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Design Thinking Lab Report 20MCA27

on

“GENERAL HEALTH & MENTAL STATUS”

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Bengaluru-560059

**DEPARTMENT OF
MASTER OF COMPUTER APPLICATIONS**

2022-2023

RV COLLEGE OF ENGINEERING®

(Autonomous Institution Affiliated to Visvesvaraya Technological University, Belagavi)

DEPARTMENT OF MASTER OF COMPUTER APPLICATIONS

Bengaluru– 560059



CERTIFICATE

Certified that Design Thinking Laboratory work titled “**GENERAL HEALTH & MENTAL STATUS**” carried out by Students **1RV21MC059_MANJUNATHA B**, **1RV21MC060_MATHEW K I**, **1RV21MC070_PAVITRA T**, **1RV21MC071_PIKU MAITY**, **1RV21MC073_PRAJWAL K**, **1RV21MC077_PRATHIKSHA**, who are bonafide students of RV College of Engineering®, Bengaluru submitted in partial fulfilment for the award of Design Thinking Lab marks for the 2nd Semester MCA during the academic year 2022-23. It is certified that all corrections/suggestions indicated for internal assessment have been incorporated in the report.

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ABSTRACT

According to the World Health Organization, every year 12 million deaths occur worldwide due to Heart Disease. Even though we have come across user empathy, real time problem which exist in our society by doing survey, one to one communication, group interviews etc. The load of cardiovascular disease is rapidly increasing all over the world from the past few years. Many researches have been conducted in attempt to pinpoint the most influential factors of heart disease as well as accurately predict the overall risk. Heart Disease is even highlighted as a silent killer which leads to the death of the person without obvious symptoms. The early diagnosis of heart disease plays a vital role in making decisions on lifestyle changes in high-risk patients and in turn reduce the complications.

The major challenge in heart disease is its detection. There are instruments available which can predict heart disease but either they are expensive or are not efficient to calculate chance of heart disease in human. Early detection of cardiac diseases can decrease the mortality rate and overall complications. However, it is not possible to monitor patients every day in all cases accurately and consultation of a patient for 24 hours by a doctor is not available since it requires more sapience, time and expertise. Since we have a good amount of data in today's world, we can use various machine learning algorithms to analyze the data for hidden patterns. The hidden patterns can be used for health diagnosis in medicinal data.

Since we have defined user centric problem then & there we ideate the process. Then we achieve bunch of ideas by utilizing Brain Storming & Matrix (Return/Innovation) method. After all, in prototyping phase we have developed a website which is more user friendly & easily accessible.

Based upon user input data the web application will fetch data & transmit over smtp to desired doctor. To determine significant risk factors based on data which may lead to heart disease.

The outcome we must achieve during the entire process is by showing the signs and symptoms of a heart attack, so that they must be aware of the symptoms and get help right away from doctor on time.



1. EMPATHIZE PHASE

Client Details :

1	Timestamp	Enter name	Select gender	Select age
19	8/28/2022 21:04:54	Rajath	Male	21
20	8/28/2022 21:05:58	Sathish	Male	24
21	8/28/2022 21:07:03	Balaji	Female	22
22	8/28/2022 21:08:01	Sahana V	Male	24
23	8/28/2022 21:08:43	Naveen E	Male	24
24	8/28/2022 21:27:09	Mansi Kumar	Female	23
25	8/28/2022 21:28:35	Junaid Pasha	Male	26
26	8/28/2022 21:29:55	Kumaran Jessie	Male	23
27	8/28/2022 21:31:18	Manoj M	Male	22
28	8/28/2022 21:31:54	Chaitra J Achar	Female	25
29	8/28/2022 21:33:29	Harshith H N	Male	26
30	8/28/2022 21:34:46	Karthik B N	Male	21
31	8/28/2022 21:35:42	Raju M	Male	21
32	8/28/2022 21:39:27	Lavanya	Female	22
33	8/28/2022 21:43:19	Mohan	Male	28
34	8/28/2022 21:43:37	Ranjith Kumar	Male	22
35	8/28/2022 21:45:20	Sushma Raj	Female	23
36	8/28/2022 21:46:23	Rachitha Shetty	Female	22
37	8/28/2022 21:51:11	Thejas P	Female	23

SCENARIO

Why Health is important?

Brief Description About 2 major Health & Significance -

- ☐ Health is important to live life to the fullest. When a person leads a healthy lifestyle, the body remains healthy and the mind is active and fresh. Living a healthy life would extend longevity and also regenerate the body and mind. Having good health is of core importance to human happiness.
- ☐ Primary Health again Subdivided into 2 core health based upon different parameters –
 1. Systemic Health / General Health
 2. Psychological Health / Mental Health

SCENARIO

- ☐ **Systemic Health** :- Having good health is directly related to leading a productive life. The functionality of the body is interconnected between various organs. Keeping the organs healthy is essential for proper functioning. As health is the state of physical, mental and social well-being, having good health is important.

- ☐ **Phycological Health** :- Mental health includes our emotional, psychological, and social well-being. It affects how we think, feel, and act. It also helps determine how we handle stress, relate to others, and make healthy choices. Mental health is important at every stage of life, from childhood and adolescence through adulthood.

Tools we have used for Empathy stage :

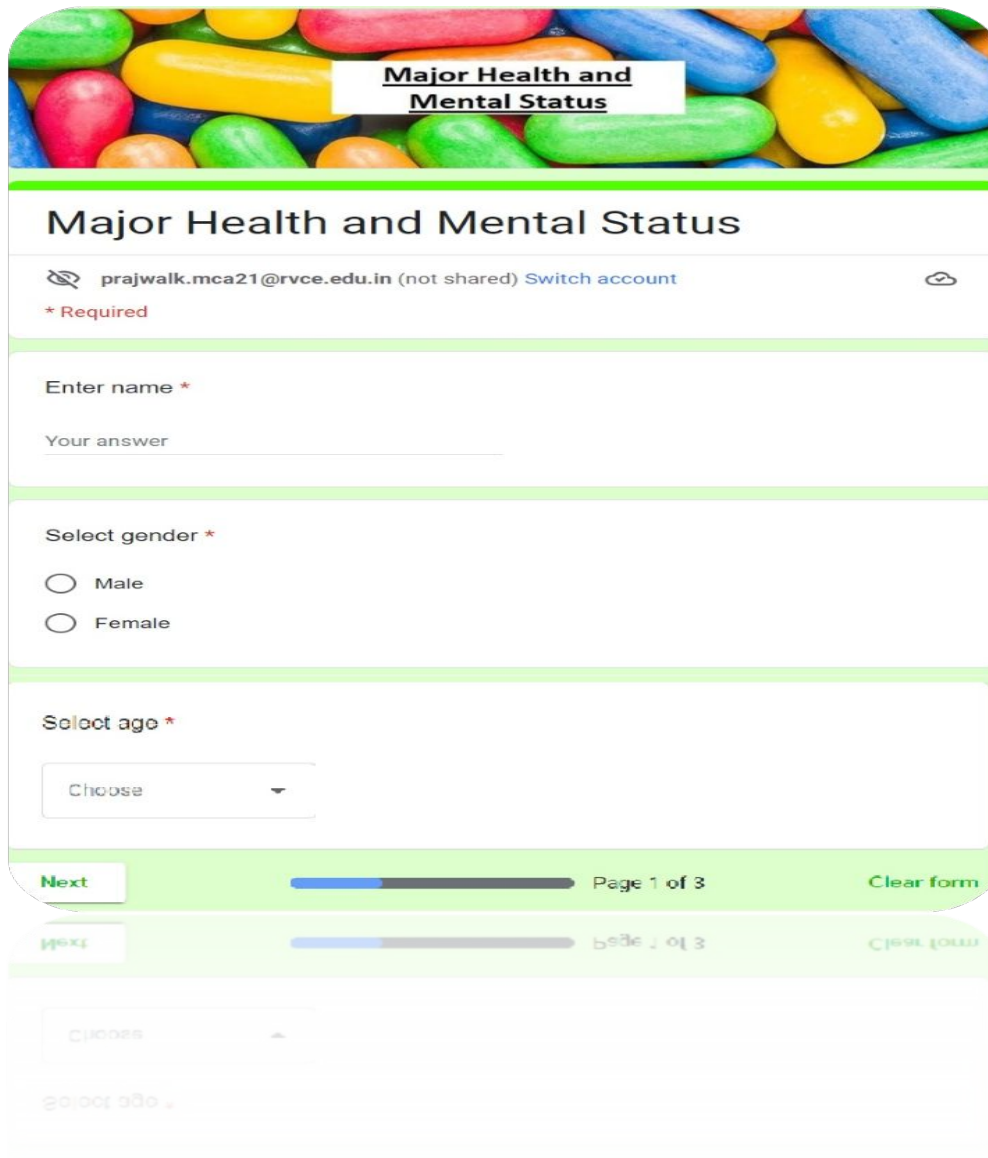
- ☐ **Questionnaire**
- ☐ **Primary Research**
- ☐ **Focus group**
- ☐ **Interviews**
- ☐ **Empathy Mapping**

