

K. J. Somaiya College of Engineering, Mumbai-77

(Autonomous College Affiliated to University of Mumbai)

Covid Website with Chatbot

Submitted in partial fulfillment of requirements for completion of

Mini-Project

By

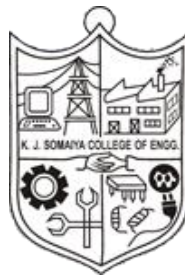
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K. J. Somaiya College of Engineering, Mumbai-77

(Autonomous College Affiliated to University of Mumbai)

Batch 2021

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(Autonomous College Affiliated to University of Mumbai)

Certificate

This is to certify that the report entitled **Covid Website with Chatbot** is bona fide record of Mini-Project work done by **Ansh Dugar, Shruti Gosain and Heet Vora** in the Sem VI, year 2021 under the guidance of **Dr.Sonali Patil** of Department of Information Technology in partial fulfillment of requirement for the completion of Mini-Project

Guide – **Dr. Sonali Patil**

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Place: Mumbai-77

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Certificate of Approval of Examiners

We certify that this report entitled **Covid Website with Chatbot** is bona fide record of Mini-Project work done by Ansh Dugar, Shruti Gosain and Heet Vora.

This project is approved for the award of credits for completing Mini-Project course.

Internal Examiner

External Examiner

Date:

Place: Mumbai-77

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DECLARATION

We declare that this written report submission represents the work done based on our and / or others' ideas with adequately cited and referenced the original source. We also declare that we have adhered to all principles of intellectual property, academic honesty and integrity as we have not misinterpreted or fabricated or falsified any idea/data/fact/source/original work/ matter in our submission.

We understand that any violation of the above will be cause for disciplinary action by the college and may evoke the penal action from the sources which have not been properly cited or from whom proper permission is not sought.

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Dedicated to
Our families and their wellbeing.

Abstract

Since the discovery of the Coronavirus (nCOV-19), it has become a global pandemic. At the same time, it has been a great challenge to hospitals or healthcare staff to manage the flow of the high number of cases. Especially in remote areas, it is becoming more difficult to consult a medical specialist when the immediate hit of the epidemic has occurred. Thus, it becomes obvious that if effectively designed and deployed chatbot can help people by promoting preventive measures, virus updates, and reducing psychological damage caused by isolation and fear. This study presents the design of a sophisticated chatbot for the purpose of answering most frequently asked questions such as recommending immediate measures when patients are exposed to COV-19. In addition, presenting a virtual assistant can also make it user convenient to know about Covid-19.

Key words: Chatbot, Covid Website, Covid-19, Flask, Python, functionalities.

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Nomenclature:

GUI - Graphical user interface

API - Application Programming Interface

UI- User Interface

JS- JavaScript

CSS- Cascading Style Sheet

COVID- Coronavirus

Chapter 1

Introduction

1.1 Problem Definition

With the spread of COVID-19 across the world, there is a sense of panic and uncertainty amongst the public. People are not sure what measures to take to safeguard themselves and their family and have many questions. Moreover, rumors, myths and misinformation about COVID-19 have spread as quickly as the virus itself. Public health hotlines and patient communication systems are now dealing with many more inquiries than normal, putting a strain on existing resources. There is a need for health organizations to automate as many responses to these inquiries as possible to free up human resources to deal with more complex problems in the fight against this pandemic. Hence, we have created a COVID-19 Chatbot with website to help the general public learn more about COVID-19. The topics covered include basic information about COVID-19, transmission, testing, risk reduction and safety measures. Information has been collected using reliable sources like Centers for Disease Control, World Health Organization, etc. A list of 50+ questions along with their answers has been collated to cover a broad spectrum of COVID-19 related information.

How is our website different?

There are various websites that contain the same information that our website does, like:

- www.cdc.gov
- mohfw.gov.in
- mygov.in
- www.who.int

These websites are information specific. However, our website has everything under one roof. We have the daily updates, Advice, News and Information on covid regarding different aspects on our website. Our website has the static as well as the real time information (using APIs) on Covid. Other websites have not integrated the feature of chatbot. Our website has the feature of chatbot which provides personal assistance to the visitor. The chatbot answers to the user's queries regarding the questions on Covid as well as fetches the answers from the website itself. This makes it easy for the people to get their answers instead of growing through the complicated structure of the website.

1.2 Motivation

The coronavirus outbreak has major consequences for society worldwide. People are rightly concerned and have many urgent questions. The World Health Organization provides answers to frequently asked questions regarding the coronavirus on their website. However, you may have to search for a while before you have found the right answer to your question. It is vital that people are well informed about current measures. This way we can efficiently limit mass spread. We strive to innovate and come up with better solutions to the current problem of pandemic and hence we thought a chatbot would be perfect with this. Whether via text, phone, websites, or communication apps, conversing with chatbots can play a critical role in helping communities quickly understand crucial information and free up customer service resources to focus on higher-level issues.

1.3 Scope of Project

As society is confronted with one of the biggest challenges of our lifetimes, stopping the spread of COVID-19 presents a global problem that demands a global response. The scope of this project is to create website containing information about COVID-19. The website will have authentic, real – time information about COVID such as the number of cases in India, updates about the vaccine, latest researches related to covid, travel precautions and updates, etc from the most trusted sources such as WHO.

Apart from this, this website will also have a chatbot for direct interaction with the user. Chatbots, if effectively designed could help us by sharing up-to-date information quickly, encouraging desired health impacting behaviours, and lessening the psychological damage caused by fear and isolation. The chatbot will be trained to search for answers asked by the users from the website. In times of crisis, communications systems are often overwhelmed with people trying to find basic information about testing, symptoms, community response, and other resources. When communication lines get clogged, people who need real help can't get through. Chatbots help respond to tens, even hundreds of thousands of messages a day.

Domains included in the project:

- Chatbot
- Covid Advice
- Travel Advice
- Health workers and administrators
- Global research on covid
- World map showing total and recovered number of cases around the world using API.
- Graph using API depicting the total cases, recovered cases and deaths in a country.

1.4 Functional Requirements and Non Functional Requirements

Function Requirements :

For Chatbot functions provided are:

- The chatbot is a pre-trained bot which will give an automated response.
- The chatbot will have a human-like approach.
- The chatbot is capable of having short and simple interactions.
- The chatbot will make it convenient for users to know about covid-19.
- The chatbot will have a pre-defined dataset as well as a dataset from the developer which will help the chatbot to give appropriate logical answers.

For Website functions provided are:

- The website consists of a dynamic world-map which will tell the users about the global situation (Current cases and deaths).
- The website consists of a dynamic graph which will give the users information about the total cases, recovered cases and deaths in the searched country.
- The website will provide valuable insights and advice for the general public.
- The website will provide the latest COVID 19 vaccine-related news.
- The website will provide the general covid-19 related news.
- The website will give the latest travel guidelines for the people.
- The chatbot will be integrated to the website.

Non-functional Requirements

- The user must have active internet connection throughout the time of using this application.
- Workload: The application can handle multiple users at a time.
- The bot should reply under 30 seconds to users queries.

Chapter 2

Background Work

COVID-19 hits humanity and everyone was startled. Pandemic proved to be deadly, and an immediate lockdown was necessary. With the spread of COVID-19 across the world, there is a sense of panic and uncertainty amongst the public. People are not sure what measures to take to safeguard themselves and their family and have many questions. Moreover, rumours, myths and misinformation about COVID-19 have spread as quickly as the virus itself. Public health hotlines and patient communication systems are now dealing with many more inquiries than normal, putting a strain on existing resources. COVID-19 has citizens looking for answers about symptoms and testing sites as well as the current status of schools, transportation, and other public services. Thus, it becomes obvious that effectively designed and deployed chatbot can help patients by promoting preventive measures, virus updates, and reducing psychological damage caused by isolation and fear.

There is a need for reliable websites for Covid-19 with chatbot to automate as many responses to these inquiries as possible to free up human resources to deal with more complex problems in the fight against this pandemic. We have designed a Covid website with chatbot to understand and respond to common questions about COVID-19 and display COVID-19 statistics inquiries with data from trusted sources on the website.

The chatbot will be able to respond by sharing consistent covid-19 information from the dataset we have made, help citizens quickly and easily access the latest information through text, free valuable resources by automating answers to common covid-19 questions and dynamically update information on the website.

Chapter 3

Implementation

3.1 Technologies Used.

Front end:

- Html
- Css
- Javascript
- BootStrap

Backend :

- Python
- Flask
- Important Libraries – Graph_files, Chatterbot, Chatbot_corpus, numpy, request
- Json

3.2 Methodology

- We referred to the World Health Organization (WHO) website to get basic information about Covid-19.
- We trained our covid-19 chatbot by taking Google FAQs and build our dataset.
- We realized that adding a virtual assistant on a dynamic website can make it user convenient to know about Covid-19. The design of a sophisticated covid chatbot for the purpose of answering most frequently asked questions such as recommending immediate measures when patients are exposed to Covid-19.
- We also felt the need of adding dynamic graphs and world map on our website which provides statistics about the pandemic.
- We discussed the solution with our faculty in-charge, it was further improved in the conversation and looking at the current situation all over the world.

