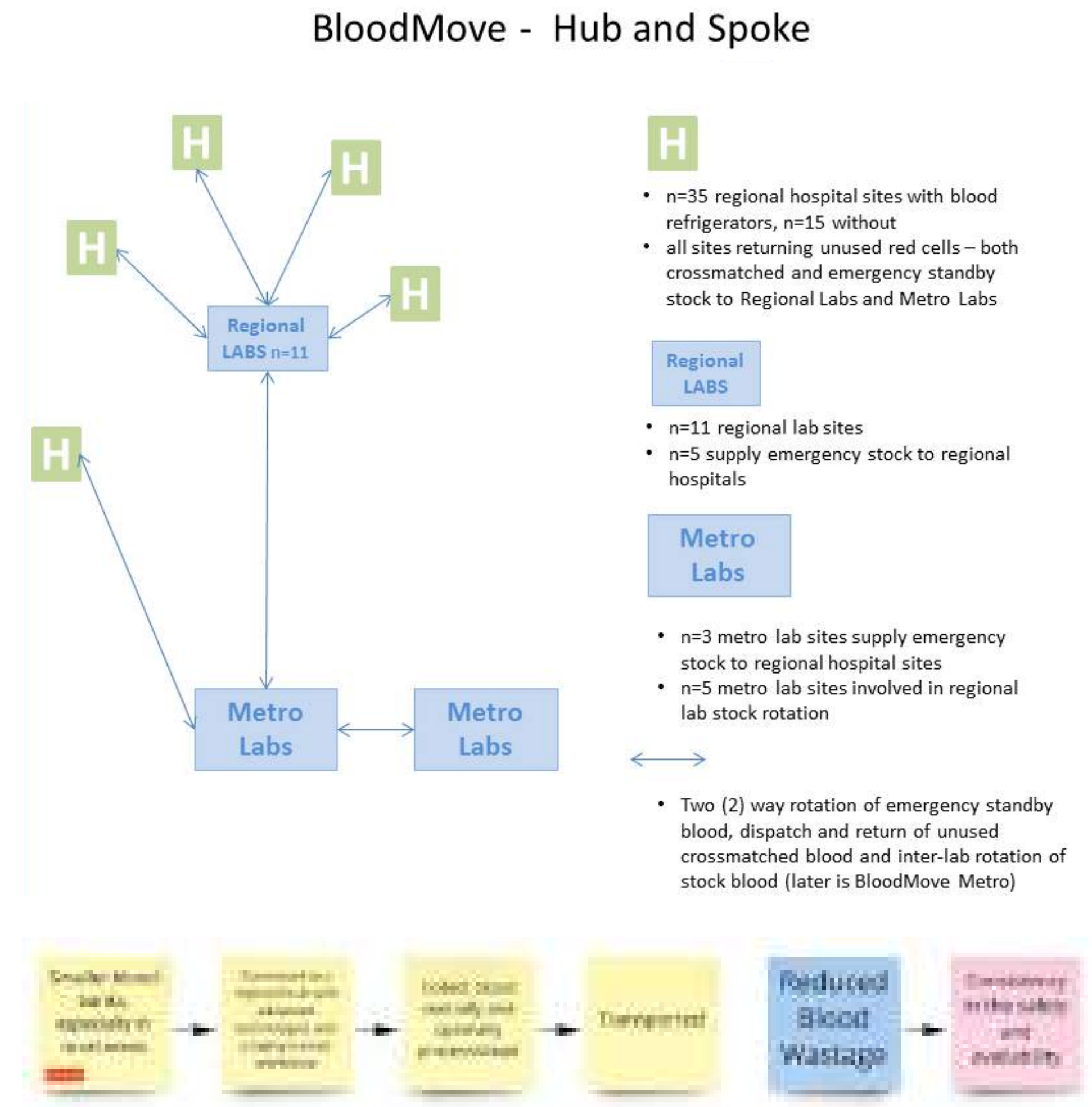


Fig 4.2. The Hub and Spoke Model

Secondary Research

4.3 DERIVED USER GROUPS

The user groups I would be dealing with would involve donors (people who have donated blood at least once in their lifetime), those who want to donate but haven't yet due to various reasons (like inconveniences due to unavailability during a donation camp or fear of needles), those who are afraid to donate (due to misconceptions and lack of clarity regarding the process), and the non-donors who don't want to donate. For this project, the age group 18 -35 was selected as they are the most exposed to social media and are more willing to try new adventurous things and the rest would need a different approach.



Fig 4.3. The Four Major User Groups of People

4.4 COMPETITOR ANALYSIS

E-RakthKosh (Fig 4.4.1) and National Blood Transfusion Council (Fig 4.4.2) were of the two most easily available websites for finding donors. They also have some facts but are not really discoverable unless the user goes hunting for them. Friends2Support (Fig 4.4.3) is a popular mobile application that does the same. These websites are very vast and have too many interactions while finding knowledge ddfdfmaking it not a good source of information. The major drawback of these websites is the fact that those who use these sites are mainly recipients and donors. Only people in the field benefit from these websites.

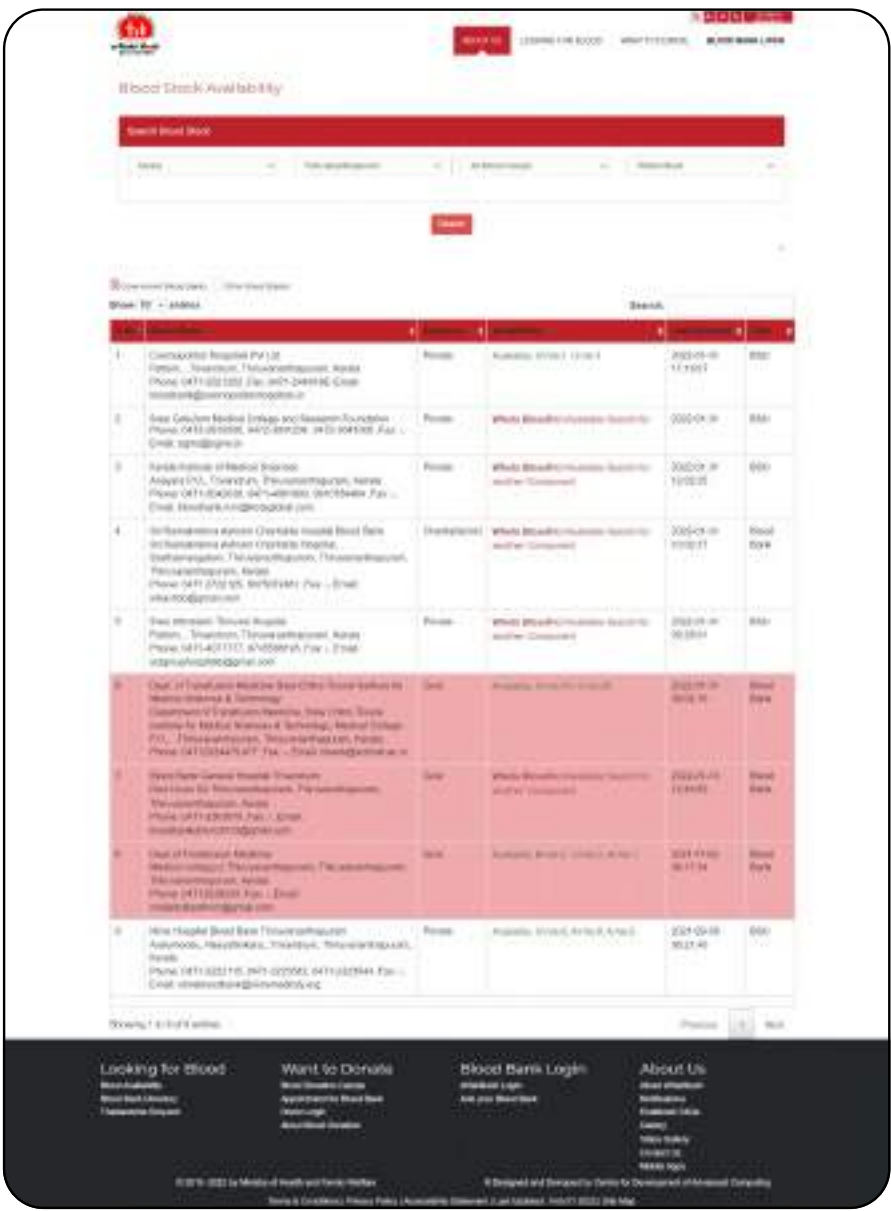


Fig 4.4.1 E-RakthKosh



Fig 4.4.2 NBTC

Secondary Research

Similarly, I came across another donor locator app, a Donation Scheduler App, and a fundraiser app. But none of them were focused on bringing in new donors on board

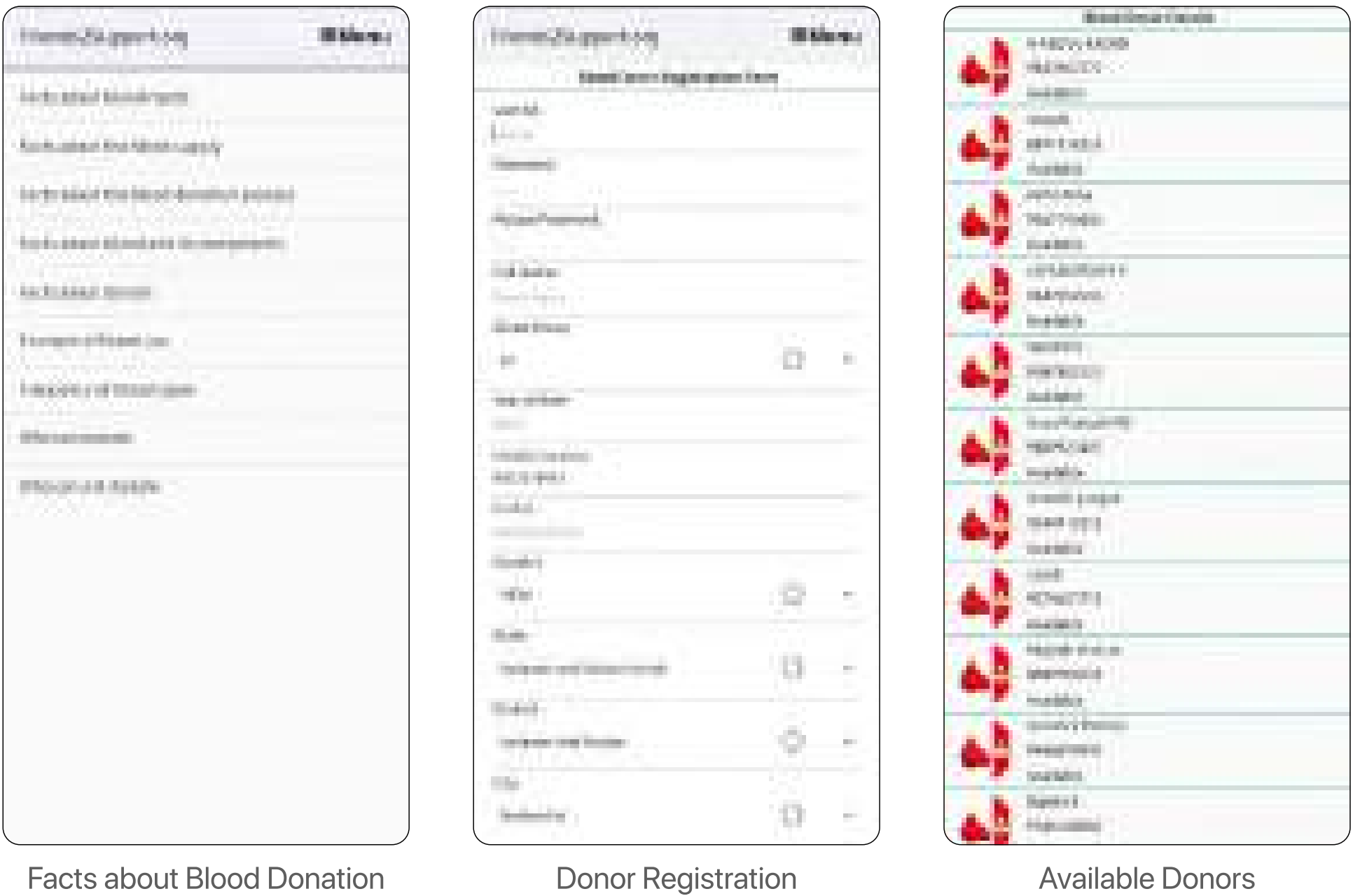


Fig 4.4.3 Friends2Support

4.5 LITERATURE REVIEW

Over the years, blood donation and the pertaining factors have been researched and worked on. Several research publications discussed studies undertaken to gain a better understanding of diverse demographics in order to develop analyses of the primary incentives for insuring recurrent donations.

K. A. Fani and K. Ashraf, along with others, conducted a comprehensive study in 2008 to determine whether motivational and socio-demographic characteristics are significant in improving a long-term promise as a voluntary, non-remunerated blood donor.. A survey through questionnaire on active donors revealed the five dimensions of blood-donor motivation namely, sympathy, social reasons, self-esteem, positive experiences associated with donation, and a moral responsibility to donate. According to Zito, Elena & Alfieri, Sara & Marconi (2012), who conducted a study on donation trends in adolescents, if Transfusion Centers and Associations who want to target young people, should first rethink and adapt their organization and logistics to the particularities of the target population, providing support and information for individuals throughout the process, and make the youngsters an active part of the process. According to Jawień, Wiktoria (2021), the current pandemic situation is not an obstacle to donating blood. Blood donations should not be withheld unless there are health contraindications and efforts to promote blood donation during the Covid-19 pandemic should be continued.

Secondary Research



Considering Millennials' demographic and psychographic characteristics (Dabula, 2021), it can be concluded that they are largely influential, active and socially connected on social media. They can thus be receptive and interactive on social media and build positive attitudes and willingness to donate blood. In the study Salazar-Concha (2021), three conducted by Torrent-Sellens, Joan &

Salazar-Concha (2021), three motivational motivational paths obtained that could be used in the recruitment of future donors via digital collaborative platforms, which are widely used in other areas of digital life. The first two started from feelings of trust in the digital community and the third from the modern lifestyle, and was linked to the subjective norm in the prediction of intention and actual donation.