Questionnaire :

Google Form link :

<https://forms.gle/NkCtBWBXpMfLET9D7>

A total of **120 responses** were recorded
Out of which **70 were male** and **50 were female.**



Major Health and Mental Status

prajwalk.mca21@rvce.edu.in (not shared) [Switch account](#)

* Required

Enter name *

Your answer

Select gender *

☐ Male

☐ Female

Select age *

Choose

Next Page 1 of 3 Clear form

Next Page 1 of 3 Clear form

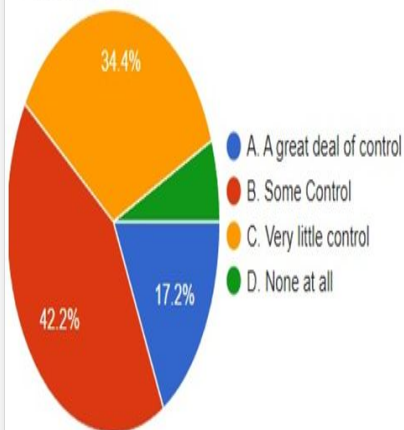
Choose

Select age *

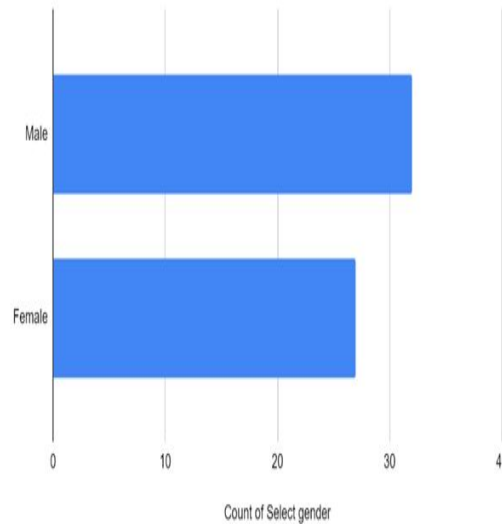
Questionnaire [Physical Health Responses]:

1. How much control do you think YOU have over your future health?

64 responses

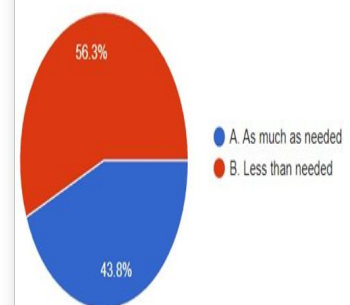


Count of Select gender



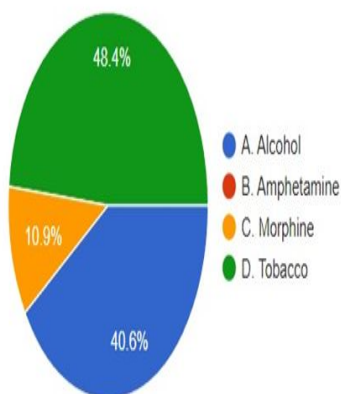
2. Do you feel that you get as much exercise as you need, or less than you need?

64 responses

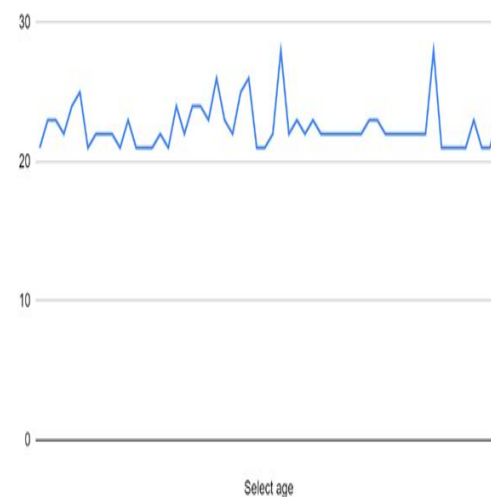


3. Which of the following is the most commonly consumed and abused intoxicant?

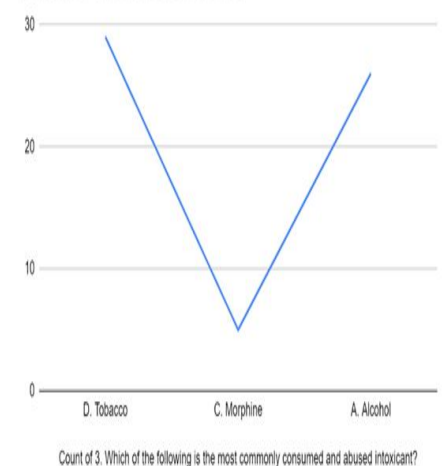
64 responses



Histogram of Select age



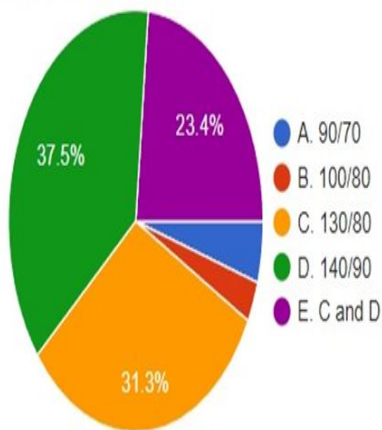
Count of 3. Which of the following is the most commonly consumed and abused intoxicant?



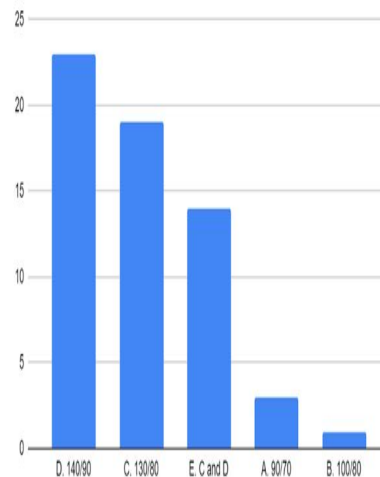
Questionnaire [Responses] :

5. What is considered "high blood pressure"?

64 responses



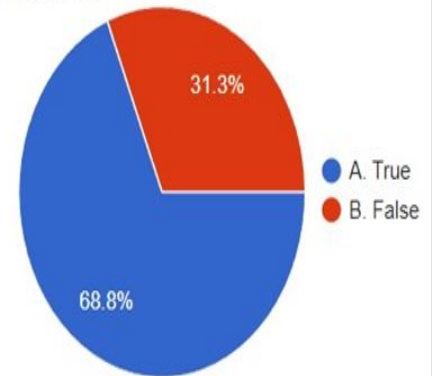
Count of 5. What is considered "high blood pressure"?



Count of 5. What is considered "high blood pressure"?

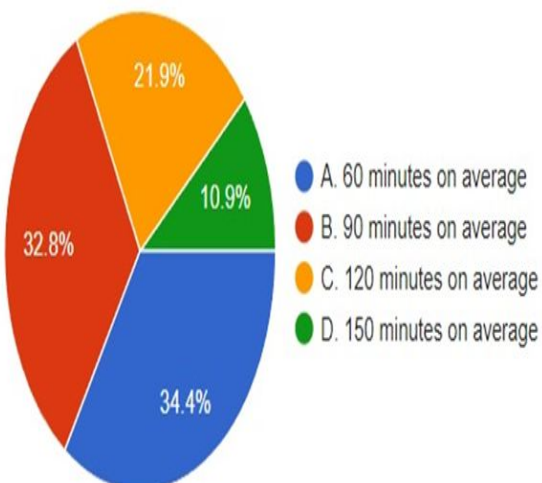
4. Passive smokers inhale only 10% of the smoke.