3.3 Implementation and Algorithm

Chatbot:

- Step 1: We have used python and flask for creating the chatbot along with a .yaml dataset to train the chatbot.
- Step 2: The user will search for his query on the chatbot GUI.
- Step 3: The chatbot will first check if the query has been asked before in the SQLite database.
- Step 4: If yes, the chatbot will automate a response from the SQLite database itself.
- Step 5: If no, the chatbot will search for the user entered query in the .yaml created dataset as well as the predefined dataset.
- Step 6: The chatbot will display the response to the query on the GUI.

Website:

- Step 1: From the home page, you can visit the world-map API page which shows the global situation.
- Step 2: The global situation consists of the current cases and recovered cases which is fetched from the python library graph_file.
- Step 3: The data fetched is displayed in the form of the world-map using the map API key we have created and upon hovering over the graph, you get the covid related statistics for the particular country.
- Step 4: You can get the latest news and history about the cases and deaths of a state/province you want to know about by searching for it on the search bar on the home page.
- Step 5: All the information related to the country will be collected from the graph_file library of python.
- Step 6: The data fetched is displayed in the form of graph and upon hovering over the graph; you get the covid related statistics for the particular country.
- Step 7: In the navbar, you can explore multiple pages like covid advice, research, vaccination and also access the chatbot.
- Step 8: Covid advice provides advice for the people, the travel guidelines and also the work of health administrators.
- Step 9: Research provides the global research on the covid-19 pandemic and the latest news on the new vaccination available for covid-19.

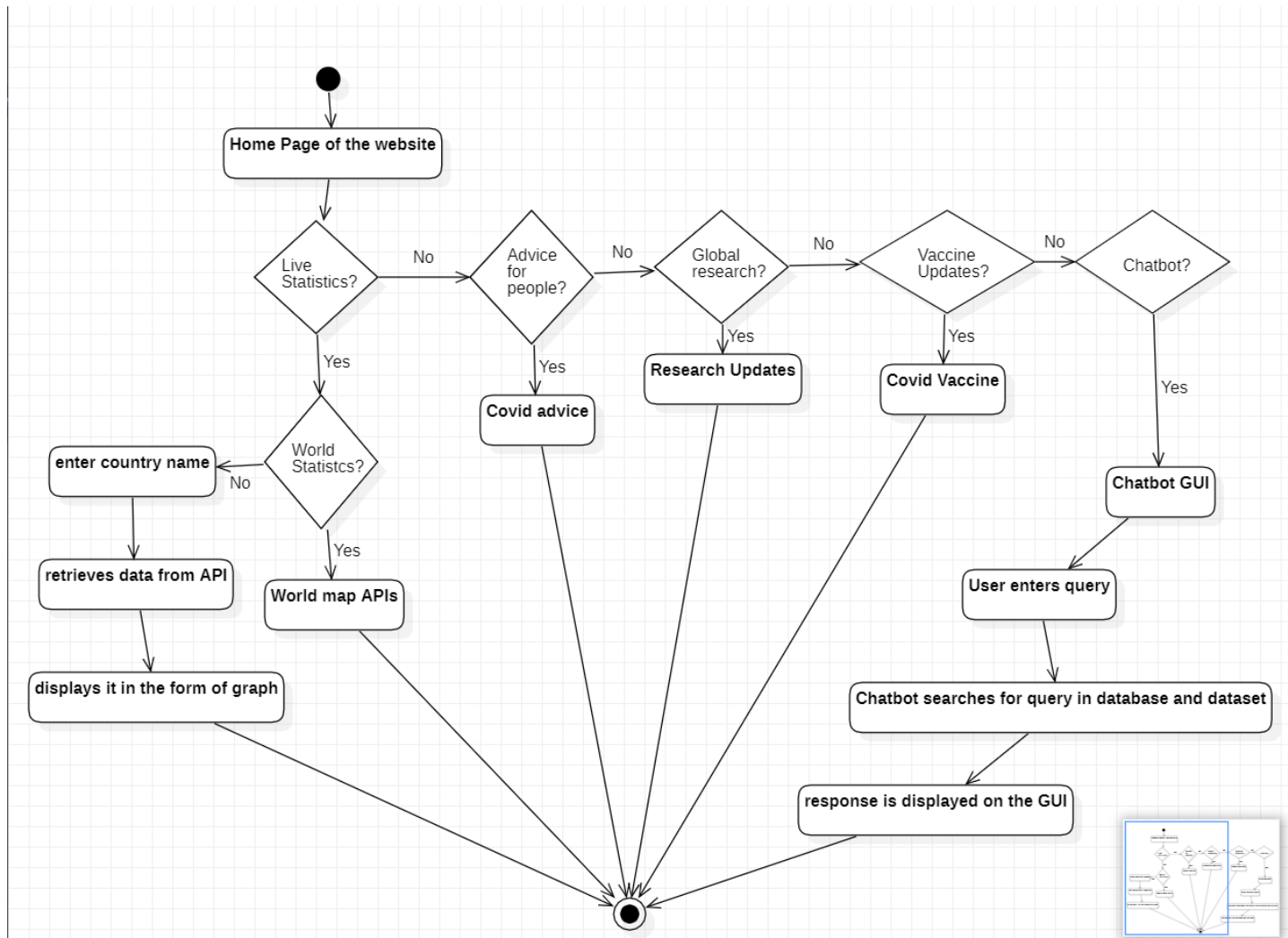


Fig 3.1 Flow of the Web Application

Chapter 4

Results and Discussion

Home Page:

This is the Covid website home page which consists of many tabs and features like the covid chatbot, real time data using API which has the world-map and country wise covid data, covid advice (for health workers and administrators, for local people and travel advice) , vaccine (covaxin and its side effects), recent updates on covid-19 and an about us page. It also provides a timeline of covid-19 right from when it was declared as a pandemic.