5. Primary Research

5.1 QUALITATIVE STUDY

Semi-Structured Contextual Inquiry was conducted with 16 interviewees including donors, non-donors, doctors, organizers, and medical professionals at blood banks. Blood donation facilities were also observed and interviewed. There are three main types of donation facilities : One that is part of a hospital, one that is independent, and the third that is a donation camp. I also visited Samarpan Blood Centre at Ghatkopar which is an independent blood center. They have the specific equipment for processing and storage and were much bigger than the one at the hospital. They also simultaneously run camps and have agreed to share their statistics with me. The hospital blood bank was slightly smaller and had less equipment. The third was a donation camp where I also had donated blood. Questions were targeted at understanding motives for donations, reasons that are stopping them from donating, general trends among donors, donations statistics before, during and after COVID-19, the major problems faced and processing and storage.

My initial user group consisted of donors who shared their experiences and motivations. They also discussed how some of their families are skeptical and think that blood donation can result in fatal blood loss. They also shared their experiences with the huge needles and how they overcame the fear with comfort from friends. The non-donors talked about how they wanted to donate blood but location

and time never matched up or the others who are scared of needles. Some others did not feel compelled to contribute since they believed their blood type was common. They were all completely oblivious of the present blood shortage. The doctors addressed the scientific side of things, stating that the needles are huge to increase the rate of blood output to avoid clots in the collected blood. Similarly, they talked about how people tend to assume things and misinformation spreads quickly.



Fig 5.1. Insights from Qualitative Study

Primary Research

The major insights from the facilities included the fact that camps operate better in institutions or work communities as donation helps them take a break from work. They also discussed how the number of donors has plummeted since COVID, and how in India, there is sometimes a shortage of blood and a lot of blood goes to waste due to a lack of communication between banks. I had also donated my blood during the course of this project. I had always wanted to but never had a chance before as my Hemoglobin levels were consistently low until now. Similarly filling out the eligibility form is a tedious process and something that people might want to avoid. There is also no information regarding donation that can reassure maybe a first-time donor.

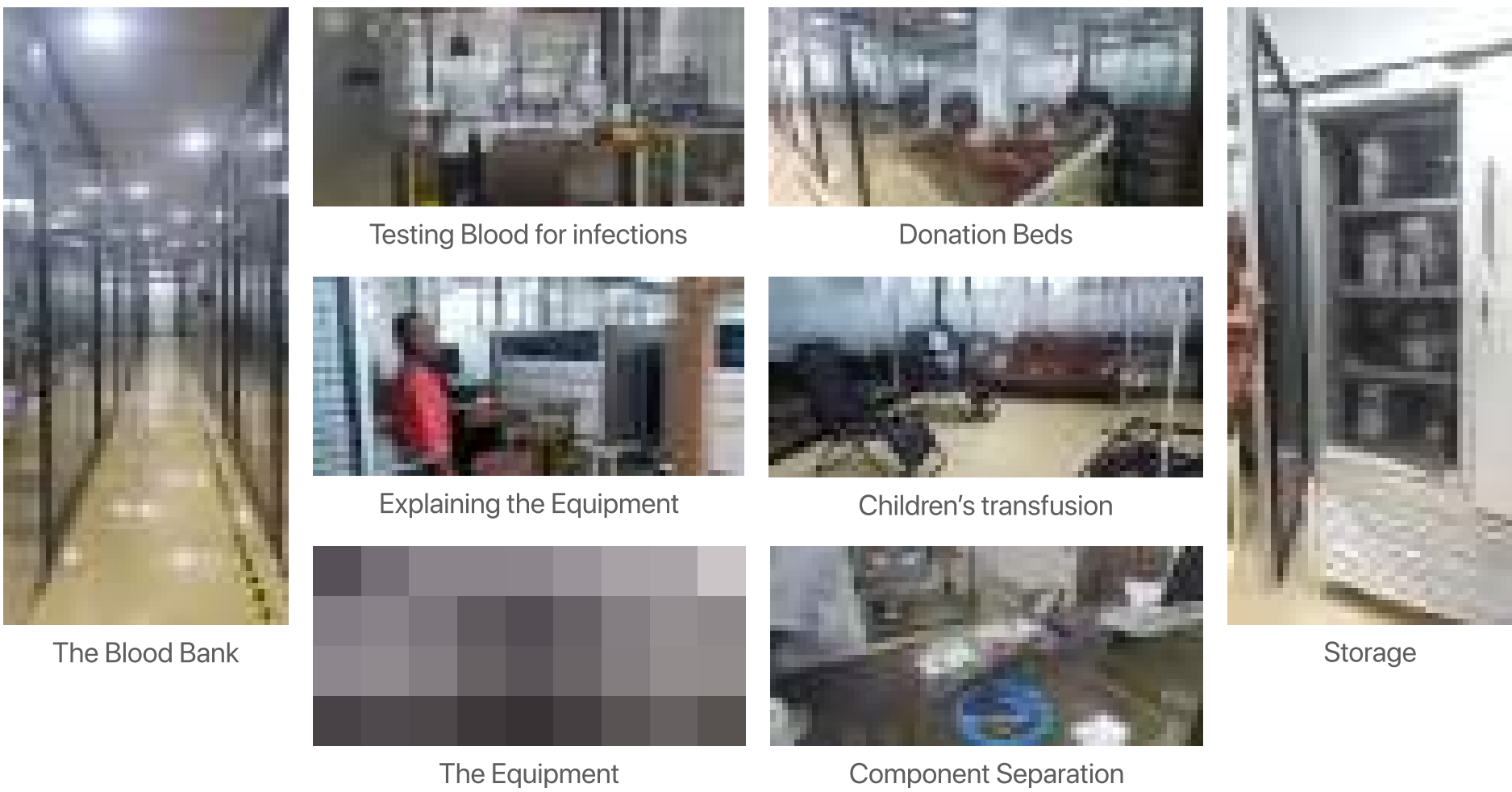


Fig 5.3. Independent Blood Bank



Fig 5.2 Hospital Blood Bank

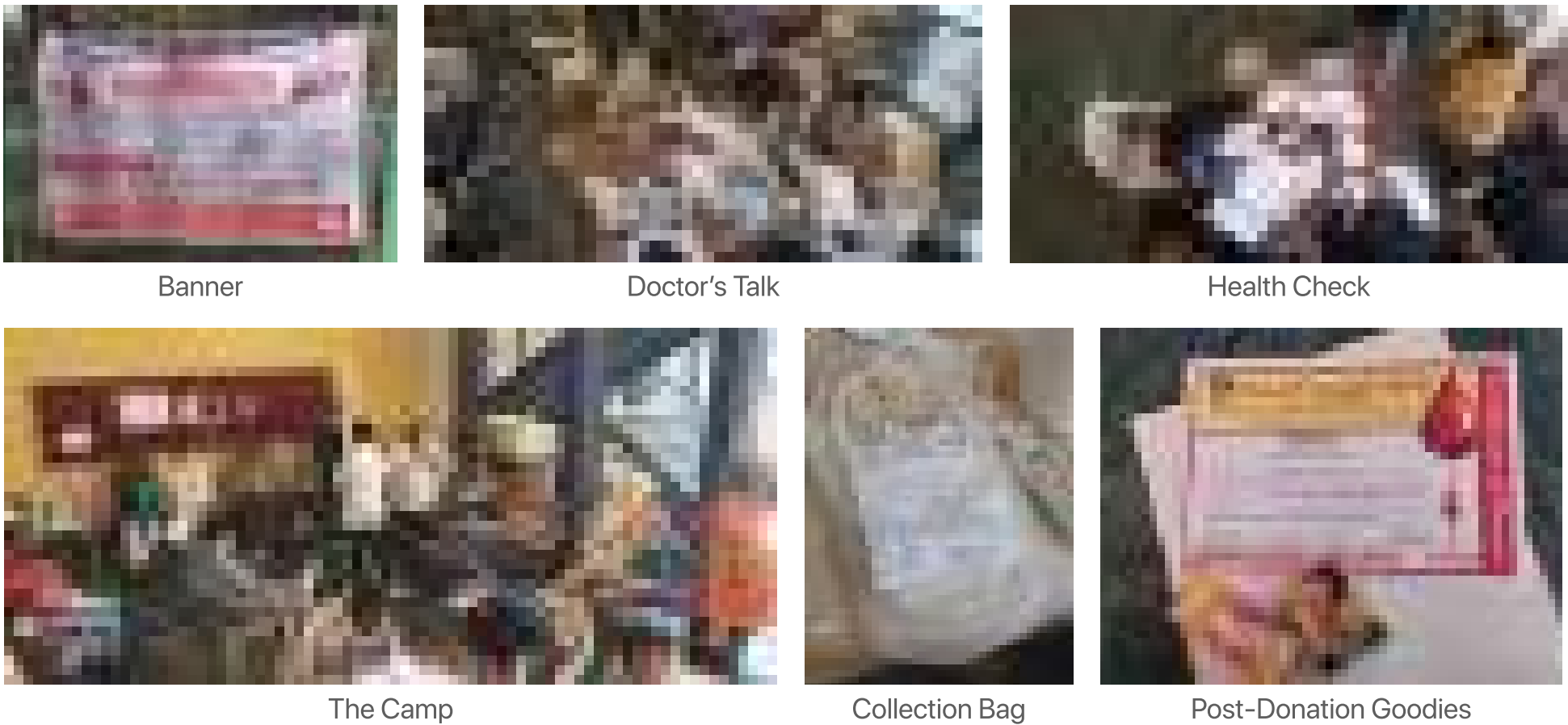


Fig 5.4 Donation Camp

Primary Research

On-site, there was a hemoglobin check and a health conditions review after which unfit people were eliminated. The doctor briefed 3 people at a time before the donation. Most beds were occupied at all times and 350ml bags for the blood were allotted to each eligible donor. Finding the vein in my case was hard so that hurt a lot. Drawing the blood took around 15 minutes. A certificate and snacks were issued afterward and finally, there was a small photo session with the organizers. After my donation, I had interviewed 4 people including a donor, a doctor, a worker at the lab and an organizer. I came to know that around 100 people were expected and around 60 had come until the afternoon. This is a recurring event every 3 to 4 months as there is a huge shortage of blood in Mumbai right now and they are trying to get as many people as possible. My major observations included the fact that they did not check anyone’s ID and people tried to skip the under observation phase. They were also not following COVID protocols. Overall the experience was good, except my arm hurt the whole day.



Fig 5.5 The Donation Process



Fig 5.6 Collected Artifacts



Fig 5.7 Collected Artifacts

Primary Research

5.2 QUANTITATIVE STUDY

An online survey was conducted which brought in around 102 respondents. The survey mainly had three parts. The first set of questions focused on understanding the demographics and categorizing the user into one of the user groups : donors, those who want to donate but have not been able to do so yet, and third, the non donors. The second set of questions depended on the category of users. In case of a donor, the main focus was to understand their donation experience and hinderances to further donations if any. Similarly, in case of someone who wants to donate but have not been able to do so, the target was to understand what is stopping them and what could hep them donate. Finally, for the non-donors, care was taken to understand why they did not wants to donate and what necessary steps are required to help them change. The third part of the survey assessed the amount of knowledge regarding blood donation that the user thought they had and how much they actually had. This also helped in identifying what aspects of donation are still unknown to the general crowd and misconceptions if any.

The target age group was those aged between 18-35, but showcased responses from all age groups. Majority of the respondents were under the age of 30. This particular age group was chosen as they are the most exposed to social media and related digital platforms. Similarly they are also willing to experiment with new things and mostly have a burning sense of adventure. Around 55 of the respondents were men and 46 were women, with varied demographics.



Primary Research

DESCRIPTIVE STATISTICS

55% of the respondents wanted to donate but have not been able to do so yet due to various reasons. After this, the users were classified into the various groups as mentioned in 6.2. 77% of the donors seemed to have donated for the first time mostly because they wanted to donate blood. 39% also said that they did so because they were aware of the huge demand yet limited supply situation. 89% of the first-time donations seemed to have happened between 18 and 30 years and only 22% of the total donors being periodic donors. 77% of the first-time donations happened at a camp even though 62% of the donors preferred to donate at a hospital. The fact that camps occur at inconvenient times and venues was found to be what 39% (most) of the donors hated about donation and the second being the fact that the arm hurt for a day after donation, slightly hindering day-to-day activities according to 34% of the respondents. All the eligible donors were willing to donate again.

50% of those who wanted to donate, but have not done so yet was because they thought their blood groups were common and 40% of this category did not know if they were eligible. Their major concerns leading to non-donation included donation being a supposedly painful procedure and fear that it would obstruct their day-to-day activities. 68% of them were willing to donate if they were rewarded. The strict not donors said that they were against donation mainly because they are scared and think their blood group is common. 50% of the non donors claimed that they would donate if they were rewarded.

In the knowledge assessment section of the survey, they were asked to assess their own knowledge regarding blood donation. Most of them rated themselves between 2 and 5 on a scale of 0 to 7. Majority claimed to know the fact that women can donate blood, that blood regenerates in 24-48 hours and the common opinion that donation is not as painful as it looks. 73% of the total respondents were not taught anything related to the awareness regarding blood donation. Families of 60% of the donors were found to be in favour and 18% of them were donors themselves. 20% were skeptical of donation as they were unaware of the process and 9% thought blood donation was dangerous. 54% of the total respondents seemed to know at least 1-3 donors. A whopping 67% of the total respondents were found to be unaware of the current shortage of blood in the country. 55% of the respondents seemed to have come across someone who was in urgent need of blood. In 41% of the above mentioned cases blood was donated by friends and family and in 39% of the cases, blood was available at a bank.

6. Analysis

The fact that most donors donated blood during their 20s maybe because this is the age when people tend to try out new challenging things. Maybe most of the first-time donations happened at a donation camp as that might have been more accessible at the time but they preferred it because they like the atmosphere and hygiene at a hospital better than that at a temporary, public camp. Inconvenience and lack of knowledge were why most of those who wanted to donate haven't so far. Contracting infection and obstruction to daily activities seemed to be the biggest concerns. Those who did not want to donate no matter what said a solid no because of fear of donating blood coupled with assuming their blood type is common. Thinking some blood group is common is clearly a misconception. It was found that only very few people knew about the health benefits, safety regarding infections, and the number of lives saved. People were also found to be unaware of the process, eligibility, and pre- and post-donation measures. Most of the families were found to be in favor but there was a considerable number of people who were skeptical and a few who thought it was dangerous mostly because they were unaware.