64 responses

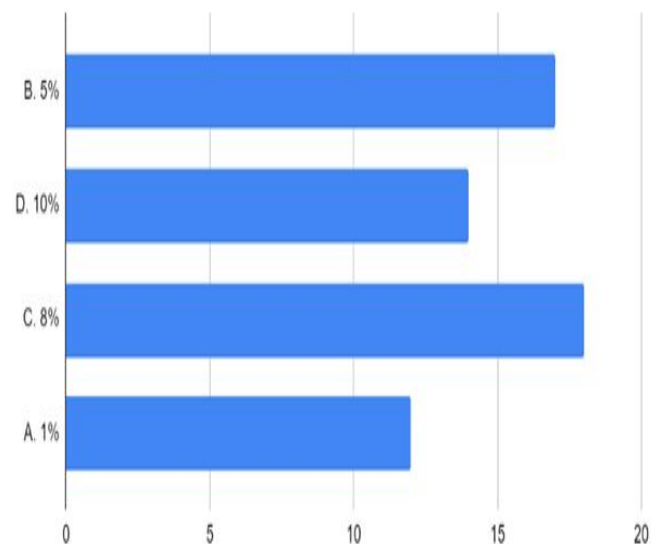


6. How much exercise each week is recommended to help prevent heart disease?

64 responses



Count of 1. The percentage of population suffering from serious mental illness is ...



Count of 1. The percentage of population suffering from serious mental illness is ...

Primary Research :

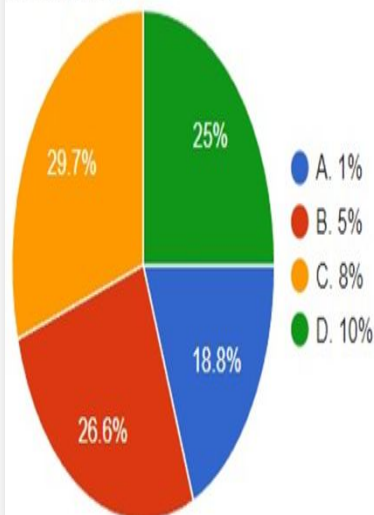
SYSTEMIC HEALTH ISSUES (AGE 16-25)

1. How much control do you think YOU have over your future health?
2. Do you feel that you get as much exercise as you need, or less than you need?
3. Which of the following is the most commonly consumed and abused intoxicant?
4. How much exercise each week is recommended to help prevent heart disease?
5. Three risk factors for heart disease can't be controlled. Which of these are they?
6. Which of these serious health problems has been linked to obesity?
7. How much physical activity should you aim for each week to help weight loss?

Questionnaire [Mental Status Responses] :

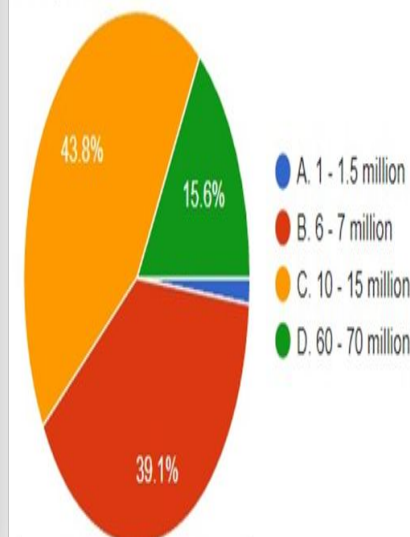
1. The percentage of population suffering from serious mental illness is ...

64 responses



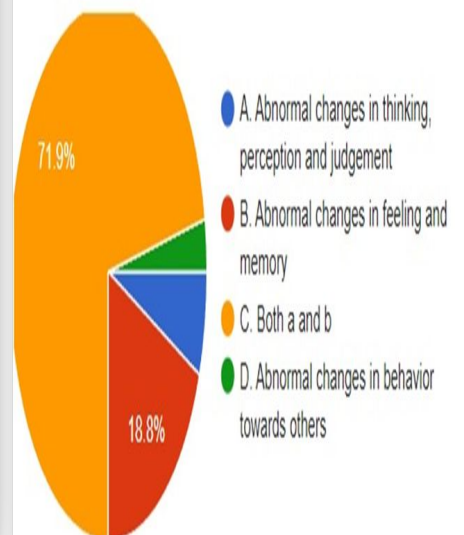
2. People suffering from mental diseases in India number...

64 responses



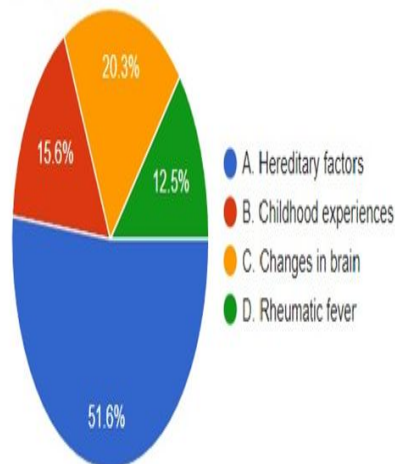
3. Signs of mental illness are...

64 responses



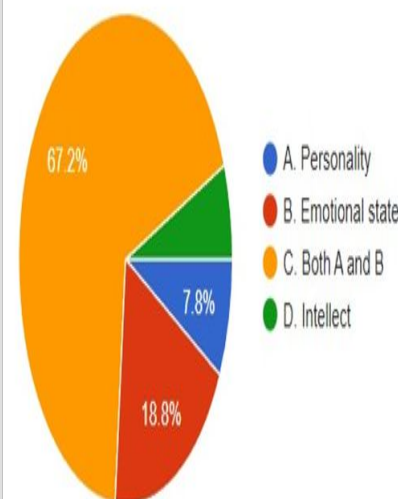
4. Which one is not involved in mental illness...

64 responses

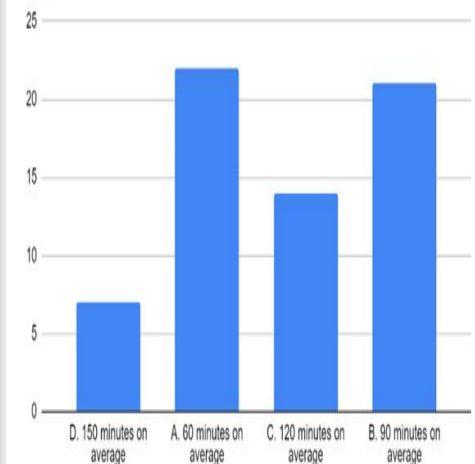


5. Mental health is state of developing one's...

64 responses



Count of 6. How much exercise each week is recommended to help prevent heart disease?

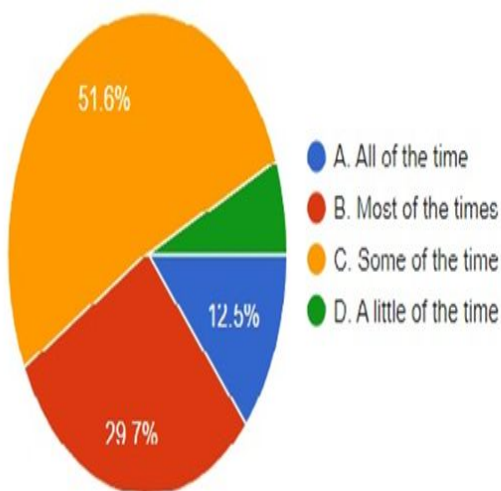


Count of 6. How much exercise each week is recommended to help prevent heart disease?