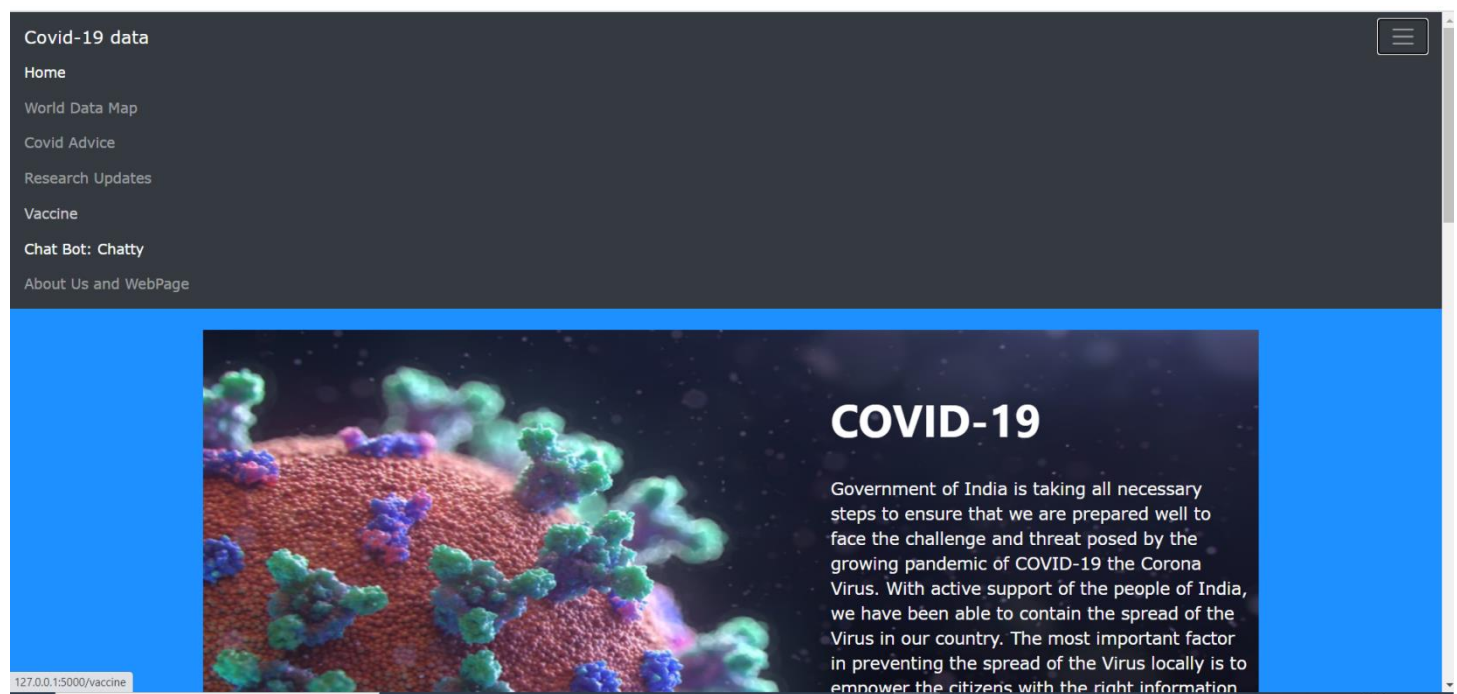


Fig 4.1 Home Page-1

To view the TOTAL and RECOVERED number of cases in the world,
CLICK below

World map statistics

To check the statistics for your country,
CLICK below

Submit

Fig 4.2 Home Page-2

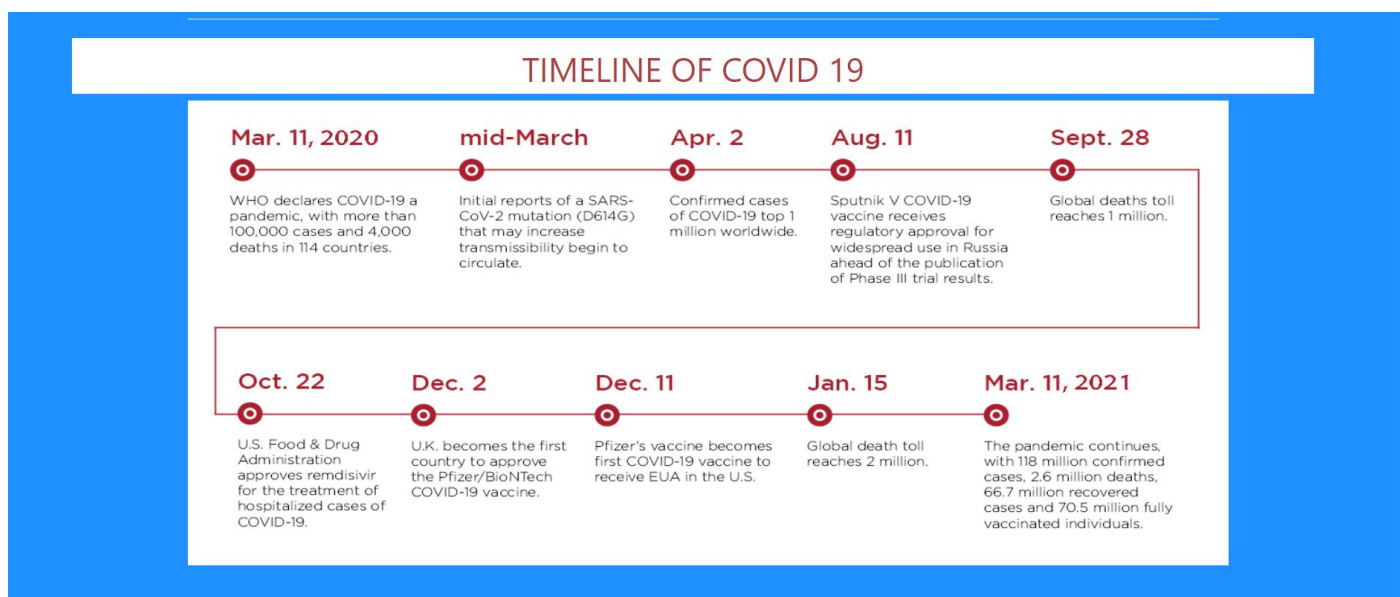


Fig 4.3 Home Page-3

World map:

This is the world map API page which shows the global situation consisting of the confirmed cases and recovered cases. It gives us real time data. The data is fetched from the python library `graph_file` and is displayed in the form of the world-map using the map API key we have created and upon hovering over the map, you get the covid related statistics for the particular country.

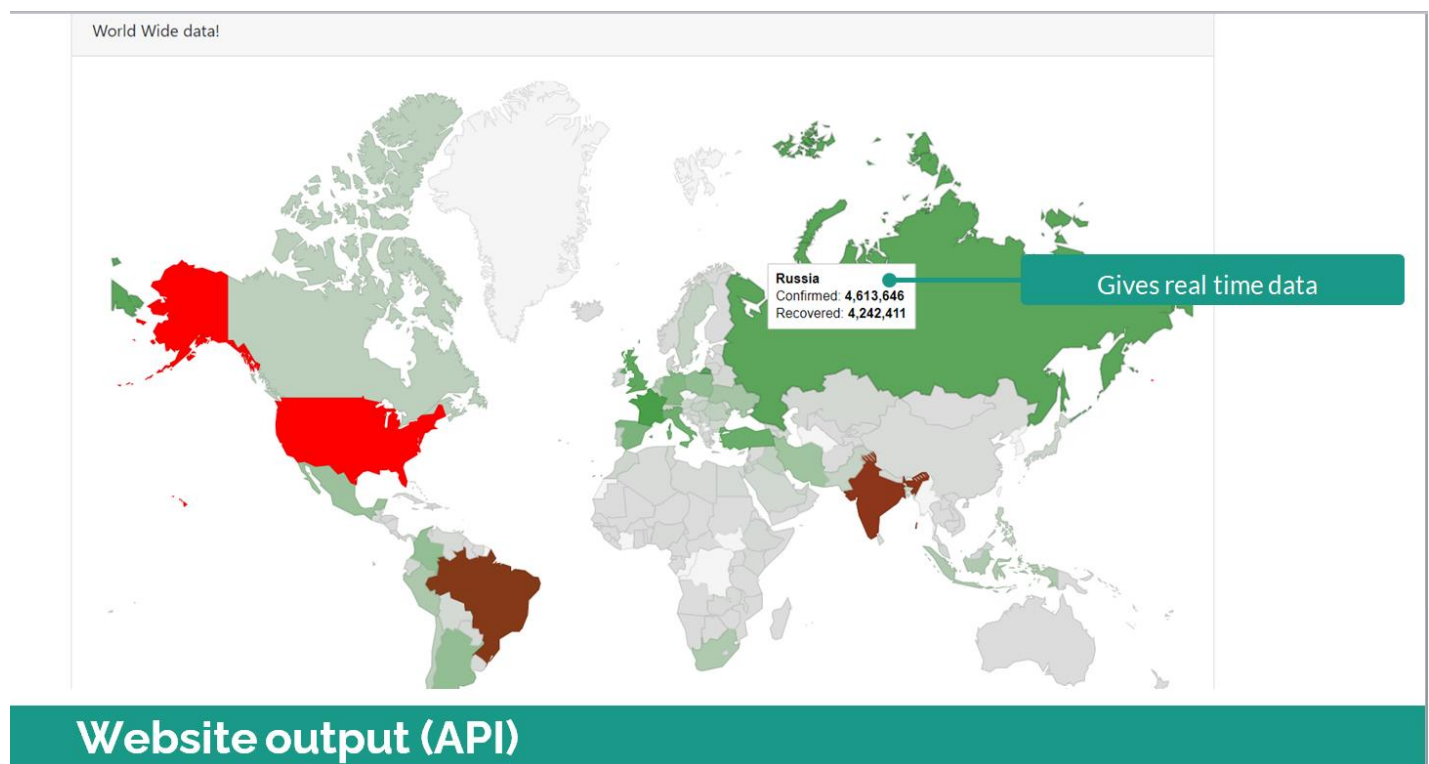


Fig 4.4 Worl Map API

Graph:

This page consists of two graphs, the first one being timeline vs number of cases and the second one being timeline vs number of new cases. It gives us the latest news and history of the confirmed cases, recovered cases and deaths of a particular country/province you search for on the search bar on the home page. All the information and data related to the country will be collected from the graph_file library of python and is displayed in the form of the a graph and upon hovering over the graph, you get the covid related statistics for the particular country.