My first set of inferences from my qualitative study concerned the people. They were unaware of the importance and urgency of the situation and lacked knowledge regarding the process and personal benefits. Misconceptions and Inconvenient location and time were also major factors. Pain Points regarding the facilities and

organizations included the lack of outreach and not targeting people as simple banners do not catch attention. They also lack presentation and Public Relations as information overload is usually ignored misinformation spreads quickly. They included a major lack of outreach and information design and the lack of a welcoming experience that could cater to more periodic donations. From the qualitative study, it was evident that communities and organizations created solely for blood donation seemed to have a higher periodic donor count and satisfactory user stories and social media groups also seemed to work out. Posters, pamphlets, and notices, and the publicity in India were not working and most camps were found to be boring and inconvenient.



Analysis

From the derived statistics, it is safe to come to a conclusion that most people are unaware of the procedure and necessity of blood donation. And even in cases where people do know, they are not aware of the sudden urgency and acute shortage of readily available blood post-pandemic. The main focus should be on making the people aware of the situation, procedure, and health benefits. A collective effort by the donation facilities and the people of all user groups has to be made to bring about a change of such a large magnitude among the general public, out of which most have a very contradicting outlook on the whole situation.

After this, the problems were charted better. So regarding the people, the major problems were lack of Awareness and Motivation which were further expanded into sub-problems like Seriousness of the Current Shortage, the Pandemic lack of available information, etc. Similarly, problems regarding the Blood Banks and Organizations included a major lack of outreach and information design and the lack of a welcoming experience that could cater to more periodic donations. During the feedback, I was also asked to look at the current practices to understand what is working and what is not. Communities and organizations created solely for blood donation seemed to have a higher periodic donor count and Satisfactory user stories and social media groups also seemed to work out. Posters, pamphlets, and notices and the publicity in India were not working and most camps were found to be boring and inconvenient.



Fig 6.1. Problems regarding the people



Fig 6.2. Problems regarding the facilities

Analysis



Fig 6.3. Mapping what is working and what is not

This mapping paved way to pinpointing the flaws in the system and potential factors that could be used to bring about a change with a little added propelling. The main emphasis was laid on taking instances from a real donation scenario and overlaying it with the interconnecting system. The multiple ways of bringing about a change at this stage involved fueling the existing methods by using the humane factors that catch the attention of the target user groups and aiding the facilities with useful methods to put forward an inviting front and using that to plant the idea in the subconscious minds of the user groups.

At this point a miniature model of what could be the system was created which could be further expanded in detail. This served as the framework for mapping out the bigger picture and aided checkpoints and relevant connections that later paved way to understanding the micro-level interactions between the user groups and their interactions which helped identify touch points that could be used to enhance the existing working methods at the time of ideation.

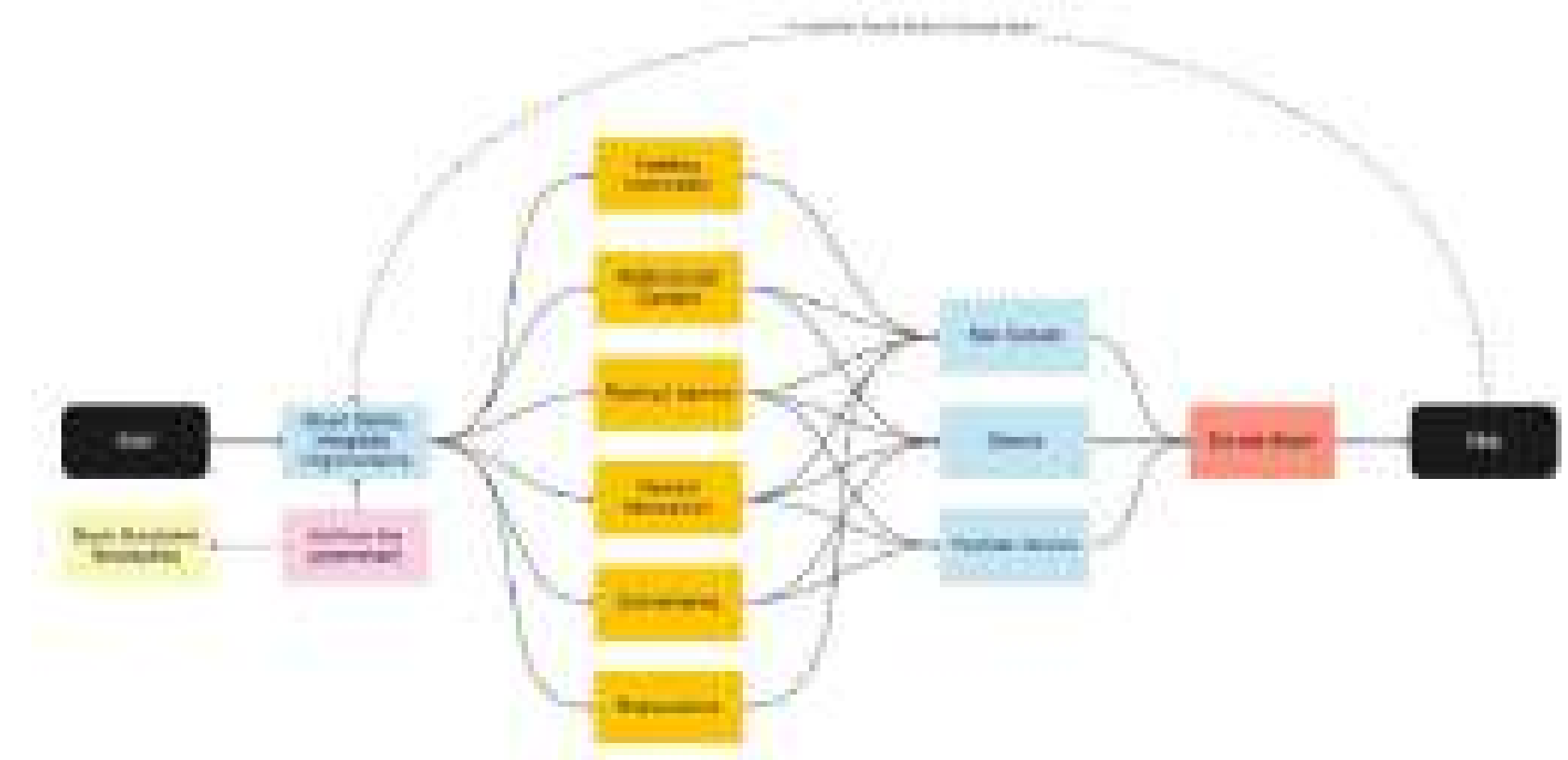


Fig 6.4. Understanding the correlation

Analysis

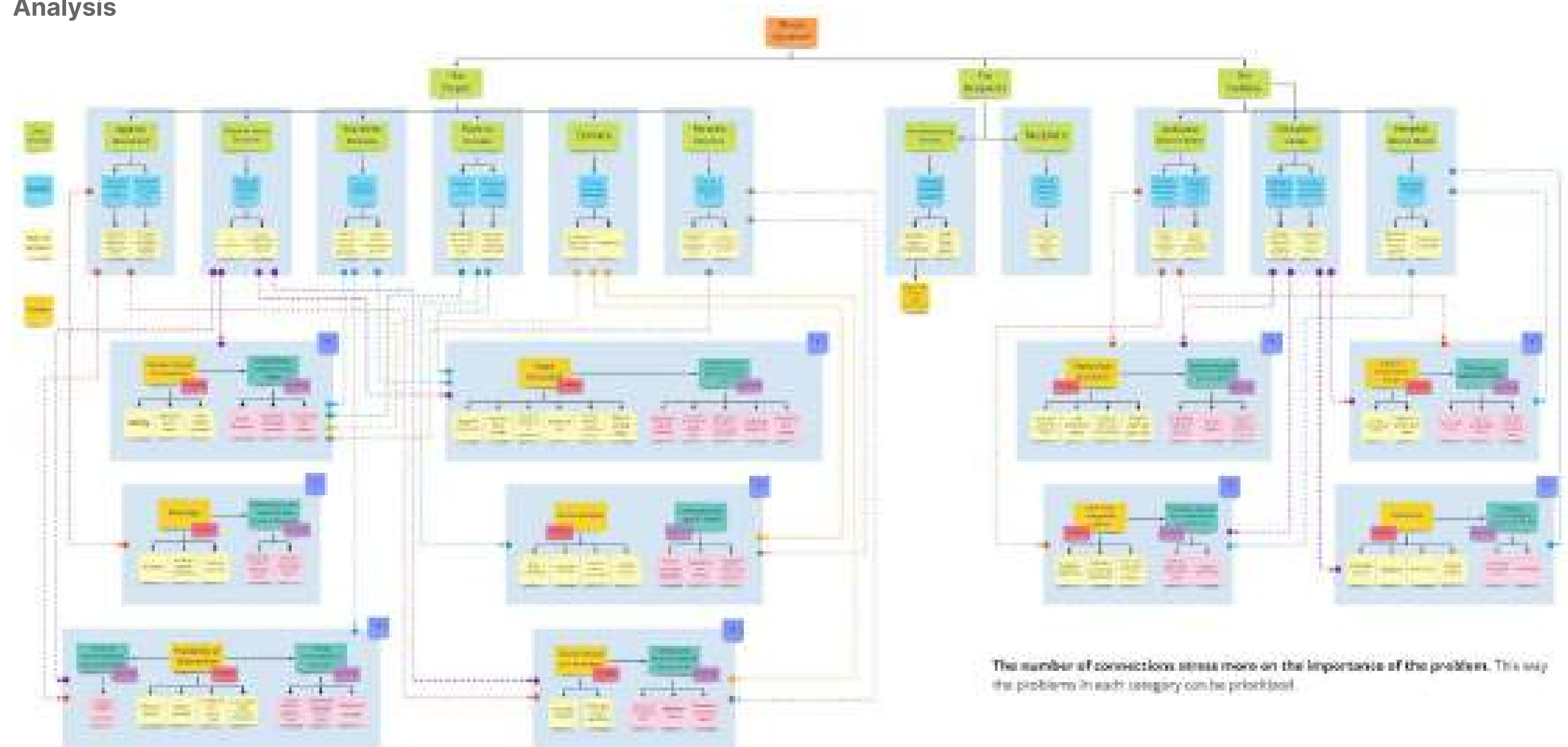


Fig 6.5. The System and its problems

The User Groups in case of the people were found to be cascading. One user group eventually becomes the other if the process works out. The goals were listed out in each case and points on how to achieve the goals were noted. Further, the problems and opportunities in each case were listed out and connected with the user groups, and each group was assigned a specific colour. The number of connections stressed more on the importance of the

problem. Those who were skeptical of donation, those who were scared to donate and those who wanted to donate had very similar problems. The user groups mainly either needed to be eased in to the world, making information consumable or they needed to be motivated in order to kick start donations or keep them going. This map helped form the major connections within the system tying up all ends, hence shaping the rest of this project.

7. Restated Design Brief

The redefined aim is to build a progressive solution to encourage Blood Donation among people aged between 18 and 35 by tackling the problems of lack of awareness and motivation and using better outreach and donation experience provided by Blood Banks.

WHY PEOPLE AGED BETWEEN 18 AND 35?

This age group was found to be the most active on and impacted by social media the most. They were found to follow trends and are heavily influenced by what others do. Similarly, according to psychology, this is the age when people's sense of adventure is at its peak and people are willing to try out new things with even the least amount of pressure. The other age groups would require a different approach.

8. Ideation

The solution has to be in both directions as the people and the donation facilities are co-dependent. Some of the opportunities regarding the people involved taking information to the user rather than waiting for them to come to seek it to tackle lack of awareness and instilling a sense of safety and comfort before, during, and after donation for reassurance. Similarly, some of the design opportunities for the banks involved using the surroundings for distraction by providing a more interesting ambiance and redesigning the existing information using a targeted approach, and so on. The stakeholders could be drawn up as a system and could be simplified into one cycle where, in an ideal situation the blood banks, hospitals, and organizations provide the people with awareness, reassurance, knowledge, and clarity regarding misconceptions leading them to donate blood periodically.



Fig 8.1.1 The Transtheoretical Model of Behaviour Change

8.1 APPLYING THE TRANSTHEORETICAL MODEL OF BEHAVIOUR CHANGE

The transtheoretical model of behavior change is an integrative theory of therapy, developed by Prochaska, that assesses a person's readiness to act on a new healthier behavior, and provides processes of change or strategies to guide the individual. The TTM posits that individuals move through six stages of change: precontemplation, contemplation, preparation, action, maintenance, and termination. The User Groups as segregated during the study could easily be superimposed on to the Transtheoretical Model of Behavior Change. For example, the non donors could be in the precontemplation stage, those who want to donate but don't know how to, in the contemplation and preparation stages, the first time donors in the action stage and the periodic donors in the maintenance stage. The termination stage does not really apply in this scenario. Each user group will require a rather different approach. Change should be brought about gradually, maybe in phases.

Ideation

Phase one could target those who are in the action and maintenance phases. The aim of this phase should be to encourage periodic donors to keep donating and first time donors to come back periodically. For this, especially in a pandemic affected situation, they need something more than just the fact that the country is in urgent need of blood to look forward to. Maybe a subtle reward system could be implemented. For example, people sometimes have to wait for more than an hour at the OPD or while waiting for results and in that case, maybe a healthy bystander could donate blood which could serve as a base for redeemable discounts on hospital bills. Another idea was to display blood availability statistics (Fig 8.1.3) on the hospital Television at the OPD (Fig 8.1.4) in case the hospital blood bank is running short of a particular blood group

or someone urgently needs blood that is unavailable. This might trigger someone around to donate blood while they are waiting. This tackles the problems of shortage and lack of motivation.