Questionnaire [Mental Status Responses] :

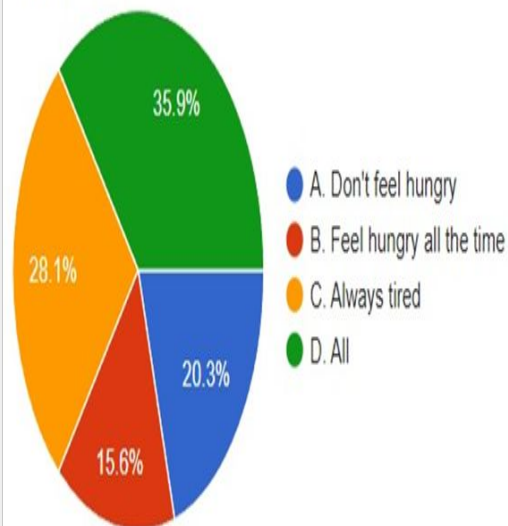
7. How much of the time, during the past month, have you felt calm and peaceful?

64 responses



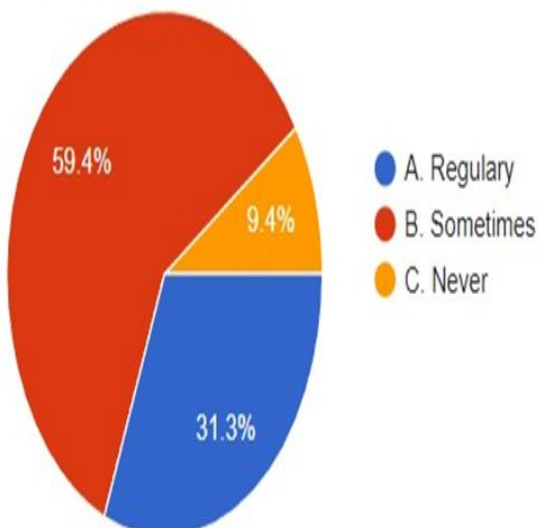
8. Which of this symptom can happen when you are depressed?

64 responses



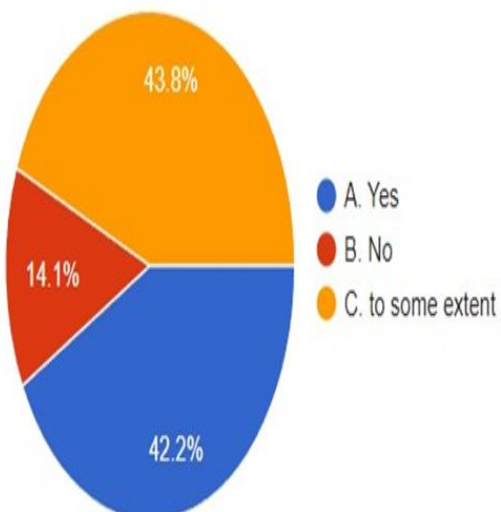
9. How often do you feel happy?

64 responses



10. Do exercising help control mental illness just by itself?

64 responses



Primary Research :

PHYCOLOGICAL HEALTH ISSUES (AGE 16-25)

1. The percentage of population suffering from serious mental illness is ...
2. People suffering from mental diseases in India number...
3. Signs of mental illness are...
4. Which one is not involved in mental illness...
5. How much of the time, during the past month, have you felt calm and peaceful?
6. Which of this symptom can happen when you are depressed?
7. Do exercising help control mental illness just by itself?

Focus Group Interviews :

Questions put forward:

1. Are you suffering from any issues related to health?
2. If yes, why do you think you got it?
3. if no, how do you keep up with the health?
4. what do you think some of the health problems young generation is facing?
5. Reasons for health issues of younger generation suffering.
6. Over the last 12 months, how frequently have you felt so worried about something that you were unable to sleep at night?

Focus Group Interviews :

Questions put forward:

7. How to make people not to avoid regular hospital visits [checkups] after they get a bit well?
8. How do you explain to your patients in case they have a deadly disease?
9. What should patients be concerned about while approaching you with any problem?
10. What is the healthiest diet to follow? [gender wise]
11. What can one do when they cannot afford the cure for their disease?
12. What causes Obesity?

Focus Group Interviews [Snapshots]:



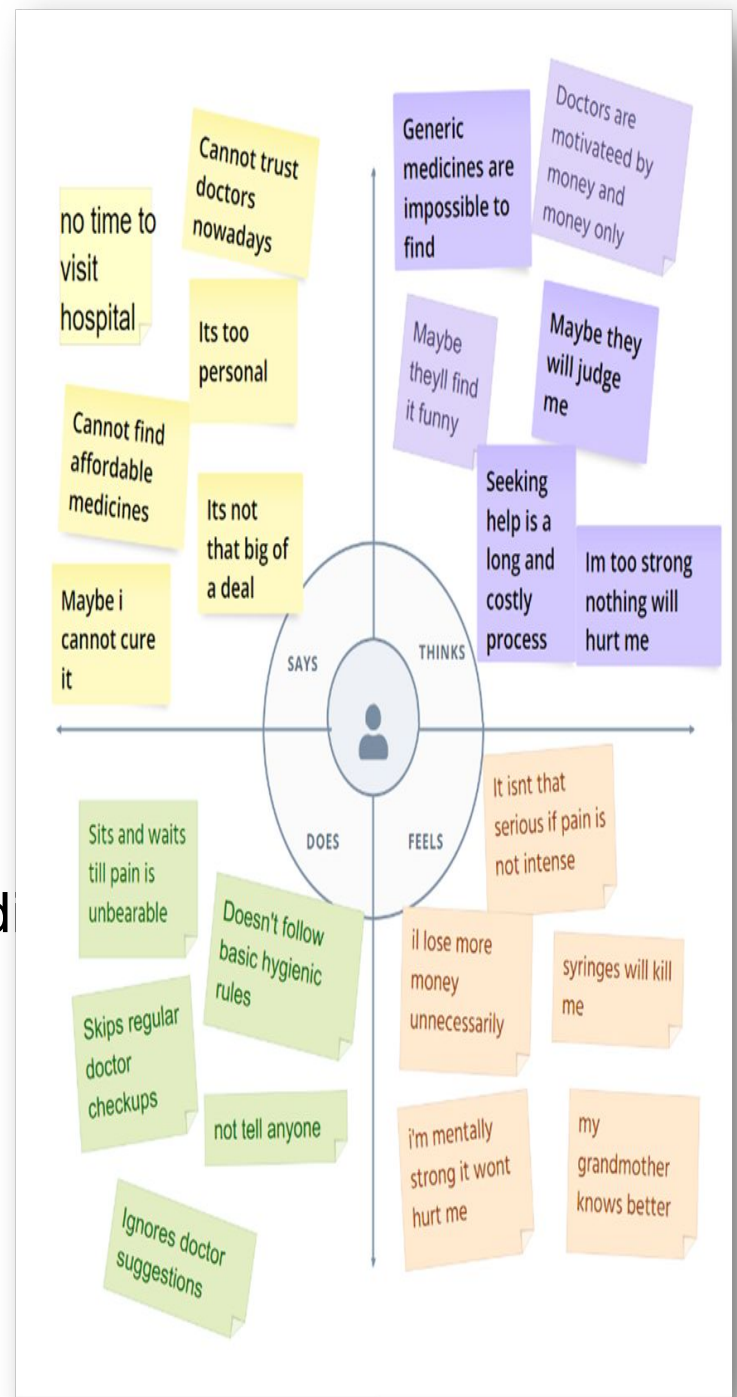
Empathy Mapping :

PAIN-

- Shyness
- Not being serious
- Illiteracy
- Procrastination
- Physical Pain

GAIN-

- Longevity Of Life
- Healthy Body
- Avoiding Spreading of d
- Effective use of money
- Improve self Esteem



2. DEFINE PHASE

“HEALTH IS WEALTH”

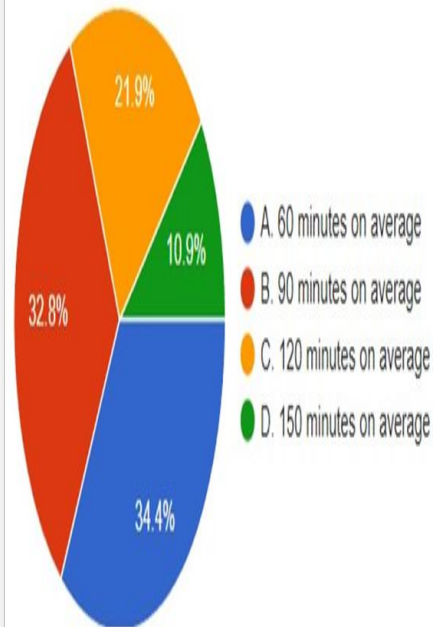
Tools we have used for Empathy stage :