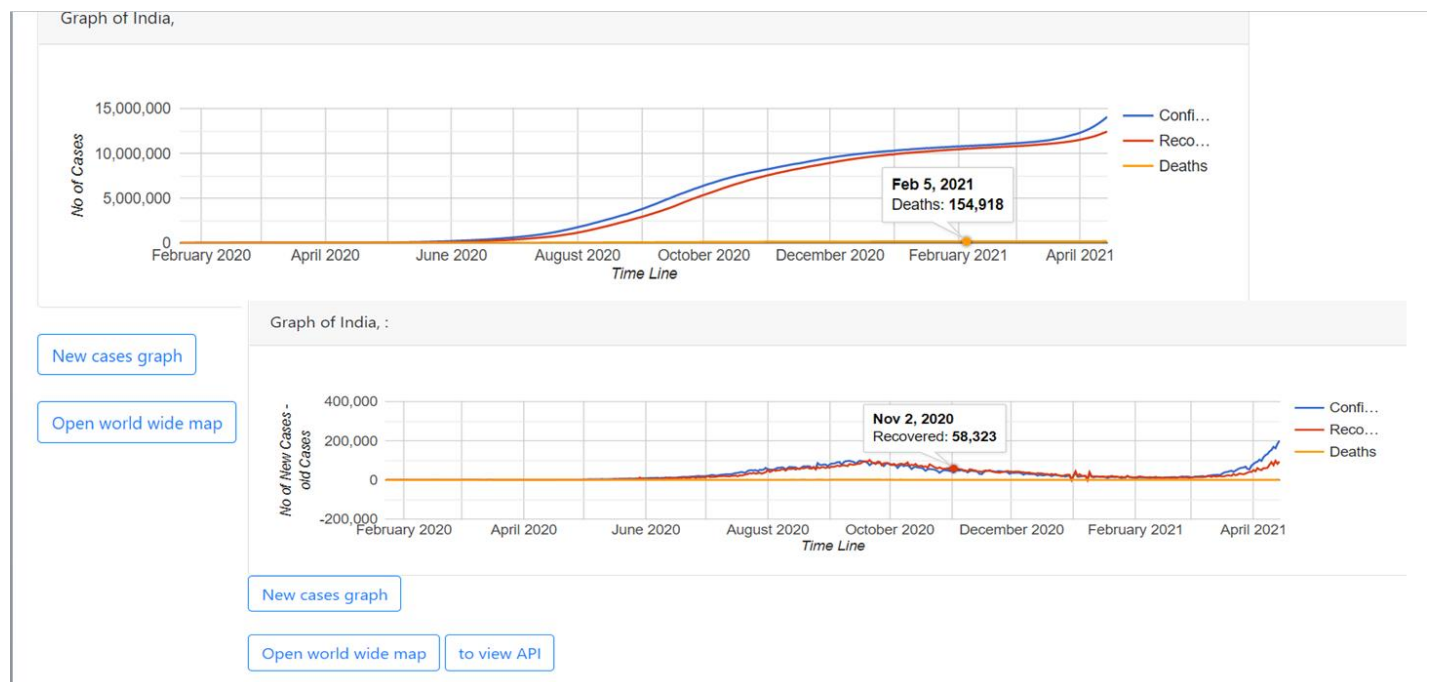


Fig 4.5 Country Wise Graph API

Chatbot GUI:

This is the covid chatbot GUI where the user will enter his/her query and seek solutions for the same. We have used python and flask for creating the chatbot along with an .yaml dataset to train the chatbot. The chatbot will first check if the query has been asked before in the SQLite database and if yes then it will fetch answers from the database itself otherwise it will search for answers in the .yaml dataset created as well as the predefined datasets in python. It will display the answers to the asked questions on the GUI.

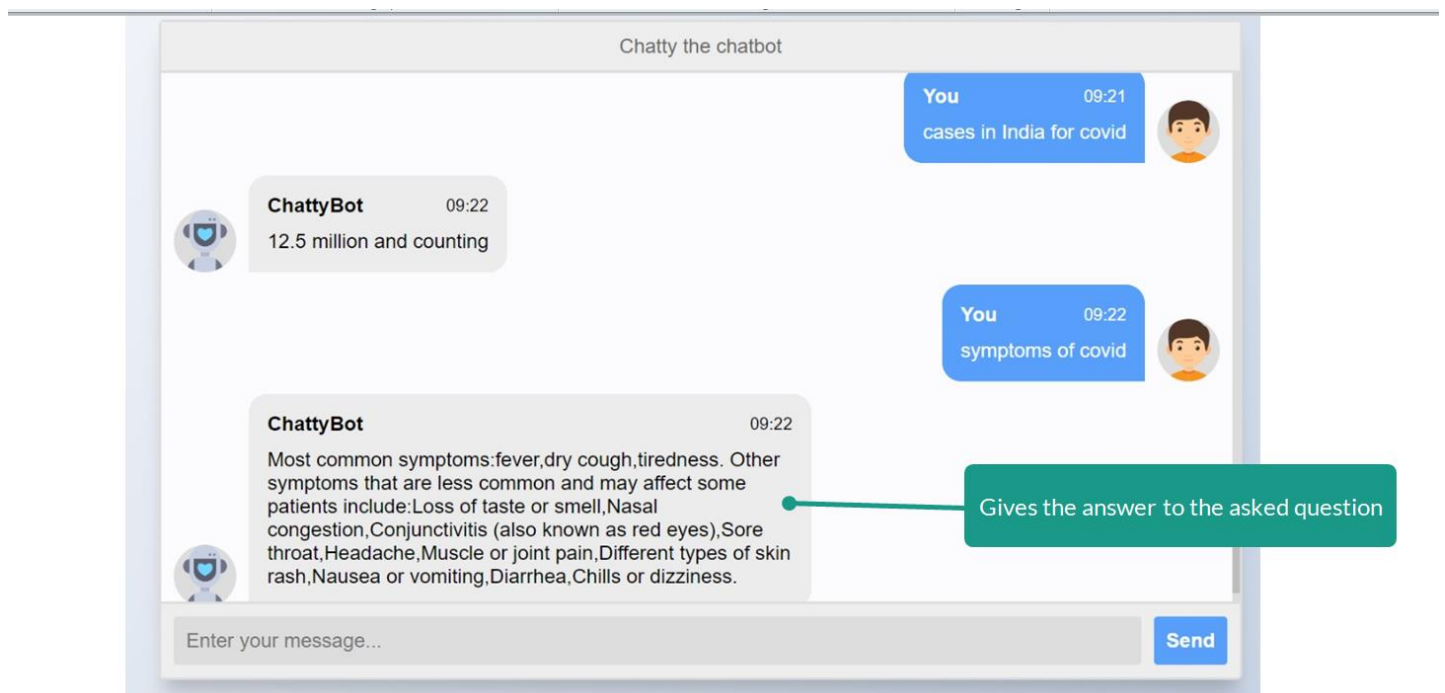


Fig 4.6 Chatbot

Covid Advice:

This is the covid advice page which basically makes it more clear and gives clear instructions on how to avoid covid, the precautions you can take, the hygiene to follow etc. It is divided into three main sections: Advice for people, Travel advice and advice for health workers and administrators.



Fig 4.7 Advice Page

Advice for the people:

This page tells us about the necessary steps to avoid covid and the precautions, hygiene to follow, distance to keep, cleanliness and the importance of masks. It has the data and information on what to do to keep ourselves and others safe from covid-19, how to make the environment safer, importance of good hygiene and steps to follow if you feel unwell. It also consists of pdfs on advice for ill people, for care givers, etc and how to cope with stress pdfs.



Fig 4.8 Advice for people-1

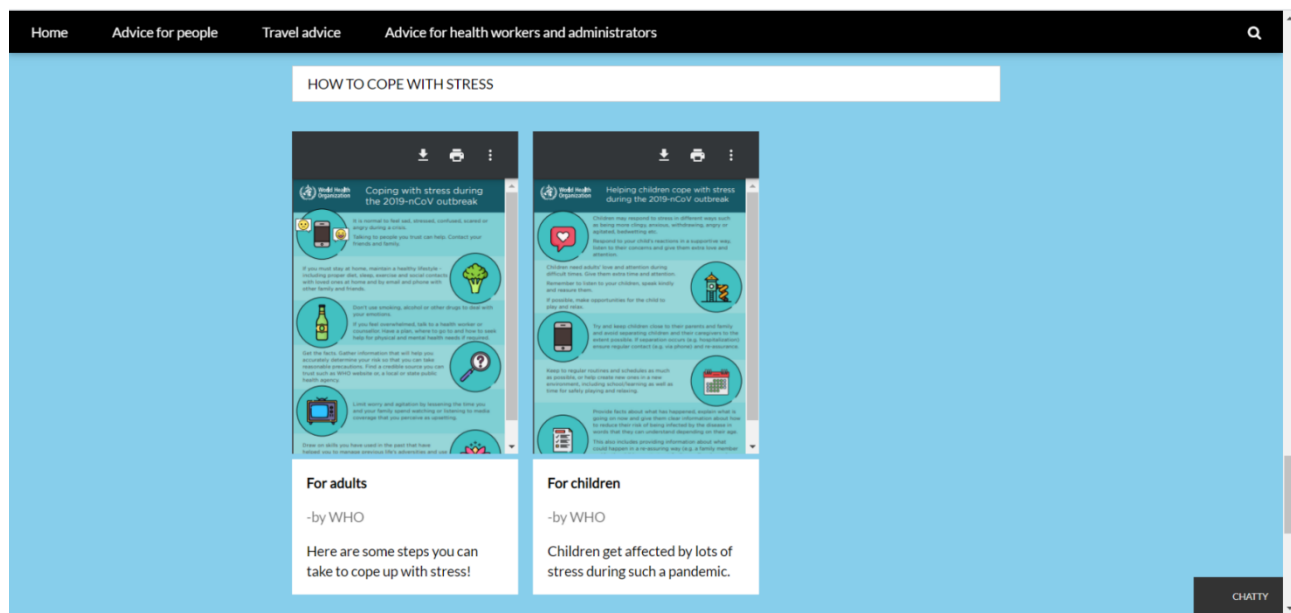


Fig 4.9 Advice for people-2

Travel Advice:

This section gives advice on things you can do to travel safely, the rules and regulations of travelling during the pandemic, recommendations and requirements for domestic travel and getting tested after travel. It enlightens you on how to prepare for a flight during covid and the things to do before, during and after your trip.