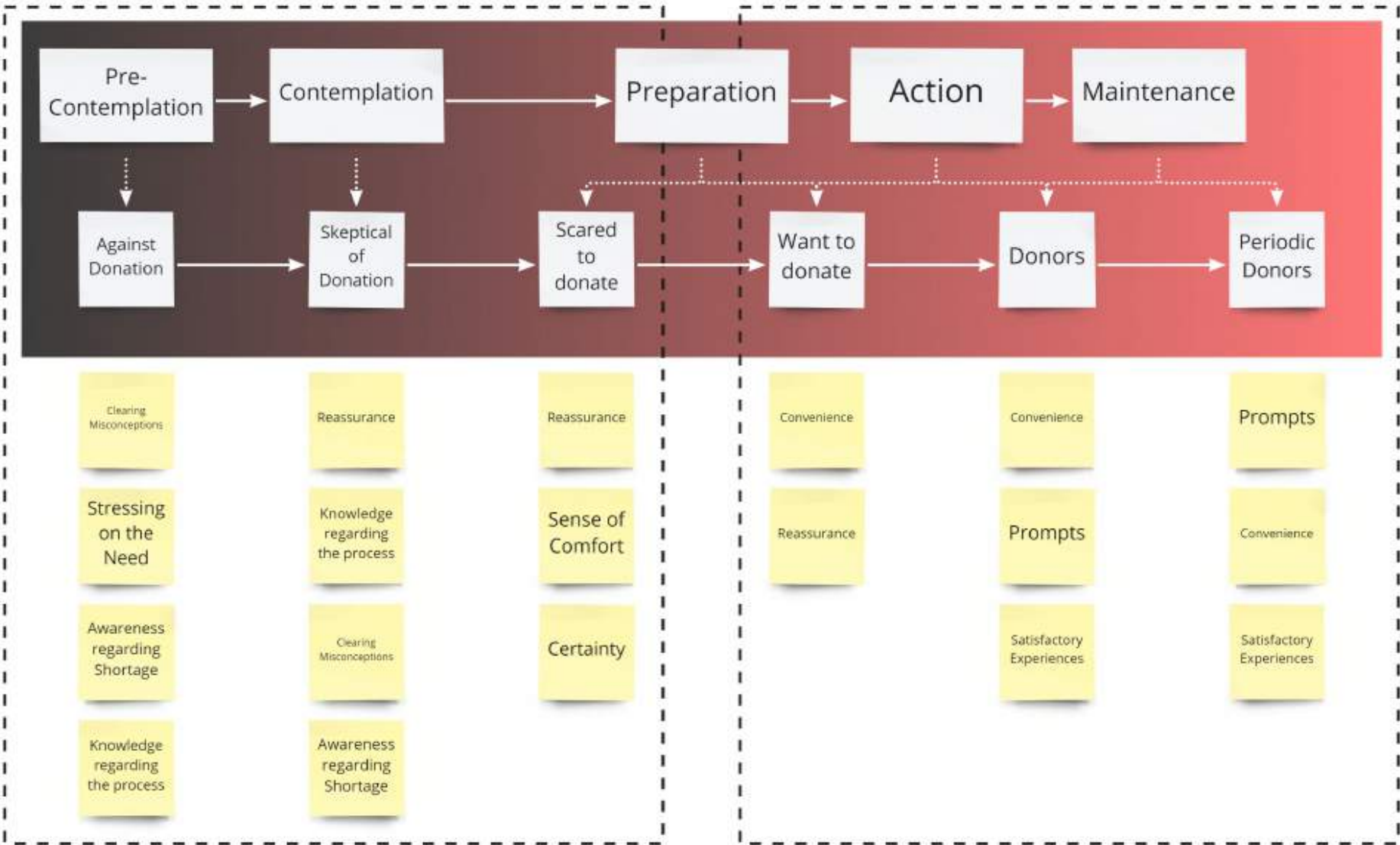


Fig 8.1.2. The Cascading User Group



Fig 8.1.2. The Factors

The second phase should be aimed at those who want to donate but don't know how to and those who don't know much about donation but are willing to donate once they do as they are in the contemplation and preparation phases. What they need is knowledge regarding the process and benefits, and awareness regarding the sheer need for blood in the country. They also need reassurance that blood donation is a safe process. This one was about showing consumable content.

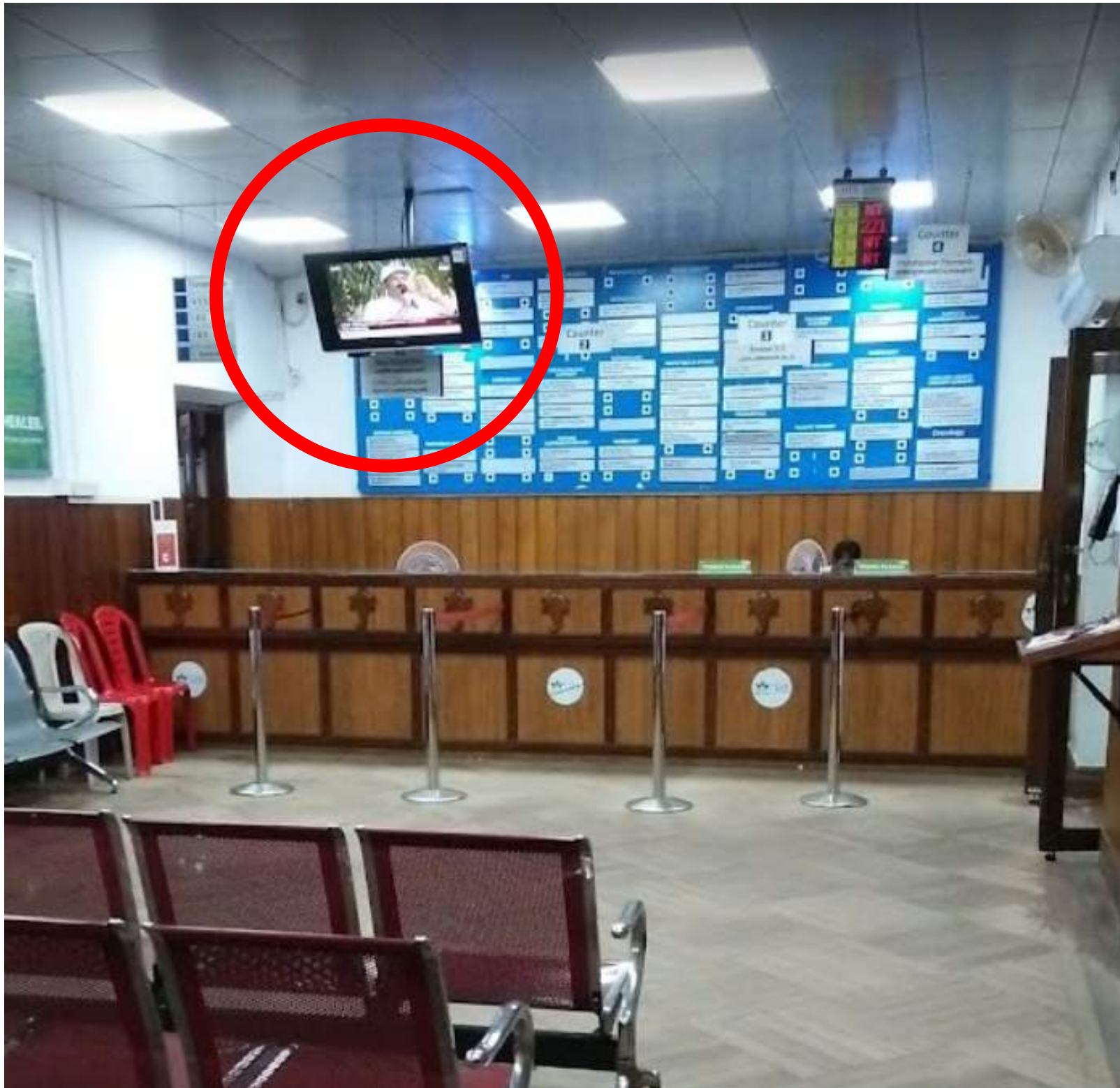


Fig. 8.1.3 TV at hospital OPD showing News

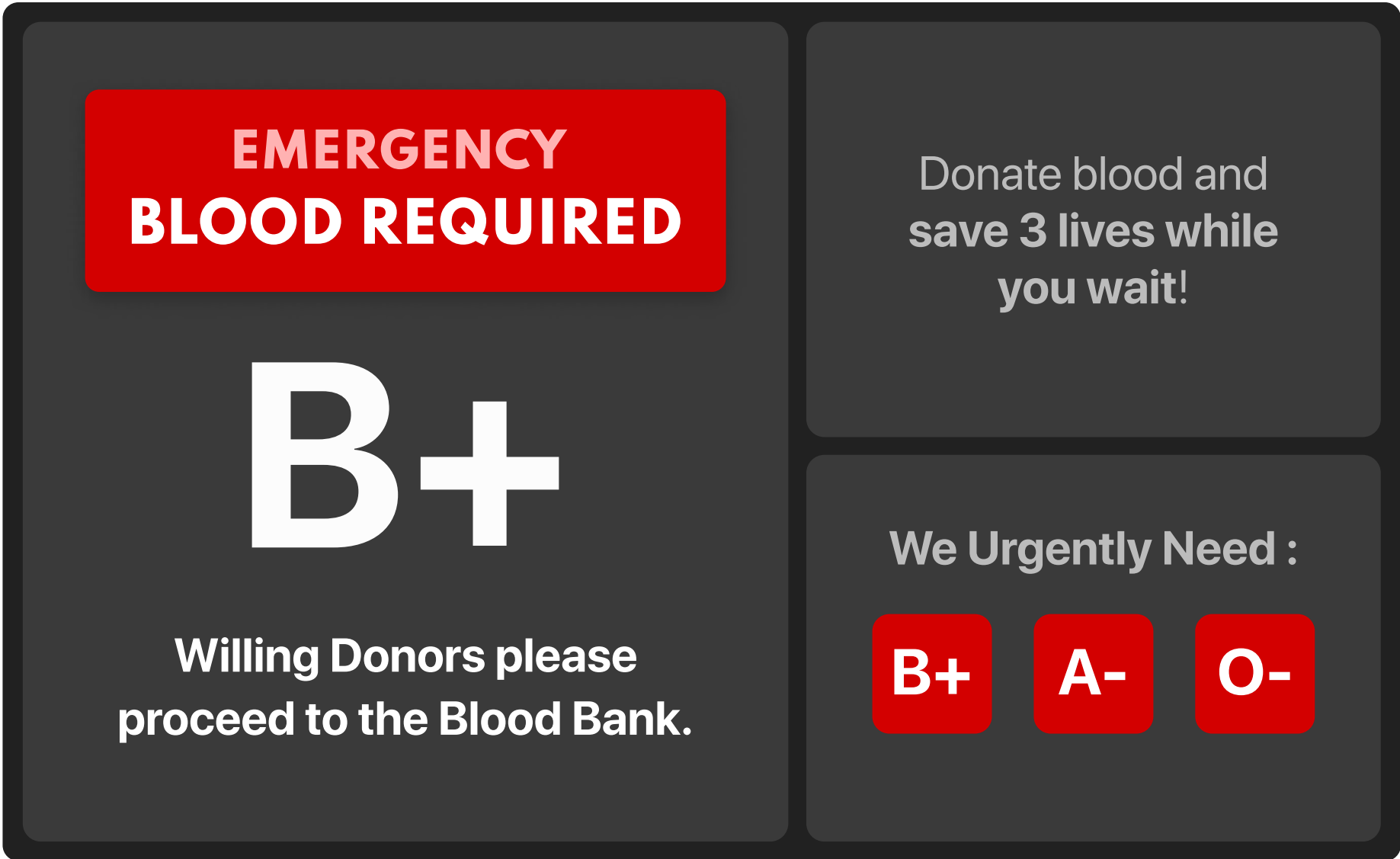


Fig. 8.1.4 The same TV showing blood availability statistics

The first was a motivational poster at a blood bank which was not legible or interesting (Fig 8.1.5). The second shows a young girl happily donating blood with the tagline “I am not afraid” which is motivational and reassuring (Fig 8.1.6). Similarly, the COVID stats on the Google search engine was widely used during the pandemic. So in case, blood is short in the user’s particular location, it could show prompts that could make the user aware of the situation and enable better outreach (Fig 8.1.7).

Phase three would focus on the non-donors who are in the pre-contemplation stage. They need to be made aware of how urgent this situation is and that all of their thoughts on blood donation are probably corrupted due to common misconceptions. What they need is clarity regarding misconceptions, knowledge regarding the

Ideation

process and benefits, and awareness regarding the situation. Since the target user group is aged between 18 and 35 as they are the most exposed to social media, the approach could be through digital media. for example, Short informative ads could be shown at the beginning of a video especially on sites like YouTube as in most cases, they have to watch for at least 5 seconds. Similarly, Small facts could be shown while using applications that have ads while in use. This could be useful to feed the user unconsciously with information, one fact at a time. Another important detail is the fact that most donation facilities and awareness personnel have bad information design. People tend to ignore propagated information. It is crucial that the content be redesigned in a way that is consumable by the common Indian crowd.