- Ranking Of Clusters**
- Affinity Diagram**
- 4 w's Of Define Phase**
- Problem Statement**

MAJOR CLUSTERS (General Health):

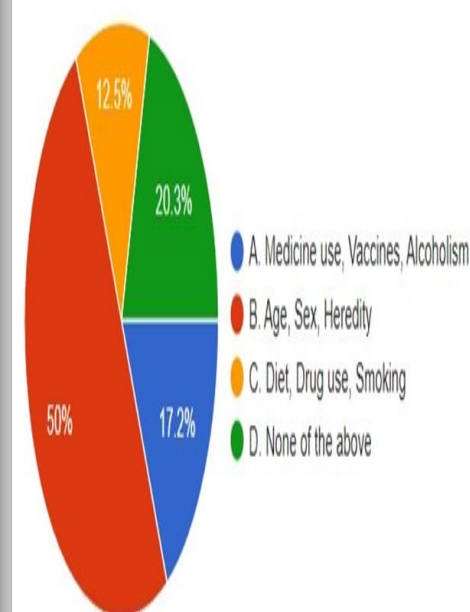
6. How much exercise each week is recommended to help prevent heart disease?

64 responses



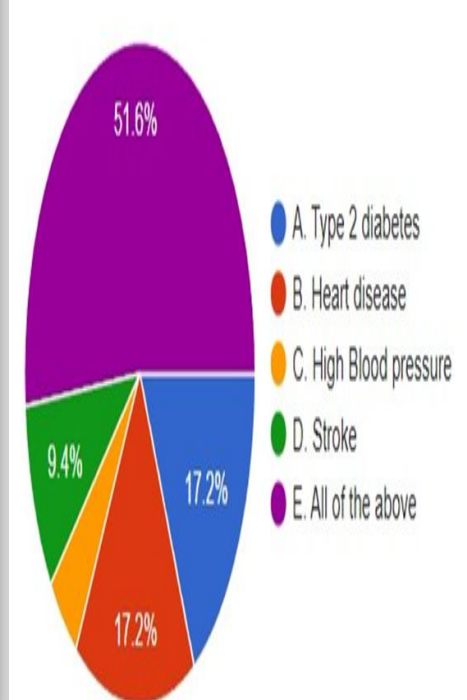
7. Three risk factors for heart disease can't be controlled. Which of these are they?

64 responses



9. Which of these serious health problems has been linked to obesity?

64 responses



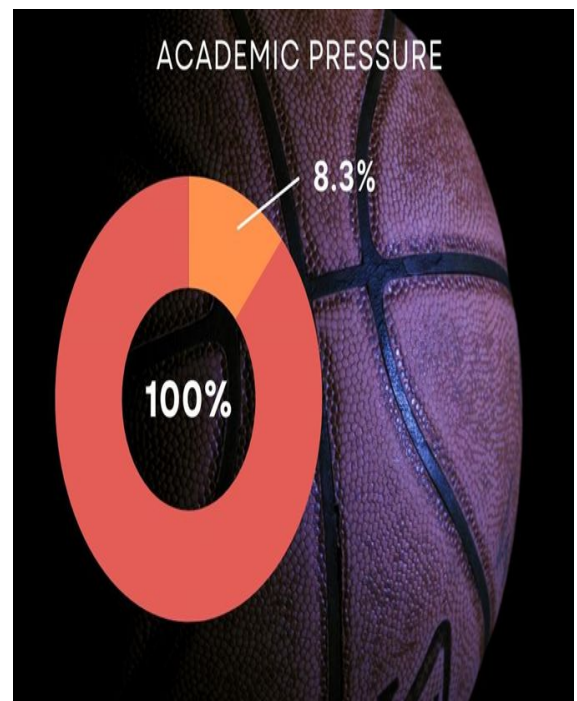
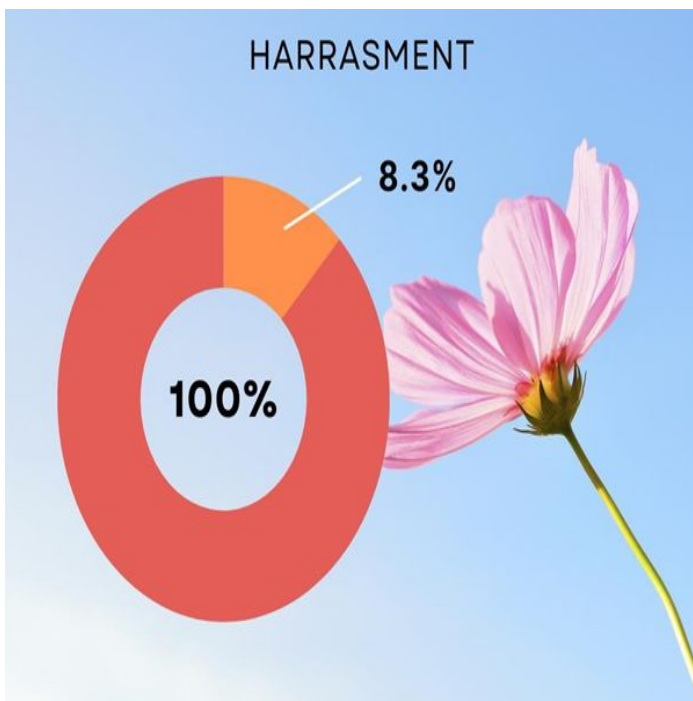
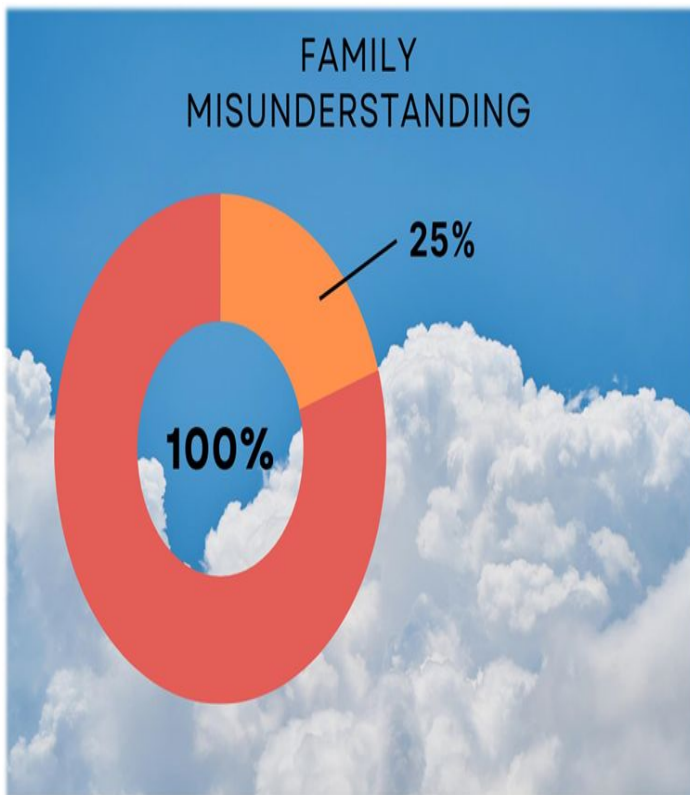
Ranking Of Clusters(General Health) -

CLUSTER	RANK
Physical Symptoms	1
Appetite	2
Fitness	3
Financial Stability	4

Affinity Diagram(General health)



MAJOR CLUSTERS (Mental Health):



RANKING of CLUSTERS (Mental Health):

CLUSTER	RANK
Health	1
Personal Life	2
Education	3
Career/Work Life	4

Affinity Diagram(Mental health)



4 W's of Define Phase

• Who is experiencing the problem?

- The people having heart attacks were increasingly young, from 20-40 age group. The youngsters who are mostly worried about their personal & psychological life.
- The people who are depressed, have mental illness which intern converts into suicide, the closed ones of the person who has committed suicide.

• What is the problem?