The image shows a screenshot of the CDC Travel Advice page. The top navigation bar includes links for Home, Advice for people, Travel advice, and Advice for health workers and administrators. A prominent banner states: "If you fly to the US from a foreign country, you must provide a negative COVID-19 test result or documentation of recovery from COVID-19 before boarding your flight." Below this, the CDC logo is visible, along with the text "CS321936-A 2/16/2021 11AM" and the URL "www.cdc.gov/covid19travel".

Below the CDC banner, there is a section titled "Interim position paper: considerations regarding proof of COVID-19 vaccination for international travellers". The date "5 February 2021 | COVID-19 Travel Advice" is displayed. The "Introduction" section states: "The World Health Organization (WHO) issues regularly updated position papers on vaccines against diseases that have an international public health impact. This paper, which presents WHO's position on the advisability of requirements for COVID-19 vaccination or proof of vaccination for international travellers, is designed for use mainly by national public health officials and managers of immunization programmes. It may also be of interest to other branches of government responsible for travel or immigration, international funding agencies, ne advisory groups, the medical community, the scientific media and the public." The bottom of the introduction mentions: "The paper presents scientific, ethical, legal and technological considerations regarding the possible introduction of requirements by States Parties of proof of COVID-19 vaccination for outgoing or incoming".

On the left side of the screenshot, there is a poster from the NHS titled "TRAVELLING HOME?". It features icons for a bus, a car, and a train. The text on the poster reads: "Students, to protect your loved ones it's important to follow national restrictions to be able to travel home between 3-9 December. If you have symptoms, self-isolate, book a test and do not travel. Get a quick coronavirus test if it's available at your university."

Fig 4.10 Travel Advice Page

Advice for health workers and administrators:

Health workers are central to the COVID-19 pandemic response, balancing additional service delivery needs while preserving access to essential health services and deploying COVID-19 vaccines. They also face higher risks of infection in their efforts to protect the greater community and are exposed to hazards such as psychological distress, fatigue and stigma.

To address these challenges, WHO provides the latest advice, guidance and training for both health workers and administrators.

Home Advice for people Travel advice Advice for health workers and administrators

Health workers and administrators

It is the safety that matters during a pandemic!

Health workers are central to the COVID-19 pandemic response, balancing additional service delivery needs while preserving access to essential health services and deploying COVID-19 vaccines. They also face higher risks of infection in their efforts to protect the greater community and are exposed to hazards such as psychological distress, fatigue and stigma. To address these challenges, WHO provides the latest advice, guidance and training for both health workers and administrators.

Readiness

To help policy-makers and planners invest in ensuring the readiness, education and learning of the health workforce, WHO provides support for strategic workforce planning, support and capacity-building.

- Interim guidance on Health workforce policy and management in the context of the COVID-19 pandemic response
- Health Workforce Estimator (HWE) to anticipate response staffing requirements
- The Health Workforce Support and Safeguards List comprises countries facing the most pressing health workforce challenges, from which active international recruitment is discouraged.

Dedicated learning resources to support expanded clinical roles and tasks, as well as support for COVID-19 vaccines roll-out, are available for individual health workers. Managers and planners can access additional resources to support learning and education requirements.

CHATTY

2021

Most Effective

Continue Working Remotely
(Elimination of Hazard)

- Remove the potential for exposure to COVID-19

Adjust the Workplace
(Engineering Controls)

- Re-design or modify the workplace configuration to enable physical distancing

Adjust Work Processes
(Administrative Controls)

- Implement hand hygiene practices and/or make adjustments to other administrative processes such as staggered shifts, changing of work hours, etc.

Provide PPE

- Where the previous measures are not possible or are ineffective, Personal Protective Equipment (PPE) may be necessary to reduce the potential for exposure to COVID-19

Least Effective

Fig 4.11 Advice for health workers

Covid Vaccines:

This page consists of three sections: Vaccine, New variant and the effects of new variant. It briefs the people about the covid-19 vaccine, the benefits of the vaccine and why is it important that everyone gets vaccinated and continue to take precautions even after getting vaccinated and not forget our responsibility.

Vaccine:

This page covers all the covid-19 vaccine related questions like if there even is a vaccine for covid, is it ready for distribution, what type of vaccines have been developed and how they work, will they provide long term protection and if they are safe for children.



Fig 4.12 Covid Vaccine

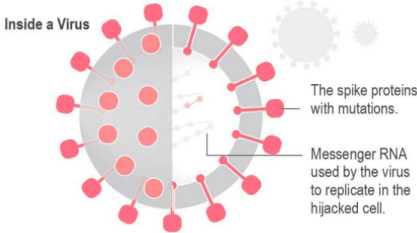
New variant:

This section has information about virus variants and their effects on covid-19 vaccines. It briefs about the new variant of the virus that causes covid-19 and what we know and not know and how the virus works.

[Home](#) [Vaccine](#) [New Variant](#) [Effects of new variant](#) [Q](#)

The new coronavirus variant

The new variant of the virus that causes COVID-19 has several mutations on its spike proteins. These spikes are used by the virus to attach to and infect cells. They also are what vaccines and antibody drugs target.



Inside a Virus

The spike proteins with mutations.

Messenger RNA used by the virus to replicate in the hijacked cell.

SOURCE: Associated Press reporting

AP

Variants of the Virus that Causes COVID-19

Updated Apr. 2, 2021

Information about the characteristics of these variants is rapidly emerging. Scientists are working to learn more about how easily they spread, whether they could cause more severe illness, and whether currently authorized vaccines will protect people against them.

What we know

Viruses constantly change through mutation, and new variants of a virus are expected to occur over time. Sometimes new variants emerge and disappear. Other times, new variants emerge and persist. Multiple variants of the virus that causes COVID-19 have been documented in the United States and globally during this pandemic.

The virus that causes COVID-19 is a type of coronavirus, a large family of viruses. Coronaviruses are named for the crown-like spikes on their surfaces. Scientists monitor changes in the virus, including changes to the spikes on the surface of the virus. These studies, including genetic analyses of the virus, are helping scientists understand how changes to the virus might affect how it spreads and what happens to people who are infected with it.

Multiple variants of the virus that causes COVID-19 are circulating globally and within the United States. In

CHATTY

Fig 4.13 New Variant Page

Effects of new variant:

This page provides answers to questions like what causes a virus to change to a new variant, what impact the new variant has on covid-19 vaccines and what is WHO doing to monitor and understand the impact of the virus on the efficacy of covid vaccines. It also tells the importance of getting vaccinated in spite of the new variants and how we can prevent future new variants of the covid virus.