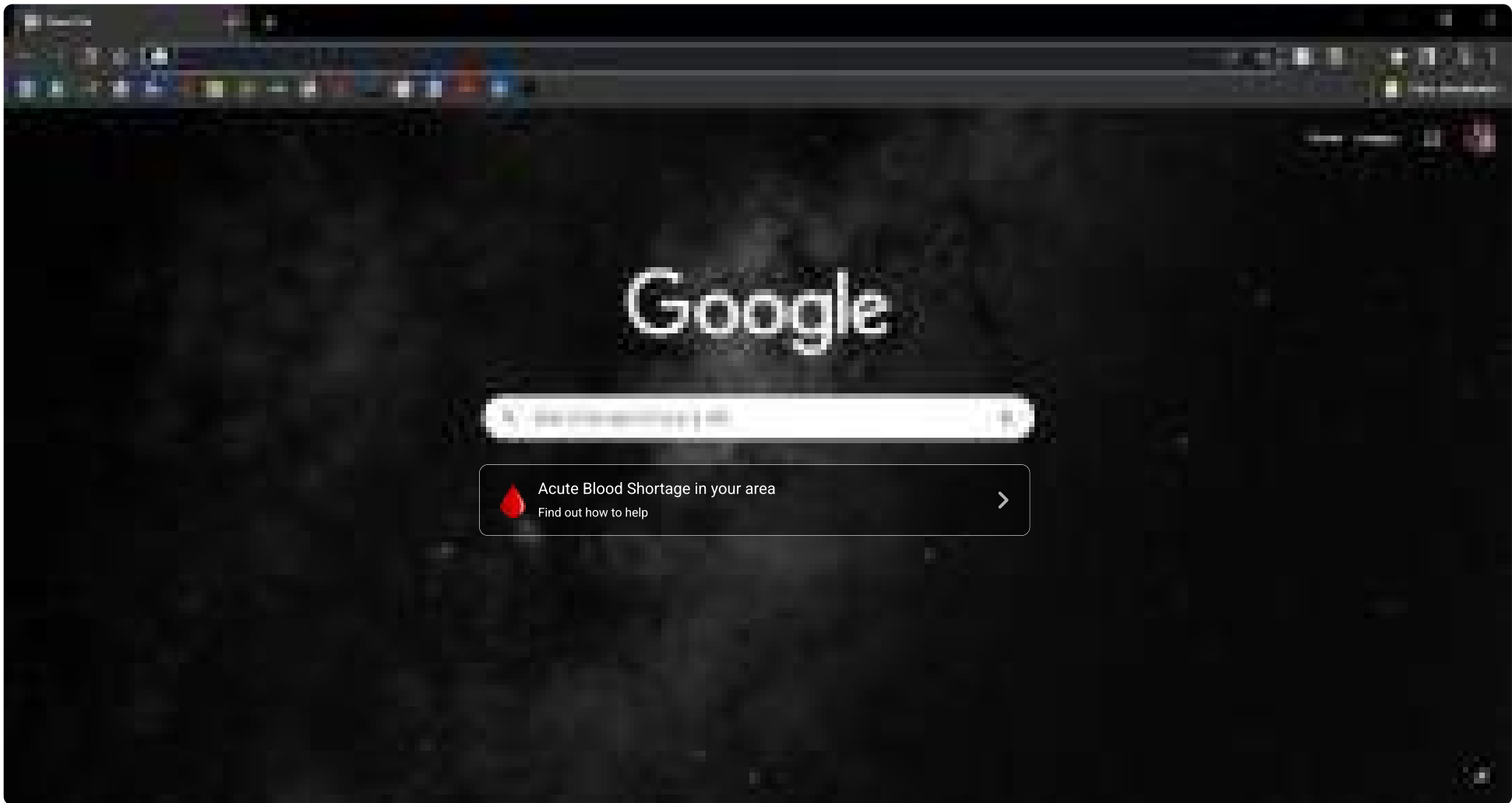


Fig 8.1.7 Showing prompts in case the user’s locality is low on blood



Fig. 8.1.5 Motivational Poster at a Blood Bank

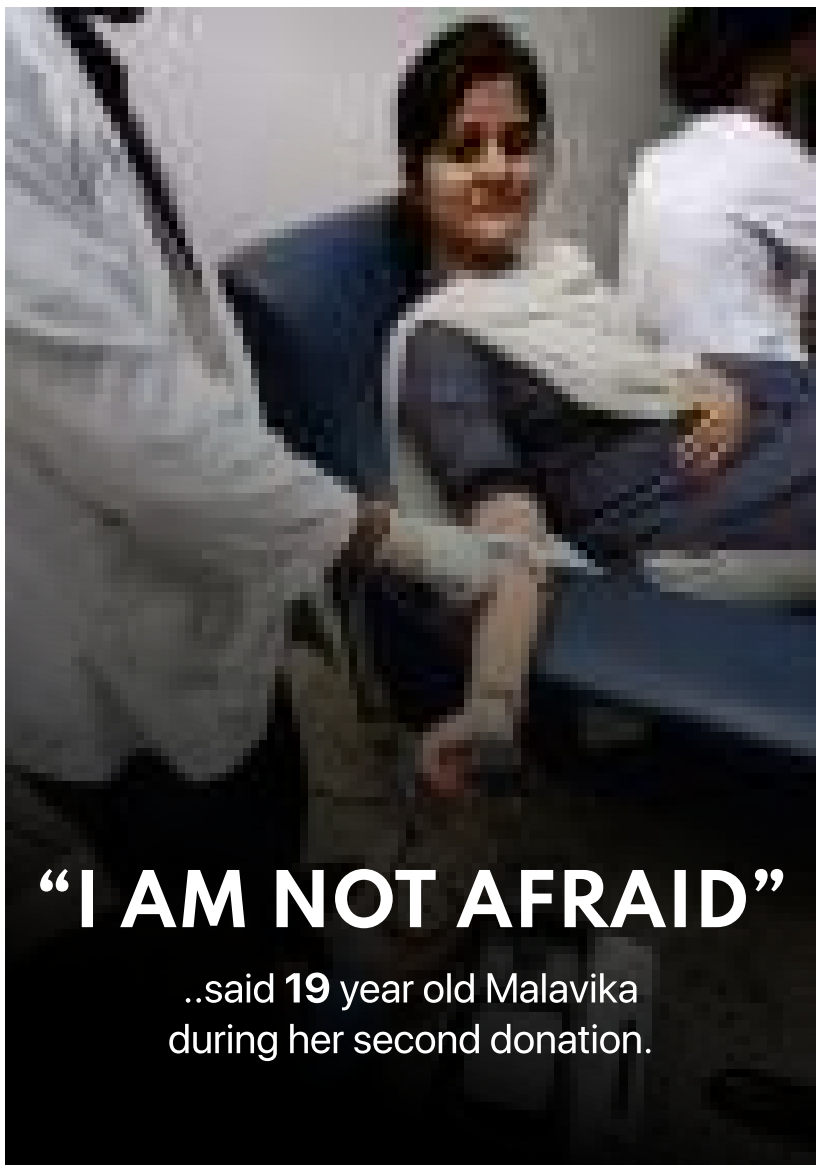


Fig. 8.1.6 Young girl donating blood which is reassuring

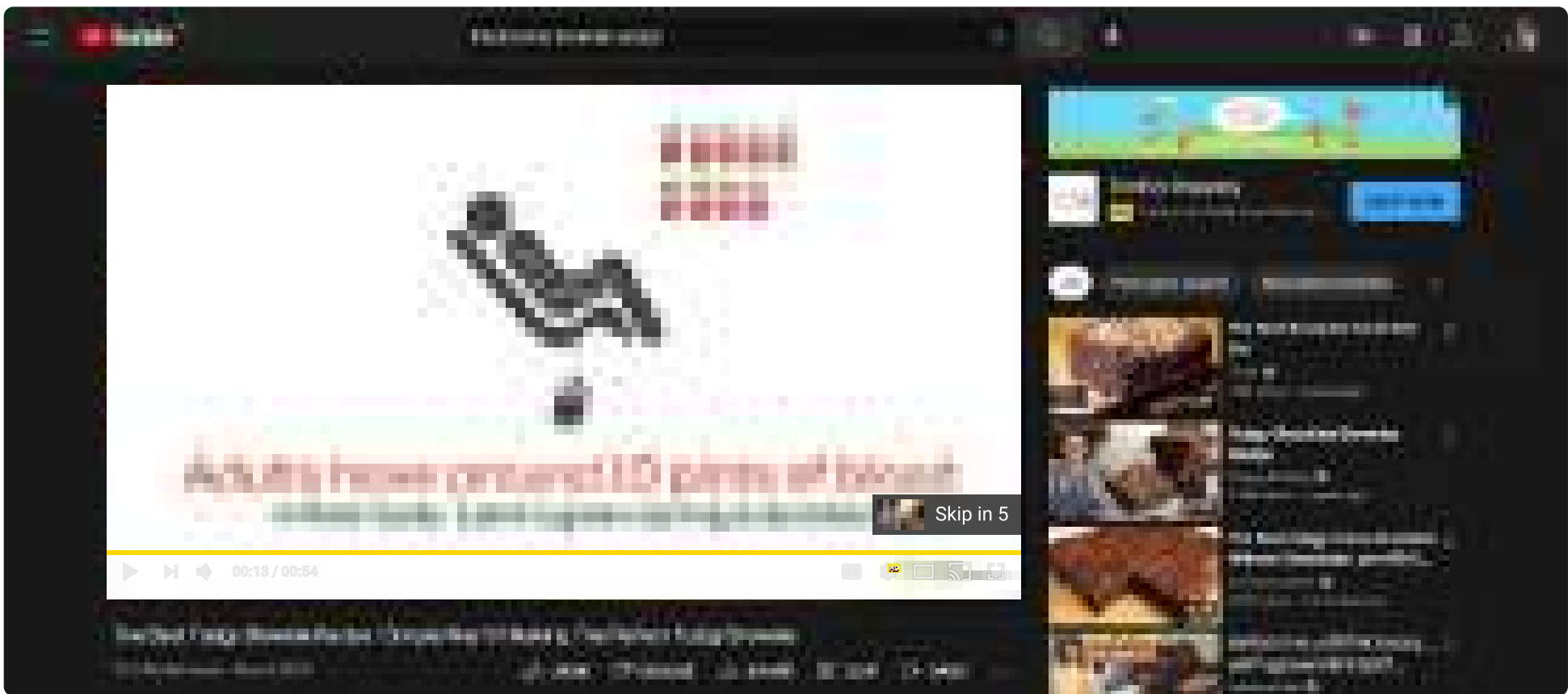


Fig 8.1.8 Small unskippable ads on YouTube

Ideation

8.2 INCORPORATING SOCIAL COGNITIVE THEORY

The Social Cognitive Theory could be used to connect the stages while attempting to transition the user groups in each stage according to the TTM to the next. This theory is base for the strategy to take the users all the way from the pre-contemplation stage to the maintenance stage. For example, those in the maintenance stage will be motivators for those in the action stage. People in the prior stages are found to observe and learn for the immediately succeeding stages to satisfy various mental states. Reinforcement is usually found to come not only from external factors like environment and behavior but also from intrinsic factors as a form of internal rewards like pride, satisfaction, and a sense of accomplishment. People these days, especially our target user group is found to be extremely reactive on social media. Additionally, they are also proactive when it comes to sharing information that could easily influence each other. Some campaigns, especially those related to sustainable living and precautionary messages in relation to COVID-19 seemed to have a massive impact on the crowd. They helped people change their outlook towards certain things that have been a stable practice over the years. Similarly, the donation facilities need to be in the field that the people are in, in order to influence them. This commands them to have a well-planned outreach mechanism on social media specifically catering to the respective target user groups. For example, those who are scared of needles in the preparation stage will require a completely different approach compared to those who are scared that they will contract infections through donations.

Extending the outreach through digital platforms could be focused on the people to bring in more first-time donors and ensure periodic donations by tackling awareness, knowledge, and motivation aspects. Some of the simple design thoughts included real-time blood availability statistics outside hospital blood banks. Most hospitals are equipped with TVs at the OPD counters where people usually have to wait to get an appointment and later wait till they see the doctor. Availability statistics could be displayed on the screen in case the hospital blood bank is running short of a particular blood group or someone urgently needs blood that is unavailable. This was to tackle the problem of shortage. Seeing this or through word of mouth, someone else also could get influenced leading to blood donation being more popular and talked about over time. Similarly, the donation facilities also enable better outreach to rope in more donors and streamlining information, based on the crowd. It could be like feeding information unconsciously like the 20-second unskippable ads as discussed in Section 9.1 and finally ensuring a smooth experience that people would recommend to others.



9. Chosen Concept

The final solution was a platform that integrates most of the above mentioned suggestions into a one major solution as a system. The output of this project is webspace that can be accessed on both desktops and smartphones. The function can be divided into two major parts, the first being a space meant for the general public which provides them with the necessary relevant information and the second being the section that caters to the individual user depending on the user group that they fall under.

The following table discusses the features that this platform should have that specifically caters to the needs of each user group. Since the user group was found to be cascading, the aim would be to use this platform to help people transform from one user group to the next. Each user group is expected to interact differently with the platform. Similarly this platform also aims at expanding the outreach and increasing possibilities of large scale collaborations involving the general public and other firms by incorporating contributions ranging from school level activities to promotions by major companies.

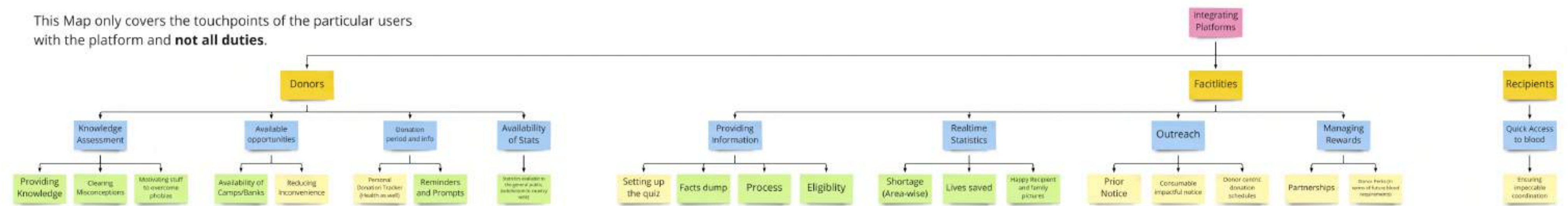


Fig 9.1 Touchpoints of the respective users with the platform

10. Design Detailing

10.1 INFORMATION ARCHITECTURE

As discussed earlier, the platform would majorly be divided into two parts. The first part that is accessible to the general public is aimed at providing the users with general information that everybody must be aware of. Emphasis is laid on statistical data in a digestible manner.