- Several health conditions, your lifestyle, and your age and family history can increase your risk for heart disease and heart attack.
- Depression (which often occurs with an anxiety disorder) or other mental health disorders. Poor quality of life & Social Isolation.
-

4 W's of Define Phase

- **Where does the problem present?**

It lies inside the society physically, mentally & emotionally who is weak and in one who is negative minded.

- **Why does it matter?**

Heart disease is the leading cause of death for both men and women. More than half of the deaths due to heart disease in 2019 were in men. Coronary heart disease (CHD) is the most common type of heart disease, killing over 370,000 people annually.

Life is precious, one should lead life positively and enjoy every moment, rather than choosing wrong way.

Life does matter than anything else in this world.

Problem Statement

- **Problem:**

Due to several mental illness, anger issues and impatient Ness we experience depression, anxiety or stress which affect our heart rate and blood pressure rise. Overtime, these effects can lead to Heart Attack.

- **Background:**

From the surveys done, we found that most of the people don't like to share their issues. Which intern is causing them and bringing hurt to their loved ones.

- **Details**

Working individual have lot of work pressure, load which Is making them stressed, depressed and frustrated.

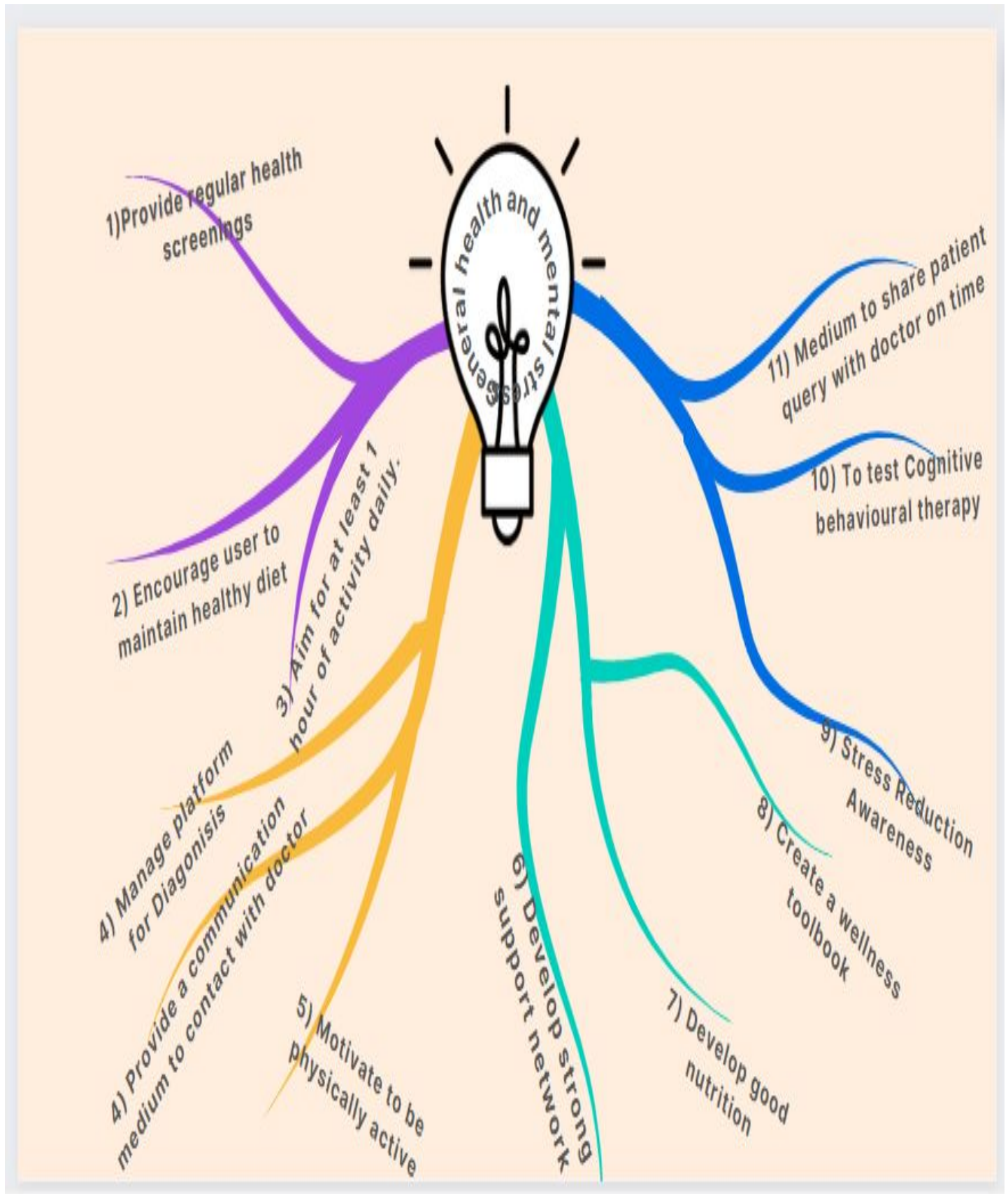
- **Impact**

Heart Attack & Suicide itself is big impact which is hurting the loved ones, society, friends and family/relatives.