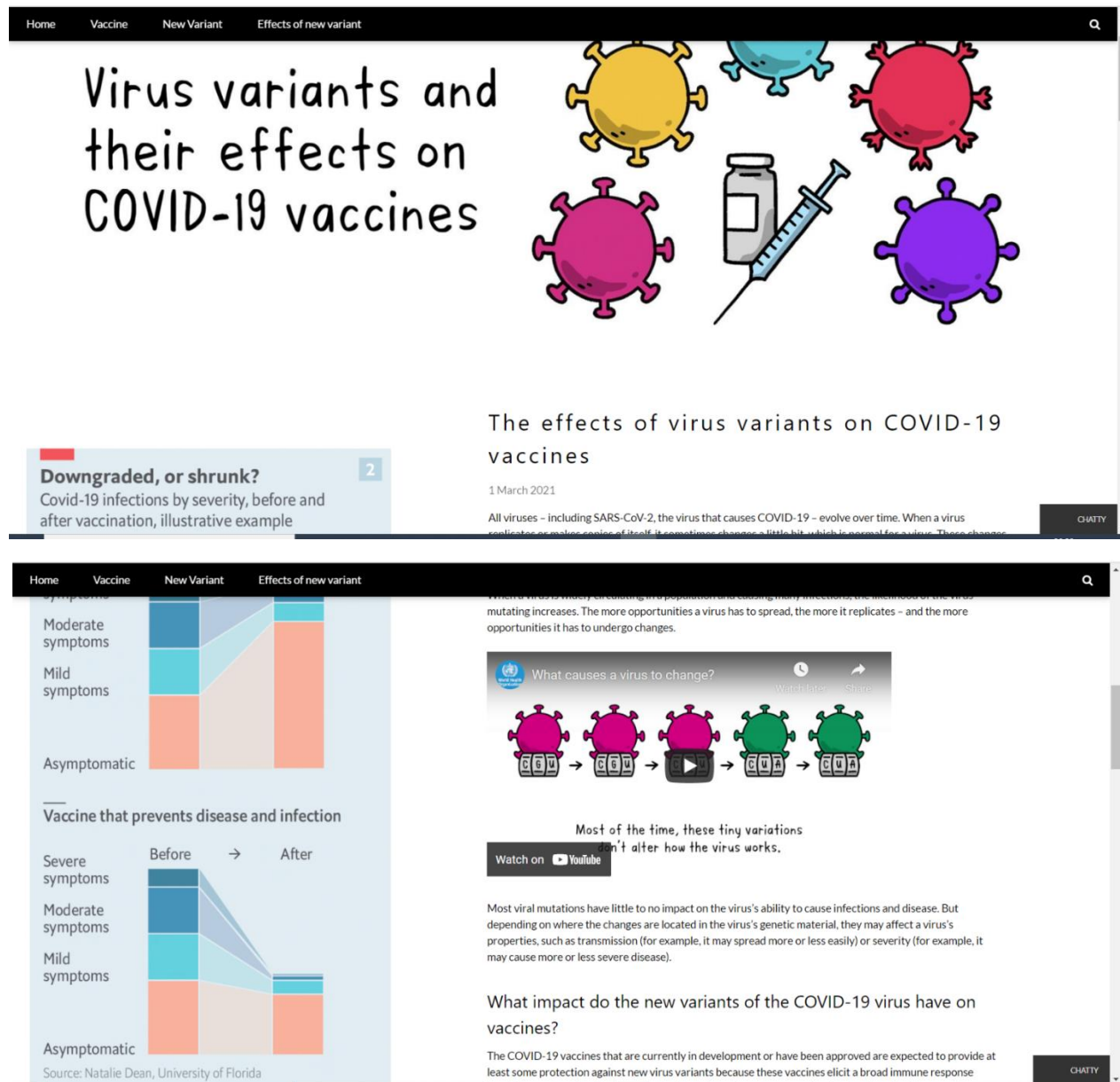


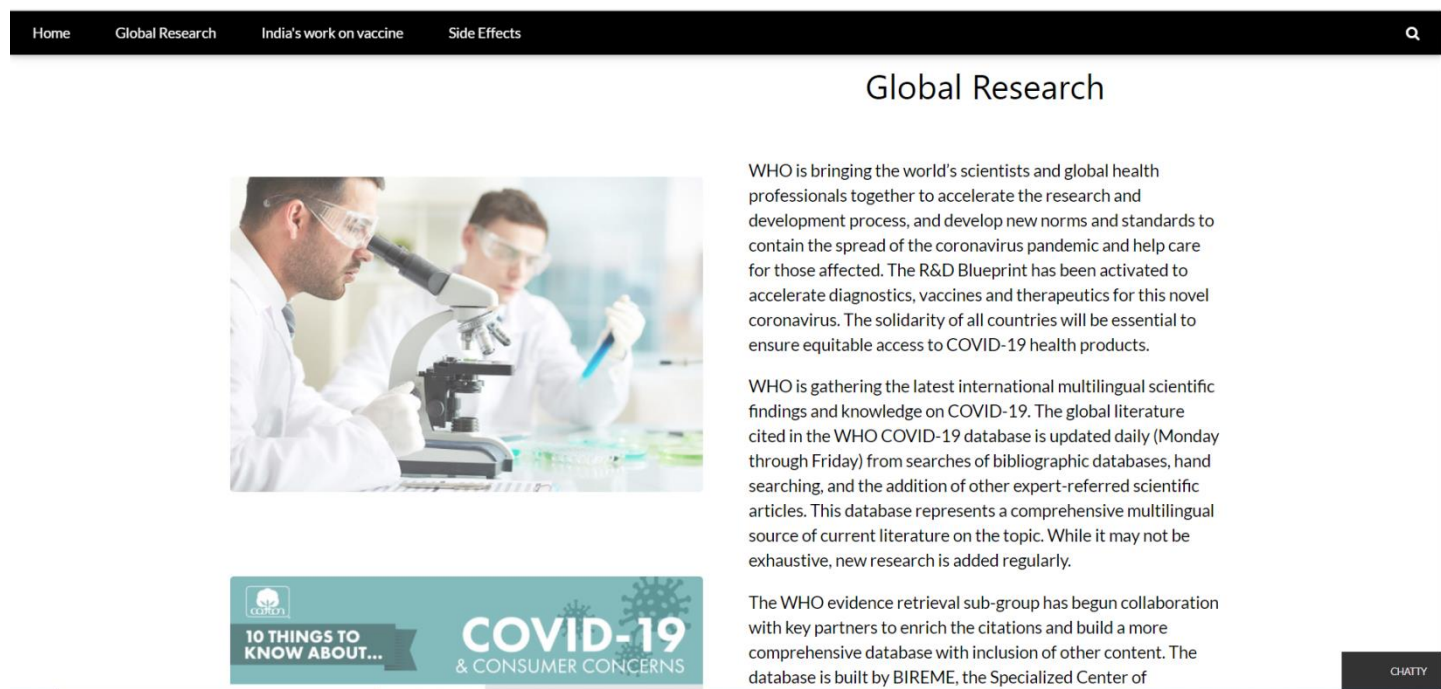
Fig 4.14 Effects of new variant

Research updates:

This page consists of three sections: Global research, India's work on the vaccine (covaxin) and its side effects and provides with the latest research on covid-19 from trusted sources.

Global research:

This page provides information on how WHO is bringing the world's scientists and global health professionals together to accelerate the research and development process, and develop new norms and standards to contain the spread of the coronavirus pandemic and help care for those affected. It also shares all the hardcore covid-19 facts like the symptoms, treatment, prevention and most at risk details.



Home Global Research India's work on vaccine Side Effects

Global Research

WHO is bringing the world's scientists and global health professionals together to accelerate the research and development process, and develop new norms and standards to contain the spread of the coronavirus pandemic and help care for those affected. The R&D Blueprint has been activated to accelerate diagnostics, vaccines and therapeutics for this novel coronavirus. The solidarity of all countries will be essential to ensure equitable access to COVID-19 health products.

WHO is gathering the latest international multilingual scientific findings and knowledge on COVID-19. The global literature cited in the WHO COVID-19 database is updated daily (Monday through Friday) from searches of bibliographic databases, hand searching, and the addition of other expert-referred scientific articles. This database represents a comprehensive multilingual source of current literature on the topic. While it may not be exhaustive, new research is added regularly.

The WHO evidence retrieval sub-group has begun collaboration with key partners to enrich the citations and build a more comprehensive database with inclusion of other content. The database is built by BIREME, the Specialized Center of

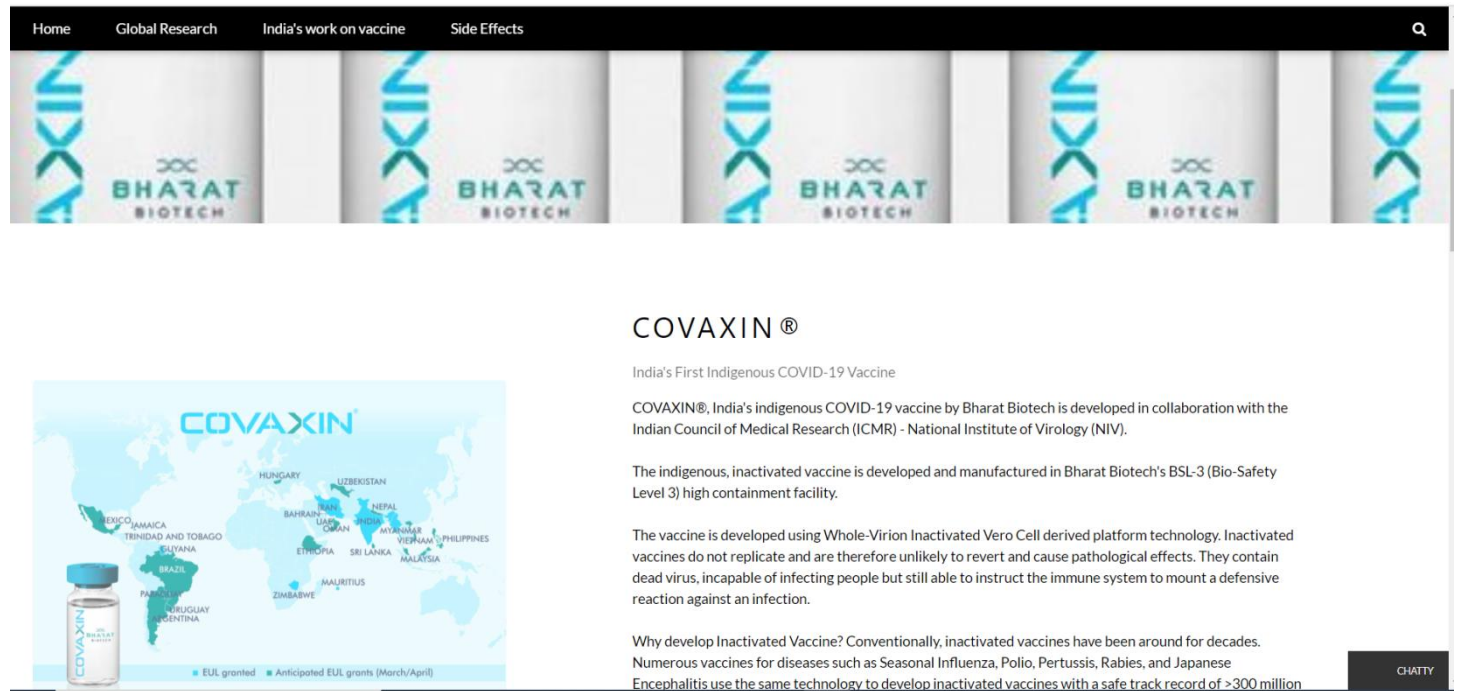
10 THINGS TO KNOW ABOUT... COVID-19 & CONSUMER CONCERNS