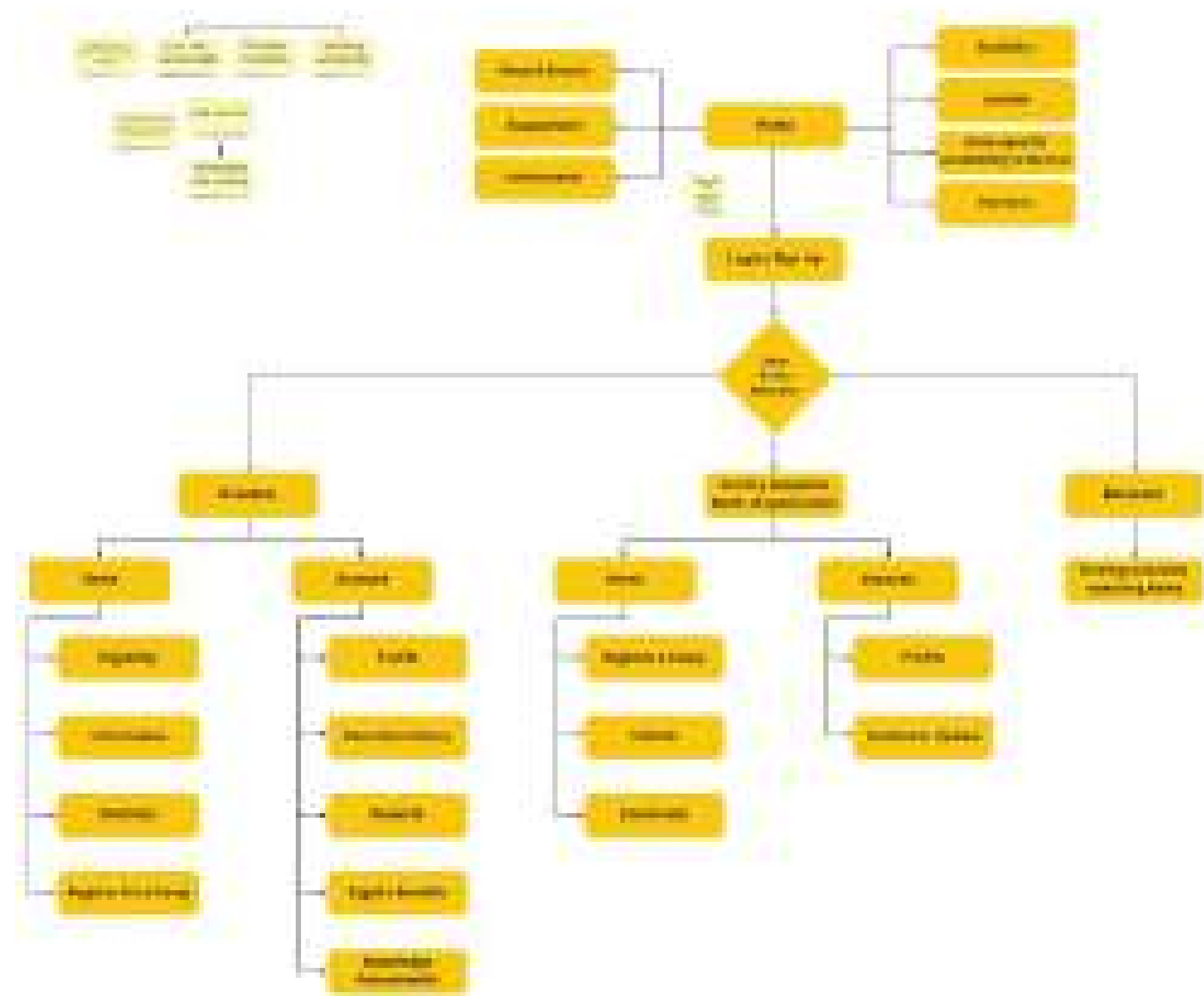
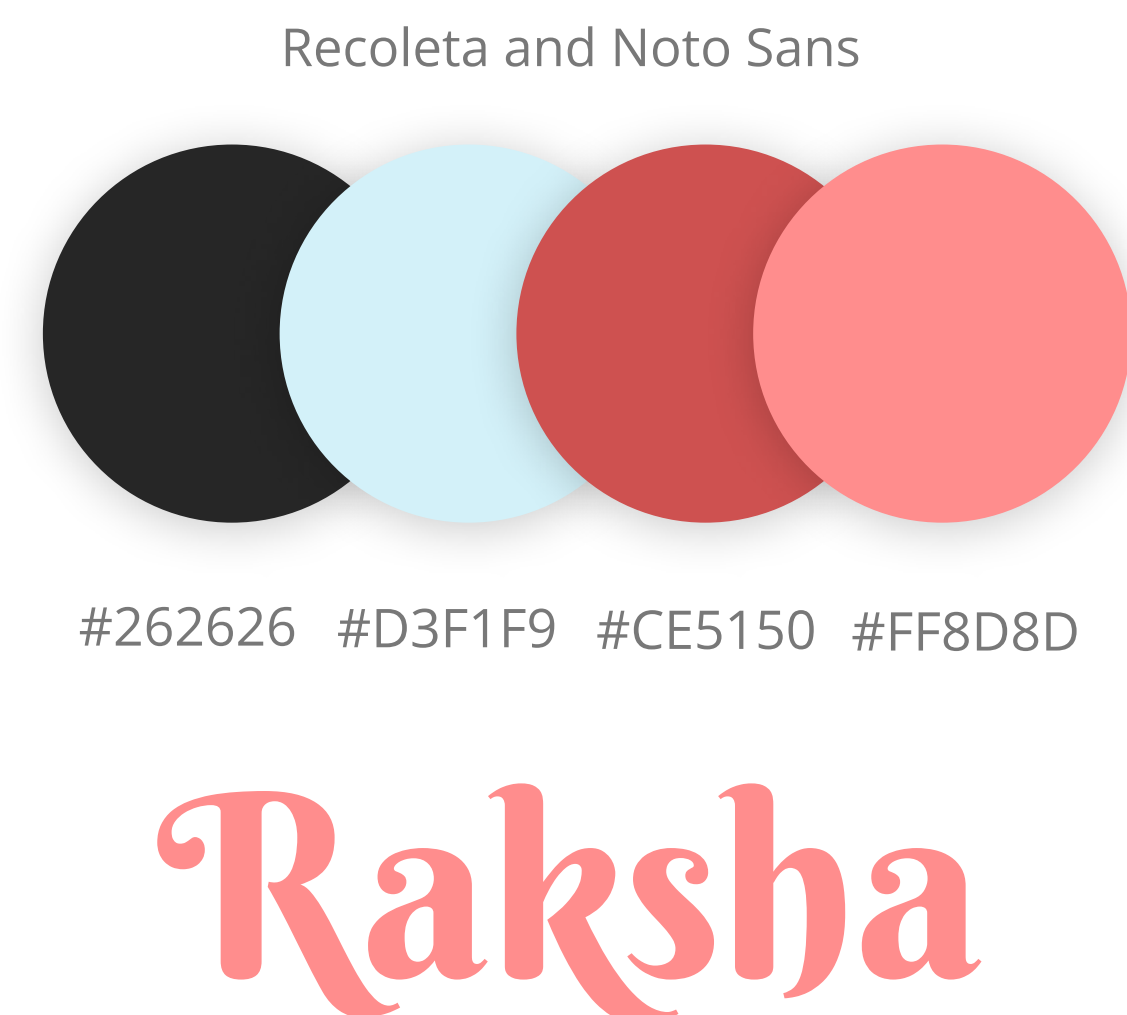


Fig 10.1 Information Architecture

10.2 STYLING

A combination of Blue and Red was used throughout the webpage. Red was used mainly to denote blood and a lighter variation was used to reassure that the red does not scream danger. The main purpose of blue was to instill a sense of calmness and serenity. Blue also symbolizes health and security.



The initiative was carefully named 'Raksha' as the word means both 'to save and 'to protect' according to most Indian languages. This was done keeping in mind how people are saved by the donated blood while some of the donors themselves are scared of the process due to various factors. Raksha is a form of reassurance for both the user groups in this case.

Design Detailing

10.3 UI ELEMENTS

As the Target User Group was mainly those aged between 18 and 25, the styling was done in such a way that the interface fits in with the current UI trends and themes. Most of the existing websites and applications catered to blood donation usually have the general government website layout which was found to not be very appealing to this user group.



Overall the design elements were kept minimal and most of the information was thoroughly segregated and displayed only what was necessary. Cues were provided to provide a sense of ambiguity in an interesting manner in such a way that the user wanders off exploring and finding new information.

10.4 THE DESIGN

The website was kept minimal. The main objective was to focus on the discovery of the website rather than what happens on the inside. The following is a snippet of what the Home screen looks like.

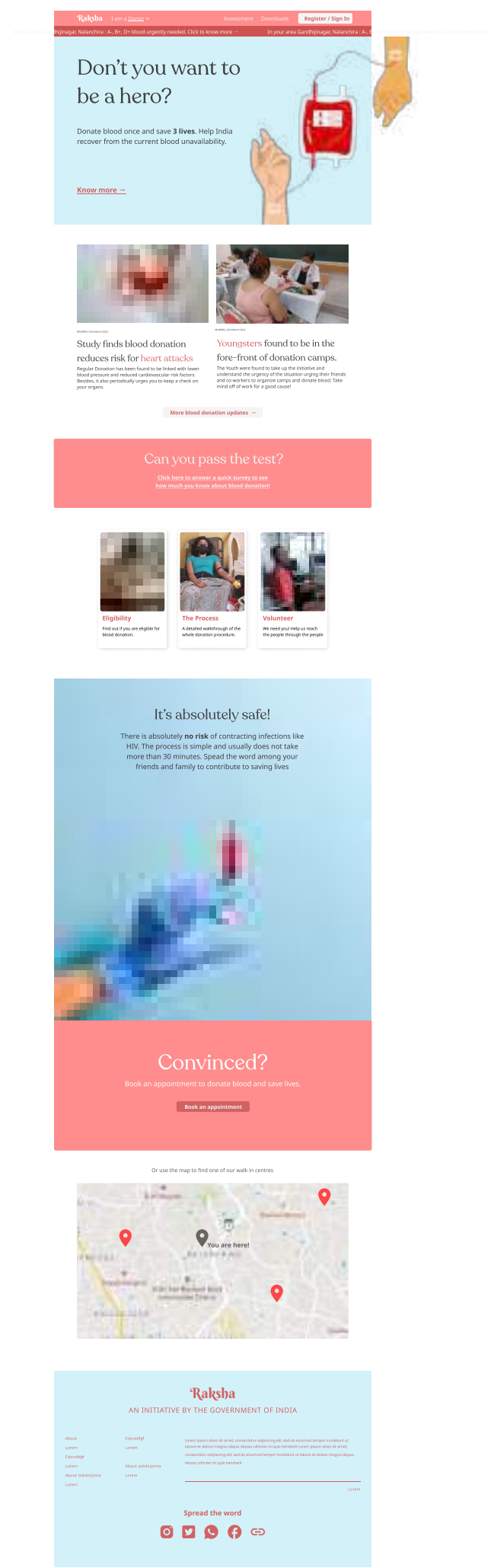


Fig 10.4.1 Snippet of the Home Screen

Ideation

10.5 THE DISCOVERABILITY

The discovery of this website is the one thing that was focussed on the most and is the one main aspect that most other existing alternatives lack. Most popular applications and web hotspots were observed and the way of advertising was closely observed. Starting with the most basic means of discovery, is one of the ideas from the ideation section that was developed further. Since google tracks location while in use, just like how there used to be links related to COVID during the pandemic, Raksha could show an alert on the home page in case of a shortage or a flash blood donation camp. This way, the user is aware of the situation as well as prompted in case they fall under the want to donate but have not yet due to inconveniences category. Similarly, this also helps in word of mouth communication in a way in case someone meets a friend or a family member who is willing but is unaware.

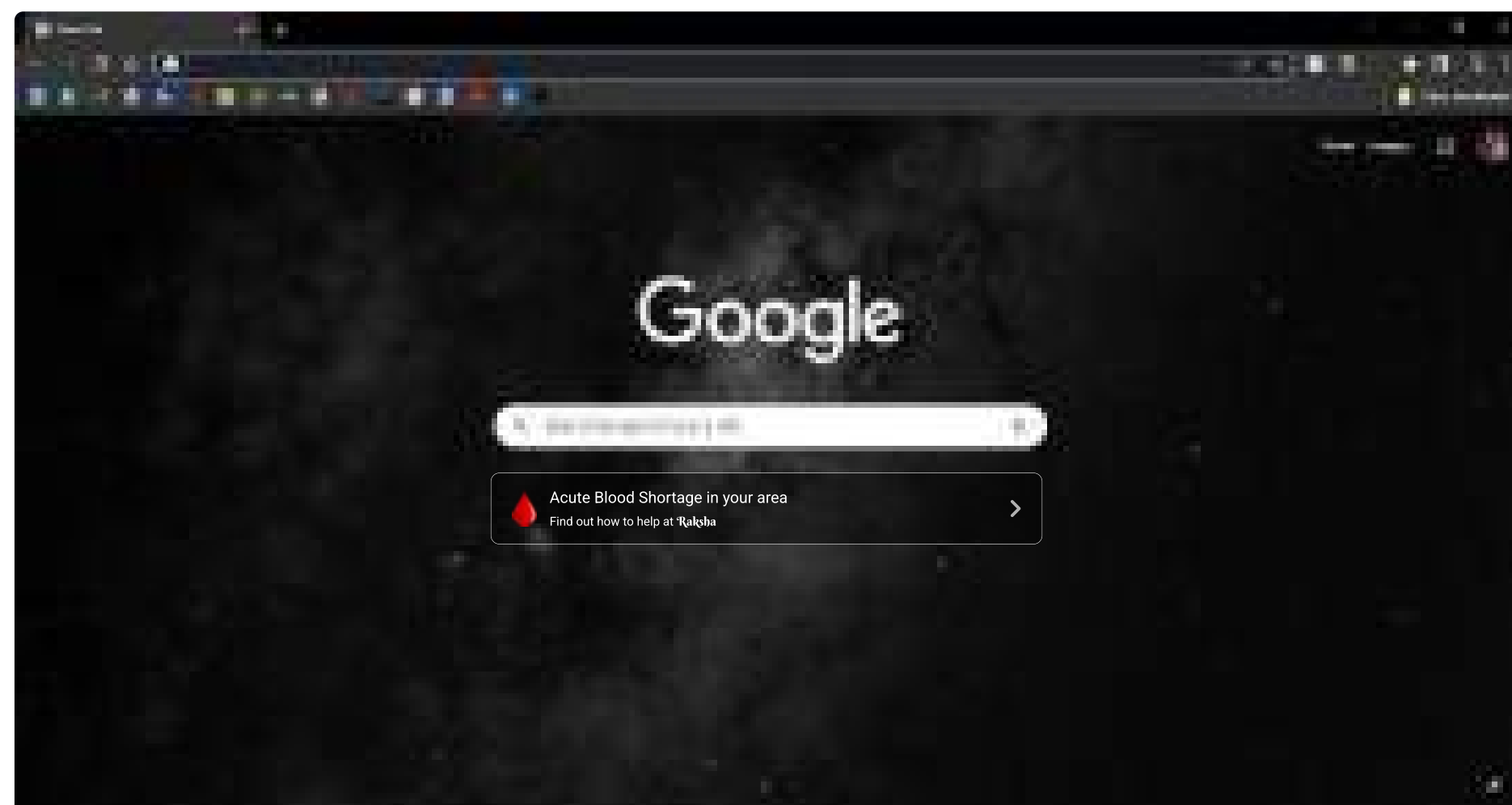


Fig 10.5.1 Showing prompts in case the user's locality is low on blood

Similarly other applications and webpages were also explored. One of the most used applications to be found were food delivery partners like Swiggy and Zomato. A lot of external, unrelated companies partner with them in the form of advertisements, games, short videos etc, for the sole purpose of publicity. People who use non-premium Spotify were even found to know the whole dialogues of advertisements in between songs by heart. From these observations, it was safe to assume that ads unknowingly leave an impact on the human mind when subjected to it frequently. The same was experimented with Swiggy in the following snippet.