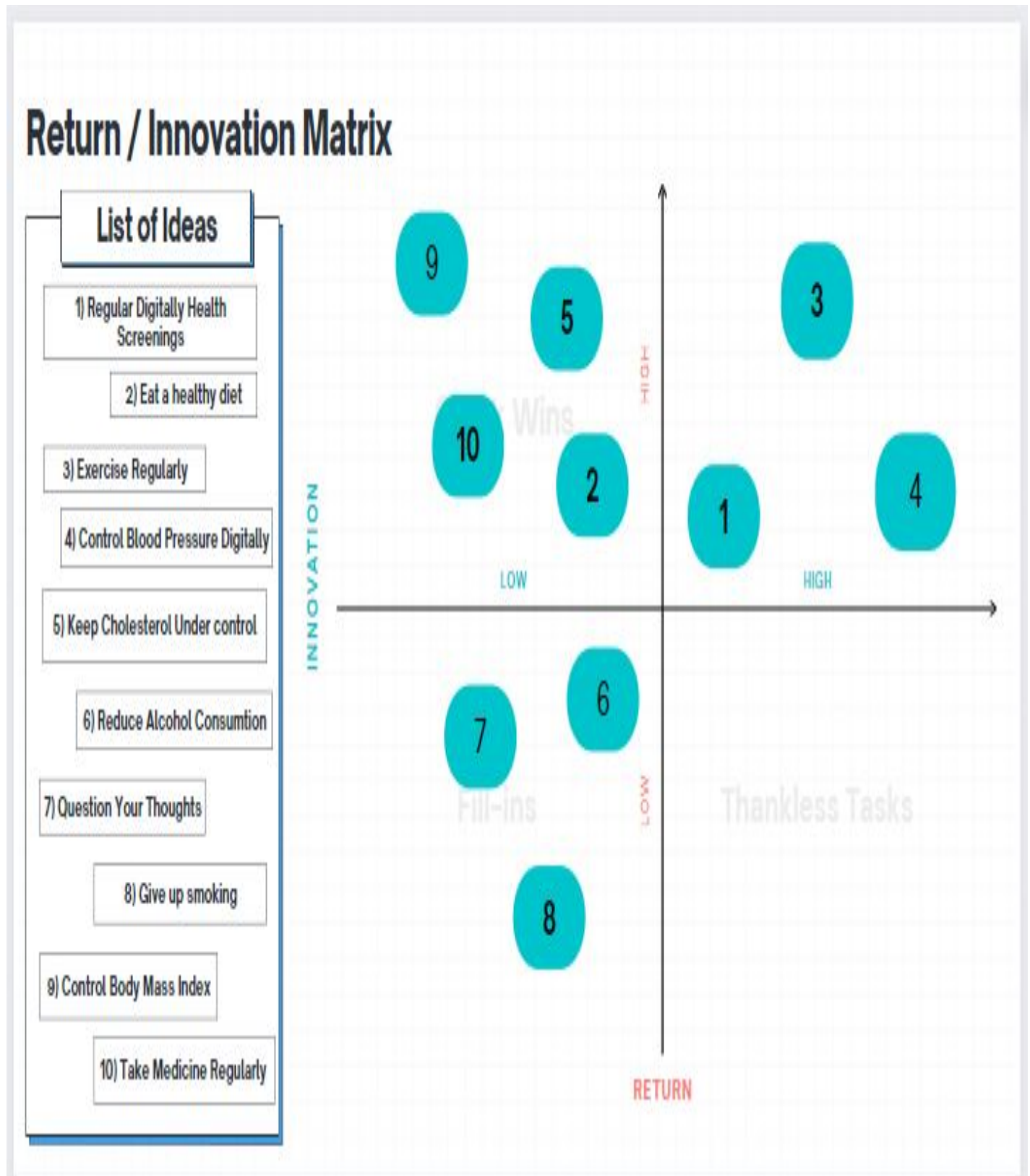


3. IDEATION PHASE

1. BRAIN STORMING :



2. RETURN / INNOVATION MATRIX :



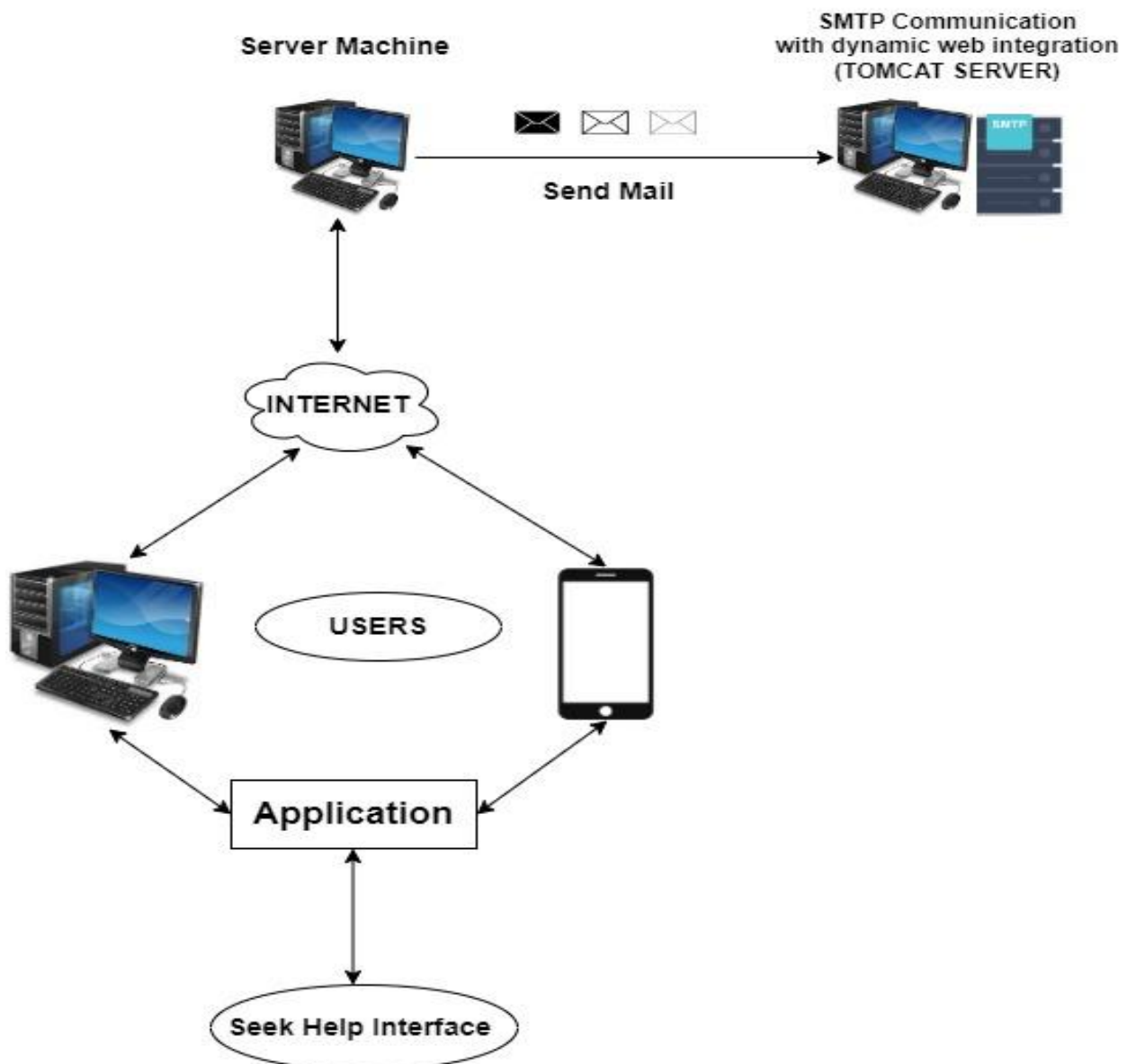


4. PROTOTYPE PHASE

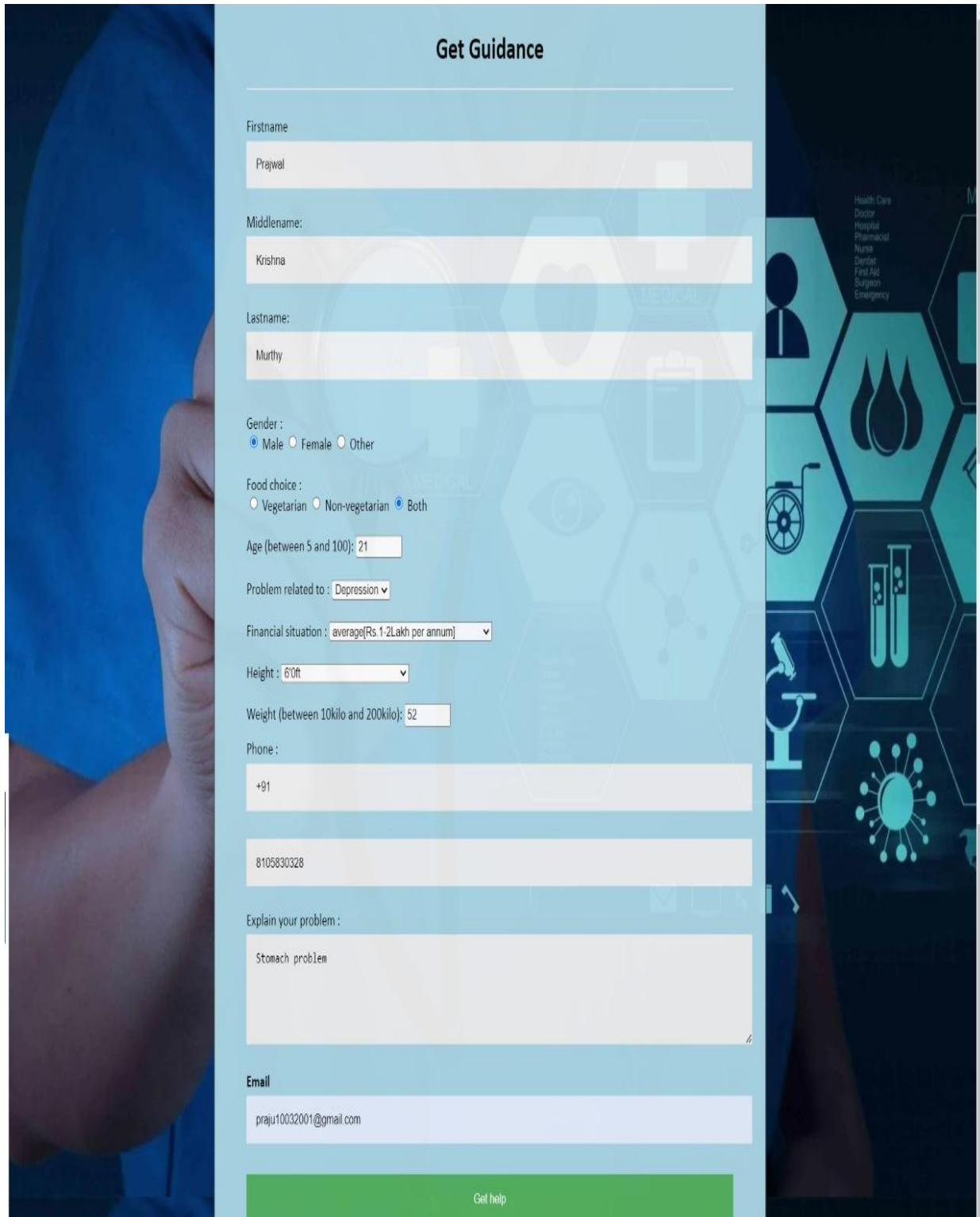
a. Tools & Technologies used for prototyping :