CHARTY

Fig 4.15 Global Research Page

India's work on the vaccine:

This page talks about India's first indigenous covid-19 vaccine which is covaxin and its key attributes. Covaxin, India's indigenous COVID-19 vaccine by Bharat Biotech is developed in collaboration with the Indian Council of Medical Research (ICMR) - National Institute of Virology (NIV).



The screenshot shows the top navigation bar with links: Home, Global Research, India's work on vaccine, and Side Effects. Below the navigation bar is a banner image featuring the Bharat Biotech logo and the word 'COVAXIN' in large, stylized letters. The main content area is titled 'COVAXIN®' and describes it as 'India's First Indigenous COVID-19 Vaccine'. It states that the vaccine is developed in collaboration with the Indian Council of Medical Research (ICMR) - National Institute of Virology (NIV). The text further explains that the vaccine is developed using Whole-Virion Inactivated Vero Cell derived platform technology and is an inactivated vaccine that does not replicate. A world map is displayed, showing countries where the vaccine has been granted (EUL granted) or is anticipated to be granted (Anticipated EUL grants (March/April)). The map includes labels for various countries such as Mexico, Jamaica, Trinidad and Tobago, Guyana, Brazil, Paraguay, Argentina, Hungary, Uzbekistan, Bahrain, Oman, Nepal, Sri Lanka, Vietnam, Philippines, Malaysia, Mauritius, and Zimbabwe. A small image of a Covaxin vaccine vial is also shown. The bottom right corner of the page has a 'CHATTY' button.

Fig 4.16 India's work on vaccine

Side effects:

This page gives data about the possible side effects after getting the covid-19 vaccine. These side effects may affect your ability to do daily activities, but they should go away in a few days. Some people have no side effects. It also gives helpful tips to overcome these side effects and cases when to consult the doctor in case something serious happens.

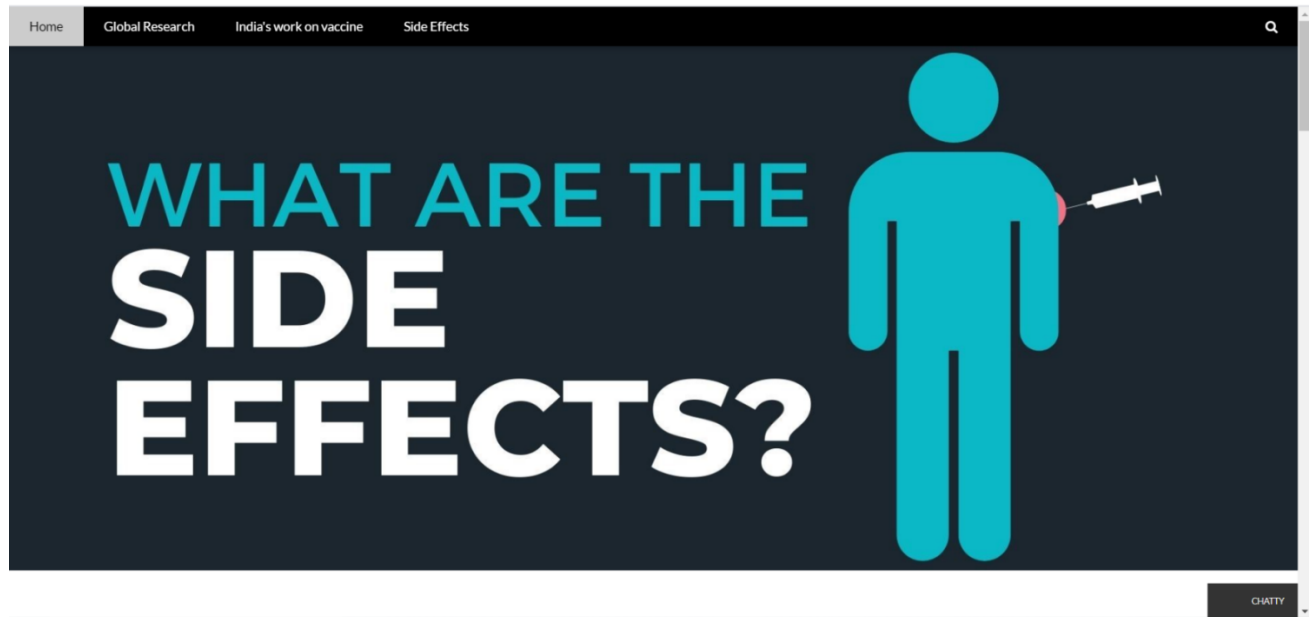


Fig 4.17 Side Effects-1

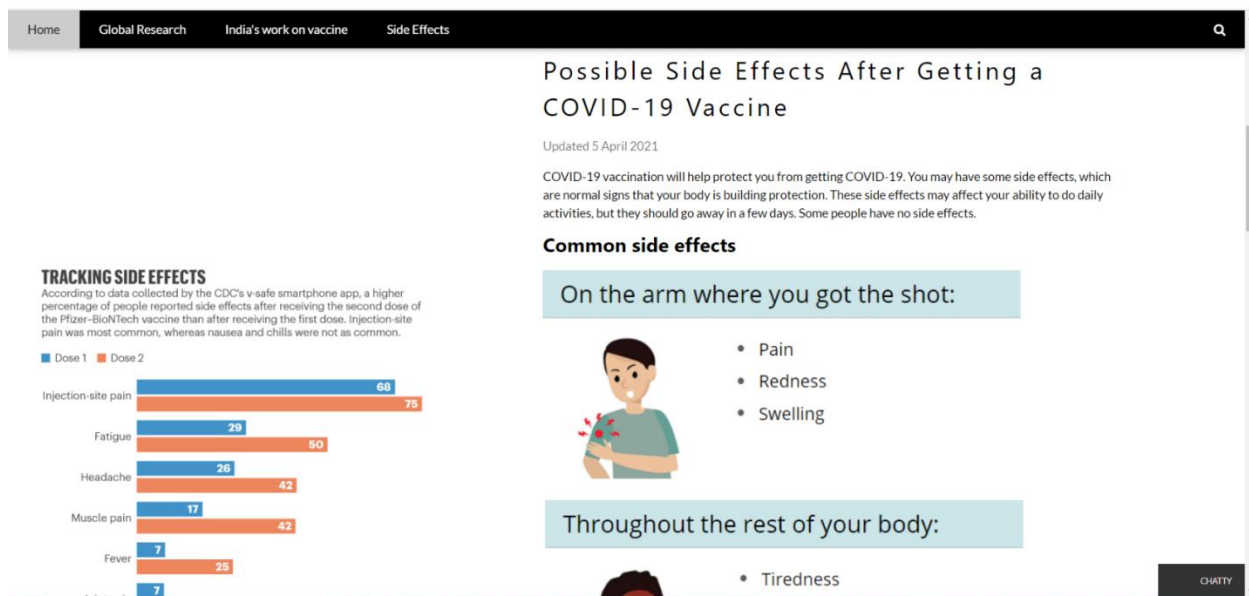


Fig 4.18 Side Effects-2

About us and webpage:

This is the about us and webpage section where we have written about us briefly and given an overview of the contents of our website.