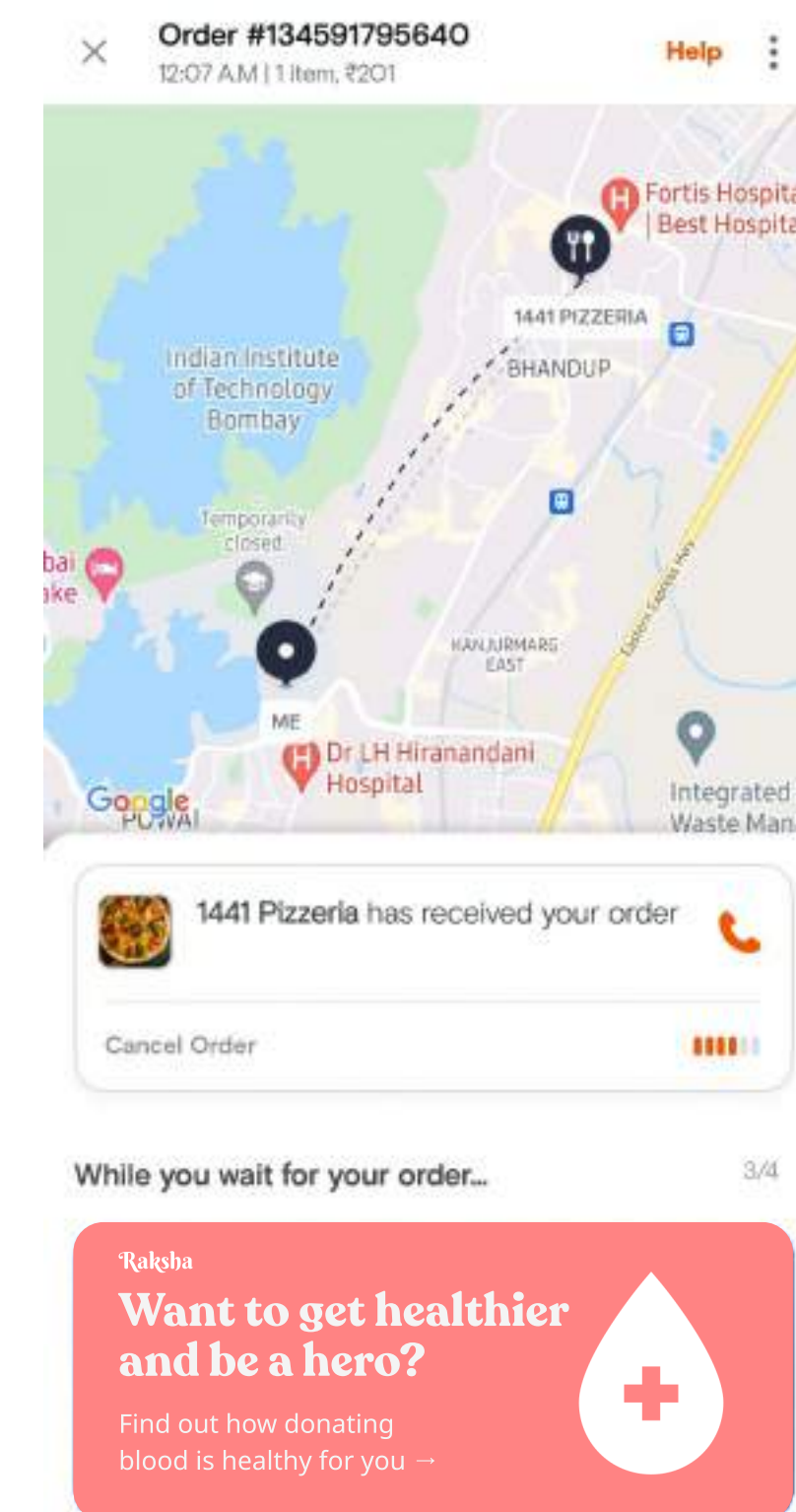


Fig 10.5.2 Discovery through apps like Swiggy

Detailing

The same statement was executed on YouTube as well. YouTube is one of the most widely used streaming platforms with all kinds of users of all age groups and demographics. While Ads serve as a revenue source, YouTube also willingly promotes Non Profit Organizations to help spread word and act as a saviour to the people in need. They have also initiated fundraisers and similar online activities that has helped people. Pop-Up ads at the bottom and short video advertisements before or during the YouTube video might also serve as a main method of having Raksha discovered by the people.



Fig 10.5.3 Ads displayed in banners

Similarly as mentioned during the ideation phase, the users could be fed one fact at a time through 5 second videos. People will unconsciously read it and this memory can be triggered at a later stage with a different stimuli. So many organizations and companies use this method known as the '**foot in the door technique**' which is being applied here.

10.6 RAKSHA'S METHODS

10.6. 1 COLLABORATION WITH YOUNG MINDS

The 14th of June is observed as World Blood donation Day and a lot of schools and colleges commemorate this day by organizing poster making competitions, public speaking competitions, etc. One of the main problems found with the donation facilities is the fact that their information posters and notices are very plain and uninviting. This platform provides the opportunity of allowing the schools to submit their students' creations which could later be converted into posters for blood donation drives and spreading awareness. This allows a constant refresh of the resources every year. This also helps raise awareness regarding the children who constantly require blood. This is a good way to make school children empathize with the children in need and will serve as a memory when they grow up while realising the importance, hence making a change.

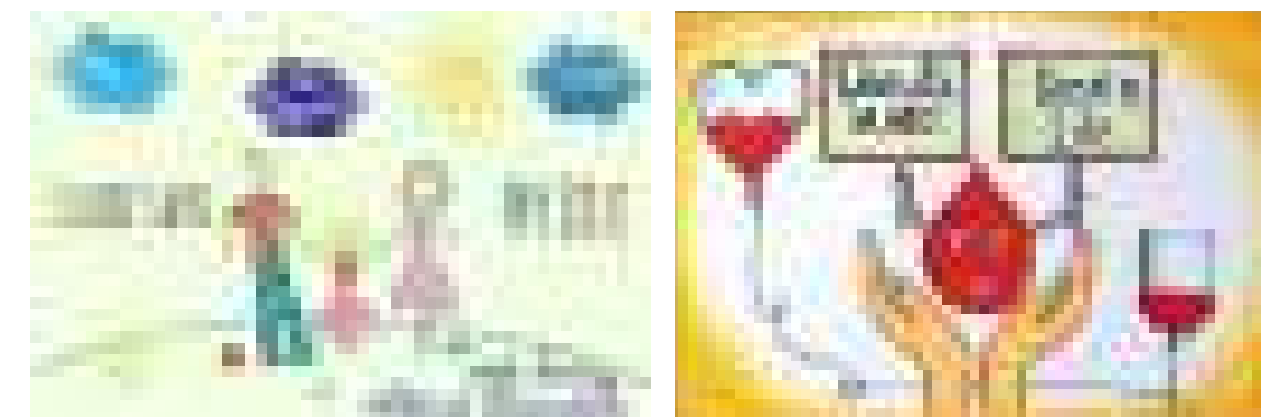


Fig 10.6.1 Posters by kids (Google Images)

10.6. 2 INTERNSHIP OPPORTUNITIES

Similarly this initiative opens up internship opportunities where the interns can add their own personal touch into the propagation of information by handling things their way and using the creative material by putting them to better execution.

Detailing

10.6. 3 KNOWLEDGE ASSESSMENTS

There is an assessment section that asks the user 3-5 questions regarding blood donation with options, that provides the user with redeemable coupons. Since the target age group is between 18 and 35, which is found to be the age where people value discounts and offers as they are all starting out with their adult lives is expected to take out to minutes of their time to redeem an offer if necessary.

7. One Donation can save upto :

☒ 24 - 48 hours

☐ 1 week

☐ 1 month

☐ Never

7. One Donation can save upto :

☐ 1 Life

☐ 2 lives

☐ 3 lives

☐ None

8. You can contract HIV from blood donation.

☐ True

☐ False

9. Donation lowers the risk of heart attack.

☐ True

☐ False

3 Questions away from your rewards!

Fig 10.6.2 Online Knowledge Assessments

This raises collaboration opportunities with major companies like online shopping websites, food delivery platforms and so on as they are high on demand especially since the pandemic. Applications like Zomato and Food chains like KFC already are partnered with non-profit organizations.

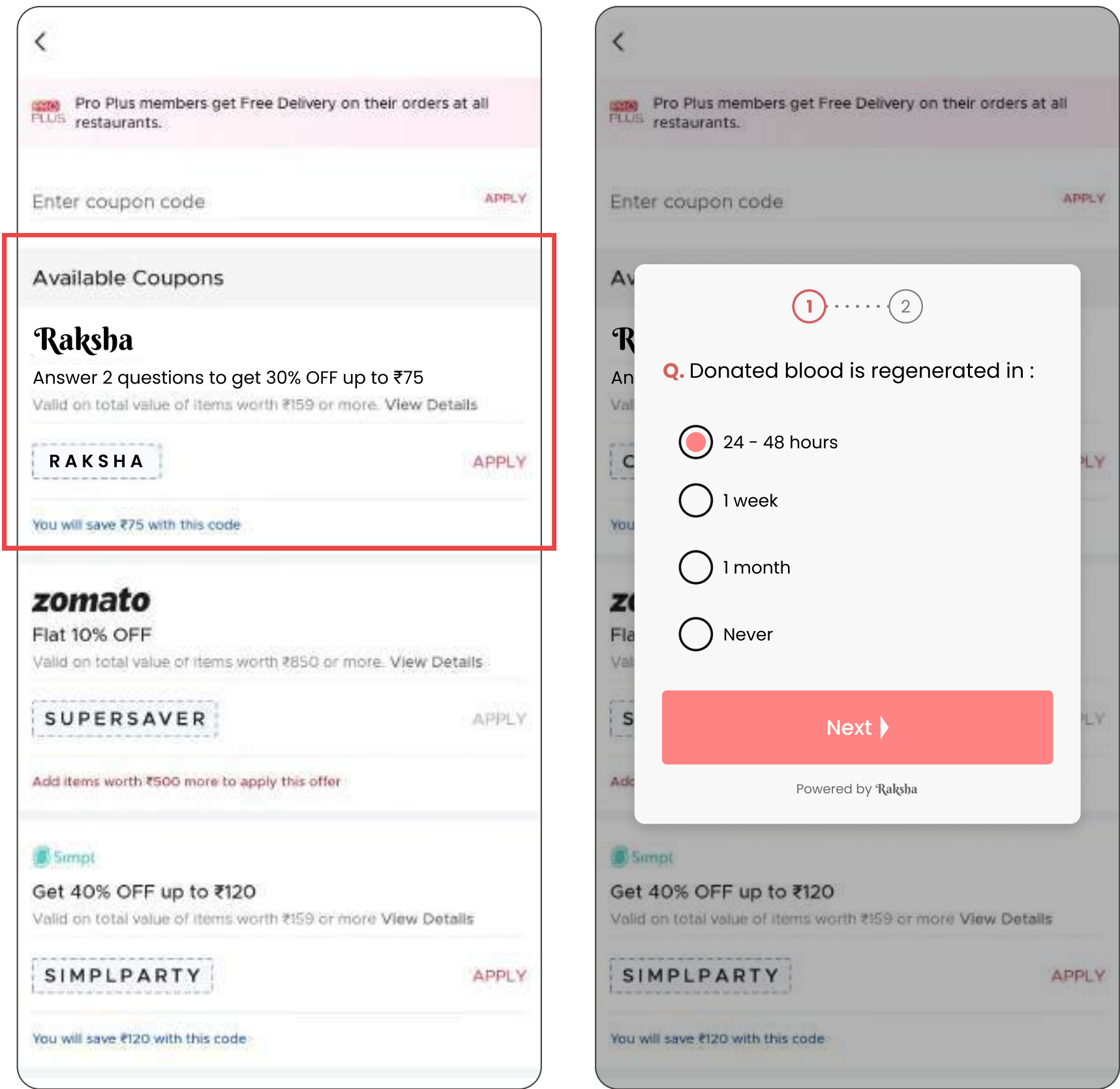


Fig 10.6.3 Collaboration Opportunities with Zomato

Information Sheets can easily be available as downloads for college and workplace noticeboards. These can be downloaded right from the website and will even have the real time statistics.

Detailing

10.6.4 ELIGIBILITY CHECK

A lot of first time donors are unaware of whether they are eligible to donate. So an eligibility test is available that upon taking lets the user know whether they are eligible without considering on site biometrics. This helps avoid any kind of inconvenience in case of ineligibility. Furthermore in case of organizing a small scale camp at a workspace or institution, the potential donors could be asked to take this test and get a rough number of those eligible who are willing to donate. This method of prediction helps ensure better donor turnout.