- HTML
- CSS
- JavaScript
- Java Servlet, JSP
- Eclipse IDE
- SMTP
- TOMCAT SERVER
- Draw.io

b. Solution developed :



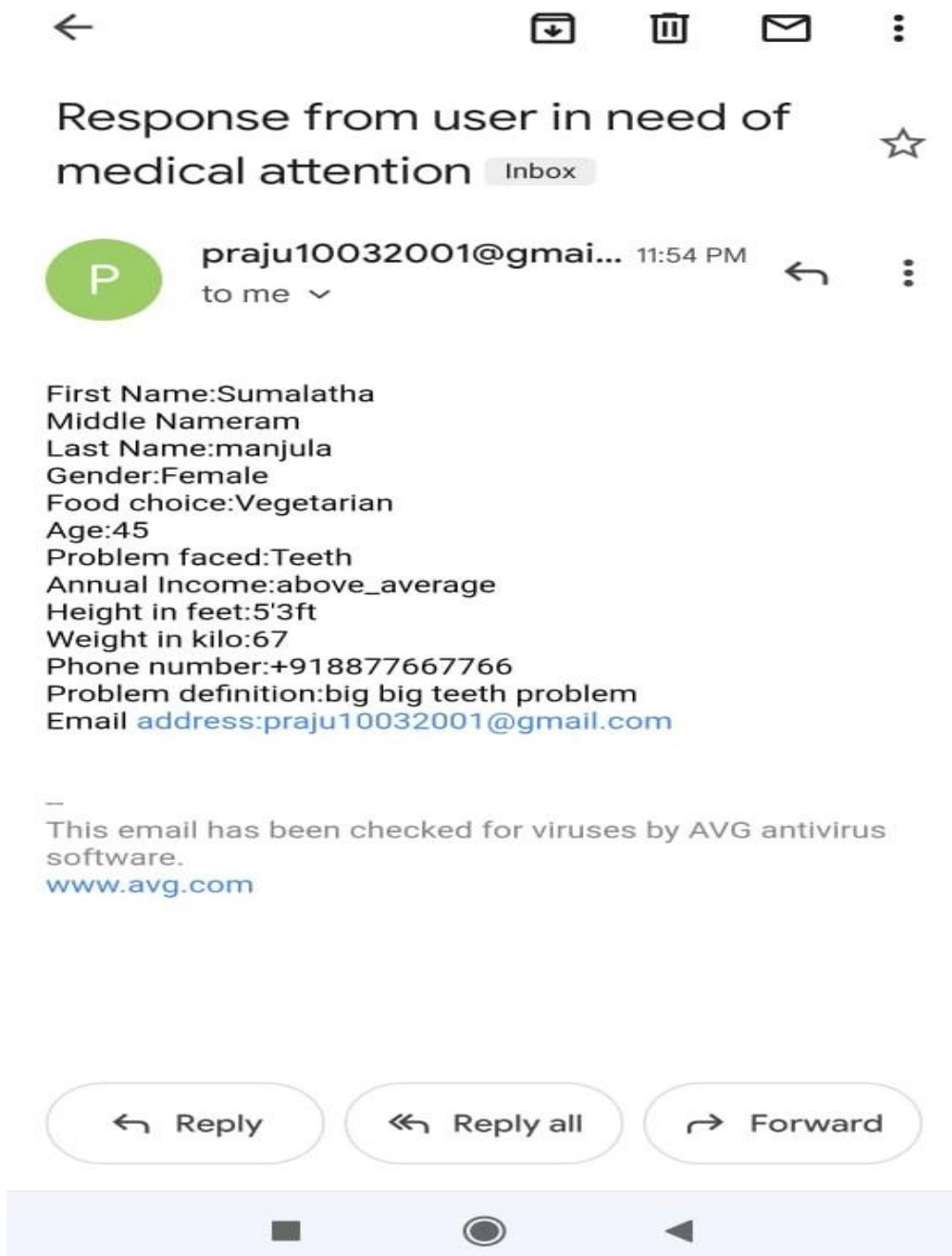
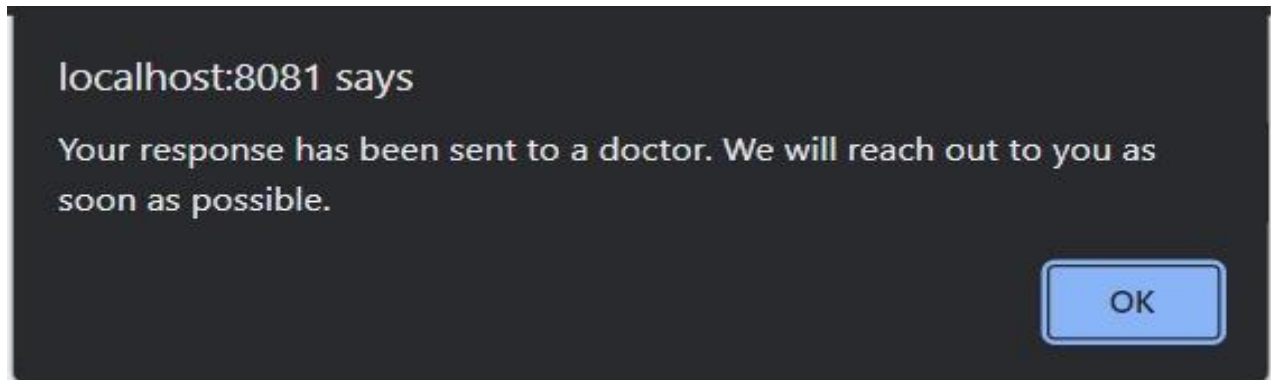
User Interface :



The screenshot shows a web form titled "Get Guidance" with a light blue background and a medical-themed pattern of hexagons containing icons like a heart, eye, stethoscope, and virus. The form fields are as follows:

- Firstname:
- Middlename:
- Lastname:
- Gender: ☒ Male ☐ Female ☐ Other
- Food choice: ☐ Vegetarian ☐ Non-vegetarian ☒ Both
- Age (between 5 and 100):
- Problem related to:
- Financial situation:
- Height:
- Weight (between 10kilo and 200kilo):
- Phone:
- Explain your problem:
- Email:
-

Outputs :



5. TESTING PHASE

a. Testing Details :

SL NO.	Name	Input	Expected Output	Actual Output	Result
1.	Click to get help without adding input data	-	Error message	No Error Message	FAIL
2.	Provide Invalid Email id	Receiver Id	Error Message	Error Message	PASS
3.	Enter Invalid Mobile Number	Number Stating with 1	Error Message	Error Message	PASS
4.	Pop-up Notification for User Confirmation	User data transmit through SMTP	Success Message	Success Message	PASS

b. Client's feedback :

- Request to add few more options for better user experience
- Request to make website more colorful(especially dark mode).
- Request for displaying notification history with in application.
- Request for get response from Doctor with in 15-20 minutes.
- Request for some existing wearable devices which can track real time health data & send to doctor through SMTP.

Conclusions & Future Scope :

With the current web applications, an end user can upload their current health data or any complications through mail automatically to their selected doctor. The early prognosis of cardiovascular diseases can aid in making decisions on lifestyle changes in high risk patients and in turn reduce the complications, which can be a great milestone in the field of medicine. This will help to prevent heart attack, get early treatment & save many life.

Future Scope :

- Login Options to keep track of users and to send notification related to other diseases.
- Like a wearable device which can track health data in different parameters & the same real time data will be store into cloud. Through ML model the data will be processed & based on experience it will predict the chances of heart attack in real time. If the predicted percent is beyond the normal level then through SMTP automatically the alert will be generated to doctor & the same data will be shared too, by which early treatment can be started & Save life too.
- Compatibility for Mobile Devices.

References :

- <https://www.w3schools.com/>
- <https://youtu.be/spAx6afS450>
- <https://app.diagrams.net/>
- <https://www.github.com>



THANK YOU!