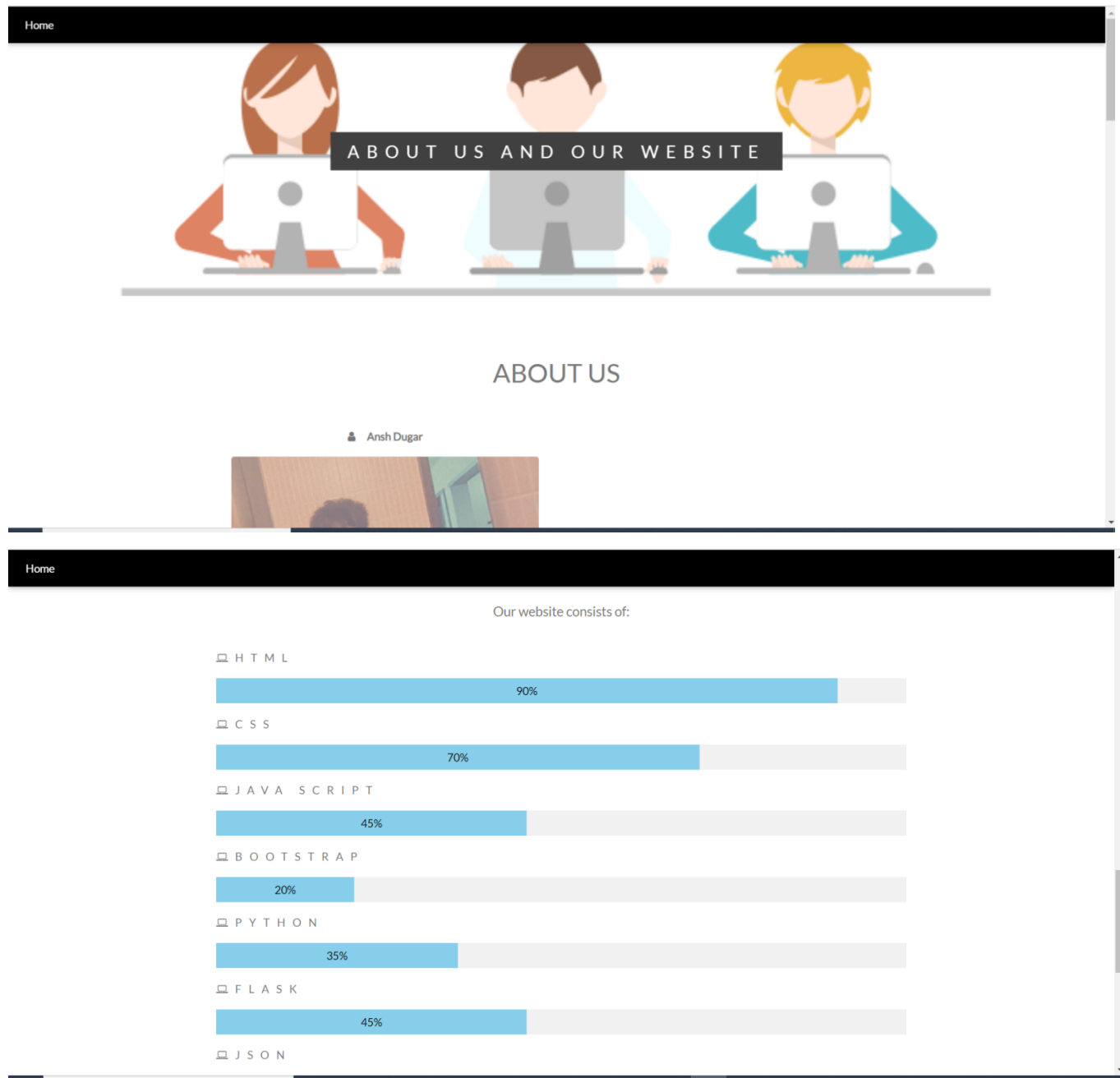


Fig 4.19 About Us

Footer:

This is the footer of the Covid website consisting of the emergency contact number and mail details and giving credentials to the World Health Organization.

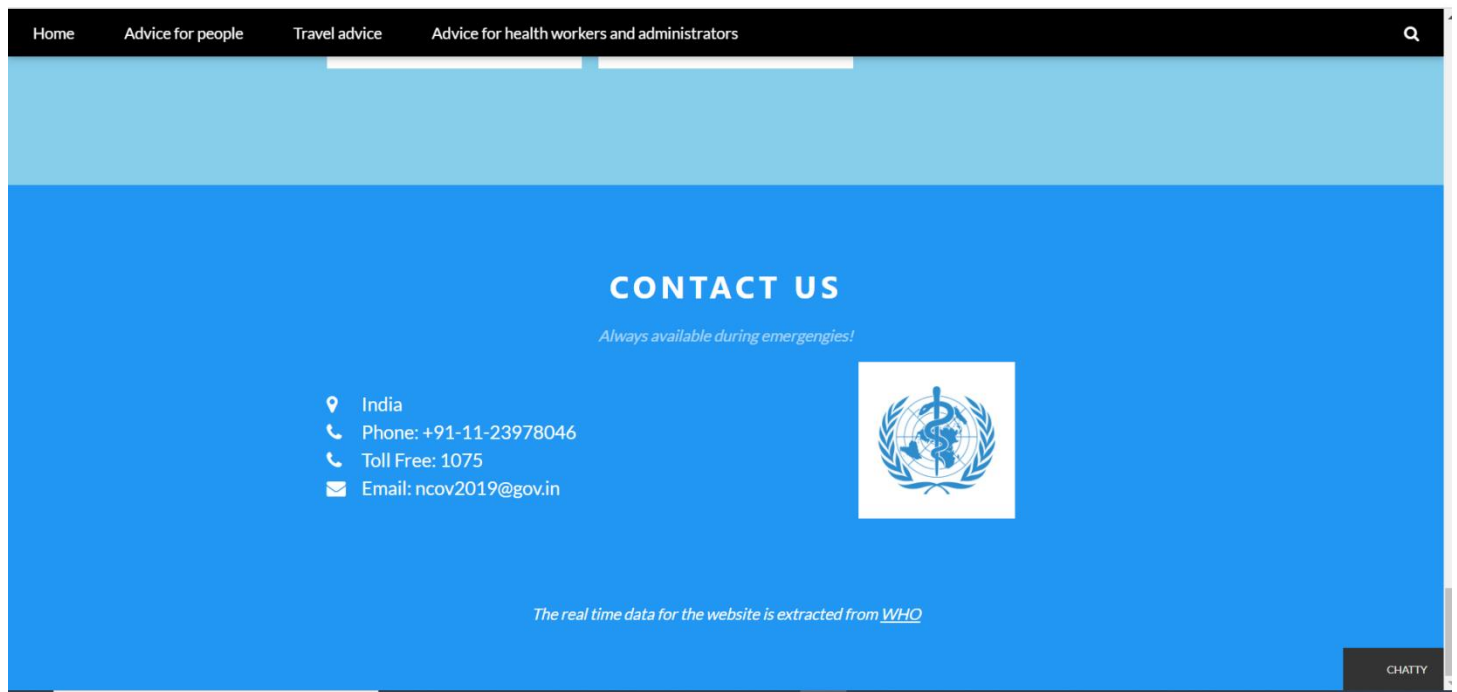


Fig 4.21 About Us

Chapter 5

Conclusions and learning

5.1 Conclusion

In our current emergency, providing information, updates, and support to the public are the key objectives. COVID-19 has accelerated the digitization process. It pushed the urgency of support and interaction methods that are timely and capable of coping with physical distance.

It's here where the use of chatbots has seen a significant uptick, revealing this new technology's full potential—especially in healthcare.

Chatbots can never replace empathy and the qualitative value of human support. They can, however, represent a valid way to manage requests and lighten the workload during emergencies.

5.2 Future Scope

The COVID-19 pandemic is an accelerator for chatbot technology, helping people around the world get more and more comfortable with leveraging this tool for healthcare. As we move beyond the pandemic, the adoption of chatbots in broader healthcare applications will continue to grow. As they do, public and private stakeholders must come together to create governance frameworks that maximize these benefits while minimizing risks. Assuming that Covid-19 is not the only disease we are facing, we plan to reuse the chatbot and make it compatible with other epidemics, diseases or other services with individual APIs or relevant datasets.

5.3 Learning

We learned Flask and using various plugins required in our project. We believe in coordinating and teamwork, thus we ensured everyone was on the same page when making this project. We believe that systems cannot be completed in one go, we accept the fact that the system can be improved, and we will strive to make incremental changes every now and then. It is essential to keep the project alive and let it grow.

We learned to understand the requirements of the world and further improve upon the current system that are in place. We hope this system helps everyone out there. Pandemics doesn't distinguish between any humans, disease brings destruction to human society, we want to decrease the impact of pandemics. We learned that this is not a simple problem. To further improve upon the system would require us to consult experts in the industry, doctors, etc.

No project could have a completed stamp on it, we believe this is a lively project and there is always room for improvement or some new functionality.

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- <https://www.bloomberg.com/coronavirus>
- <https://flask.palletsprojects.com/en/1.1.x/>
- <https://docs.python.org/3.8/>
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- <https://www.aarogyasetu.gov.in/>
- https://developers.google.com/chart/interactive/docs/basic_load_libs#load-settings

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