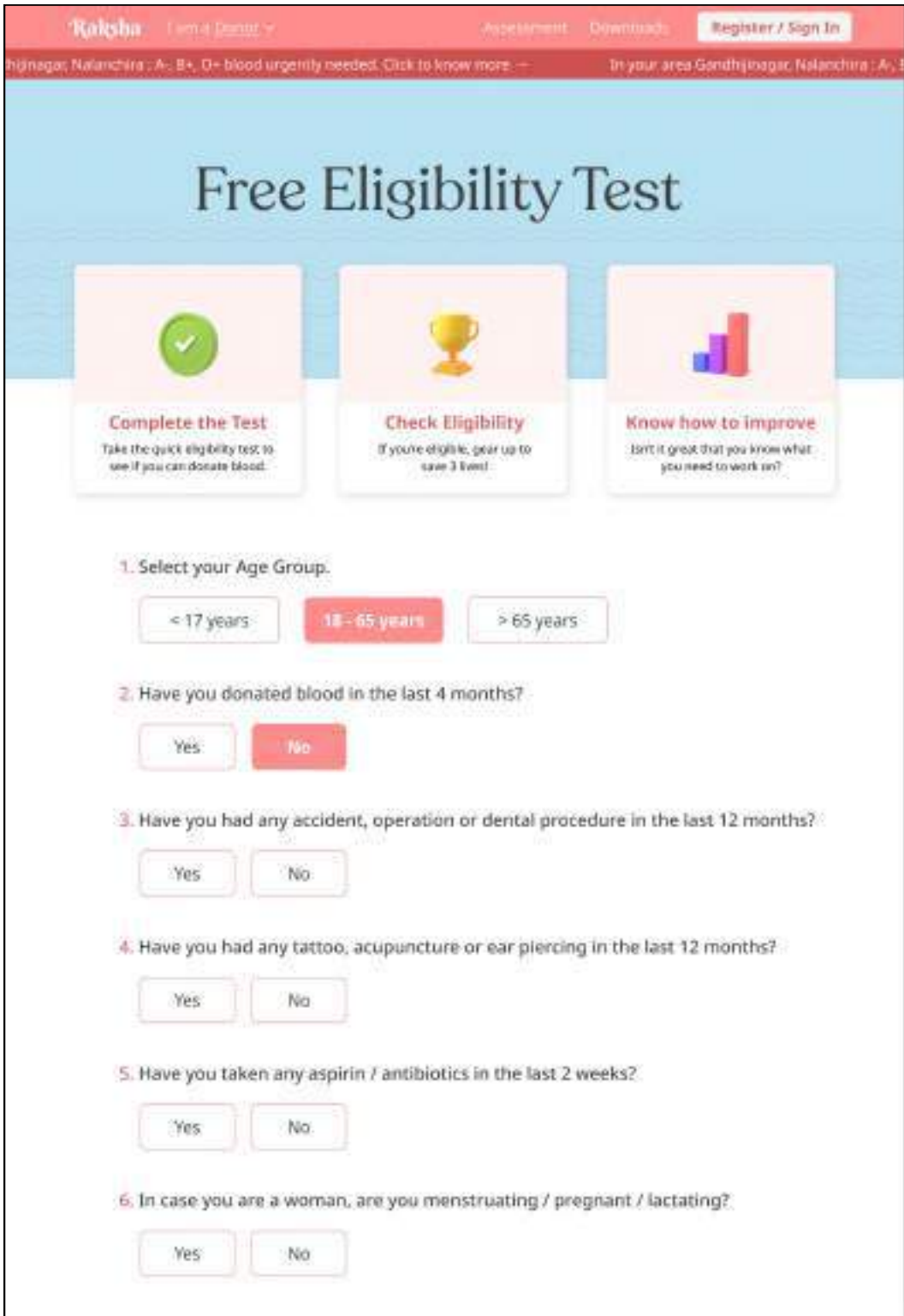


Fig 10.6.4 Eligibility Tests

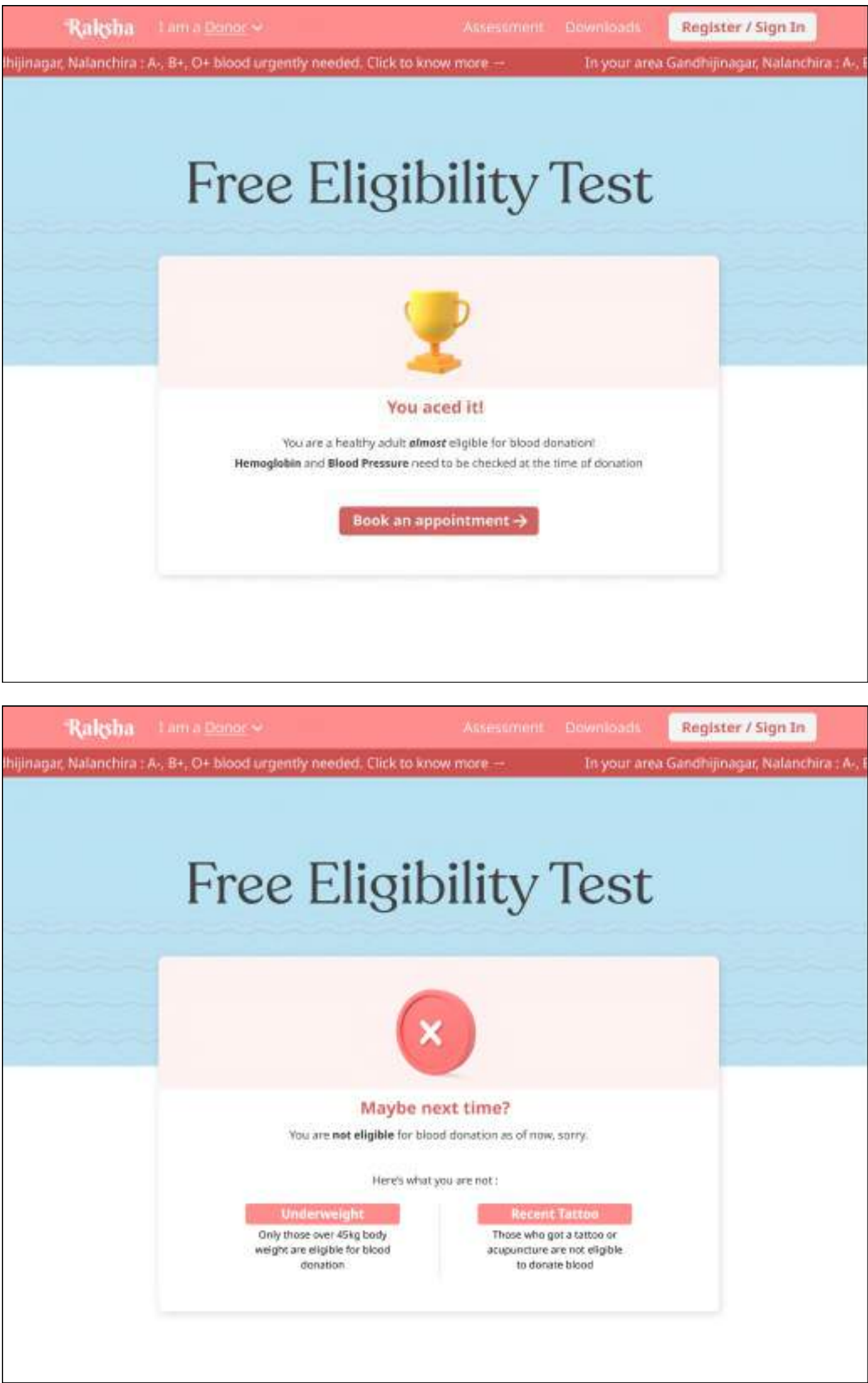


Fig 10.6.5 Eligibility Test Results

This way, the user is completely involved in the process while gaining an understanding of their own health and what they could improve. This also helps clear common misconceptions.

Detailing

10.6.5 DONOR EXPERIENCE

Donors should be able to register for camps to avoid any inconvenience. This application tracks the donor's donation periods and notifies them about donation camps occurring around their areas if eligible. There is a option of setting availability to weekends so that only those available during the weekends are displayed / notified about. Donors are also able to book their convenient time slot with the real time number of booking visible. Each time slot will have a limit. In case a donor is unable to turn up for their slot, a follow up message will be sent as a personal connection to the user that might encourage them the next time.

The screenshot shows the 'Donor's Corner' registration form. The form is titled 'Enter your Details below and create your Donor profile!'. It contains the following fields: Name (text input), Age (dropdown menu with '18 - 65 Years' selected), Email (text input), Blood Group (dropdown menu with 'Select blood group' selected), Weight (text input with 'Above 45 kgs' placeholder), and Last Donated (calendar icon with 'dd-mm-yyyy' placeholder). A red 'Submit' button is at the bottom.

Fig 10.6.5 Signing up as a Donor

The screenshot shows the 'Donor's Corner' appointment booking interface. It displays a donor profile for 'Sushant Khan, 27' with a 'Last Updated on 23/12/2021' timestamp. The profile includes a 'Last Donated' date of '23/12/2021', an 'Earliest Next Donation After' date of '22/03/2022', and a 'Blood Group' of 'B+'. A green 'ELIGIBLE' badge is shown. Below the profile, there is a 'Book your Appointment now!' section. It includes a 'Date' field with a calendar icon, a 'Pick a time slot' dropdown, and a table of available time slots with their respective limits. A red 'Continue Booking' button is at the bottom.

Time Slot	Limit
10:00 to 10:30	3/5 left
10:30 to 11:00	2/5 left
11:00 to 11:30	1/5 left
11:30 to 12:00	0/5 left
12:00 to 12:30	0/5 left
12:30 to 13:00	4/5 left
14:00 to 14:30	5/5 left

Fig 10.6.6 Booking an Appointment as a Donor

While booking a slot, if a donor is donating for the first time, they can choose to have added assistance which alerts the facility coordinators who can provide extra information and reassurance at the time of donation to ensure a smoother experience. A better explanation regarding the equipment and a little distraction at the time of needle insertion will allow the user to ease into the process.

11. Evaluation Criteria

Since this a progressive solution that can only be evaluated after a certain period of time, a criterion has been drawn up. There should be a monthly and yearly analysis of the number of willing donors who show up for donation. The ultimate aim is to raise the percentage of voluntary donors from 0.86% of the population to 0.91% of the total population by a year.

Population of India as of 2022 : 1,404,939,670

Number of Blood Banks in India : 2760

0.86% of the population in India voluntarily donate blood :
12,082,481

Minimum 1% voluntary donors required : 14,049,396

Required : $14,049,396 - 12,082,481 = 1,966,915$ more donations

Avg at a blood bank : $1,966,915 / 2760 = 712$ new donations per year

If 0.91% donated blood : 12,784,950

Difference : $12,784,950 - 12,082,481 = 702,469$

Avg at a blood bank : 254 new donations per year

This means 21 new donations per month at a given blood bank.

Estimated population in 2024 : 1,431,990,000

Minimum 1% in 2024 : 14,319,900

According to this criterion, considering the population of India in 2022 at 1,404,939,670, India requires a minimum of at least 14,049,396. But as of now only 0.86% of the population only voluntarily donate blood in India. This approach is aimed at raising this percentage by 0.5% in the first year. This means that within a year at least 702,469 new donations should be there in total. This becomes 254 yearly new donations at each blood bank. This means 21 new donors per year. This can be achieved mainly in case of blood donation camps which can happen in different kinds of places especially in cases like using the workplace as a dedicated donation camp. Running surveys before donation camps to get an estimate of the number of donors who will be attending the camp will lead to more effective donation camps ensuring better donor turnout. Blood Banks working hand in hand coordinating with each other targets the right set of people and this helps in reaching a new set of people each time.

12. Other Applications

This method does not just apply in the scenario of blood donation. It can be applied to various other neglected areas like global warming in a timely manner. This whole project was based on the principle of taking one step at a time to influence the user uncsciously to later lead to a conscious or sunconscious action in the right direction. or example simple steps like showing realtime electricity bills instead of the number of units consumed in a household might lead to less usage of electricity. It is about showing people how it can be rather than trying to preach about the future and wait for the people to make an effort.

This project was all about taking the information to the user rather than hoping for them to go seeking information. It is also about pointing out the various opportunities that is often neglected and either used to convey non-useful information or left unconsidered. It is also about trying to bring about a change through the people by rewarding them in small but appreciable ways to keep both parties content.

12. User Feedback

12.1 PEOPLE'S RESPONSES

This strategy really seemed to be welcomed by the people who were willing to donate but have not so far due to various reasons and those who were scared or skeptical to donate. Some concerns like what happens in case the ads get annoying or people get so used to the discovery methods that they stop using them. Some even mentioned how they may develop a negative outlook towards ads that are always everywhere. But in most of the cases, this approach seemed to be welcomed.

12.2 FACILITIES' RESPONSES

They appreciated how this integrated system does not demolish the existing methods and can be used as an added advantage. They also mentioned how each existing alternative can be linked to this and having Raksha as a medium that unites all the other platforms building connections and enhancing communication leading to a more efficient donor-recipient scenario can really help all the user groups. Some areas of improvement were brought up by some interviewees which could be worked out in the further iterations like how the full fledged design of the website would impact the usability and how necessary visiting the website was. For example, one facility stressed on how having systems like the small quiz for discounts could serve as a better information source than users being taken to a different website each time.

13. Conclusion

13.1 FLAWS IN THE DESIGN

- More focus was on the features and discoverability than the usability which can be improved in further iterations.
- Some of the information was found to be quite repetitive.
- The fact that user testing cannot be done as this is more of a progressive solution leaves a lot of uncertainty.

13.2 DIFFICULTIES FACED

- It was very hard to find donors to understand their motivations and hardships.
- Evaluation could not be done as the solution is progressive and the user groups are expected to have a shift over time.
- The blood banks were not willing to give me more than one appointment to discuss my progress.

13.3 PLANS AHEAD

- Working on the usability of the platform.
- Working out how the website interface can be customized for the facilities and the people.
- Run a simulatory experience as a user testing session and monitor their thoughts and how they change.

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